Message

From: Bertrand, Charlotte [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=F044D768E05842E1B75321FF6010E1B8-BERTRAND, CHARLOTTE]
Sent: 6/16/2020 6:58:50 PM
To: McLain, Jennifer L. [McLain.Jennifer@epa.gov]
Subject: Re: Perchlorate Notice

Perfect. Thank you. I added you and Eric to a Wall Street Journal prep session.

Sent from my iPhone

On Jun 16, 2020, at 2:49 PM, McLain, Jennifer L. <Mclain.Jennifer@epa.gov> wrote:

Charlotte – status from OMB below. We are effectively cleared and working on final formatting. However the ROCIS clearance will occur tomorrow after Vlad completes his final steps.

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Tuesday, June 16, 2020 2:37 PM
To: McLain, Jennifer L. <McLain.Jennifer@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: FW: Perchlorate Notice

FYI

From: Dorjets, Vlad EOP/OMB Ex. 6 Personal Privacy (PP)
Sent: Tuesday, June 16, 2020 2:35 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Johnson, Ann <Johnson.Ann@epa.gov>
Subject: Perchlorate Notice

Eric,

The final perchlorate notice is in ROCIS and looks good so we are effectively done but, per our earlier discussion, I will be concluding our review tomorrow and not today. I'll send you a notice tomorrow morning once I have formally concluded review.

Vlad

Appointment

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 8/7/2017 9:02:46 PM
To: Burneson, Eric [Burneson.Eric@epa.gov]; Christ, Lisa [Christ.Lisa@epa.gov]; Hafez, Ahmed [Hafez.Ahmed@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Huff, Lisa [Huff.Lisa@epa.gov]; Olson, Daniel [Olson.Daniel@epa.gov]; Johnson, Ann [Johnson.Ann@epa.gov]; Muellerleile, Caryn [Muellerleile.Caryn@epa.gov]
CC: Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Flowers, Lynn [Flowers.Lynn@epa.gov]; Bussard, David [Bussard.David@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]
BCC: DCRoomEast2339/DC-ICC-OW-OGWDW [DCRoomEast2339@epa.gov]

Subject: Perchlorate charge
Location: EPA east 2339 or Ex. 6 Personal Privacy (PP)

Start: 8/8/2017 1:00:00 PM
End: 8/8/2017 1:30:00 PM
Show Time As: Busy

From: Burneson, Eric
Sent: Monday, August 07, 2017 4:42 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Hafez, Ahmed <Hafez.Ahmed@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>; Olson, Daniel <Olson.Daniel@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>
Cc: Behl, Betsy <Behl.Betsy@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>; Bussard, David <Bussard.David@epa.gov>; Strong, Jamie <Strong.Jamie@epa.gov>
Subject: FW: Perchlorate charge

I will set up a meeting to discuss these tomorrow.

From: Kim, Jim H. EOP/OMB [mailto:James_H_Kim@omb.eop.gov]
Sent: Monday, August 07, 2017 3:45 PM
To: Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Cc: Schwab, Margo EOP/OMB <Ex. 6 Personal Privacy (PP)>; Dorjets, Vlad EOP/OMB Ex. 6 Personal Privacy (PP) Laity, Jim A. EOP/OMB Ex. 6 Personal Privacy (PP)
Subject: Perchlorate charge

Hi Caryn, Eric and Lynn,

Thank you for your patience as we worked on this. Attached is a version of the charge with our suggestions in tracked changes. Please let me know if you have any questions.

Best regards,
Jim

James Kim, Ph.D., DABT

Office of Management and Budget
202-395-3085
Ex. 6 Personal Privacy (PP)

Appointment

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 7/24/2017 10:00:49 PM
To: Burneson, Eric [Burneson.Eric@epa.gov]; Mclain, Jennifer [Mclain.Jennifer@epa.gov]

Subject: Perchlorate
Location: Call OMB

Start: 7/25/2017 9:00:00 PM
End: 7/25/2017 9:30:00 PM
Show Time As: Busy

From: Dorjets, Vlad EOP/OMB Ex. 6 Personal Privacy (PP)
Sent: Monday, July 24, 2017 5:38 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Subject: RE: Perchlorate

Nothing urgent but appreciate the offer. Is 5:00 (or around then) too late for us to speak?

-----Original Message-----
From: Burneson, Eric [mailto:Burneson.Eric@epa.gov]
Sent: Monday, July 24, 2017 5:35 PM
To: Dorjets, Vlad EOP/OMB Ex. 6 Personal Privacy (PP)
Subject: RE: Perchlorate

Yes Vlad I would suggest a conversation after 3:30 since I am meeting with folks tomorrow morning and early afternoon to see what options we have for moving forward and addressing concerns. However if you have a more urgent need to discuss I am also available at 10:30 or 1:00.

Eric Burneson, P.E.
Director of Standards and Risk Management Office of Ground Water and Drinking Water U.S. Environmental Protection Agency
202 564 5250

-----Original Message-----
From: Dorjets, Vlad EOP/OMB Ex. 6 Personal Privacy (PP)
Sent: Monday, July 24, 2017 5:28 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Subject: Perchlorate

Eric - I'm back in the office and trying to get caught up on perchlorate. I've already spoken with Jim K. about last week's briefing but am a little confused about next steps. Do you (or somebody in your office) have a couple minutes to chat tomorrow?

Message

From: Campbell, Ann [Campbell.Ann@epa.gov]
Sent: 6/29/2017 2:32:52 PM
To: Burneson, Eric [Burneson.Eric@epa.gov]
CC: Grevatt, Peter [Grevatt.Peter@epa.gov]; Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Christ, Lisa [Christ.Lisa@epa.gov]; Tricas, Marisa [tricas.marisa@epa.gov]; Olson, Daniel [Olson.Daniel@epa.gov]
Subject: Re: Perchlorate Peer Review Briefing with EPA

Thanks Eric. I expect he will join you.

On Jun 29, 2017, at 9:30 AM, Burneson, Eric <Burneson.Eric@epa.gov> wrote:

> Looks like room 2339 in WJC East has already been reserved so that is where Lee should join us if he is so inclined.
>
> **From:** Burneson, Eric
> **Sent:** Thursday, June 29, 2017 9:25 AM
> **To:** Campbell, Ann <Campbell.Ann@epa.gov>
> **Cc:** Grevatt, Peter <Grevatt.Peter@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Tricas, Marisa <tricas.marisa@epa.gov>; Olson, Daniel <Olson.Daniel@epa.gov>
> **Subject:** FW: Perchlorate Peer Review Briefing with EPA
>
> Ann: Per Lee's request attached are the materials we will be using in the briefing for OMB today to brief them on the perchlorate MCLG report peer review. The conference call information is below and we are in the process of booking room 2123 so that we can all be in the same room for the call.
>
> **From:** Muellerleile, Caryn
> **Sent:** Thursday, June 29, 2017 8:46 AM
> **To:** Hafez, Ahmed <Hafez.Ahmed@epa.gov>; Strong, Jamie <Strong.Jamie@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Olson, Daniel <Olson.Daniel@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Schwab, Margo EOP/OMB [Ex. 6 Personal Privacy (PP)]; Vlad Dorjets [Ex. 6 Personal Privacy (PP)]
> **Cc:** Behl, Betsy <Behl.Betsy@epa.gov>; OP ADP Calendar <OP_ADP_Calendar@epa.gov>; Nurse, Leanne <Nurse.Leanne@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>; Schlosser, Paul <Schlosser.Paul@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
> **Subject:** RE: Perchlorate Peer Review Briefing with EPA
>
> Attached are materials for this afternoon's briefing.
>
> -----Original Appointment-----
> **From:** Muellerleile, Caryn
> **Sent:** Friday, June 16, 2017 10:14 AM
> **To:** Hafez, Ahmed; Strong, Jamie; Mclain, Jennifer; Grevatt, Peter; Burneson, Eric; Olson, Daniel; Christ, Lisa; Schwab, Margo EOP/OMB; Vlad Dorjets [Ex. 6 Personal Privacy (PP)]
> **Cc:** Behl, Betsy; OP ADP Calendar; Nurse, Leanne; Johnson, Ann; Flowers, Lynn; Schlosser, Paul; Huff, Lisa
> **Subject:** Perchlorate Peer Review Briefing with EPA
> **When:** Thursday, June 29, 2017 3:00 PM-4:00 PM (UTC-05:00) Eastern Time (US & Canada).
> **Where:** [Ex. 6 Personal Privacy (PP)], access code [Ex. 6 Personal Privacy (PP)]
>
> Use conference line [Ex. 6 Personal Privacy (PP)] and access code [Ex. 6 Personal Privacy (PP)]

Message

From: Manibusan, Mary [Manibusan.Mary@epa.gov]
Sent: 6/17/2020 2:53:53 PM
To: Johnson, Ann [Johnson.Ann@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]
CC: Parikh, Pooja [Parikh.Pooja@epa.gov]; Christ, Lisa [Christ.Lisa@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]; Flaharty, Stephanie [Flaharty.Stephanie@epa.gov]; Wadlington, Christina [Wadlington.Christina@epa.gov]
Subject: RE: Review of Perchlorate Notice Concluded

It is not yet formally at OP – we are doing our FR review on an earlier draft version.

From: Johnson, Ann <Johnson.Ann@epa.gov>
Sent: Wednesday, June 17, 2020 9:36 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Parikh, Pooja <Parikh.Pooja@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Manibusan, Mary <Manibusan.Mary@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>
Subject: RE: Review of Perchlorate Notice Concluded

That's okay. Don't worry about it. I thought it was still in OW. I have not gotten word that it is in OP.

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Wednesday, June 17, 2020 9:35 AM
To: Johnson, Ann <Johnson.Ann@epa.gov>
Cc: Parikh, Pooja <Parikh.Pooja@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Manibusan, Mary <Manibusan.Mary@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>
Subject: RE: Review of Perchlorate Notice Concluded

Ann
I don't have concerns with making this edit, I am just not certain who has the pen at the moment. Note that I don't believe this is an edit that should delay signature if steps have already been set in motion.

Mary or Stephanie:
Can whoever holds the pen make this edit without delay to signature?

Eric

From: Johnson, Ann
Sent: Wednesday, June 17, 2020 9:29 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Parikh, Pooja <Parikh.Pooja@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: RE: Review of Perchlorate Notice Concluded

Eric,

I believe there is a typo that should be fixed on p. 30 – "cost-benefit", not "cost benefit"

Although a cost-benefit analysis is not one of the three SDWA criteria for making a regulatory determination, the EPA also considered the findings of the Health Risk Reduction and Cost Analysis (HRRCA, USEPA 2019c) as additional information confirming the appropriateness of the withdrawal of the regulatory determination.

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Wednesday, June 17, 2020 9:05 AM
To: Dorjets, Vlad EOP/OMB Ex. 6 Personal Privacy (PP)
Cc: Parikh, Pooja <Parikh.Pooja@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: RE: Review of Perchlorate Notice Concluded

Thank you Vlad;
We appreciate your input, coordination and timeliness.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Dorjets, Vlad EOP/OMB Ex. 6 Personal Privacy (PP)
Sent: Wednesday, June 17, 2020 9:01 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Parikh, Pooja <Parikh.Pooja@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: Review of Perchlorate Notice Concluded

Eric,

OMB has concluded its review of the Perchlorate notice.

Vlad

Message

From: Flaharty, Stephanie [Flaharty.Stephanie@epa.gov]
Sent: 6/17/2020 1:36:41 PM
To: Johnson, Ann [Johnson.Ann@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]
CC: Parikh, Pooja [Parikh.Pooja@epa.gov]; Christ, Lisa [Christ.Lisa@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]; Manibusan, Mary [Manibusan.Mary@epa.gov]; Wadlington, Christina [Wadlington.Christina@epa.gov]
Subject: RE: Review of Perchlorate Notice Concluded

Thanks Ann, the FRN is in the process of being encoded now...

From: Johnson, Ann <Johnson.Ann@epa.gov>
Sent: Wednesday, June 17, 2020 9:36 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Parikh, Pooja <Parikh.Pooja@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Manibusan, Mary <Manibusan.Mary@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>
Subject: RE: Review of Perchlorate Notice Concluded

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From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Wednesday, June 17, 2020 9:35 AM
To: Johnson, Ann <Johnson.Ann@epa.gov>
Cc: Parikh, Pooja <Parikh.Pooja@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Manibusan, Mary <Manibusan.Mary@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>
Subject: RE: Review of Perchlorate Notice Concluded

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Mary or Stephanie:
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Eric

From: Johnson, Ann
Sent: Wednesday, June 17, 2020 9:29 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Parikh, Pooja <Parikh.Pooja@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: RE: Review of Perchlorate Notice Concluded

Eric,

I believe there is a typo that should be fixed on p. 30 – "cost-benefit", not "cost benefit"

Although a cost-benefit analysis is not one of the three SDWA criteria for making a regulatory determination, the EPA also considered the findings of the Health Risk Reduction and Cost Analysis (HRRCA, USEPA 2019c) as additional information confirming the appropriateness of the withdrawal of the regulatory determination.

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Wednesday, June 17, 2020 9:05 AM
To: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)
Cc: Parikh, Pooja <Parikh.Pooja@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: RE: Review of Perchlorate Notice Concluded

Thank you Vlad;
We appreciate your input, coordination and timeliness.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Dorjets, Vlad EOP/OMB Ex. 6 Personal Privacy (PP)
Sent: Wednesday, June 17, 2020 9:01 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Parikh, Pooja <Parikh.Pooja@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: Review of Perchlorate Notice Concluded

Eric,

OMB has concluded its review of the Perchlorate notice.

Vlad

Message

From: Flaharty, Stephanie [Flaharty.Stephanie@epa.gov]
Sent: 6/17/2020 1:13:03 PM
To: Burneson, Eric [Burneson.Eric@epa.gov]; McLain, Jennifer L. [McLain.Jennifer@epa.gov]; Guilaran, Yu-Ting [Guilaran.Yu-Ting@epa.gov]
CC: Wadlington, Christina [Wadlington.Christina@epa.gov]; Tiago, Joseph [Tiago.Joseph@epa.gov]; Christ, Lisa [Christ.Lisa@epa.gov]; Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]; Khera, Rajiv [Khera.Rajiv@epa.gov]
Subject: RE: Review of Perchlorate Notice Concluded
Attachments: 10011-21-OW Perchlorate FRN final. 4 pm.docx

All: attached is the OMB- and OGC-approved FRN, currently be encoded by OP/FR

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Wednesday, June 17, 2020 9:04 AM
To: McLain, Jennifer L. <McLain.Jennifer@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>
Cc: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>
Subject: FW: Review of Perchlorate Notice Concluded

Jennifer and Yu-Ting
OMB review of perchlorate is concluded. We can proceed with the necessary steps towards signature and roll out. Many thanks to the perchlorate team for their excellent work!

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Dorjets, Vlad EOP/OMB **Ex. 6 Personal Privacy (PP)**
Sent: Wednesday, June 17, 2020 9:01 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Parikh, Pooja <Parikh.Pooja@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: Review of Perchlorate Notice Concluded

Eric,

OMB has concluded its review of the Perchlorate notice.

Vlad

Message

From: Wehling, Carrie [Wehling.Carrie@epa.gov]
Sent: 6/4/2020 4:07:27 PM
To: McLain, Jennifer L. [McLain.Jennifer@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]
CC: Parikh, Pooja [Parikh.Pooja@epa.gov]; Guilaran, Yu-Ting [Guilaran.Yu-Ting@epa.gov]; Rodgers-Jenkins, Crystal [Rodgers-Jenkins.Crystal@epa.gov]
Subject: RE: Perchlorate

4 pm

Caroline (Carrie) Wehling
Assistant General Counsel
Water Law Office
U.S. Environmental Protection Agency
Washington DC 20004
202-564-5492
wehling.carrie@epa.gov

From: McLain, Jennifer L. <McLain.Jennifer@epa.gov>
Sent: Thursday, June 04, 2020 12:03 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>; Parikh, Pooja <Parikh.Pooja@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>; Rodgers-Jenkins, Crystal <Rodgers-Jenkins.Crystal@epa.gov>
Subject: RE: Perchlorate

Good news. What time is your call?

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Thursday, June 4, 2020 11:42 AM
To: McLain, Jennifer L. <McLain.Jennifer@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>; Parikh, Pooja <Parikh.Pooja@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>; Rodgers-Jenkins, Crystal <Rodgers-Jenkins.Crystal@epa.gov>
Subject: FW: Perchlorate

FYI: regarding the status of OMB review.

From: Dorjets, Vlad EOP/OMB [**Ex. 6 Personal Privacy (PP)**
Sent: Thursday, June 04, 2020 10:50 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>
Subject: Perchlorate

Eric – Both HHS and DOD let me know this morning that they don't have any comments on the perchlorate notice. I'll wait for this afternoon's call in case I want to capture anything we hear in OMB's comments but expect to send you whatever I have at some point tonight.

Message

From: Flaharty, Stephanie [Flaharty.Stephanie@epa.gov]
Sent: 6/17/2020 1:05:57 PM
To: Burneson, Eric [Burneson.Eric@epa.gov]; McLain, Jennifer L. [McLain.Jennifer@epa.gov]; Guilaran, Yu-Ting [Guilaran.Yu-Ting@epa.gov]
CC: Wadlington, Christina [Wadlington.Christina@epa.gov]; Tiago, Joseph [Tiago.Joseph@epa.gov]; Christ, Lisa [Christ.Lisa@epa.gov]; Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]; Khera, Rajiv [Khera.Rajiv@epa.gov]
Subject: RE: Review of Perchlorate Notice Concluded

Hurray! I'll work with Sandy to obtain AA signature on the Action Memo...

My thanks to the team!

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Wednesday, June 17, 2020 9:04 AM
To: McLain, Jennifer L. <McLain.Jennifer@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>
Cc: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>
Subject: FW: Review of Perchlorate Notice Concluded

Jennifer and Yu-Ting
OMB review of perchlorate is concluded. We can proceed with the necessary steps towards signature and roll out. Many thanks to the perchlorate team for their excellent work!

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Dorjets, Vlad EOP/OMB **Ex. 6 Personal Privacy (PP)**
Sent: Wednesday, June 17, 2020 9:01 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Parikh, Pooja <Parikh.Pooja@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: Review of Perchlorate Notice Concluded

Eric,

OMB has concluded its review of the Perchlorate notice.

Vlad

Message

From: Grevatt, Peter [Grevatt.Peter@epa.gov]
Sent: 8/9/2017 11:25:18 AM
To: Burneson, Eric [Burneson.Eric@epa.gov]
Subject: RE: Perchlorate charge

Thanks again for all of your team's work on this Eric!

From: Burneson, Eric
Sent: Tuesday, August 08, 2017 7:28 PM
To: James_H_Kim@omb.eop.gov; Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Cc: Schwab, Margo EOP/OMB <Ex. 6 Personal Privacy (PP)>; Dorjets, Vlad EOP/OMB Ex. 6 Personal Privacy (PP); Laity, Jim A. EOP/OMB <Ex. 6 Personal Privacy (PP)>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>
Subject: RE: Perchlorate charge

Jim:
Thanks very much for your comments on the draft peer review charge. We have incorporated your input in the revised draft charge document (dated 8-8-17)that will soon be distributed to Inter Agency partners. To assist your understanding in how we incorporated your edits we have also prepared the attached response document for your consideration.

Thanks again for your helpful input.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Kim, Jim H. EOP/OMB <Ex. 6 Personal Privacy (PP)>
Sent: Monday, August 07, 2017 3:45 PM
To: Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Cc: Schwab, Margo EOP/OMB <Ex. 6 Personal Privacy (PP)>; Dorjets, Vlad EOP/OMB Ex. 6 Personal Privacy (PP); Laity, Jim A. EOP/OMB <Ex. 6 Personal Privacy (PP)>
Subject: Perchlorate charge

Hi Caryn, Eric and Lynn,

Thank you for your patience as we worked on this. Attached is a version of the charge with our suggestions in tracked changes. Please let me know if you have any questions.

Best regards,
Jim

James Kim, Ph.D., DABT
Office of Management and Budget
202-395-3085
Ex. 6 Personal Privacy (PP)

Message

From: Hafez, Ahmed [Hafez.Ahmed@epa.gov]
Sent: 10/4/2017 6:54:55 PM
To: Christ, Lisa [Christ.Lisa@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]
CC: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
Subject: FW: Perchlorate Charge Question - My latest thoughts - feel free to modify

Hello Lisa and Eric,

Any of the language below can be used or massaged for a reply to Kevin and Jim if needed.

Most of the regression analysis equations are simply:

Change in neuro outcome = slope X the change in fT4

The smaller the delta in fT4 will give a smaller change in neuro outcome and vice versa. The smaller delta in fT4 is because the distribution of fT4 is decreased by a consistent ratio as the mean value of fT4 is decreased by perchlorate. Thus changes a *lower* percentiles require a *smaller* unit change to result in the consistent ratio and changes at *higher* percentiles results in *greater* unit changes.

The regression equations play no part in the size of the change in fT4 from the distribution.

The derivation of the distribution is critical to understanding the entire approach and the uncertainties are better highlighted in question 13 that discusses the derived fT4 distribution and not question 11 which focuses on the regression analyses.

--Our suggested edits to question #13 incorporate language identifying the size differences in unit changes based on percentile examined and the uncertainties associated with fT4 levels at certain percentiles.

"Hypothyroxinemia is the condition of having an abnormally low level of T4 in the blood and TSH is in the normal range, and in diagnosing this condition the threshold for "abnormally low" is often selected to be the 2.5th, 5th or 10th percentile of the population fT4 distribution. Because the BBDR model can be calibrated to any given percentile, but does not predict the distribution of fT4 levels, it was necessary to derive a fT4 distribution to identify a hypothyroxinemic threshold. EPA assumed a lognormal distribution with a Geometric Standard Deviation based on 2 to 3 studies depending on the gestational week. There is uncertainty regarding the true fT4 levels at various percentiles in the distribution around the median output from the BBDR model. This is exemplified by the fact that for some of the analyses larger unit changes are being seen with increasing percentiles of fT4 in most analyses. Specifically, as the mean value of fT4 is decreased due to perchlorate, the distribution of fT4 is decreased by a consistent ratio. Subsequently, for the functions based on the change in fT4, changes at lower percentiles require smaller unit changes to result in the consistent ratio where changes at higher percentiles require greater unit changes to result in the consistent ratio. Please comment on the assumptions, strengths and limitations of the derived fT4 distribution for the purposes of this analysis."

--To get at Kevin's point about the regression equations a more appropriate edit would be to add the following to question 11.a. to receive comment on the appropriateness of the derived functional form.

"Please also comment on the various functional forms of the regression equations (e.g. linear, log-linear, quadratic)."

Regards,
Ahmed

Ahmed M. Hafez, Ph.D.
OW/OGWDW/SRMD/TAB | Office: WJC East 2227Q
hafez.ahmed@epa.gov | phone: 202.564.1944

"It is better to do things that you cannot explain, than to explain things that you cannot do."
--Nassim Taleb

From: Bromberg, Kevin L. [mailto:kevin.bromberg@sba.gov]
Sent: Wednesday, October 04, 2017 1:38 PM
To: James_H_Kim Ex. 6 Personal Privacy (PP) Christ, Lisa <Christ.Lisa@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Hafez, Ahmed <Hafez.Ahmed@epa.gov>
Cc: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: RE: Perchlorate Charge Question - My latest thoughts - feel free to modify

Lisa, thanks for that analysis. I stand by my previous comments, and add this one below on one of your sentences:

"The reason for this result is the log distribution assumed when developing the distribution around fT4, and the approach to developing distributions for each dose of perchlorate. Additional details on uncertainties can be found in section 6.5.6 of the report."

My reaction, as noted in my earlier email, is this result COULD also be attributed to an inaccuracy of the derived regression equations. If we make reference to ADDITIONAL uncertainties in 6.5.6 – we should call out some specifics, I would suggest, rather then imply by omission that it is solely the function of distribution approaches.

From: Kim, Jim H. EOP/OMB Ex. 6 Personal Privacy (PP)
Sent: Wednesday, October 04, 2017 12:46 PM
To: Christ, Lisa; Bromberg, Kevin L.; Burneson, Eric; Hafez, Ahmed
Cc: Hernandez-Quinones, Samuel
Subject: RE: Perchlorate Charge Question - My latest thoughts - feel free to modify

Lisa,

Thanks for the explanation – though to be honest, I don't completely understand it. Basically, the explanation is that the log distribution results in the larger unit changes at the higher fT4 levels? Does this highlight an insensitivity of the BBDR model?

I am supportive of Kevin's italicized suggestion to the charge question (or some variant) so that this feature of the BBDR model and the log distributions are brought specifically to the awareness of the peer reviewers.

Jim

From: Christ, Lisa [mailto:Christ.Lisa@epa.gov]
Sent: Wednesday, October 4, 2017 11:56 AM
To: kevin.bromberg@sba.gov; Burneson, Eric <Burneson.Eric@epa.gov>; Hafez, Ahmed <Hafez.Ahmed@epa.gov>
Cc: Kim, Jim H. EOP/OMB < Ex. 6 Personal Privacy (PP) ; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: RE: Perchlorate Charge Question - My latest thoughts - feel free to modify

Kevin,
Thank you for the additional input on the charge. Also, I have summarized the discussion from yesterday.

You asked: Why do you see less affect (change in fT4 or change in IQ) at the 2.5th percentile than at the 50th percentile? Intuitively you would expect to see a greater affect when the mother has very low fT4, however, the affect is greater at the 50th percentile.

Response: Report tables 24, 30, 31, 32 and 33 provide results from studies by Finken, Pop and Vermiglio.

To develop these tables, EPA used the BBDR model output for the gestation week (12,13,16) that corresponds to the GW used in each study. Therefore, the BBDR predicted fT4 value at a zero dose of perchlorate differ.

The BBDR model output is the central tendency (i.e., 50th percentile). EPA created the distribution around the 50Th percentile BBDR model output as described in Chapter 4 of the report.

There is uncertainty regarding the true fT4 levels at various percentiles in the distribution around the median output from the BBDR model. This is exemplified by the fact that in this analysis larger unit changes are being seen with increasing percentiles of fT4 in most analyses. The reason for this result is the log distribution assumed when developing the distribution around fT4, and the approach to developing distributions for each dose of perchlorate. Additional details on uncertainties can be found in section 6.5.6 of the report.

Also, we did receive and evaluate the studies you provided. Casey and the Lazarus (CATS) studies did not investigate the effects of hypothyroximemia on cognitive outcome. They looked at kids born to women who were at 'low end of normal' thyroid function and who were either given or not given levothyroxine. There was no comparison to developmental outcome in children born to women with 'optimal' hormone levels. We also reviewed the Cooper and Pearce, 2017 paper which provided additional
perspectives. >http://www.sempr.org.br/files/1023/Beneficio_do_tratamento_do_hiposubclinico_na_gestacao_Editor%20ial_NEJM%202017.pdf<

Best,

Lisa

From: Bromberg, Kevin L. [mailto:kevin.bromberg@sba.gov]
Sent: Wednesday, October 04, 2017 11:33 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>; Hafez, Ahmed <Hafez.Ahmed@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Cc: James_H_Kim(Ex. 6 Personal Privacy (PP)
Subject: Perchlorate Charge Question - My latest thoughts - feel free to modify

Thanks for that thoughtful conversation yesterday.

Lisa and I just talked – and not I'm memorializing my latest thoughts.

The apparent discrepancy with regard to increase in neurodevelopmental outcome is due potentially to two factors – the distribution of ft4 about the median AND the regression equations. We should not
Focus on on just the distribution of ft4 levels, as I thought earlier.

A better home for these thoughts would be in Charge Question 11, rather than Charge Question 13. See italicized additions.

11. EPA used regression analyses to predict the magnitude of change in each of the neurodevelopmental endpoints given a change in fT4 as a result of increased perchlorate exposure at different iodide intakes.

In Tables 24, 25 ...and 33, EPA presents the predicted size of these changes. These effects are projected to be greater for the median fT4 in comparison to the lower fT4s, which is not the expected result. This is a function of the assumed distribution about the median (see charge question 13) and the regression equations derived for each study.

a. Please comment on the assumptions, strengths, and limitations of using the regression analyses to inform the relationship between thyroid hormone levels and neurodevelopmental outcomes.
b. Please identify additional data or analyses EPA could use to quantify the relationship between thyroid hormone levels and neurodevelopmental effects, including how this information would be expected to improve the analysis.
c. Please comment on whether there is a magnitude of change in fT4 below which the relationship between fT4 and neurodevelopmental effects should not be used because it is too uncertain.
d. Please comment on whether other studies that were identified in the literature search (e.g., studies that found effects but lacked statistical significance, studies that did not find an effect, studies that found categorical relationships between fT4 and neurodevelopmental outcomes) could be utilized to quantitatively characterize the relationship between fT4 and neurodevelopmental outcomes or inform uncertainty associated with the analysis presented.

Kevin Bromberg
Assistant Chief Counsel for Environmental Policy
SBA // Office of Advocacy
409 3rd St. SW, Washington, D.C. 20416
kevin.bromberg@sba.gov 202.481.2963
202.205.6964

Message

From: Bradford, Charlotte [Bradford.Charlotte@epa.gov]
Sent: 6/29/2017 7:09:50 PM
To: Burneson, Eric [Burneson.Eric@epa.gov]
Subject: RE: Perchlorate Peer Review Briefing with EPA

Should I print 5 copies?

From: Burneson, Eric
Sent: Thursday, June 29, 2017 2:56 PM
To: Bradford, Charlotte <Bradford.Charlotte@epa.gov>
Subject: FW: Perchlorate Peer Review Briefing with EPA

The attachments

From: Muellerleile, Caryn
Sent: Thursday, June 29, 2017 8:46 AM
To: Hafez, Ahmed <Hafez.Ahmed@epa.gov>; Strong, Jamie <Strong.Jamie@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Olson, Daniel <Olson.Daniel@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Schwab, Margo EOP/OMB <Margo_Schwab@omb.eop.gov>; Vlad Dorjets (Ex. 6 Personal Privacy (PP)
Cc: Behl, Betsy <Behl.Betsy@epa.gov>; OP ADP Calendar <OP_ADP_Calendar@epa.gov>; Nurse, Leanne <Nurse.Leanne@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>; Schlosser, Paul <Schlosser.Paul@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Perchlorate Peer Review Briefing with EPA

Attached are materials for this afternoon's briefing.

-----Original Appointment-----
From: Muellerleile, Caryn
Sent: Friday, June 16, 2017 10:14 AM
To: Hafez, Ahmed; Strong, Jamie; Mclain, Jennifer; Grevatt, Peter; Burneson, Eric; Olson, Daniel; Christ, Lisa; Schwab, Margo EOP/OMB; Vlad Dorjets (Ex. 6 Personal Privacy (PP)
Cc: Behl, Betsy; OP ADP Calendar; Nurse, Leanne; Johnson, Ann; Flowers, Lynn; Schlosser, Paul; Huff, Lisa
Subject: Perchlorate Peer Review Briefing with EPA
When: Thursday, June 29, 2017 3:00 PM-4:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Ex. 6 Personal Privacy (PP)

Use conference line 1 Ex. 6 Personal Privacy (PP)

Message

From: Bradford, Charlotte [Bradford.Charlotte@epa.gov]
Sent: 6/29/2017 6:42:04 PM
To: Burneson, Eric [Burneson.Eric@epa.gov]
Subject: RE: Perchlorate Peer Review Briefing with EPA

Where's the attachment?

From: Burneson, Eric
Sent: Thursday, June 29, 2017 2:39 PM
To: Bradford, Charlotte <Bradford.Charlotte@epa.gov>
Subject: Fwd: Perchlorate Peer Review Briefing with EPA

Can you print 5 copies of the attached for the 4:00 meeting?

Sent from my iPhone

Begin forwarded message:

From: "Christ, Lisa" <Christ.Lisa@epa.gov>
Date: June 29, 2017 at 11:11:21 AM EDT
To: "Muellerleile, Caryn" <Muellerleile.Caryn@epa.gov>, "Hafez, Ahmed" <Hafez.Ahmed@epa.gov>, "Strong, Jamie" <Strong.Jamie@epa.gov>, "Mclain, Jennifer" <Mclain.Jennifer@epa.gov>, "Grevatt, Peter" <Grevatt.Peter@epa.gov>, "Burneson, Eric" <Burneson.Eric@epa.gov>, "Olson, Daniel" <Olson.Daniel@epa.gov>, "Schwab, Margo EOP/OMB" Ex. 6 Personal Privacy (PP) "Vlad Dorjets Ex. 6 Personal Privacy (PP)
Cc: "Behl, Betsy" <Behl.Betsy@epa.gov>, OP ADP Calendar <OP_ADP_Calendar@epa.gov>, "Nurse, Leanne" <Nurse.Leanne@epa.gov>, "Johnson, Ann" <Johnson.Ann@epa.gov>, "Flowers, Lynn" <Flowers.Lynn@epa.gov>, "Schlosser, Paul" <Schlosser.Paul@epa.gov>, "Huff, Lisa" <Huff.Lisa@epa.gov>, "Forsgren, Lee" <Forsgren.Lee@epa.gov>
Subject: RE: Perchlorate Peer Review Briefing with EPA

For EPA HQ attendees, we will be meeting in WJC East Room 2339.

-----Original Appointment-----
From: Muellerleile, Caryn
Sent: Friday, June 16, 2017 10:14 AM
To: Muellerleile, Caryn; Hafez, Ahmed; Strong, Jamie; Mclain, Jennifer; Grevatt, Peter; Burneson, Eric; Olson, Daniel; Christ, Lisa; Schwab, Margo EOP/OMB; Vlad Dorjets (Ex. 6 Personal Privacy (PP)
Cc: Behl, Betsy; OP ADP Calendar; Nurse, Leanne; Johnson, Ann; Flowers, Lynn; Schlosser, Paul; Huff, Lisa; Forsgren, Lee
Subject: Perchlorate Peer Review Briefing with EPA
When: Thursday, June 29, 2017 3:00 PM-4:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Ex. 6 Personal Privacy (PP)

Use conference line Ex. 6 Personal Privacy (PP)

Message

From: Behl, Betsy [Behl.Betsy@epa.gov]
Sent: 9/11/2017 8:44:36 PM
To: Burneson, Eric [Burneson.Eric@epa.gov]
Subject: RE: Perchlorate charge

Congratulations!

From: Burneson, Eric
Sent: Monday, August 14, 2017 3:43 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Olson, Daniel <Olson.Daniel@epa.gov>; Hafez, Ahmed <Hafez.Ahmed@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>
Cc: Behl, Betsy <Behl.Betsy@epa.gov>; Strong, Jamie <Strong.Jamie@epa.gov>
Subject: FW: Perchlorate charge

Good news. Thanks again for all your contributions to assuring this outcome.

From: Dorjets, Vlad EOP/OMB [**Ex. 6 Personal Privacy (PP)**
Sent: Monday, August 14, 2017 3:29 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>; J[Ex. 6 Personal Privacy (PP)
Cc: Schwab, Margo EOP/OMB <[Ex. 6 Personal Privacy (PP)]; Laity, Jim A. EOP/OMB <[**Ex. 6 Personal Privacy (PP)**]; Grevatt, Peter <Grevatt.Peter@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Subject: RE: Perchlorate charge

Eric,

Thank you for sharing this revised draft charge. I want to thank you for your willingness to engage with OMB and EPA throughout this process and for that thoughtfulness with which you have addressed our comments. OMB does not have any further comments on the charge. Please go ahead and distribute to interagency reviewers (presumably to the people on the invitation list to last week's briefing) for final comments. Also, it may not be a bad idea to let the interagency reviewers (and OMB) know when the FRN has been published so that they can get the report right away and maximize the time they have to review it.

Vlad

From: Burneson, Eric [mailto:Burneson.Eric@epa.gov]
Sent: Friday, August 11, 2017 3:41 PM
To: Kim, Jim H. EOP/OMB <[**Ex. 6 Personal Privacy (PP)**]; Dorjets, Vlad EOP/OMB <[**Ex. 6 Personal Privacy (PP)**]
Cc: Schwab, Margo EOP/OMB <[**Ex. 6 Personal Privacy (PP)**]; Laity, Jim A. EOP/OMB [**Ex. 6 Personal Privacy (PP)**]; Grevatt, Peter <Grevatt.Peter@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Subject: RE: Perchlorate charge

Vlad and Jim:
Thank you for helping to facilitate a constructive meeting with our Federal partners this week on the perchlorate peer review. We believe that the input we received from you and our Federal partners has helped us to communicate more clearly about our analysis and the critical assumptions, strengths and limitations.

Attached is a revised draft charge that responds to the concerns identified in our discussion on Wednesday. In preparing the attached revisions, we tried to better organize the issues and break down complex charge questions into more direct questions. Prior to distribution to the other Federal Agencies, we ask that you review the attached charge and let us know if you have any suggestions for better addressing the identified concerns.

Our goal is to have input from the other Federal Agencies by Friday, August 18th so that we can move forward with the next steps in conducting the peer review. Therefore we hope to have your feedback by early next week.

Thanks in advance for your continued input.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Burneson, Eric
Sent: Tuesday, August 08, 2017 7:29 PM
To: 'Kim, Jim H. EOP/OMB' <Ex. 6 Personal Privacy (PP)>; Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Cc: Schwab, Margo EOP/OMB <Ex. 6 Personal Privacy (PP)>; Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)>; Laity, Jim A. EOP/OMB <Ex. 6 Personal Privacy (PP)>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>
Subject: RE: Perchlorate charge

Jim:
Thanks very much for your comments on the draft peer review charge. We have incorporated your input in the revised draft charge document (dated 8-8-17)that will soon be distributed to Inter Agency partners. To assist your understanding in how we incorporated your edits we have also prepared the attached response document for your consideration.

Thanks again for your helpful input.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Kim, Jim H. EOP/OMB [Ex. 6 Personal Privacy (PP)]
Sent: Monday, August 07, 2017 3:45 PM
To: Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Cc: Schwab, Margo EOP/OMB <Ex. 6 Personal Privacy (PP)>; Dorjets, Vlad EOP/OMB

Ex. 6 Personal Privacy (PP) ; Laity, Jim A. EOP/OMB <Ex. 6 Personal Privacy (PP)
Subject: Perchlorate charge

Hi Caryn, Eric and Lynn,

Thank you for your patience as we worked on this. Attached is a version of the charge with our suggestions in tracked changes. Please let me know if you have any questions.

Best regards,
Jim

James Kim, Ph.D., DABT
Office of Management and Budget
202-395-3085
Ex. 6 Personal Privacy (PP)

Message

From: Muellerleile, Caryn [Muellerleile.Caryn@epa.gov]
Sent: 8/8/2017 7:49:32 PM
To: Burneson, Eric [Burneson.Eric@epa.gov]
CC: Johnson, Ann [Johnson.Ann@epa.gov]; Schuck, Tracey [Schuck.Tracey@epa.gov]; Bradford, Charlotte [Bradford.Charlotte@epa.gov]; Christ, Lisa [Christ.Lisa@epa.gov]
Subject: RE: Interagency briefing on Perchlorate Peer Review hosted by EPA

I can check back in to distribute materials sometime after 8 p.m. today.

I will send updated list of attendees before 4:30, but it is unclear who is teleconferencing and who is attending in-person.

From: Burneson, Eric
Sent: Tuesday, August 08, 2017 3:37 PM
To: Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>
Cc: Johnson, Ann <Johnson.Ann@epa.gov>; Schuck, Tracey <Schuck.Tracey@epa.gov>; Bradford, Charlotte <Bradford.Charlotte@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: RE: Interagency briefing on Perchlorate Peer Review hosted by EPA

Caryn:
Thanks for your continued assistance organizing this meeting. I understand you will not be joining us tomorrow morning.

I do plan to ask you to distribute the following meeting materials by the end of the day today.

- A revised peer review charge
- A briefing document
- A table summary of the identified studies

I am hopeful we will have those materials soon but I doubt they will be ready by 4:30. Is there a way for you to check your email remotely later today and send it out? Alternatively I can send a note out to participants later.

Regarding access to the building, I have asked Tracey Schuck and Charlotte Bradford to be at the EPA East entrance starting at 2:30 to escort people into the building and to the 2123 conference room until a little after 3:00. . Can you provide an updated list of the individuals who accepted the invitation? And is there any indication of whether they are coming in person or not? We would want to get a list to security in advance.

From: Muellerleile, Caryn
Sent: Tuesday, August 08, 2017 3:06 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Johnson, Ann <Johnson.Ann@epa.gov>
Subject: FW: Interagency briefing on Perchlorate Peer Review hosted by EPA

Hello Eric,

I think I will have to miss out on tomorrow morning's logistics call (I need to take leave from 8-12). Also, today I was planning to work until 4:30 but I am happy to check in later if there is something I should plan on sending out to tomorrow's attendees.

Is there an OW point of contact (name/tel) that I can provide to people in the event that there are any issues at the guards' desk tomorrow?

Thanks,
Caryn

From: Kluever, April [mailto:April.Kluever@fda.hhs.gov]
Sent: Tuesday, August 08, 2017 3:02 PM
To: Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>
Subject: RE: Interagency briefing on Perchlorate Peer Review hosted by EPA

Hi Caryn,

I'm planning on attending this meeting in person, coming down from the FDA CFSAN campus on the green line. Are there any special instructions for people coming in person? After going through security will I be able to go up to the conference room, or will I need an escort? Thanks so much,

April Kluever

April Neal Kluever, Ph.D., D.A.B.T.
Toxicologist

Center for Food Safety and Applied Nutrition (CFSAN)
Office of Food Additive Safety (OFAS)
Division of Food Contact Notifications (DFCN)
U.S. Food and Drug Administration
5001 Campus Drive, HFS 275
College Park, MD 20740
Tel: 240-402-1225
April.kluever@fda.hhs.gov

From: Muellerleile, Caryn [mailto:Muellerleile.Caryn@epa.gov]
Sent: Friday, August 04, 2017 10:12 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>; Vlad Dorjets [Ex. 6 Personal Privacy (PP)] <[Ex. 6 Personal Privacy (PP)]>; Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>
Subject: Interagency briefing on Perchlorate Peer Review hosted by EPA

Thank you for your input on our charge for the peer review of methodologies to inform a perchlorate MCLG. We have continued to work on our characterization of the analysis and to improve the charge questions for the peer reviewers. We have planned an additional discussion with you for Wednesday August 9, to share more information and answer your questions about the draft analysis.

Please respond to me, Eric Burneson and Vlad Dorjets with the key issues or questions you would like us to address in the meeting on Wednesday so that we can be better prepared to discuss those concerns. We continue to consider the

thoughtful input you have provided on the charge to this point and are preparing a revised charge for your consideration and comment. We will distribute the revised charge prior to the meeting.

Caryn Muellerleile
Regulatory Management Division
Office of Policy
US Environmental Protection Agency
1200 Pennsylvania Ave NW (1803A)
Washington, DC 20460
(202) 564-2855
muellerleile.caryn@epa.gov

Message

From: Evalenko, Sandy [Evalenko.Sandy@epa.gov]
Sent: 5/23/2019 2:55:09 PM
To: Messier, Dawn [Messier.Dawn@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]; Tiago, Joseph [Tiago.Joseph@epa.gov]
CC: Flaharty, Stephanie [Flaharty.Stephanie@epa.gov]; Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]; Christ, Lisa [Christ.Lisa@epa.gov]
Subject: RE: perchlorate

Great – Thanks!

From: Messier, Dawn
Sent: Thursday, May 23, 2019 10:54 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>
Cc: Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: RE: perchlorate

OGC concurs with signature of the proposed perchlorate rule federal register notice recently approved by OMB. Thanks!

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

From: Burneson, Eric
Sent: Thursday, May 23, 2019 10:52 AM
To: Tiago, Joseph <Tiago.Joseph@epa.gov>
Cc: Messier, Dawn <Messier.Dawn@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: FW: perchlorate

Below is the concurrence from OGC. Let us know if something more formal is required.

From: Messier, Dawn
Sent: Thursday, May 23, 2019 9:53 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: perchlorate

I'm fine with both.

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

From: Messier, Dawn
Sent: Thursday, May 23, 2019 9:51 AM

To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: perchlorate

FRN all good.

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

From: Burneson, Eric
Sent: Thursday, May 23, 2019 9:45 AM
To: Messier, Dawn <Messier.Dawn@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: FW: perchlorate

Please review ASAP and let me know if there are any show stoppers

---

From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]
Sent: Thursday, May 23, 2019 9:43 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: perchlorate

Final edits.

Message

From: Tiago, Joseph [Tiago.Joseph@epa.gov]
Sent: 5/23/2019 2:54:24 PM
To: Messier, Dawn [Messier.Dawn@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]
CC: Evalenko, Sandy [Evalenko.Sandy@epa.gov]; Flaharty, Stephanie [Flaharty.Stephanie@epa.gov]; Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]; Christ, Lisa [Christ.Lisa@epa.gov]
Subject: RE: perchlorate

Thanks, Dawn!

From: Messier, Dawn
Sent: Thursday, May 23, 2019 10:54 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>
Cc: Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: RE: perchlorate

OGC concurs with signature of the proposed perchlorate rule federal register notice recently approved by OMB. Thanks!

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

From: Burneson, Eric
Sent: Thursday, May 23, 2019 10:52 AM
To: Tiago, Joseph <Tiago.Joseph@epa.gov>
Cc: Messier, Dawn <Messier.Dawn@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: FW: perchlorate

Below is the concurrence from OGC. Let us know if something more formal is required.

From: Messier, Dawn
Sent: Thursday, May 23, 2019 9:53 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: perchlorate

I'm fine with both.

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

From: Messier, Dawn
Sent: Thursday, May 23, 2019 9:51 AM

To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: perchlorate

FRN all good.

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

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Final edits.

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CC: Messier, Dawn [Messier.Dawn@epa.gov]; Evalenko, Sandy [Evalenko.Sandy@epa.gov]; Flaharty, Stephanie [Flaharty.Stephanie@epa.gov]; Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]; Christ, Lisa [Christ.Lisa@epa.gov]
Subject: RE: perchlorate

Got it – Will include in the package.

From: Burneson, Eric
Sent: Thursday, May 23, 2019 10:52 AM
To: Tiago, Joseph <Tiago.Joseph@epa.gov>
Cc: Messier, Dawn <Messier.Dawn@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
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Water Law Office
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Sent: Thursday, May 23, 2019 9:43 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: perchlorate

Final edits.

Message

From: Flowers, Lynn [Flowers.Lynn@epa.gov]
Sent: 8/7/2017 9:59:43 PM
To: Burneson, Eric [Burneson.Eric@epa.gov]; Christ, Lisa [Christ.Lisa@epa.gov]; Hafez, Ahmed [Hafez.Ahmed@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Huff, Lisa [Huff.Lisa@epa.gov]; Olson, Daniel [Olson.Daniel@epa.gov]; Johnson, Ann [Johnson.Ann@epa.gov]; Muellerleile, Caryn [Muellerleile.Caryn@epa.gov]
CC: Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Bussard, David [Bussard.David@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]
Subject: with attachments: Perchlorate charge
Attachments: DRAFT MCLG Approach Charge 08-02-17clean_OMB comments.docx; DRAFT MCLG Approach Charge 08-07-17_ORD.docx

Taking the liberty to send to all since it is getting late and time is of the essence here.
Two attachments:

1) Proposed new draft in redline
2) Explanation of changes as per OMB recommendations (edits accepted, rejected, or have questions to discuss tomorrow).

Lynn Flowers, PhD, DABT
Associate Director for Science
Office of Science Policy
US EPA
Washington, DC
202-564-6293

-----Original Appointment-----
From: Burneson, Eric
Sent: Monday, August 07, 2017 5:02 PM
To: Burneson, Eric; Christ, Lisa; Hafez, Ahmed; Miller, Gregory; Huff, Lisa; Olson, Daniel; Johnson, Ann; Muellerleile, Caryn
Cc: Mclain, Jennifer; Behl, Betsy; Flowers, Lynn; Bussard, David; Strong, Jamie
Subject: Perchlorate charge
When: Tuesday, August 08, 2017 9:00 AM-9:30 AM (UTC-05:00) Eastern Time (US & Canada).
Where: EPA east 2339 or 1 866 299 3188 code 202 564 5250

From: Burneson, Eric
Sent: Monday, August 07, 2017 4:42 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Hafez, Ahmed <Hafez.Ahmed@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>; Olson, Daniel <Olson.Daniel@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>
Cc: Behl, Betsy <Behl.Betsy@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>; Bussard, David <Bussard.David@epa.gov>; Strong, Jamie <Strong.Jamie@epa.gov>
Subject: FW: Perchlorate charge

I will set up a meeting to discuss these tomorrow.

From: Kim, Jim H. EOP/OMB [**Ex. 6 Personal Privacy (PP)**
Sent: Monday, August 07, 2017 3:45 PM
To: Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Flowers, Lynn

<Flowers.Lynn@epa.gov>
Cc: Schwab, Margo EOP/OMB <Ex. 6 Personal Privacy (PP)>; Dorjets, Vlad EOP/OMB
Ex. 6 Personal Privacy (PP) Laity, Jim A. EOP/OMB <Ex. 6 Personal Privacy (PP)>
Subject: Perchlorate charge

Hi Caryn, Eric and Lynn,

Thank you for your patience as we worked on this. Attached is a version of the charge with our suggestions in tracked changes. Please let me know if you have any questions.

Best regards,
Jim

James Kim, Ph.D., DABT
Office of Management and Budget
202-395-3085
Ex. 6 Personal Privacy (PP)

Message

From: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
Sent: 4/22/2019 1:22:11 PM
To: Burneson, Eric [Burneson.Eric@epa.gov]
CC: Christ, Lisa [Christ.Lisa@epa.gov]; Huff, Lisa [Huff.Lisa@epa.gov]
Subject: RE: Proposed Perchlorate NPDWR
Attachments: 190419_DRAFT MCLG TSD.docx; Perchlorate Brief HHS 4-22-19V1.pptx

Hi Eric,

Attached you will find the revised MCLG Derivation TSD document and the proposed Slides for the upcoming Thursday Meeting. I am working on revising the Occurrence document and will have it ready by COB today.

Thanks
Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Burneson, Eric
Sent: Monday, April 22, 2019 8:45 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: FW: Proposed Perchlorate NPDWR

Sam:
Can we connect today to discuss the status of documents that we need to get to OMB.

I believe we owe them the
MCLG report,
the slide presentation and now
the Occurrence and Monitoring document.
Thanks in advance

From: Christ, Lisa
Sent: Sunday, April 21, 2019 11:51 AM
To: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Nickerson, William <Nickerson.William@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Vlad,
The HRRCA has not been publicly released as all of the support documents for the proposal are still draft. We sent the draft HRRCA at the same time the proposal was sent to OMB. I'm attaching it again here with the proposal.
Lisa

From: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)
Sent: Friday, April 19, 2019 1:37 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Sam – One more request. I'm seeing lots of references in HRRCA to EPA's *Perchlorate Occurrence and Monitoring Report* dated 2018 (so assume it's been released already) but it does not come up in a Google search and is not included among the other key Perchlorate documents on your website. Could you please sent that to me too?

From: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Sent: Friday, April 19, 2019 12:58 PM
To: Dorjets, Vlad EOP/OMB Ex. 6 Personal Privacy (PP) ; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Hi Vlad,

I just noticed that I inadvertently provided an earlier version of Volume I which Eric forwarded to you. Attached is a revised version of Volume 1 which incorporates minor editorial changes to the document. Sorry for the inconvenience.

Also, in response to your request I am attaching Volumes 2 and 3 of the Report.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)
Sent: Friday, April 19, 2019 12:01 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Eric/Lisa – Could you please share Volumes II and III?

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Wednesday, April 17, 2019 4:23 PM
To: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Vlad:
We can provide the requested support documents. The first document has been shared previously with many of the other Federal Agencies (see my email to Jim Kim on July 11, 2018) but we are happy to share this document again. It is attached to this email. The second document is currently under revision to incorporate some of the modifications we made just prior to submitting the proposed NPDWR. We expect to be able to send this document early next week.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)
Sent: Tuesday, April 16, 2019 3:54 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Eric,

Kevin Bromberg has apparently already skimmed (if not actually read) the NPRM and is requesting two documents referenced in the preamble: the "proposed approaches to inform the derivation of a maximum contaminant level goal for perchlorate in drinking water" (reference 2018d) and the TSD (reference 2018e). Could you please let me know the status of these two documents? In case they're not currently available or will not be available soon it would help me to understand what they documents do and do not contain.

Vlad

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Tuesday, April 16, 2019 1:10 PM
To: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>
Subject: Proposed Perchlorate NPDWR

Vlad
Thanks for touching base regarding the perchlorate proposed drinking water regulation. As we discussed I have blocked time on April 25 at 3:00 pm for a briefing to the other Federal Agency's on the perchlorate proposal. We will send an

updated presentation to you early next week for distribution to the other Agency partners. I am assuming this will be a teleconference but let me know if you or other Federal partners would be interested in coming to EPA Offices for the meeting and I can book a larger room for the discussion.
As I mentioned I will be out of the office Thursday and Friday this week but if you have questions about the draft proposal you can contact Lisa Christ in my absence. Lisa's number is 202 564 8354.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

Message

From: Evalenko, Sandy [Evalenko.Sandy@epa.gov]
Sent: 10/8/2019 4:19:03 PM
To: Manibusan, Mary [Manibusan.Mary@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]; Flaharty, Stephanie [Flaharty.Stephanie@epa.gov]
CC: Christ, Lisa [Christ.Lisa@epa.gov]; Helm, Erik [Helm.Erik@epa.gov]
Subject: Use this version: When you have a moment
Attachments: EO 12866 CLEAN LCRR NPRM 10-8-19.docx

From: Manibusan, Mary <Manibusan.Mary@epa.gov>
Sent: Tuesday, October 08, 2019 12:13 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Helm, Erik <Helm.Erik@epa.gov>
Subject: RE: When you have a moment

In your document, can you please add the FRL# that we have already established for this reg action - the FRL number is 10001-16-OW. This will help us identify the regulation when we receive it after signature.

Thank you!

Mary

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Tuesday, October 8, 2019 11:19 AM
To: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Helm, Erik <Helm.Erik@epa.gov>; Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: FW: When you have a moment

Stephanie:
Per the suggestion below from Mary and Bill, can you please transmit the attached Draft FRN to EPA's OFR office with a request for an expedited review and request an expedited publication date of 10/24. We should note that the document is not yet cleared or signed but that we expect clearance and signature by Thursday.
Eric

From: Manibusan, Mary
Sent: Tuesday, October 08, 2019 10:51 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>
Subject: RE: When you have a moment

Hi Eric,

The perchlorate proposal was received by OP on May 24th and the FRN was submitted to OFR on June 10th with comments and responses delaying the publication until June 26th. With the size of the FRN being 300 pages in length, I would advise sending the document to OFR ASAP, with a request for an expedited review and publication date. As Bill indicated, it is at the discretion of OFR to grant/deny the request, but it will at least flag it as a priority. And as with the

proposal, I would anticipate comments from OFR prior to publication. Please let me know if you have additional questions.

Mary

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Tuesday, October 8, 2019 10:07 AM
To: Nickerson, William <Nickerson.William@epa.gov>
Cc: Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: RE: When you have a moment

Thanks Bill
On 3 we are remembering a one month lag between signature (May 23)and FRN publication (June 26) of the perchlorate proposal which we understood was due to delays in transmitting to OFR. Given the Administrator's aggressive schedule for a final rule (he had us put January in the Reg Agenda) we need to do everything we can to expedite. I realize this may not be sufficient for the OFR but I guess I am checking on what we can do to get this in their queue for publication ASAP. Note that the FRN is over 300 pages in length.
Eric

From: Nickerson, William
Sent: Tuesday, October 08, 2019 9:17 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: RE: When you have a moment

I assume 1 and 2 are inevitable.

On 3, we can quickly transmit to OFR and expeditiously deal with any edits that come back. Are you looking for something more than that? It is possible to send a package to OFR with a request to expedite, but OFR is pretty strict about offering a good reason for that (because it's important isn't enough).

Copying Mary in case she has been in contact with OW WPS already on this.

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Monday, October 07, 2019 6:33 PM
To: Nickerson, William <Nickerson.William@epa.gov>
Subject: When you have a moment

Bill
I need to check in with you about

1. expedited loading of the final FRN /EA in to ROCIS for the LCRR and
2. expedited processing of the FRN for Autopen signature in time for Thursday's rollout by the Administrator
3. expedited FRN processing following Administrator's signature to assure we don't have a significant lag before publication.

Perhaps the OW WPS staff have already worked this through but I wanted to be certain it's on OP's radar.
Can we talk in the morning?
Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

Message

From: Evalenko, Sandy [Evalenko.Sandy@epa.gov]
Sent: 10/8/2019 4:16:29 PM
To: Manibusan, Mary [Manibusan.Mary@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]; Flaharty, Stephanie [Flaharty.Stephanie@epa.gov]
CC: Christ, Lisa [Christ.Lisa@epa.gov]; Helm, Erik [Helm.Erik@epa.gov]
Subject: RE: When you have a moment
Attachments: EO 12866 CLEAN LCRR NPRM 10-8-19.docx

FYI--

From: Manibusan, Mary <Manibusan.Mary@epa.gov>
Sent: Tuesday, October 08, 2019 12:13 PM
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Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Helm, Erik <Helm.Erik@epa.gov>
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Mary

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Tuesday, October 8, 2019 10:07 AM
To: Nickerson, William <Nickerson.William@epa.gov>
Cc: Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: RE: When you have a moment

Thanks Bill
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Eric

From: Nickerson, William
Sent: Tuesday, October 08, 2019 9:17 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: RE: When you have a moment

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Sent: Monday, October 07, 2019 6:33 PM
To: Nickerson, William <Nickerson.William@epa.gov>
Subject: When you have a moment

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Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

Message

From: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
Sent: 4/22/2019 2:25:24 PM
To: Burneson, Eric [Burneson.Eric@epa.gov]
CC: Christ, Lisa [Christ.Lisa@epa.gov]; Huff, Lisa [Huff.Lisa@epa.gov]
Subject: RE: Proposed Perchlorate NPDWR
Attachments: Perchlorate Brief HHS 4-22-19V2.pptx; 190419_DRAFT MCLG TSD V1.docx

Hi Eric,

Attached are the revised slides. I also was able to fix the formatting issue with the MCLG TSD document, let me know if this version works for you.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Burneson, Eric
Sent: Monday, April 22, 2019 9:58 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Sam for slides 8 and 10 can we change the order of the presentation to have the proposed 2 IQ point decrement in the middle?

From: Hernandez-Quinones, Samuel
Sent: Monday, April 22, 2019 9:22 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Hi Eric,

Attached you will find the revised MCLG Derivation TSD document and the proposed Slides for the upcoming Thursday Meeting. I am working on revising the Occurrence document and will have it ready by COB today.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water

Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Burneson, Eric
Sent: Monday, April 22, 2019 8:45 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: FW: Proposed Perchlorate NPDWR

Sam:
Can we connect today to discuss the status of documents that we need to get to OMB.

I believe we owe them the
MCLG report,
the slide presentation and now
the Occurrence and Monitoring document.
Thanks in advance

From: Christ, Lisa
Sent: Sunday, April 21, 2019 11:51 AM
To: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Nickerson, William <Nickerson.William@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
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Vlad,
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Lisa

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Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>; Huff, Lisa

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Subject: RE: Proposed Perchlorate NPDWR

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Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Dorjets, Vlad EOP/OMB <[Ex. 6 Personal Privacy (PP)]
Sent: Tuesday, April 16, 2019 3:54 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Eric,

Kevin Bromberg has apparently already skimmed (if not actually read) the NPRM and is requesting two documents referenced in the preamble: the "proposed approaches to inform the derivation of a maximum contaminant level goal for perchlorate in drinking water" (reference 2018d) and the TSD (reference 2018e). Could you please let me know the status of these two documents? In case they're not currently available or will not be available soon it would help me to understand what they documents do and do not contain.

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As I mentioned I will be out of the office Thursday and Friday this week but if you have questions about the draft proposal you can contact Lisa Christ in my absence. Lisa's number is 202 564 8354.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

Message

From: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
Sent: 4/22/2019 2:03:33 PM
To: Burneson, Eric [Burneson.Eric@epa.gov]
CC: Christ, Lisa [Christ.Lisa@epa.gov]; Huff, Lisa [Huff.Lisa@epa.gov]
Subject: RE: Proposed Perchlorate NPDWR

Ok. Looking into this right now. I will get both documents revised.

Thanks
Sam
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Samuel Hernández Quiñones, P.E.
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Sam for slides 8 and 10 can we change the order of the presentation to have the proposed 2 IQ point decrement in the middle?

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Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

Message

From: Johnson, Ann [Johnson.Ann@epa.gov]
Sent: 5/22/2019 4:26:04 PM
To: Burneson, Eric [Burneson.Eric@epa.gov]; Christ, Lisa [Christ.Lisa@epa.gov]
Subject: RE: NASA Comments on Perchlorate
Attachments: EPA response to NASA comments_op.docx

Some thoughts to consider.

From: Burneson, Eric
Sent: Wednesday, May 22, 2019 11:49 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>
Subject: FW: NASA Comments on Perchlorate

If either of you have a minute I would appreciate your review of my response to the NASA comments attached. Note that I decided a point by point response would not be constructive.

From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]
Sent: Monday, May 20, 2019 1:28 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Nickerson, William <Nickerson.William@epa.gov>
Subject: NASA Comments on Perchlorate

Attached please find the comments submitted by NASA on the perchlorate NPRM. I think some sort of a response would be appropriate. Can discuss those reasons – and my thinking on this in general - by phone offline.

Message

From: Christ, Lisa [Christ.Lisa@epa.gov]
Sent: 5/22/2019 4:25:45 PM
To: Burneson, Eric [Burneson.Eric@epa.gov]; Johnson, Ann [Johnson.Ann@epa.gov]
Subject: RE: NASA Comments on Perchlorate
Attachments: EPA response to NASA comments.v2.docx

Small edits – see attached.

From: Burneson, Eric
Sent: Wednesday, May 22, 2019 11:49 AM
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From: Messier, Dawn [Messier.Dawn@epa.gov]
Sent: 5/23/2019 1:46:39 PM
To: Burneson, Eric [Burneson.Eric@epa.gov]
CC: Wehling, Carrie [Wehling.Carrie@epa.gov]
Subject: RE: perchlorate

Got it. will do.

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

From: Burneson, Eric
Sent: Thursday, May 23, 2019 9:45 AM
To: Messier, Dawn <Messier.Dawn@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: FW: perchlorate

Please review ASAP and let me know if there are any show stoppers

From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]
Sent: Thursday, May 23, 2019 9:43 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: perchlorate

Final edits.

Message

From: Khera, Rajiv [Khera.Rajiv@epa.gov]
Sent: 4/25/2019 1:37:52 PM
To: Burneson, Eric [Burneson.Eric@epa.gov]; Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
CC: Christ, Lisa [Christ.Lisa@epa.gov]
Subject: RE: Inter Agency Briefing on Proposed Perchlorate NPDWR
Attachments: Perchlorate Interagency Brief 4-25-19.pptx

Please see attached the updated file.

From: Burneson, Eric
Sent: Thursday, April 25, 2019 9:28 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>
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Can you please double check?

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To: Burneson, Eric <Burneson.Eric@epa.gov>
Subject: RE: Inter Agency Briefing on Proposed Perchlorate NPDWR

Eric,

I believe there is a typo in the note on page 10.

"Note: the RSC is the perchlorate **dose** ~~(µg/kg/L)~~ (µg/kg/d) from food, not a percentage allocated to drinking water"

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From: Burneson, Eric
Sent: Thursday, April 25, 2019 9:01 AM
To: Christ, Lisa; Hernandez-Quinones, Samuel; Khera, Rajiv; Nickerson, William
Cc: Johnson, Ann; Messier, Dawn; Mclain, Jennifer; Vladik Dorjets Ex. 6 Personal Privacy (PP)
Subject: Inter Agency Briefing on Proposed Perchlorate NPDWR
When: Thursday, April 25, 2019 11:00 AM-12:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: DCRoomEast2339/DC-ICC-OW-OGWDW call in Ex. 6 Personal Privacy (PP) passcode Ex. 6 Personal Privacy (PP)

OMB has scheduled an Inter-Agency teleconference at this time for EPA to brief other Federal Agencies on the draft proposed drinking water regulation for perchlorate. EPA will deliver the attached slides and ask for any clarifying questions at the end.

Message

From: Khera, Rajiv [Khera.Rajiv@epa.gov]
Sent: 4/25/2019 1:35:08 PM
To: Burneson, Eric [Burneson.Eric@epa.gov]; Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
CC: Christ, Lisa [Christ.Lisa@epa.gov]
Subject: RE: Inter Agency Briefing on Proposed Perchlorate NPDWR

It should be ug/kg/day. Also on slide 15, first bullet should say "live births" instead of "life births". I will send you the updated file in a minute.

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Message

From: Christ, Lisa [Christ.Lisa@epa.gov]
Sent: 5/23/2019 7:28:28 PM
To: Burneson, Eric [Burneson.Eric@epa.gov]
Subject: RE: Uploaded new versions of Perchlorate, 2040-AF28 into ROCIS

I'll send something to the workgroup tomorrow

From: Burneson, Eric
Sent: Thursday, May 23, 2019 3:13 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Subject: FW: Uploaded new versions of Perchlorate, 2040-AF28 into ROCIS

If possible it would be good for Sam or someone to send a note to the work group tomorrow after the notice is signed.

From: Wadlington, Christina
Sent: Thursday, May 23, 2019 2:18 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: RE: Uploaded new versions of Perchlorate, 2040-AF28 into ROCIS

Provided is the updated PR based on OMB's edits. They will also be on the web.

Today, the U.S. Environmental Protection Agency (EPA) released a notice of proposed rulemaking that seeks public input on a range of options regarding the regulation of perchlorate in public drinking water systems.

The agency is seeking comment on a proposed National Primary Drinking Water Regulation (NPDWR) for perchlorate to establish a Maximum Contaminant Level (MCL) and a health-based Maximum Contaminant Level Goal (MCLG) at 56 micrograms per liter.

In addition, the agency is seeking comment on three alternative regulatory options:

- An MCL and MCLG for perchlorate set at 18 micrograms per liter.
- An MCL and MCLG for perchlorate set at 90 micrograms per liter.
- Withdrawal of the agency's 2011 determination to regulate perchlorate in drinking water.

The agency is requesting comment on all relevant aspects of the proposed rule but is especially interested in the perchlorate monitoring and reporting requirements for public water systems and a list of treatment technologies that would enable water systems to comply with the MCL, including affordable compliance technologies for small systems serving 10,000 persons or less. EPA is also requesting comment on its methodology for deriving the MCLG, the underlying assumptions and analysis of its cost and benefit estimates, and other specific items listed in the proposed rule.

Perchlorate is commonly used in solid rocket propellants, munitions, fireworks, airbag initiators for vehicles, matches, and signal flares. Perchlorate may occur naturally, particularly in arid regions such as the southwestern United States and is found as an impurity in hypochlorite solutions used for drinking water treatment and nitrate salts used to produce nitrate fertilizers, explosives, and other products.

EPA will accept public comment on the proposal for 60 days after publication in the Federal Register via http://www.regulations.gov [Docket ID No. EPA-HQ-OW-2018-0780].

For more information and to view the pre-publication version of the Federal Register Notice, visit https://www.epa.gov/dwstandardsregulations/perchlorate-drinking-water

From: Burneson, Eric
Sent: Thursday, May 23, 2019 11:46 AM
To: Wadlington, Christina <Wadlington.Christina@epa.gov>
Cc: Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: FW: Uploaded new versions of Perchlorate, 2040-AF28 into ROCIS

Christina
I did not make any promises to OMB, but below are their thoughts about our press release. Can we make the changes to the last paragraph a this stage? If not in the press release how about the website?

From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]
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To: Burneson, Eric <Burneson.Eric@epa.gov>
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Subject: RE: Uploaded new versions of Perchlorate, 2040-AF28 into ROCIS

Eric – I'm choosing not to think about the final yet but will look forward to it at some point in the future. Also, thank you for the kind words below.

In regards to the press release, I think it would be a good idea to add language on what perchlorate is to provide important context for the public. Also, the solicitation of comment risks confusing people since it is limited to a subset of items listed in the NPRM and does not make the important point that EPA is actually taking comment on a lot more than that.

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Cc: Manibusan, Mary <Manibusan.Mary@epa.gov>
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Vlad:
Many thanks to you on your excellent work coordinating the review of this very important action. We appreciate your careful consideration of all the key issues and your balanced approach to resolving them in a way that assures the public can provide informed input. We look forward to working with you on the final action for this contaminant and on other key drinking water regulatory issues.

Per your request pasted below is the draft of the press statement we expect will be going out today.

DRAFT PRESS RELEASE

EPA Seeks Comment on Proposed Options for Regulating Perchlorate in Drinking Water

WASHINGTON – Today, the U.S. Environmental Protection Agency (EPA) released a notice of proposed rulemaking that seeks public input on a range of options regarding the regulation of perchlorate in public drinking water systems. Perchlorate comes from both natural and manmade sources. It is formed naturally via atmospheric processes and can be found within mineral deposits in certain geographical areas. It is also produced in the United States for use in solid fuels to power rockets, missiles, and fireworks. For the general population, most perchlorate exposure is through the ingestion of contaminated food or drinking water.

The agency is seeking comment on a proposed National Primary Drinking Water Regulation (NPDWR) for perchlorate to establish a Maximum Contaminant Level (MCL) and a health-based Maximum Contaminant Level Goal (MCLG) at 56 micrograms per liter.

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- An MCL and MCLG for perchlorate set at 90 micrograms per liter.
- Withdrawal of the agency's 2011 determination to regulate perchlorate in drinking water.

The agency is requesting comment on all relevant aspects of the proposed rule but is especially interested in the perchlorate monitoring and reporting requirements for public water systems and a list of treatment technologies that would enable water systems to comply with the MCL, including affordable compliance technologies for small systems serving 10,000 persons or less. EPA is also requesting comment on its methodology for deriving the MCLG, the underlying assumptions and analysis of its cost and benefit estimates, and other specific items listed in the proposed rule.

EPA will accept public comment on the proposal for 60 days after publication in the Federal Register via >http://www.regulations.gov< [Docket ID No. EPA-HQ-OW-2018-0780].

From: Dorjets, Vlad EOP/OMB [**Ex. 6 Personal Privacy (PP)**
Sent: Thursday, May 23, 2019 10:58 AM
To: Manibusan, Mary <Manibusan.Mary@epa.gov>; Adams, Darryl <Adams.Darryl@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Nurse, Leanne <Nurse.Leanne@epa.gov>
Subject: RE: Uploaded new versions of Perchlorate, 2040-AF28 into ROCIS

OMB has concluded its review of the Perchlorate rule. I realize this review had some particular challenges so we want to thank everybody for all their hard work and thoughtful responses to OMB and interagency comments.

We understand that EPA is planning on signing and rolling out this rule later today. We would appreciate it if you could send us your roll-out material in advance so that we can could take a quick look to see how EPA is planning on messaging this NPRM.

From: Manibusan, Mary <Manibusan.Mary@epa.gov>
Sent: Thursday, May 23, 2019 10:44 AM
To: Adams, Darryl <Adams.Darryl@epa.gov>
Cc: Dorjets, Vlad EOP/OMB < **Ex. 6 Personal Privacy (PP)** >; Burneson, Eric <Burneson.Eric@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Nurse, Leanne <Nurse.Leanne@epa.gov>
Subject: Re: Uploaded new versions of Perchlorate, 2040-AF28 into ROCIS

Vlad,
Please confirm when OMB has officially concluded.
Thanks,
Mary

Sent from my iPhone

On May 23, 2019, at 10:41 AM, Adams, Darryl <Adams.Darryl@epa.gov> wrote:

Vlad et al,
I've uploaded the new versions into ROCIS. Please let me if there are any issues. Thank you.

<image003.jpg>

Darryl Adams
Regulatory Management Division
Office of Policy, U.S. EPA
202 564-6569
Mail Code 1803A, Room 3512D WJC North

Message

From: Aguirre, Janita [Aguirre.Janita@epa.gov]
Sent: 5/23/2019 5:06:14 PM
To: Dennis, Allison [Dennis.Allison@epa.gov]
CC: Burneson, Eric [Burneson.Eric@epa.gov]; Mejias, Melissa [mejias.melissa@epa.gov]
Subject: Press release - RE: Uploaded new versions of Perchlorate, 2040-AF28 into ROCIS

Hi Allison,

Dave reviewed and cleared the highlighted version while we were in with Eric just now. Since he focused on your edited version, he didn't review the original edits that Vlad sent along.

Adding Eric for awareness.

Thank you,
Janita

Janita Aguirre – Special Assistant
U.S. Environmental Protection Agency | Office of Water
Phone: **(202) 566-1149** | Email: **aguirre.janita@epa.gov**

From: Dennis, Allison
Sent: Thursday, May 23, 2019 12:05 PM
To: Mejias, Melissa <mejias.melissa@epa.gov>; Aguirre, Janita <Aguirre.Janita@epa.gov>
Subject: FW: Uploaded new versions of Perchlorate, 2040-AF28 into ROCIS
Importance: High

Sorry- meant to cc you.

From: Dennis, Allison
Sent: Thursday, May 23, 2019 12:03 PM
To: Ross, David P <ross.davidp@epa.gov>
Subject: FW: Uploaded new versions of Perchlorate, 2040-AF28 into ROCIS
Importance: High

Dave- see Vlad's note below and his specific suggested edits to our press release.

How about this:

1) On Vlad's first ask, we add the following language pulled directly from our Q&A to the very end of our press release as a stand-alone para?

Perchlorate is commonly used in solid rocket propellants, munitions, fireworks, airbag initiators for vehicles, matches, and signal flares. Perchlorate may occur naturally, particularly in arid regions such as the southwestern United States and is found as a impurity in hypochlorite solutions used for drinking water treatment and nitrate salts used to produce nitrate fertilizers, explosives, and other products.

2) On Vlad's second ask, we take his comments as is:

The agency is requesting comment on all relevant aspects of the proposed rule but is especially interested in the perchlorate monitoring and reporting requirements for public water systems and a list of treatment technologies

that would enable water systems to comply with the MCL, including affordable compliance technologies for small systems serving 10,000 persons or less. EPA is also requesting comment on its methodology for deriving the MCLG, the underlying assumptions and analysis of its cost and benefit estimates, and other specific items listed in the proposed rule.

From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]
Sent: Thursday, May 23, 2019 11:37 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: RE: Uploaded new versions of Perchlorate, 2040-AF28 into ROCIS

Eric – I'm choosing not to think about the final yet but will look forward to it at some point in the future. Also, thank you for the kind words below.

In regards to the press release, I think it would be a good idea to add language on what perchlorate is to provide important context for the public. Also, the solicitation of comment risks confusing people since it is limited to a subset of items listed in the NPRM and does not make the important point that EPA is actually taking comment on a lot more than that.

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Thursday, May 23, 2019 11:19 AM
To: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]
Cc: Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: RE: Uploaded new versions of Perchlorate, 2040-AF28 into ROCIS

Vlad:
Many thanks to you on your excellent work coordinating the review of this very important action. We appreciate your careful consideration of all the key issues and your balanced approach to resolving them in a way that assures the public can provide informed input. We look forward to working with you on the final action for this contaminant and on other key drinking water regulatory issues.

Per your request pasted below is the draft of the press statement we expect will be going out today.

DRAFT PRESS RELEASE

EPA Seeks Comment on Proposed Options for Regulating Perchlorate in Drinking Water

WASHINGTON – Today, the U.S. Environmental Protection Agency (EPA) released a notice of proposed rulemaking that seeks public input on a range of options regarding the regulation of perchlorate in public drinking water systems. Perchlorate comes from both natural and manmade sources. It is formed naturally via atmospheric processes and can be found within mineral deposits in certain geographical areas. It is also produced in the United States for use in solid fuels to power rockets, missiles, and fireworks. For the general population, most perchlorate exposure is through the ingestion of contaminated food or drinking water.

The agency is seeking comment on a proposed National Primary Drinking Water Regulation (NPDWR) for perchlorate to establish a Maximum Contaminant Level (MCL) and a health-based Maximum Contaminant Level Goal (MCLG) at 56 micrograms per liter.

In addition, the agency is seeking comment on three alternative regulatory options:

- An MCL and MCLG for perchlorate set at 18 micrograms per liter.

- An MCL and MCLG for perchlorate set at 90 micrograms per liter.
- Withdrawal of the agency's 2011 determination to regulate perchlorate in drinking water.

The agency is requesting comment on all relevant aspects of the proposed rule but is especially interested in the perchlorate monitoring and reporting requirements for public water systems and a list of treatment technologies that would enable water systems to comply with the MCL, including affordable compliance technologies for small systems serving 10,000 persons or less. EPA is also requesting comment on its methodology for deriving the MCLG, the underlying assumptions and analysis of its cost and benefit estimates, and other specific items listed in the proposed rule.

EPA will accept public comment on the proposal for 60 days after publication in the Federal Register via >http://www.regulations.gov< [Docket ID No. EPA-HQ-OW-2018-0780].

From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]
Sent: Thursday, May 23, 2019 10:58 AM
To: Manibusan, Mary <Manibusan.Mary@epa.gov>; Adams, Darryl <Adams.Darryl@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Nurse, Leanne <Nurse.Leanne@epa.gov>
Subject: RE: Uploaded new versions of Perchlorate, 2040-AF28 into ROCIS

OMB has concluded its review of the Perchlorate rule. I realize this review had some particular challenges so we want to thank everybody for all their hard work and thoughtful responses to OMB and interagency comments.

We understand that EPA is planning on signing and rolling out this rule later today. We would appreciate it if you could send us your roll-out material in advance so that we can could take a quick look to see how EPA is planning on messaging this NPRM.

From: Manibusan, Mary <Manibusan.Mary@epa.gov>
Sent: Thursday, May 23, 2019 10:44 AM
To: Adams, Darryl <Adams.Darryl@epa.gov>
Cc: Dorjets, Vlad EOP/OMB <[Ex. 6 Personal Privacy (PP)]>; Burneson, Eric <Burneson.Eric@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Nurse, Leanne <Nurse.Leanne@epa.gov>
Subject: Re: Uploaded new versions of Perchlorate, 2040-AF28 into ROCIS

Vlad,
Please confirm when OMB has officially concluded.
Thanks,
Mary

Sent from my iPhone

On May 23, 2019, at 10:41 AM, Adams, Darryl <Adams.Darryl@epa.gov> wrote:

> Vlad et al,
> I've uploaded the new versions into ROCIS. Please let me if there are any issues. Thank you.
>
> <image003.jpg>
>
> Darryl Adams

Regulatory Management Division
Office of Policy, U.S. EPA
202 564-6569
Mail Code 1803A, Room 3512D WJC North

Message

From: Flaharty, Stephanie [Flaharty.Stephanie@epa.gov]
Sent: 5/23/2019 3:40:05 PM
To: Tiago, Joseph [Tiago.Joseph@epa.gov]; Messier, Dawn [Messier.Dawn@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]
CC: Evalenko, Sandy [Evalenko.Sandy@epa.gov]; Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]; Christ, Lisa [Christ.Lisa@epa.gov]; Aguirre, Janita [Aguirre.Janita@epa.gov]
Subject: RE: perchlorate

Thanks Joe!

From: Tiago, Joseph
Sent: Thursday, May 23, 2019 11:38 AM
To: Messier, Dawn <Messier.Dawn@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Aguirre, Janita <Aguirre.Janita@epa.gov>
Subject: Re: perchlorate

The package has just been hand delivered to Leanne and verified complete in CMS. I'll deliver the burned CD when ready.

Joe.
(202) 564-0340

On May 23, 2019, at 11:08 AM, Tiago, Joseph <Tiago.Joseph@epa.gov> wrote:

> Package on the way to OP now. I called Leanne and gave her a heads-up I'm on my way. Note Darryl no longer working on this action this morning.
>
> **From:** Messier, Dawn
> **Sent:** Thursday, May 23, 2019 10:54 AM
> **To:** Burneson, Eric <Burneson.Eric@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>
> **Cc:** Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
> **Subject:** RE: perchlorate
>
> OGC concurs with signature of the proposed perchlorate rule federal register notice recently approved by OMB. Thanks!
>
> Dawn Messier
> U.S.E.P.A.
> Office of General Counsel
> Water Law Office
> 202-564-5517
>
> **From:** Burneson, Eric
> **Sent:** Thursday, May 23, 2019 10:52 AM
> **To:** Tiago, Joseph <Tiago.Joseph@epa.gov>
> **Cc:** Messier, Dawn <Messier.Dawn@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Hernandez-Quinones, Samuel

<Hernandez.Samuel@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: FW: perchlorate

Below is the concurrence from OGC. Let us know if something more formal is required.

From: Messier, Dawn
Sent: Thursday, May 23, 2019 9:53 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: perchlorate

I'm fine with both.

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

From: Messier, Dawn
Sent: Thursday, May 23, 2019 9:51 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: perchlorate

FRN all good.

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

From: Burneson, Eric
Sent: Thursday, May 23, 2019 9:45 AM
To: Messier, Dawn <Messier.Dawn@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: FW: perchlorate

Please review ASAP and let me know if there are any show stoppers

From: Dorjets, Vlad EOP/OMB **Ex. 6 Personal Privacy (PP)**
Sent: Thursday, May 23, 2019 9:43 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: perchlorate

Final edits.

Message

From: Bradford, Charlotte [Bradford.Charlotte@epa.gov]
Sent: 4/18/2019 12:37:34 PM
To: Burneson, Eric [Burneson.Eric@epa.gov]
Subject: RE: Perchlorate briefing

Thanks Eric. I've taken care of it. (Hint: turn your phone OFF!!) - SMILE

-----Original Message-----
From: Burneson, Eric
Sent: Thursday, April 18, 2019 8:35 AM
To: Bradford, Charlotte <Bradford.Charlotte@epa.gov>
Cc: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: Re: Perchlorate briefing

It was scheduled for 3 but we need to move it to 11. There is a Reg Det meeting at 11 that I need you to move please.

Sent from my iPhone

> On Apr 18, 2019, at 7:29 AM, Bradford, Charlotte <Bradford.Charlotte@epa.gov> wrote:
>
> Good morning, I need to confirm that the briefing is scheduled for Thursday, April 25, at 3.
>
> -----Original Message-----
> From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]
> Sent: Wednesday, April 17, 2019 6:46 PM
> To: Burneson, Eric <Burneson.Eric@epa.gov>
> Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Bradford, Charlotte <Bradford.Charlotte@epa.gov>
> Subject: Re: Perchlorate briefing
>
> That would be great thanks!! It also means that I would have a convenient excuse for a hard stop since I would have to leave to head to airport at 12:30.
>
> Sent from my iPhone
>
>> On Apr 17, 2019, at 6:22 PM, Burneson, Eric <Burneson.Eric@epa.gov> wrote:
>>
>> Vlad
>> I am copying Charlotte to see if she can move a 11:00 meeting I have that day to make room for this meeting.
>> Charlotte can you please reply to all?
>>
>> Sent from my iPhone
>>
>>> On Apr 17, 2019, at 6:13 PM, Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)] wrote:
>>>
>>> Really sorry to do this but can we move the interagency briefing to Thursday morning? Just realize I'll be in the air at 3:00. Had forgotten about a trip.
>>>
>>> Sent from my iPhone

Message

From: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
Sent: 4/23/2019 11:54:06 AM
To: Burneson, Eric [Burneson.Eric@epa.gov]
Subject: RE: Proposed Perchlorate NPDWR
Attachments: Perchlorate Interagency Brief 4-25-19 V1.pptx

Hi Eric,

There was a typo in slide #15. Bullet 1 should read "live" instead of life. "Estimate annual number of live births given entry point population:"

I have updated the slide in the attached document. Let me know if you want me to send the revised file to Vlad.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Burneson, Eric
Sent: Monday, April 22, 2019 12:18 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Sam: Thank you. I made some additional changes to slide 7 in the attached. I will send these slides along with the TSD to Vlad shortly.

From: Hernandez-Quinones, Samuel
Sent: Monday, April 22, 2019 10:25 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Hi Eric,

Attached are the revised slides. I also was able to fix the formatting issue with the MCLG TSD document, let me know if this version works for you.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water

Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Burneson, Eric
Sent: Monday, April 22, 2019 9:58 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Sam for slides 8 and 10 can we change the order of the presentation to have the proposed 2 IQ point decrement in the middle?

From: Hernandez-Quinones, Samuel
Sent: Monday, April 22, 2019 9:22 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Hi Eric,

Attached you will find the revised MCLG Derivation TSD document and the proposed Slides for the upcoming Thursday Meeting. I am working on revising the Occurrence document and will have it ready by COB today.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Burneson, Eric
Sent: Monday, April 22, 2019 8:45 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: FW: Proposed Perchlorate NPDWR

Sam:
Can we connect today to discuss the status of documents that we need to get to OMB.

I believe we owe them the
MCLG report,
the slide presentation and now
the Occurrence and Monitoring document.

Thanks in advance

From: Christ, Lisa
Sent: Sunday, April 21, 2019 11:51 AM
To: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Nickerson, William <Nickerson.William@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Vlad,
The HRRCA has not been publicly released as all of the support documents for the proposal are still draft. We sent the draft HRRCA at the same time the proposal was sent to OMB. I'm attaching it again here with the proposal.
Lisa

From: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)>
Sent: Friday, April 19, 2019 1:37 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Sam -- One more request. I'm seeing lots of references in HRRCA to EPA's *Perchlorate Occurrence and Monitoring Report* dated 2018 (so assume it's been released already) but it does not come up in a Google search and is not included among the other key Perchlorate documents on your website. Could you please sent that to me too?

From: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Sent: Friday, April 19, 2019 12:58 PM
To: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Hi Vlad,

I just noticed that I inadvertently provided an earlier version of Volume I which Eric forwarded to you. Attached is a revised version of Volume 1 which incorporates minor editorial changes to the document. Sorry for the inconvenience.

Also, in response to your request I am attaching Volumes 2 and 3 of the Report.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)
Sent: Friday, April 19, 2019 12:01 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Eric/Lisa – Could you please share Volumes II and III?

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Wednesday, April 17, 2019 4:23 PM
To: Dorjets, Vlad EOP/OMB Ex. 6 Personal Privacy (PP)
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Vlad:
We can provide the requested support documents. The first document has been shared previously with many of the other Federal Agencies (see my email to Jim Kim on July 11, 2018) but we are happy to share this document again. It is attached to this email. The second document is currently under revision to incorporate some of the modifications we made just prior to submitting the proposed NPDWR. We expect to be able to send this document early next week.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)
Sent: Tuesday, April 16, 2019 3:54 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Eric,

Kevin Bromberg has apparently already skimmed (if not actually read) the NPRM and is requesting two documents referenced in the preamble: the "proposed approaches to inform the derivation of a maximum contaminant level goal for perchlorate in drinking water" (reference 2018d) and the TSD (reference 2018e). Could you please let me know the status of these two documents? In case they're not currently available or will not be available soon it would help me to understand what they documents do and do not contain.

Vlad

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Tuesday, April 16, 2019 1:10 PM
To: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>
Subject: Proposed Perchlorate NPDWR

Vlad
Thanks for touching base regarding the perchlorate proposed drinking water regulation. As we discussed I have blocked time on April 25 at 3:00 pm for a briefing to the other Federal Agency's on the perchlorate proposal. We will send an updated presentation to you early next week for distribution to the other Agency partners. I am assuming this will be a teleconference but let me know if you or other Federal partners would be interested in coming to EPA Offices for the meeting and I can book a larger room for the discussion.
As I mentioned I will be out of the office Thursday and Friday this week but if you have questions about the draft proposal you can contact Lisa Christ in my absence. Lisa's number is 202 564 8354.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

Message

From: Nickerson, William [Nickerson.William@epa.gov]
Sent: 3/5/2019 9:20:46 PM
To: Burneson, Eric [Burneson.Eric@epa.gov]
Subject: RE: Perchlorate

Let's go with 2 or 4pm on Thursday.

I'm still hearing rumors that the Administrator might want a briefing or some info on perchlorate before it goes to OMB, and I think it would be wise to have that briefing, if it is going to happen, before we talk to OMB. Later on Thursday gives us as much time as possible to sort that out before we talk to OMB.

I'm fine if you want to get back to Vlad; just invite me to the meeting.

From: Burneson, Eric
Sent: Tuesday, March 05, 2019 4:17 PM
To: Nickerson, William <Nickerson.William@epa.gov>
Subject: FW: Perchlorate

Bill:
My folks and I could do this on the following dates/times.
Wed 3/6 @ 11am-noon or 3-4pm
Th 3/7 @ 1-2pm, 2-3pm, 4-5pm

Let me know if you want me to get back to Vlad.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Dorjets, Vlad EOP/OMB **Ex. 6 Personal Privacy (PP)**
Sent: Monday, March 04, 2019 5:07 PM
To: Nickerson, William <Nickerson.William@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>
Subject: Perchlorate

Bill,

Before you submit perchlorate for OMB review (which, hopefully, will be very soon), I would like to request a staff-level briefing so that we can get an understanding of what is in the rule. Specifically, we are interested in getting an overview of what regulatory options EPA plans on proposing and how EPA plans to quantify the associated costs and benefits. Please note that Rosario should be making a similar request to Brittany later today. I'm hoping we can do this in a brief call sometime later this week.

Thanks,

Vlad

Message

From: Forsgren, Lee [Forsgren.Lee@epa.gov]
Sent: 5/23/2019 3:16:06 PM
To: Burneson, Eric [Burneson.Eric@epa.gov]
CC: Ross, David P [ross.davidp@epa.gov]; Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Aguirre, Janita [Aguirre.Janita@epa.gov]; Mejias, Melissa [mejias.melissa@epa.gov]; Guilaran, Yu-Ting [Guilaran.Yu-Ting@epa.gov]; Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]; Khera, Rajiv [Khera.Rajiv@epa.gov]; Tiago, Joseph [Tiago.Joseph@epa.gov]; Flaharty, Stephanie [Flaharty.Stephanie@epa.gov]; Evalenko, Sandy [Evalenko.Sandy@epa.gov]; Christ, Lisa [Christ.Lisa@epa.gov]; Messier, Dawn [Messier.Dawn@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Wadlington, Christina [Wadlington.Christina@epa.gov]
Subject: Re: Uploaded new versions of Perchlorate, 2040-AF28 into ROCIS

Great job Perchlorate team. As they say in the Navy BZ - Well Done!

Sent from my iPhone

On May 23, 2019, at 10:09 AM, Burneson, Eric <Burneson.Eric@epa.gov> wrote:

> Dave:
> Be advised that OMB has cleared the perchlorate proposal and we are sending forward the documents for signature and rollout. Thank you for your leadership on this important effort and for your timely input on the key issues we have had to address throughout the review process.
> As you know the perchlorate team and members of the OW and OGC staff have put significant effort into achieve this milestone. It is a privilege to work with such talented and dedicated staff. I thank them for all the great work to get us to this important milestone
>
> Eric Burneson, P.E.
> Director of Standards and Risk Management
> Office of Ground Water and Drinking Water
> U.S. Environmental Protection Agency
> 202 564 5250

From: Dorjets, Vlad EOP/OMB **Ex. 6 Personal Privacy (PP)**
Sent: Thursday, May 23, 2019 10:58 AM
To: Manibusan, Mary <Manibusan.Mary@epa.gov>; Adams, Darryl <Adams.Darryl@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Nurse, Leanne <Nurse.Leanne@epa.gov>
Subject: RE: Uploaded new versions of Perchlorate, 2040-AF28 into ROCIS

OMB has concluded its review of the Perchlorate rule. I realize this review had some particular challenges so we want to thank everybody for all their hard work and thoughtful responses to OMB and interagency comments.

We understand that EPA is planning on signing and rolling out this rule later today. We would appreciate it if you could send us your roll-out material in advance so that we can could take a quick look to see how EPA is planning on messaging this NPRM.

From: Manibusan, Mary <Manibusan.Mary@epa.gov>
Sent: Thursday, May 23, 2019 10:44 AM
To: Adams, Darryl <Adams.Darryl@epa.gov>
Cc: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)>; Burneson, Eric <Burneson.Eric@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Nurse, Leanne <Nurse.Leanne@epa.gov>
Subject: Re: Uploaded new versions of Perchlorate, 2040-AF28 into ROCIS

Vlad,
Please confirm when OMB has officially concluded.
Thanks,
Mary

Sent from my iPhone

On May 23, 2019, at 10:41 AM, Adams, Darryl <Adams.Darryl@epa.gov> wrote:

> Vlad et al,
> I've uploaded the new versions into ROCIS. Please let me if there are any issues. Thank you.
>
> <image003.jpg>
>
> Darryl Adams
> Regulatory Management Division
> Office of Policy, U.S. EPA
> 202 564-6569
> Mail Code 1803A, Room 3512D WJC North

Message

From: Flaharty, Stephanie [Flaharty.Stephanie@epa.gov]
Sent: 5/23/2019 3:11:59 PM
To: Aguirre, Janita [Aguirre.Janita@epa.gov]
CC: Tiago, Joseph [Tiago.Joseph@epa.gov]; Messier, Dawn [Messier.Dawn@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]; Evalenko, Sandy [Evalenko.Sandy@epa.gov]; Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]; Christ, Lisa [Christ.Lisa@epa.gov]
Subject: RE: perchlorate

Janita, thank you!

From: Aguirre, Janita
Sent: Thursday, May 23, 2019 11:10 AM
To: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>
Cc: Tiago, Joseph <Tiago.Joseph@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: Re: perchlorate

I am burning the cd now.

Sent from my iPhone

Janita Aguirre – Special Assistant
U.S. Environmental Protection Agency - Office of Water
(202) 566-1149

On May 23, 2019, at 11:09 AM, Flaharty, Stephanie <Flaharty.Stephanie@epa.gov> wrote:

> Did you get the disk burned?
>
> **From:** Tiago, Joseph
> **Sent:** Thursday, May 23, 2019 11:09 AM
> **To:** Messier, Dawn <Messier.Dawn@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
> **Cc:** Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Aguirre, Janita <Aguirre.Janita@epa.gov>
> **Subject:** RE: perchlorate
>
> Package on the way to OP now. I called Leanne and gave her a heads-up I'm on my way. Note Darryl no longer working on this action this morning.
>
> **From:** Messier, Dawn
> **Sent:** Thursday, May 23, 2019 10:54 AM
> **To:** Burneson, Eric <Burneson.Eric@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>
> **Cc:** Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
> **Subject:** RE: perchlorate

OGC concurs with signature of the proposed perchlorate rule federal register notice recently approved by OMB. Thanks!

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

From: Burneson, Eric
Sent: Thursday, May 23, 2019 10:52 AM
To: Tiago, Joseph <Tiago.Joseph@epa.gov>
Cc: Messier, Dawn <Messier.Dawn@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: FW: perchlorate

Below is the concurrence from OGC. Let us know if something more formal is required.

From: Messier, Dawn
Sent: Thursday, May 23, 2019 9:53 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: perchlorate

I'm fine with both.

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

From: Messier, Dawn
Sent: Thursday, May 23, 2019 9:51 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: perchlorate

FRN all good.

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

From: Burneson, Eric
Sent: Thursday, May 23, 2019 9:45 AM
To: Messier, Dawn <Messier.Dawn@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: FW: perchlorate

Please review ASAP and let me know if there are any show stoppers

---

From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]
Sent: Thursday, May 23, 2019 9:43 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: perchlorate

Final edits.

Message

From: Flaharty, Stephanie [Flaharty.Stephanie@epa.gov]
Sent: 5/23/2019 3:10:55 PM
To: Tiago, Joseph [Tiago.Joseph@epa.gov]; Messier, Dawn [Messier.Dawn@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]
CC: Evalenko, Sandy [Evalenko.Sandy@epa.gov]; Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]; Christ, Lisa [Christ.Lisa@epa.gov]; Aguirre, Janita [Aguirre.Janita@epa.gov]
Subject: RE: perchlorate

Great, thanks!

From: Tiago, Joseph
Sent: Thursday, May 23, 2019 11:10 AM
To: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Aguirre, Janita <Aguirre.Janita@epa.gov>
Subject: RE: perchlorate

Janita is helping with that. Leanne said the disc can follow.

From: Flaharty, Stephanie
Sent: Thursday, May 23, 2019 11:09 AM
To: Tiago, Joseph <Tiago.Joseph@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Aguirre, Janita <Aguirre.Janita@epa.gov>
Subject: RE: perchlorate

Did you get the disk burned?

From: Tiago, Joseph
Sent: Thursday, May 23, 2019 11:09 AM
To: Messier, Dawn <Messier.Dawn@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Aguirre, Janita <Aguirre.Janita@epa.gov>
Subject: RE: perchlorate

Package on the way to OP now. I called Leanne and gave her a heads-up I'm on my way. Note Darryl no longer working on this action this morning.

From: Messier, Dawn
Sent: Thursday, May 23, 2019 10:54 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>
Cc: Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: RE: perchlorate

OGC concurs with signature of the proposed perchlorate rule federal register notice recently approved by OMB. Thanks!

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

From: Burneson, Eric
Sent: Thursday, May 23, 2019 10:52 AM
To: Tiago, Joseph <Tiago.Joseph@epa.gov>
Cc: Messier, Dawn <Messier.Dawn@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: FW: perchlorate

Below is the concurrence from OGC. Let us know if something more formal is required.

From: Messier, Dawn
Sent: Thursday, May 23, 2019 9:53 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: perchlorate

I'm fine with both.

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

From: Messier, Dawn
Sent: Thursday, May 23, 2019 9:51 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: perchlorate

FRN all good.

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

From: Burneson, Eric
Sent: Thursday, May 23, 2019 9:45 AM
To: Messier, Dawn <Messier.Dawn@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: FW: perchlorate

Please review ASAP and let me know if there are any show stoppers

From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]
Sent: Thursday, May 23, 2019 9:43 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: perchlorate

Final edits.

Message

From: Bahadori, Tina [Bahadori.Tina@epa.gov]
Sent: 2/12/2018 10:58:55 PM
To: Burneson, Eric [Burneson.Eric@epa.gov]; Christ, Lisa [Christ.Lisa@epa.gov]; Bussard, David [Bussard.David@epa.gov]; Lavoie, Emma [Lavoie.Emma@epa.gov]; Flowers, Lynn [Flowers.Lynn@epa.gov]
CC: Mclain, Jennifer [Mclain.Jennifer@epa.gov]
Subject: RE: Submission of Comments for the IRIS Process Workshop

Thanks Eric. SBA generously shared these with us as well ☺.
Tina

From: Burneson, Eric
Sent: Monday, February 12, 2018 5:58 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Bussard, David <Bussard.David@epa.gov>; Lavoie, Emma <Lavoie.Emma@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Cc: Bahadori, Tina <Bahadori.Tina@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>
Subject: FW: Submission of Comments for the IRIS Process Workshop

Colleagues:
I am sharing a note I received from SBA today which seems focused on IRIS process but which makes reference to Perchlorate.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Bromberg, Kevin L. [mailto:kevin.bromberg@sba.gov]
Sent: Monday, February 12, 2018 10:49 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: James_H_Kim(Ex. 6 Personal Privacy (PP)
Subject: FW: Submission of Comments for the IRIS Process Workshop

Hi Eric – see section of NRC comments re: perchlorate towards the end of this letter.

Kevin Bromberg
Assistant Chief Counsel for Environmental Policy
SBA // Office of Advocacy
409 3rd St. SW, Washington, D.C. 20416
kevin.bromberg@sba.gov 202.481.2963
202.205.6964

U.S. SMALL BUSINESS ADMINISTRATION
OFFICE OF ADVOCACY

Appointment

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 8/7/2017 9:07:07 PM
To: Muellerleile, Caryn [Muellerleile.Caryn@epa.gov]

Subject: Perchlorate charge
Location: EPA east 2339 or Ex. 6 Personal Privacy (PP)

Start: 8/8/2017 1:00:00 PM
End: 8/8/2017 1:30:00 PM
Show Time As: Tentative

From: Burneson, Eric
Sent: Monday, August 07, 2017 4:42 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Hafez, Ahmed <Hafez.Ahmed@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>; Olson, Daniel <Olson.Daniel@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>
Cc: Behl, Betsy <Behl.Betsy@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>; Bussard, David <Bussard.David@epa.gov>; Strong, Jamie <Strong.Jamie@epa.gov>
Subject: FW: Perchlorate charge

I will set up a meeting to discuss these tomorrow.

From: Kim, Jim H. EOP/OMB Ex. 6 Personal Privacy (PP)
Sent: Monday, August 07, 2017 3:45 PM
To: Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Cc: Schwab, Margo EOP/OMB <Ex. 6 Personal Privacy (PP)>; Dorjets, Vlad EOP/OMB Ex. 6 Personal Privacy (PP); Laity, Jim A. EOP/OMB <Ex. 6 Personal Privacy (PP)>
Subject: Perchlorate charge

Hi Caryn, Eric and Lynn,

Thank you for your patience as we worked on this. Attached is a version of the charge with our suggestions in tracked changes. Please let me know if you have any questions.

Best regards,
Jim

James Kim, Ph.D., DABT
Office of Management and Budget
202-395-3085
Ex. 6 Personal Privacy (PP)

Appointment

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 8/7/2017 9:01:44 PM
To: Christ, Lisa [Christ.Lisa@epa.gov]; Hafez, Ahmed [Hafez.Ahmed@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Huff, Lisa [Huff.Lisa@epa.gov]; Olson, Daniel [Olson.Daniel@epa.gov]; Johnson, Ann [Johnson.Ann@epa.gov]
CC: Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Flowers, Lynn [Flowers.Lynn@epa.gov]; Bussard, David [Bussard.David@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]
BCC: DCRoomEast2339/DC-ICC-OW-OGWDW [DCRoomEast2339@epa.gov]

Subject: Perchlorate charge
Location: EPA east 2339 or Ex. 6 Personal Privacy (PP)

Start: 8/8/2017 1:00:00 PM
End: 8/8/2017 1:30:00 PM
Show Time As: Tentative

From: Burneson, Eric
Sent: Monday, August 07, 2017 4:42 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Hafez, Ahmed <Hafez.Ahmed@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>; Olson, Daniel <Olson.Daniel@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>
Cc: Behl, Betsy <Behl.Betsy@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>; Bussard, David <Bussard.David@epa.gov>; Strong, Jamie <Strong.Jamie@epa.gov>
Subject: FW: Perchlorate charge

I will set up a meeting to discuss these tomorrow.

From: Kim, Jim H. EOP/OMB [Ex. 6 Personal Privacy (PP)]
Sent: Monday, August 07, 2017 3:45 PM
To: Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Cc: Schwab, Margo EOP/OMB [Ex. 6 Personal Privacy (PP)]; Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]; Laity, Jim A. EOP/OMB [Ex. 6 Personal Privacy (PP)]
Subject: Perchlorate charge

Hi Caryn, Eric and Lynn,

Thank you for your patience as we worked on this. Attached is a version of the charge with our suggestions in tracked changes. Please let me know if you have any questions.

Best regards,
Jim

James Kim, Ph.D., DABT

Office of Management and Budget
202-395-3085
Ex. 6 Personal Privacy (PP)

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 8/7/2017 8:38:24 PM
To: Grevatt, Peter [Grevatt.Peter@epa.gov]; Mclain, Jennifer [Mclain.Jennifer@epa.gov]
Subject: FW: Perchlorate charge
Attachments: DRAFT MCLG Approach Charge 08-02-17clean_OMB comments.docx

From: Kim, Jim H. EOP/OMB Ex. 6 Personal Privacy (PP)
Sent: Monday, August 07, 2017 3:45 PM
To: Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Cc: Schwab, Margo EOP/OMB < Ex. 6 Personal Privacy (PP) >; Dorjets, Vlad EOP/OMB < Ex. 6 Personal Privacy (PP) >; Laity, Jim A. EOP/OMB Ex. 6 Personal Privacy (PP)
Subject: Perchlorate charge

Hi Caryn, Eric and Lynn,

Thank you for your patience as we worked on this. Attached is a version of the charge with our suggestions in tracked changes. Please let me know if you have any questions.

Best regards,
Jim

James Kim, Ph.D., DABT
Office of Management and Budget
202-395-3085
Ex. 6 Personal Privacy (PP)

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 8/15/2017 8:19:00 PM
To: Muellerleile, Caryn [Muellerleile.Caryn@epa.gov]
Subject: RE: Perchlorate charge

Enjoy your time off. Thanks for all your help.

From: Muellerleile, Caryn
Sent: Tuesday, August 15, 2017 4:10 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>
Subject: RE: Perchlorate charge

Ex. 6 Personal Privacy (PP) My out-of-office message lists Nicole Owens but she knows to contact either of you if any Perchlorate-related questions come my way.

Caryn

From: Burneson, Eric
Sent: Monday, August 14, 2017 5:23 PM
To: Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>
Cc: Johnson, Ann <Johnson.Ann@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Dorjets, Vlad EOP/OMB
Ex. 6 Personal Privacy (PP)
Subject: FW: Perchlorate charge

Caryn:
Would you please distribute the attached Draft Charge to the Federal Inter-Agency participants in last weeks meeting on the perchlorate peer review.
Eric

Inter-Agency Partners:
Thank you for your review and comment on the draft charge for the next perchlorate peer review. We believe that the input we received from you has helped us to communicate more clearly about our analysis and the critical assumptions, strengths and limitations.

Attached is a revised draft charge that responds to the concerns identified in our discussion last Wednesday. In preparing the attached revisions, we tried to better organize the issues and break down complex charge questions into more direct questions. We ask that you review the attached draft charge and provide us with any comments or suggestions by Friday, August 18. Please send comments on the draft charge to myself and Eric Burneson. Please also copy Vlad Dorjets on your comments as well.

After we receive your input our next steps will be as follows:

1. Prepare a revised draft charge that addresses Inter- Agency Input
2. Publish an FRN that announces the availability and requests comment on
    a. The Draft Charge,
    b. The Preliminary List of Peer reviewers, and
    c. Draft Report on Approaches to Inform Derivation of the MCLG

3. We will request public comments on the draft charge and peer reviewers within 21 days of FRN publication. We will schedule Inter Agency call during this period to discuss the revised charge and will ask for any Inter Agency comments on the draft charge to be provided via email.
4. We will request comments on the draft MCLG Approaches Report within 45 days of the FRN Publication. Inter-Agency comments on the draft report should be submitted in accordance with the process identified in the FRN.
5. After addressing comments on the draft charge and Versar's selection of the peer reviewers, we will publish an FRN announcing the peer review panel members, the final charge and the date and location of the public peer review meeting. We will also publish information on how to register to attend and/or provide public comment at the peer review meeting.
6. We will provide public comments on the draft MCLG Approaches Report to peer reviewers for their review and consideration.
7. Peer reviewers will meet in a public meeting in the DC Metro Area (date and specific location TBD).
8. EPA will post the final peer review report in the Docket upon completion.

Thank you for your continued input into this important peer review process

From: Grevatt, Peter
Sent: Monday, August 14, 2017 3:38 PM
To: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)>; Burneson, Eric <Burneson.Eric@epa.gov>; James H Kim@Ex. 6 Personal Privacy (PP)
Cc: Schwab, Margo EOP/OMB <Ex. 6 Personal Privacy (PP)>; Laity, Jim A. EOP/OMB Ex. 6 Personal Privacy (PP)>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Subject: RE: Perchlorate charge

Great news Vlad. Thanks again to you, Jim, Jim, Margo and your entire team for all of your help with this! We'll get this out to the interagency reviewers this afternoon.

From: Dorjets, Vlad EOP/OMB Ex. 6 Personal Privacy (PP)
Sent: Monday, August 14, 2017 3:29 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>; James H Kim Ex. 6 Personal Privacy (PP)
Cc: Schwab, Margo EOP/OMB <Ex. 6 Personal Privacy (PP)>; Laity, Jim A. EOP/OMB Ex. 6 Personal Privacy (PP)>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Subject: RE: Perchlorate charge

Eric,

Thank you for sharing this revised draft charge. I want to thank you for your willingness to engage with OMB and EPA throughout this process and for that thoughtfulness with which you have addressed our comments. OMB does not have any further comments on the charge. Please go ahead and distribute to interagency reviewers (presumably to the people on the invitation list to last week's briefing) for final comments. Also, it may not be a bad idea to let the interagency reviewers (and OMB) know when the FRN has been published so that they can get the report right away and maximize the time they have to review it.

Vlad

From: Burneson, Eric [mailto:Burneson.Eric@epa.gov]
Sent: Friday, August 11, 2017 3:41 PM
To: Kim, Jim H. EOP/OMB <Ex. 6 Personal Privacy (PP)>; Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)>
Cc: Schwab, Margo EOP/OMB <Ex. 6 Personal Privacy (PP)> Laity, Jim A. EOP/OMB
Ex. 6 Personal Privacy (PP)>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Mclain, Jennifer
<Mclain.Jennifer@epa.gov>; Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Subject: RE: Perchlorate charge

Vlad and Jim:
Thank you for helping to facilitate a constructive meeting with our Federal partners this week on the perchlorate peer review. We believe that the input we received from you and our Federal partners has helped us to communicate more clearly about our analysis and the critical assumptions, strengths and limitations.

Attached is a revised draft charge that responds to the concerns identified in our discussion on Wednesday. In preparing the attached revisions, we tried to better organize the issues and break down complex charge questions into more direct questions. Prior to distribution to the other Federal Agencies, we ask that you review the attached charge and let us know if you have any suggestions for better addressing the identified concerns.

Our goal is to have input from the other Federal Agencies by Friday, August 18th so that we can move forward with the next steps in conducting the peer review. Therefore we hope to have your feedback by early next week.

Thanks in advance for your continued input.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Burneson, Eric
Sent: Tuesday, August 08, 2017 7:29 PM
To: 'Kim, Jim H. EOP/OMB' <Ex. 6 Personal Privacy (PP)>; Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Cc: Schwab, Margo EOP/OMB <Ex. 6 Personal Privacy (PP)>; Dorjets, Vlad EOP/OMB
Ex. 6 Personal Privacy (PP)>; Laity, Jim A. EOP/OMB Ex. 6 Personal Privacy (PP)>; Grevatt, Peter
<Grevatt.Peter@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>
Subject: RE: Perchlorate charge

Jim:
Thanks very much for your comments on the draft peer review charge. We have incorporated your input in the revised draft charge document (dated 8-8-17)that will soon be distributed to Inter Agency partners. To assist your understanding in how we incorporated your edits we have also prepared the attached response document for your consideration.

Thanks again for your helpful input.

Eric Burneson, P.E.
Director of Standards and Risk Management

Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Kim, Jim H. EOP/OMB [Ex. 6 Personal Privacy (PP)]
Sent: Monday, August 07, 2017 3:45 PM
To: Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Cc: Schwab, Margo EOP/OMB [Ex. 6 Personal Privacy (PP)]; Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]; Laity, Jim A. EOP/OMB [Ex. 6 Personal Privacy (PP)]
Subject: Perchlorate charge

Hi Caryn, Eric and Lynn,

Thank you for your patience as we worked on this. Attached is a version of the charge with our suggestions in tracked changes. Please let me know if you have any questions.

Best regards,
Jim

James Kim, Ph.D., DABT
Office of Management and Budget
202-395-3085
[Ex. 6 Personal Privacy (PP)]

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 6/17/2020 4:33:46 PM
To: Parikh, Pooja [Parikh.Pooja@epa.gov]; Flaharty, Stephanie [Flaharty.Stephanie@epa.gov]
Subject: FW: Review of Perchlorate Notice Concluded
Attachments: 10011-21-OW Perchlorate FRN final. 4 pm.docx

Pooja
Attached is the version that has been sent to OP f."encoding".
Stephanie: OGC needs to share with DOJ for the court filing. Please share with Pooja any modifications that result from "encoding"
Eric

From: Flaharty, Stephanie
Sent: Wednesday, June 17, 2020 9:13 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>; McLain, Jennifer L. <McLain.Jennifer@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>
Cc: Wadlington, Christina <Wadlington.Christina@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>
Subject: RE: Review of Perchlorate Notice Concluded

All: attached is the OMB- and OGC-approved FRN, currently be encoded by OP/FR

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Wednesday, June 17, 2020 9:04 AM
To: McLain, Jennifer L. <McLain.Jennifer@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>
Cc: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>
Subject: FW: Review of Perchlorate Notice Concluded

Jennifer and Yu-Ting
OMB review of perchlorate is concluded. We can proceed with the necessary steps towards signature and roll out. Many thanks to the perchlorate team for their excellent work!

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]
Sent: Wednesday, June 17, 2020 9:01 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Parikh, Pooja <Parikh.Pooja@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Manibusan,

Mary <Manibusan.Mary@epa.gov>
Subject: Review of Perchlorate Notice Concluded

Eric,

OMB has concluded its review of the Perchlorate notice.

Vlad

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 8/14/2017 9:26:19 PM
To: Olson, Daniel [Olson.Daniel@epa.gov]; Flowers, Lynn [Flowers.Lynn@epa.gov]; Hafez, Ahmed [Hafez.Ahmed@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]
Subject: FW: Perchlorate charge
Attachments: DRAFT MCLG Approach Charge 08-11-17.docx

FYI

From: Burneson, Eric
Sent: Monday, August 14, 2017 5:24 PM
To: Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>
Cc: Johnson, Ann <Johnson.Ann@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; 'Dorjets, Vlad EOP/OMB'
Ex. 6 Personal Privacy (PP)
Subject: FW: Perchlorate charge

Caryn:
Would you please distribute the attached Draft Charge to the Federal Inter-Agency participants in last weeks meeting on the perchlorate peer review.
Eric

Inter-Agency Partners:
Thank you for your review and comment on the draft charge for the next perchlorate peer review. We believe that the input we received from you has helped us to communicate more clearly about our analysis and the critical assumptions, strengths and limitations.

Attached is a revised draft charge that responds to the concerns identified in our discussion last Wednesday. In preparing the attached revisions, we tried to better organize the issues and break down complex charge questions into more direct questions. We ask that you review the attached draft charge and provide us with any comments or suggestions by Friday, August 18. Please send comments on the draft charge to myself and Eric Burneson. Please also copy Vlad Dorjets on your comments as well.

After we receive your input our next steps will be as follows:

1. Prepare a revised draft charge that addresses Inter- Agency Input
2. Publish an FRN that announces the availability and requests comment on
    a. The Draft Charge,
    b. The Preliminary List of Peer reviewers, and
    c. Draft Report on Approaches to Inform Derivation of the MCLG
3. We will request public comments on the draft charge and peer reviewers within 21 days of FRN publication. We will schedule Inter Agency call during this period to discuss the revised charge and will ask for any Inter Agency comments on the draft charge to be provided via email.
4. We will request comments on the draft MCLG Approaches Report within 45 days of the FRN Publication. Inter-Agency comments on the draft report should be submitted in accordance with the process identified in the FRN.
5. After addressing comments on the draft charge and Versar's selection of the peer reviewers, we will publish an FRN announcing the peer review panel members, the final charge and the date and location of the public peer review meeting. We will also publish information on how to register to attend and/or provide public comment at the peer review meeting.
6. We will provide public comments on the draft MCLG Approaches Report to peer reviewers for their review and consideration.

7. Peer reviewers will meet in a public meeting in the DC Metro Area (date and specific location TBD).
8. EPA will post the final peer review report in the Docket upon completion.

Thank you for your continued input into this important peer review process

From: Grevatt, Peter
Sent: Monday, August 14, 2017 3:38 PM
To: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)>; Burneson, Eric <Burneson.Eric@epa.gov>; James H Kim <Ex. 6 Personal Privacy (PP)>
Cc: Schwab, Margo EOP/OMB <Ex. 6 Personal Privacy (PP)>; Laity, Jim A. EOP/OMB <Ex. 6 Personal Privacy (PP)>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Subject: RE: Perchlorate charge

Great news Vlad. Thanks again to you, Jim, Jim, Margo and your entire team for all of your help with this! We'll get this out to the interagency reviewers this afternoon.

From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]
Sent: Monday, August 14, 2017 3:29 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>; James H Kim <Ex. 6 Personal Privacy (PP)>
Cc: Schwab, Margo EOP/OMB <Ex. 6 Personal Privacy (PP)>; Laity, Jim A. EOP/OMB <Ex. 6 Personal Privacy (PP)>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Subject: RE: Perchlorate charge

Eric,

Thank you for sharing this revised draft charge. I want to thank you for your willingness to engage with OMB and EPA throughout this process and for that thoughtfulness with which you have addressed our comments. OMB does not have any further comments on the charge. Please go ahead and distribute to interagency reviewers (presumably to the people on the invitation list to last week's briefing) for final comments. Also, it may not be a bad idea to let the interagency reviewers (and OMB) know when the FRN has been published so that they can get the report right away and maximize the time they have to review it.

Vlad

From: Burneson, Eric [mailto:Burneson.Eric@epa.gov]
Sent: Friday, August 11, 2017 3:41 PM
To: Kim, Jim H. EOP/OMB <Ex. 6 Personal Privacy (PP)>; Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)>
Cc: Schwab, Margo EOP/OMB <Ex. 6 Personal Privacy (PP)>; Laity, Jim A. EOP/OMB <Ex. 6 Personal Privacy (PP)>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Subject: RE: Perchlorate charge

Vlad and Jim:

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Our goal is to have input from the other Federal Agencies by Friday, August 18th so that we can move forward with the next steps in conducting the peer review. Therefore we hope to have your feedback by early next week.

Thanks in advance for your continued input.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Burneson, Eric
Sent: Tuesday, August 08, 2017 7:29 PM
To: 'Kim, Jim H. EOP/OMB' <Ex. 6 Personal Privacy (PP)>; Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Cc: Schwab, Margo EOP/OMB <Ex. 6 Personal Privacy (PP)>; Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)>; Laity, Jim A. EOP/OMB <Ex. 6 Personal Privacy (PP)>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>
Subject: RE: Perchlorate charge

Jim:
Thanks very much for your comments on the draft peer review charge. We have incorporated your input in the revised draft charge document (dated 8-8-17)that will soon be distributed to Inter Agency partners. To assist your understanding in how we incorporated your edits we have also prepared the attached response document for your consideration.

Thanks again for your helpful input.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Kim, Jim H. EOP/OMB Ex. 6 Personal Privacy (PP)
Sent: Monday, August 07, 2017 3:45 PM

To: Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Cc: Schwab, Margo EOP/OMB <Ex. 6 Personal Privacy (PP)>; Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)>; Laity, Jim A. EOP/OMB <Ex. 6 Personal Privacy (PP)>
Subject: Perchlorate charge

Hi Caryn, Eric and Lynn,

Thank you for your patience as we worked on this. Attached is a version of the charge with our suggestions in tracked changes. Please let me know if you have any questions.

Best regards,
Jim

James Kim, Ph.D., DABT
Office of Management and Budget
202-395-3085
Ex. 6 Personal Privacy (PP)

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 6/4/2020 9:05:32 PM
To: Khera, Rajiv [Khera.Rajiv@epa.gov]; Hernandez-Quinones, Samuel [hernandez.samuel@epa.gov]
CC: McLain, Jennifer L. [Mclain.Jennifer@epa.gov]
Subject: FW: EO12866: OMB Comments on Perchlorate Notice
Attachments: EO12866 EPA Perchlorate Rule (OMB 06-04-20).docx

FYI

From: Dorjets, Vlad EOP/OMB [i Ex. 6 Personal Privacy (PP)
Sent: Thursday, June 04, 2020 5:00 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Parikh, Pooja <Parikh.Pooja@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: EO12866: OMB Comments on Perchlorate Notice

Eric,

As promised, attached please find OMB's comments on the perchlorate notice. Please don't hesitate to let me know if you have any questions. Especially, if you have any questions / concerns about how to characterize the role that cost benefit analysis played in the Administrator's decision in light of this afternoon's call. I'm sure you can guess where my office would stand on the matter.

Vlad

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 7/10/2017 3:36:31 PM
To: Muellerleile, Caryn [Muellerleile.Caryn@epa.gov]
Subject: RE: briefings on OW actions

Caryn:
Per our discussion the docket contains the draft BBDR report and the peer review report on that draft document.
https://www.regulations.gov/docket?D=EPA-HQ-OW-2016-0439

From: Muellerleile, Caryn
Sent: Monday, July 10, 2017 10:48 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Subject: FW: briefings on OW actions

From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]
Sent: Friday, July 07, 2017 10:44 AM
To: Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>
Cc: Nurse, Leanne <Nurse.Leanne@epa.gov>; James_H_Kim [Ex. 6 Personal Privacy (PP)] Schwab, Margo EOP/OMB <[Ex. 6 Personal Privacy (PP)]
Subject: RE: briefings on OW actions

Adding Margo to this chain because I accidentally omitted her from my original email. We'll get back to you as soon.

From: Muellerleile, Caryn [mailto:Muellerleile.Caryn@epa.gov]
Sent: Friday, July 7, 2017 10:09 AM
To: Dorjets, Vlad EOP/OMB <[Ex. 6 Personal Privacy (PP)]
Cc: Nurse, Leanne <Nurse.Leanne@epa.gov>; Kim, Jim H. EOP/OMB <[Ex. 6 Personal Privacy (PP)]>; Kim, Jim H. EOP/OMB <[Ex. 6 Personal Privacy (PP)]
Subject: RE: briefings on OW actions

Hello,

Additional update. EPA plans to provide the briefing presentation and draft charge questions prior to the meeting as we did for the first round. We agree that it would be helpful for everyone to have these a few days ahead of time. Below is our proposed agenda:

- Perchlorate BBDR Model Peer Review Outcome
  - Reviewers response to charge
  - EPA's actions on peer review recommendations
- Overview of Revisions to the BBDR Model
- MCLG Approaches
- Next Steps

Alternate suggested dates for the meeting: July 18 from 2-3pm or July 19 from 3-4pm. Let me know if either of these work for you.

Caryn Muellerleile

Regulatory Management Division
Office of Policy
US Environmental Protection Agency
1200 Pennsylvania Ave NW (1803A)
Washington, DC 20460
(202) 564-2855
muellerleile.caryn@epa.gov

From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)
Sent: Thursday, July 06, 2017 3:23 PM
To: Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>
Cc: Nurse, Leanne <Nurse.Leanne@epa.gov>; James_H_Kim@ Ex. 6 Personal Privacy (PP)
Subject: RE: briefings on OW actions

Caryn,

Thanks for setting up the meeting for Monday. I was getting ready to send out an invitation to interagency reviewers when I realized three things: First, I'm worried that we may be giving Agencies too little time to identify and invite the appropriate people (especially with tomorrow being Friday). Second, even if the right people are able to participate in the call, they won't have much time to review the briefing material. Third, I think there is still some confusion about exactly what material EPA plans to provide in advance of the call and even what the briefing will cover. Can you please let me know whether you plan to provide OMB and reviewers with the draft BBDR model report or the draft MCLG approach report? We think it would be of great value to allow people to review those reports prior to the call so that they can ask more informed questions. Along, similar lines could you please confirm that EPA plans to discuss the comments it received to the BBDR model and the changes made to the model in addition to the MCLG report?

I think that reviewers need at least several days (if not a week) to review the report(s) so if you can get those to me today to circulate we can set up the briefing for late next week. What do you think? Happy to discuss by phone if you think that's easier.

Vlad

From: Muellerleile, Caryn [mailto:Muellerleile.Caryn@epa.gov]
Sent: Wednesday, July 5, 2017 1:47 PM
To: Schwab, Margo EOP/OMB <Ex. 6 Personal Privacy (PP)>; Dorjets, Vlad EOP/OMB
Ex. 6 Personal Privacy (PP)
Cc: Nurse, Leanne <Nurse.Leanne@epa.gov>
Subject: RE: briefings on OW actions

Hello,

I'm seeking to set up another meeting day/time with you all and others (DOD, NASA, etc) to discuss EPA's peer review materials for perchlorate. Do any of the following days/times work for you?

Mon. 7/10 from 10-11 or 2-3
Wed. 7/12 from 10-11

Also, would you like to forward EPA's invitation or would you prefer to send me the names of other federal invitees?

thank you,
Caryn

Caryn Muellerleile
Regulatory Management Division
Office of Policy
US Environmental Protection Agency
1200 Pennsylvania Ave NW (1803A)
Washington, DC 20460
(202) 564-2855
muellerleile.caryn@epa.gov

From: Schwab, Margo EOP/OMB [Ex. 6 Personal Privacy (PP)]
Sent: Thursday, June 15, 2017 5:09 PM
To: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)>; Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>
Cc: Nurse, Leanne <Nurse.Leanne@epa.gov>
Subject: RE: briefings on OW actions

The following time works for us. Please send us both an invite with a call in number. Thank you!
6/29/17 (Thurs) 3-4

From: Dorjets, Vlad EOP/OMB
Sent: Thursday, June 15, 2017 4:11 PM
To: Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>
Cc: Nurse, Leanne <Nurse.Leanne@epa.gov>; Schwab, Margo EOP/OMB <Ex. 6 Personal Privacy (PP)>
Subject: Re: briefings on OW actions

Caryn,

I am out of the office until Tuesday so please work with Margo to set up the peer review briefing.

Thanks,

Vlad

Sent from my iPhone

On Jun 15, 2017, at 7:58 AM, Muellerleile, Caryn <Muellerleile.Caryn@epa.gov> wrote:

> Hello Vlad,
>
> I am coordinating another OW briefing on perchlorate peer review. OW has a tight timeline due to a deadline (explanation in blue text further below).
>
> We have the following date & time suggestions for this briefing:

- 6/29/17 (Thurs) 11-12 or 3-4
- 6/30/17 (Fri) 9-10
- 7/3/17 (Mon) 10-11 or 11-12

Please let me know if you have questions or alternate suggestions. OW is working on materials to share with interagency partners for this briefing.

Thank you,
Caryn
202-564-2855

> The perchlorate SDWA action has deadlines that are established under a consent decree. The first consent decree deadline is for completion of the expert peer review by October 18, 2017 of materials to inform EPA's SDWA action on perchlorate. While this is a unenforceable date, the EPA would need to file a letter with the court explaining why we did not meet the deadline. The consent decree also established enforceable deadlines of October 2018 for a proposal and December 2019 for final. Delay in completing the expert peer review will severely limit the timeframe for EPA to develop a proposal.

From: Dorjets, Vlad Ex. 6 Personal Privacy (PP)
Sent: Wednesday, June 15, 2016 11:03 AM
To: Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>
Subject: RE: briefings on OW actions

Thanks for setting this up. I need to coordinate with some other folks over here and will get back to you.

From: Muellerleile, Caryn [mailto:Muellerleile.Caryn@epa.gov]
Sent: Tuesday, June 14, 2016 5:01 PM
To: Dorjets, Vlad <Ex. 6 Personal Privacy (PP)
Subject: RE: briefings on OW actions

Hello Vlad,

Regarding the Perchlorate peer review activities briefing with OW, a few date/time offerings:

Monday, June 20 @ 2:00 p.m.
Wed., June 22 @ 9:00 a.m.
Thurs, June 30 @ 2 p.m. or 3 p.m.

Caryn Muellerleile
Regulatory Management Division
Office of Policy
US Environmental Protection Agency
1200 Pennsylvania Ave NW (1803A)
Washington, DC 20460
(202) 564-2855
muellerleile.caryn@epa.gov

From: Dorjets, Vlad [Ex. 6 Personal Privacy (PP)
Sent: Tuesday, June 07, 2016 3:09 PM
To: Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>
Subject: RE: briefings on OW actions

Thanks for checking. I actually don't remember what prompted my request for a breifing on stormwater but I'm sure there was a reason. I can definitely confirm the other two. Also, I sent a request to Nicole this morning for yet another briefing. I'll forward that email you right away.

From: Muellerleile, Caryn [mailto:Muellerleile.Caryn@epa.gov]
Sent: Tuesday, June 07, 2016 3:05 PM
To: Dorjets, Vlad Ex. 6 Personal Privacy (PP)
Subject: briefings on OW actions

Hello Vlad,

Just checking in, as I understand there have been various requests on informational briefings on OW topics and I don't want to lose track of them all.

1) The Forest Roads update is scheduled for next Tuesday, 6/14 at 3:15. I hope that one still works for you.
2) Stormwater (overall status update) was something you requested during Reg Agenda review. I will schedule that in the near future, unless your request has changed in any way.
3) Peer review in perchlorate (ground water/drinking water). This one just came in to me from Nicole, but I can't schedule yet as many OW staff are out an SES conference. For this one, I hope to discuss potential schedule options with you next week.

Is there anything else I'm missing? Also, we will soon be sending another list of requests of non-significance for various OW rules, but that is not quite ready yet. At that time there may be additional questions or potential briefings to schedule.

Thank you,
Caryn

Caryn Muellerleile
Regulatory Management Division
Office of Policy
US Environmental Protection Agency
1200 Pennsylvania Ave NW (1803A)
Washington, DC 20460
(202) 564-2855
muellerleile.caryn@epa.gov

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 6/4/2020 4:04:25 PM
To: McLain, Jennifer L. [Mclain.Jennifer@epa.gov]
Subject: RE: Perchlorate

4:00 today. I can forward the invite if you would like to participate.

From: McLain, Jennifer L.
Sent: Thursday, June 04, 2020 12:03 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>; Parikh, Pooja <Parikh.Pooja@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>; Rodgers-Jenkins, Crystal <Rodgers-Jenkins.Crystal@epa.gov>
Subject: RE: Perchlorate

Good news. What time is your call?

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Thursday, June 4, 2020 11:42 AM
To: McLain, Jennifer L. <McLain.Jennifer@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>; Parikh, Pooja <Parikh.Pooja@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>; Rodgers-Jenkins, Crystal <Rodgers-Jenkins.Crystal@epa.gov>
Subject: FW: Perchlorate

FYI: regarding the status of OMB review.

From: Dorjets, Vlad EOP/OMB Ex. 6 Personal Privacy (PP)
Sent: Thursday, June 04, 2020 10:50 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>
Subject: Perchlorate

Eric – Both HHS and DOD let me know this morning that they don't have any comments on the perchlorate notice. I'll wait for this afternoon's call in case I want to capture anything we hear in OMB's comments but expect to send you whatever I have at some point tonight.

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 8/11/2017 7:42:37 PM
To: Olson, Daniel [Olson.Daniel@epa.gov]; Hafez, Ahmed [Hafez.Ahmed@epa.gov]; Christ, Lisa [Christ.Lisa@epa.gov]; Johnson, Ann [Johnson.Ann@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]
CC: Behl, Betsy [Behl.Betsy@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]
Subject: FW: Perchlorate charge
Attachments: DRAFT MCLG Approach Charge 08-11-17.docx

From: Burneson, Eric
Sent: Friday, August 11, 2017 3:42 PM
To: 'Kim, Jim H. EOP/OMB' <Ex. 6 Personal Privacy (PP)>; 'Dorjets, Vlad EOP/OMB' <Ex. 6 Personal Privacy (PP)>
Cc: 'Schwab, Margo EOP/OMB' <Ex. 6 Personal Privacy (PP)>; 'Laity, Jim A. EOP/OMB' <Ex. 6 Personal Privacy (PP)>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Subject: RE: Perchlorate charge

Vlad and Jim:
Thank you for helping to facilitate a constructive meeting with our Federal partners this week on the perchlorate peer review. We believe that the input we received from you and our Federal partners has helped us to communicate more clearly about our analysis and the critical assumptions, strengths and limitations.

Attached is a revised draft charge that responds to the concerns identified in our discussion on Wednesday. In preparing the attached revisions, we tried to better organize the issues and break down complex charge questions into more direct questions. Prior to distribution to the other Federal Agencies, we ask that you review the attached charge and let us know if you have any suggestions for better addressing the identified concerns.

Our goal is to have input from the other Federal Agencies by Friday, August 18th so that we can move forward with the next steps in conducting the peer review. Therefore we hope to have your feedback by early next week.

Thanks in advance for your continued input.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Burneson, Eric
Sent: Tuesday, August 08, 2017 7:29 PM
To: 'Kim, Jim H. EOP/OMB' <Ex. 6 Personal Privacy (PP)>; Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Cc: Schwab, Margo EOP/OMB <Ex. 6 Personal Privacy (PP)>; Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)>; Laity, Jim A. EOP/OMB <Ex. 6 Personal Privacy (PP)>; Grevatt, Peter

<Grevatt.Peter@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>
Subject: RE: Perchlorate charge

Jim:
Thanks very much for your comments on the draft peer review charge. We have incorporated your input in the revised draft charge document (dated 8-8-17)that will soon be distributed to Inter Agency partners. To assist your understanding in how we incorporated your edits we have also prepared the attached response document for your consideration.

Thanks again for your helpful input.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Kim, Jim H. EOP/OMB [Ex. 6 Personal Privacy (PP)
Sent: Monday, August 07, 2017 3:45 PM
To: Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Cc: Schwab, Margo EOP/OMB < Ex. 6 Personal Privacy (PP) >; Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]; Laity, Jim A. EOP/OMB [Ex. 6 Personal Privacy (PP)]
Subject: Perchlorate charge

Hi Caryn, Eric and Lynn,

Thank you for your patience as we worked on this. Attached is a version of the charge with our suggestions in tracked changes. Please let me know if you have any questions.

Best regards,
Jim

James Kim, Ph.D., DABT
Office of Management and Budget
202-395-3085
[Ex. 6 Personal Privacy (PP)]

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 7/17/2017 4:26:34 PM
To: Bussard, David [Bussard.David@epa.gov]; Flowers, Lynn [Flowers.Lynn@epa.gov]; Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Schlosser, Paul [Schlosser.Paul@epa.gov]; Lavoie, Emma [Lavoie.Emma@epa.gov]
Subject: FW: Perchlorate presentation slides and charge for OMB briefing tomorrow
Attachments: Perchlorate Briefing Invitees-7-18-17.docx

From: Muellerleile, Caryn
Sent: Monday, July 17, 2017 11:37 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>; Olson, Daniel <Olson.Daniel@epa.gov>; Hafez, Ahmed <Hafez.Ahmed@epa.gov>
Cc: Huff, Lisa <Huff.Lisa@epa.gov>; Schuck, Tracey <Schuck.Tracey@epa.gov>
Subject: RE: Perchlorate presentation slides and charge for OMB briefing tomorrow

Also attaching a list of the people who have been invited to tomorrow's meeting.

Caryn

From: Muellerleile, Caryn
Sent: Friday, July 14, 2017 8:54 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>; Olson, Daniel <Olson.Daniel@epa.gov>; Hafez, Ahmed <Hafez.Ahmed@epa.gov>
Cc: Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Perchlorate presentation slides and charge for OMB briefing tomorrow

I just received the attached from Vlad – sorry that I didn't get these too you sooner.

Caryn Muellerleile
Regulatory Management Division
Office of Policy
US Environmental Protection Agency
1200 Pennsylvania Ave NW (1803A)
Washington, DC 20460
(202) 564-2855
muellerleile.caryn@epa.gov

From: Burneson, Eric
Sent: Friday, July 14, 2017 8:52 AM
To: Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Olson, Daniel <Olson.Daniel@epa.gov>; Hafez, Ahmed <Hafez.Ahmed@epa.gov>
Cc: Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Perchlorate presentation slides and charge for OMB briefing tomorrow

Caryn:

Attached please find a new presentation for use at next week's meeting and the draft charge (unchanged from the last version you had). Please forward these materials to our Federal partners in advance of the meeting on Tuesday. Thanks for your assistance in setting up the discussion.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Muellerleile, Caryn
Sent: Monday, July 10, 2017 2:51 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>; Olson, Daniel <Olson.Daniel@epa.gov>; Hafez, Ahmed <Hafez.Ahmed@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>
Subject: FW: Perchlorate presentation slides and charge for OMB briefing tomorrow

Just checking in – will you have updated versions of these materials to share for the 7/18 meeting? I've been asked when those will be distributed.

Caryn
564-2855

From: Christ, Lisa
Sent: Wednesday, June 28, 2017 4:39 PM
To: Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>; Olson, Daniel <Olson.Daniel@epa.gov>; Hafez, Ahmed <Hafez.Ahmed@epa.gov>
Subject: Perchlorate presentation slides and charge for OMB briefing tomorrow

Hi Caryn,
Attached is the slide deck for the perchlorate briefing and the draft charge for discussion.
Let me know if you need anything else.
Lisa

Appointment

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 6/4/2020 12:36:15 PM
To: Wehling, Carrie [Wehling.Carrie@epa.gov]

Subject: FW: Call w/ DOJ re Perchlorate
Location: Ex. 6 Personal Privacy (PP)

Start: 6/4/2020 8:00:00 PM
End: 6/4/2020 9:00:00 PM
Show Time As: Tentative

-----Original Appointment-----
From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)
Sent: Tuesday, June 02, 2020 2:14 PM
To: Dorjets, Vlad EOP/OMB; Burneson, Eric; Parikh, Pooja; Christ, Lisa; Johnson, Ann
Subject: Call w/ DOJ re Perchlorate
When: Thursday, June 04, 2020 4:00 PM-5:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Ex. 6 Personal Privacy (PP)

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 7/27/2017 7:21:28 PM
To: Muellerleile, Caryn [Muellerleile.Caryn@epa.gov]; Johnson, Ann [Johnson.Ann@epa.gov]; Flowers, Lynn [Flowers.Lynn@epa.gov]; Bussard, David [Bussard.David@epa.gov]; Grevatt, Peter [Grevatt.Peter@epa.gov]; Mclain, Jennifer [Mclain.Jennifer@epa.gov]
CC: Olson, Daniel [Olson.Daniel@epa.gov]; Hafez, Ahmed [Hafez.Ahmed@epa.gov]
Subject: FW: Meeting w/ OMB on Perchlorate
Attachments: EPA Perchlorate - OMB comments 7-27-17.docx

Please see the attached confirmation of the meeting next week at OMB. Also note that they have attached a revised set of issues/questions for discussion. Lets plan to talk early next week to determine how we will respond in the meeting on Thursday.

-----Original Message-----
From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]
Sent: Thursday, July 27, 2017 3:16 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Subject: Meeting w/ OMB on Perchlorate

Eric,

We're all set to meet over here next Thursday, August 3rd, at 4:00 to discuss perchlorate. The meeting will take place in our new offices on the 9th floor of NEOB (Conference Room 9258). Please enter the names of whomever you think may attend in the link below by COB Tuesday.

Ex. 6 Personal Privacy (PP)

I have attached our comments/questions to help inform your agenda and our discussion in general. Note that these comments are very similar to the ones we sent you after our initial phone call. We understand that you have already answered/addressed some of these questions but we thought it might be helpful to go over them one more time so that we can be clear of your response.

Please don't hesitate to let me know if you have any questions about the attached list.

Vlad

Appointment

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 7/24/2017 10:00:03 PM
To: Mclain, Jennifer [Mclain.Jennifer@epa.gov]

Subject: Perchlorate
Location: Call OMB

Start: 7/25/2017 9:00:00 PM
End: 7/25/2017 9:30:00 PM
Show Time As: Tentative

From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)
Sent: Monday, July 24, 2017 5:38 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Subject: RE: Perchlorate

Nothing urgent but appreciate the offer. Is 5:00 (or around then) too late for us to speak?

-----Original Message-----
From: Burneson, Eric [mailto:Burneson.Eric@epa.gov]
Sent: Monday, July 24, 2017 5:35 PM
To: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]
Subject: RE: Perchlorate

Yes Vlad I would suggest a conversation after 3:30 since I am meeting with folks tomorrow morning and early afternoon to see what options we have for moving forward and addressing concerns. However if you have a more urgent need to discuss I am also available at 10:30 or 1:00.

Eric Burneson, P.E.
Director of Standards and Risk Management Office of Ground Water and Drinking Water U.S. Environmental Protection Agency
202 564 5250

-----Original Message-----
From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]
Sent: Monday, July 24, 2017 5:28 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Subject: Perchlorate

Eric - I'm back in the office and trying to get caught up on perchlorate. I've already spoken with Jim K. about last week's briefing but am a little confused about next steps. Do you (or somebody in your office) have a couple minutes to chat tomorrow?

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 7/24/2017 5:59:52 PM
To: Huff, Lisa [Huff.Lisa@epa.gov]
CC: Olson, Daniel [Olson.Daniel@epa.gov]; Hafez, Ahmed [Hafez.Ahmed@epa.gov]; Hernandez-Quinones, Samuel [hernandez.samuel@epa.gov]
Subject: FW: FDA/CFSAN review of EPA charge questions
Attachments: DRAFT MCLG Approach Charge 06-01-17 Combined CFSAN comments.docx

See attached.

From: Kluever, April [mailto:April.Kluever@fda.hhs.gov]
Sent: Friday, July 21, 2017 3:06 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>; James_H_Kim@omb.eop.gov
Cc: Abt, Eileen <Eileen.Abt@fda.hhs.gov>; Kabadi, Shruti <Shruti.Kabadi@fda.hhs.gov>; Dinovi, Michael J <Michael.Dinovi@fda.hhs.gov>; Suzanne_Fitzpatrick <Suzanne.Fitzpatrick@fda.hhs.gov>
Subject: FDA/CFSAN review of EPA charge questions

Hi Eric and Jim,

Please find the combined comments from FDA/CFSAN on the EPA charge questions for the 2nd perchlorate peer review. Thank you for the opportunity to comment on the charge and questions.

Thank you,

April

April Neal Kluever, Ph.D., D.A.B.T.
Toxicologist

Center for Food Safety and Applied Nutrition (CFSAN)
Office of Food Additive Safety (OFAS)
Division of Food Contact Notifications (DFCN)
U.S. Food and Drug Administration
5001 Campus Drive, HFS 275
College Park, MD 20740
Tel: 240-402-1225
April.kluever@fda.hhs.gov

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 7/24/2017 5:59:16 PM
To: Kluever, April [April.Kluever@fda.hhs.gov]
Subject: RE: FDA/CFSAN review of EPA charge questions

Thank you for this input April.

From: Kluever, April [mailto:April.Kluever@fda.hhs.gov]
Sent: Friday, July 21, 2017 3:06 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>; James_H_Kim Ex. 6 Personal Privacy (PP)
Cc: Abt, Eileen <Eileen.Abt@fda.hhs.gov>; Kabadi, Shruti <Shruti.Kabadi@fda.hhs.gov>; Dinovi, Michael J <Michael.Dinovi@fda.hhs.gov>; Suzanne_Fitzpatrick <Suzanne.Fitzpatrick@fda.hhs.gov>
Subject: FDA/CFSAN review of EPA charge questions

Hi Eric and Jim,

Please find the combined comments from FDA/CFSAN on the EPA charge questions for the 2nd perchlorate peer review. Thank you for the opportunity to comment on the charge and questions.

Thank you,

April

April Neal Kluever, Ph.D., D.A.B.T.
Toxicologist

Center for Food Safety and Applied Nutrition (CFSAN)
Office of Food Additive Safety (OFAS)
Division of Food Contact Notifications (DFCN)
U.S. Food and Drug Administration
5001 Campus Drive, HFS 275
College Park, MD 20740
Tel: 240-402-1225
April.kluever@fda.hhs.gov

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 5/23/2019 2:49:22 PM
To: Messier, Dawn [Messier.Dawn@epa.gov]
CC: Wehling, Carrie [Wehling.Carrie@epa.gov]
Subject: RE: perchlorate

Can I interpret this as OGC concurrence?

From: Messier, Dawn
Sent: Thursday, May 23, 2019 9:53 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: perchlorate

I'm fine with both.

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

From: Messier, Dawn
Sent: Thursday, May 23, 2019 9:51 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: perchlorate

FRN all good.

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

From: Burneson, Eric
Sent: Thursday, May 23, 2019 9:45 AM
To: Messier, Dawn <Messier.Dawn@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: FW: perchlorate

Please review ASAP and let me know if there are any show stoppers

From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]
Sent: Thursday, May 23, 2019 9:43 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: perchlorate

Final edits.

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 4/22/2019 1:54:26 PM
To: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
CC: Christ, Lisa [Christ.Lisa@epa.gov]; Huff, Lisa [Huff.Lisa@epa.gov]
Subject: RE: Proposed Perchlorate NPDWR

Sam
There seems to be something going on with the formatting of the TSD. After Section 7 it seems to only include 2 lines per page

Can you take a look and see if there is a formating glitch?
Thanks
Eric

From: Hernandez-Quinones, Samuel
Sent: Monday, April 22, 2019 9:22 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Hi Eric,

Attached you will find the revised MCLG Derivation TSD document and the proposed Slides for the upcoming Thursday Meeting. I am working on revising the Occurrence document and will have it ready by COB today.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Burneson, Eric
Sent: Monday, April 22, 2019 8:45 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: FW: Proposed Perchlorate NPDWR

Sam:
Can we connect today to discuss the status of documents that we need to get to OMB.

I believe we owe them the
MCLG report,
the slide presentation and now

the Occurrence and Monitoring document.
Thanks in advance

From: Christ, Lisa
Sent: Sunday, April 21, 2019 11:51 AM
To: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Nickerson, William <Nickerson.William@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Vlad,
The HRRCA has not been publicly released as all of the support documents for the proposal are still draft. We sent the draft HRRCA at the same time the proposal was sent to OMB. I'm attaching it again here with the proposal.
Lisa

From: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)>
Sent: Friday, April 19, 2019 1:37 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Sam – One more request. I'm seeing lots of references in HRRCA to EPA's *Perchlorate Occurrence and Monitoring Report* dated 2018 (so assume it's been released already) but it does not come up in a Google search and is not included among the other key Perchlorate documents on your website. Could you please sent that to me too?

From: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Sent: Friday, April 19, 2019 12:58 PM
To: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Hi Vlad,

I just noticed that I inadvertently provided an earlier version of Volume I which Eric forwarded to you. Attached is a revised version of Volume 1 which incorporates minor editorial changes to the document. Sorry for the inconvenience.

Also, in response to your request I am attaching Volumes 2 and 3 of the Report.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]
Sent: Friday, April 19, 2019 12:01 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Eric/Lisa – Could you please share Volumes II and III?

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Wednesday, April 17, 2019 4:23 PM
To: Dorjets, Vlad EOP/OMB <[Ex. 6 Personal Privacy (PP)]
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Vlad:
We can provide the requested support documents. The first document has been shared previously with many of the other Federal Agencies (see my email to Jim Kim on July 11, 2018) but we are happy to share this document again. It is attached to this email. The second document is currently under revision to incorporate some of the modifications we made just prior to submitting the proposed NPDWR. We expect to be able to send this document early next week.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Dorjets, Vlad EOP/OMB <[Ex. 6 Personal Privacy (PP)]
Sent: Tuesday, April 16, 2019 3:54 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Eric,

Kevin Bromberg has apparently already skimmed (if not actually read) the NPRM and is requesting two documents referenced in the preamble: the "proposed approaches to inform the derivation of a maximum contaminant level goal for perchlorate in drinking water" (reference 2018d) and the TSD (reference 2018e). Could you please let me know the status of these two documents? In case they're not currently available or will not be available soon it would help me to understand what they documents do and do not contain.

Vlad

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Tuesday, April 16, 2019 1:10 PM
To: Dorjets, Vlad EOP/OMB <[Ex. 6 Personal Privacy (PP)]
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>
Subject: Proposed Perchlorate NPDWR

Vlad
Thanks for touching base regarding the perchlorate proposed drinking water regulation. As we discussed I have blocked time on April 25 at 3:00 pm for a briefing to the other Federal Agency's on the perchlorate proposal. We will send an updated presentation to you early next week for distribution to the other Agency partners. I am assuming this will be a teleconference but let me know if you or other Federal partners would be interested in coming to EPA Offices for the meeting and I can book a larger room for the discussion.
As I mentioned I will be out of the office Thursday and Friday this week but if you have questions about the draft proposal you can contact Lisa Christ in my absence. Lisa's number is 202 564 8354.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 10/8/2019 8:29:19 PM
To: Joe Tiago (Tiago.Joseph@epa.gov) [Tiago.Joseph@epa.gov]
CC: Mclain, Jennifer [Mclain.Jennifer@epa.gov]
Subject: FW: FRN
Attachments: EO 12866 CLEAN LCRR NPRM 10-8-19.docx

Importance: High

Per Jennifer's request attached is the latest FRN version. Note that OMB has not yet cleared this action.

From: Flaharty, Stephanie
Sent: Tuesday, October 08, 2019 11:24 AM
To: Evalenko, Sandy <Evalenko.Sandy@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Helm, Erik <Helm.Erik@epa.gov>; Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: FRN
Importance: High

Sandy, please send this to the OP FR team for their review! I'm placing a request for publication of the notice on October 24, 2019.

Many thanks,
Steph

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Tuesday, October 8, 2019 11:19 AM
To: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Helm, Erik <Helm.Erik@epa.gov>; Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: FW: When you have a moment

Stephanie:
Per the suggestion below from Mary and Bill, can you please transmit the attached Draft FRN to EPA's OFR office with a request for an expedited review and request an expedited publication date of 10/24. We should note that the document is not yet cleared or signed but that we expect clearance and signature by Thursday.
Eric

From: Manibusan, Mary
Sent: Tuesday, October 08, 2019 10:51 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>
Subject: RE: When you have a moment

Hi Eric,

The perchlorate proposal was received by OP on May 24th and the FRN was submitted to OFR on June 10th with comments and responses delaying the publication until June 26th. With the size of the FRN being 300 pages in length, I would advise sending the document to OFR ASAP, with a request for an expedited review and publication date. As Bill indicated, it is at the discretion of OFR to grant/deny the request, but it will at least flag it as a priority. And as with the

proposal, I would anticipate comments from OFR prior to publication. Please let me know if you have additional questions.

Mary

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Tuesday, October 8, 2019 10:07 AM
To: Nickerson, William <Nickerson.William@epa.gov>
Cc: Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: RE: When you have a moment

Thanks Bill
On 3 we are remembering a one month lag between signature (May 23)and FRN publication (June 26) of the perchlorate proposal which we understood was due to delays in transmitting to OFR. Given the Administrator's aggressive schedule for a final rule (he had us put January in the Reg Agenda) we need to do everything we can to expedite. I realize this may not be sufficient for the OFR but I guess I am checking on what we can do to get this in their queue for publication ASAP. Note that the FRN is over 300 pages in length.
Eric

From: Nickerson, William
Sent: Tuesday, October 08, 2019 9:17 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: RE: When you have a moment

I assume 1 and 2 are inevitable.

On 3, we can quickly transmit to OFR and expeditiously deal with any edits that come back. Are you looking for something more than that? It is possible to send a package to OFR with a request to expedite, but OFR is pretty strict about offering a good reason for that (because it's important isn't enough).

Copying Mary in case she has been in contact with OW WPS already on this.

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Monday, October 07, 2019 6:33 PM
To: Nickerson, William <Nickerson.William@epa.gov>
Subject: When you have a moment

Bill
I need to check in with you about

1. expedited loading of the final FRN /EA in to ROCIS for the LCRR and
2. expedited processing of the FRN for Autopen signature in time for Thursday's rollout by the Administrator
3. expedited FRN processing following Administrator's signature to assure we don't have a significant lag before publication.

Perhaps the OW WPS staff have already worked this through but I wanted to be certain its on OP's radar.
Can we talk in the morning?
Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 4/22/2019 4:18:19 PM
To: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
CC: Christ, Lisa [Christ.Lisa@epa.gov]; Huff, Lisa [Huff.Lisa@epa.gov]
Subject: RE: Proposed Perchlorate NPDWR
Attachments: Perchlorate Interagency Brief 4-25-19.pptx

Sam: Thank you. I made some additional changes to slide 7 in the attached. I will send these slides along with the TSD to Vlad shortly.

From: Hernandez-Quinones, Samuel
Sent: Monday, April 22, 2019 10:25 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Hi Eric,

Attached are the revised slides. I also was able to fix the formatting issue with the MCLG TSD document, let me know if this version works for you.

Thanks
Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Burneson, Eric
Sent: Monday, April 22, 2019 9:58 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Sam for slides 8 and 10 can we change the order of the presentation to have the proposed 2 IQ point decrement in the middle?

From: Hernandez-Quinones, Samuel
Sent: Monday, April 22, 2019 9:22 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Hi Eric,

Attached you will find the revised MCLG Derivation TSD document and the proposed Slides for the upcoming Thursday Meeting. I am working on revising the Occurrence document and will have it ready by COB today.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Burneson, Eric
Sent: Monday, April 22, 2019 8:45 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: FW: Proposed Perchlorate NPDWR

Sam:
Can we connect today to discuss the status of documents that we need to get to OMB.

I believe we owe them the
MCLG report,
the slide presentation and now
the Occurrence and Monitoring document.
Thanks in advance

From: Christ, Lisa
Sent: Sunday, April 21, 2019 11:51 AM
To: Dorjets, Vlad EOP/OMB [**Ex. 6 Personal Privacy (PP)**]; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Nickerson, William <Nickerson.William@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Vlad,
The HRRCA has not been publicly released as all of the support documents for the proposal are still draft. We sent the draft HRRCA at the same time the proposal was sent to OMB. I'm attaching it again here with the proposal.
Lisa

From: Dorjets, Vlad EOP/OMB [**Ex. 6 Personal Privacy (PP)**]
Sent: Friday, April 19, 2019 1:37 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Sam – One more request. I'm seeing lots of references in HRRCA to EPA's *Perchlorate Occurrence and Monitoring Report* dated 2018 (so assume it's been released already) but it does not come up in a Google search and is not included among the other key Perchlorate documents on your website. Could you please sent that to me too?

From: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Sent: Friday, April 19, 2019 12:58 PM
To: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Hi Vlad,

I just noticed that I inadvertently provided an earlier version of Volume I which Eric forwarded to you. Attached is a revised version of Volume 1 which incorporates minor editorial changes to the document. Sorry for the inconvenience.

Also, in response to your request I am attaching Volumes 2 and 3 of the Report.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)>
Sent: Friday, April 19, 2019 12:01 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Eric/Lisa – Could you please share Volumes II and III?

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Wednesday, April 17, 2019 4:23 PM
To: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Vlad:
We can provide the requested support documents. The first document has been shared previously with many of the other Federal Agencies (see my email to Jim Kim on July 11, 2018) but we are happy to share this document again. It is

attached to this email. The second document is currently under revision to incorporate some of the modifications we made just prior to submitting the proposed NPDWR. We expect to be able to send this document early next week.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)
Sent: Tuesday, April 16, 2019 3:54 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Eric,

Kevin Bromberg has apparently already skimmed (if not actually read) the NPRM and is requesting two documents referenced in the preamble: the "proposed approaches to inform the derivation of a maximum contaminant level goal for perchlorate in drinking water" (reference 2018d) and the TSD (reference 2018e). Could you please let me know the status of these two documents? In case they're not currently available or will not be available soon it would help me to understand what they documents do and do not contain.

Vlad

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Tuesday, April 16, 2019 1:10 PM
To: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>
Subject: Proposed Perchlorate NPDWR

Vlad
Thanks for touching base regarding the perchlorate proposed drinking water regulation. As we discussed I have blocked time on April 25 at 3:00 pm for a briefing to the other Federal Agency's on the perchlorate proposal. We will send an updated presentation to you early next week for distribution to the other Agency partners. I am assuming this will be a teleconference but let me know if you or other Federal partners would be interested in coming to EPA Offices for the meeting and I can book a larger room for the discussion.
As I mentioned I will be out of the office Thursday and Friday this week but if you have questions about the draft proposal you can contact Lisa Christ in my absence. Lisa's number is 202 564 8354.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 5/20/2019 10:07:50 PM
To: Christ, Lisa [Christ.Lisa@epa.gov]; Huff, Lisa [Huff.Lisa@epa.gov]
CC: Hernandez-Quinones, Samuel [hernandez.samuel@epa.gov]; Khera, Rajiv [Khera.Rajiv@epa.gov]; Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Messier, Dawn [Messier.Dawn@epa.gov]
Subject: FW: DOD Comments on Perchlorate NPRM
Attachments: Draft Perchlorate HRRCA 2019-05-15 revised per OMB commentsDoD response.docx

From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]
Sent: Monday, May 20, 2019 5:12 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Nickerson, William <Nickerson.William@epa.gov>
Subject: DOD Comments on Perchlorate NPRM

DOD's comments attached.

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 5/23/2019 2:28:54 PM
To: Christ, Lisa [Christ.Lisa@epa.gov]; Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]; Khera, Rajiv [Khera.Rajiv@epa.gov]
CC: Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Messier, Dawn [Messier.Dawn@epa.gov]
Subject: RE: perchlorate

Got it. I am sending the accepted changes versions of these to OP for loading into ROCIS. Sam Please work on the clean versions with the other typo edits to get to Stephanie/Sandy and Joe

From: Christ, Lisa
Sent: Thursday, May 23, 2019 10:26 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>
Cc: Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>
Subject: RE: perchlorate

There's a typo on the first page …
ENVI RONMENTAL
Also a hyper link in the reference for USEPA 2003 CCL for Aldrin & Dieldrin

From: Hernandez-Quinones, Samuel
Sent: Thursday, May 23, 2019 10:18 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>
Cc: Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>
Subject: RE: perchlorate

Revised FRN with responses attached.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Burneson, Eric
Sent: Thursday, May 23, 2019 10:06 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>
Subject: RE: perchlorate

Attached please find my draft responses.
Sam please verify the acceptance of edits on the FRN and insert the footnote on the benefits uncertainty table.
Rajiv please verify my edit to the benefits dietary consumption and let Sam and I know if there are further edits required

---

From: Burneson, Eric
Sent: Thursday, May 23, 2019 9:44 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>; Hernandez-Quinones, Samuel <hernandez.samuel@epa.gov>
Cc: Mclain, Jennifer <Mclain.Jennifer@epa.gov>
Subject: FW: perchlorate

Please review ASAP and let me know if there are any show stoppers

---

From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]
Sent: Thursday, May 23, 2019 9:43 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: perchlorate

Final edits.

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 5/22/2019 4:38:21 PM
To: Johnson, Ann [Johnson.Ann@epa.gov]; Christ, Lisa [Christ.Lisa@epa.gov]
Subject: RE: NASA Comments on Perchlorate
Attachments: EPA response NASA comments.docx

Thanks all here is the revised I am going to send

From: Johnson, Ann
Sent: Wednesday, May 22, 2019 12:28 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: RE: NASA Comments on Perchlorate

(I realize that we don't want to make specific promises with respect to review of the final rule given the deadline….)

From: Johnson, Ann
Sent: Wednesday, May 22, 2019 12:26 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: RE: NASA Comments on Perchlorate

Some thoughts to consider.

From: Burneson, Eric
Sent: Wednesday, May 22, 2019 11:49 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>
Subject: FW: NASA Comments on Perchlorate

If either of you have a minute I would appreciate your review of my response to the NASA comments attached. Note that I decided a point by point response would not be constructive.

From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]
Sent: Monday, May 20, 2019 1:28 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Nickerson, William <Nickerson.William@epa.gov>
Subject: NASA Comments on Perchlorate

Attached please find the comments submitted by NASA on the perchlorate NPRM. I think some sort of a response would be appropriate. Can discuss those reasons – and my thinking on this in general - by phone offline.

Appointment

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 5/20/2019 8:15:46 PM
To: Messier, Dawn [Messier.Dawn@epa.gov]

Subject: FW: EPA Perchlorate MCL NPRM
Location: Dial-in: **Ex. 6 Personal Privacy (PP)**

Start: 5/20/2019 8:00:00 PM
End: 5/20/2019 8:30:00 PM
Show Time As: Tentative

I could really use your help on this call Can you join

-----Original Appointment-----
From: Dorjets, Vlad EOP/OMB [**Ex. 6 Personal Privacy (PP)**
Sent: Monday, May 20, 2019 2:19 PM
To: Dorjets, Vlad EOP/OMB; eric.t.gormsen@usdoj.gov; Oakes, Matthew (ENRD); Eric.Hostetler@usdoj.gov; Nickerson, William; Burneson, Eric; Messier, Dawn
Subject: EPA Perchlorate MCL NPRM
When: Monday, May 20, 2019 4:00 PM-4:30 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Dial-in: **Ex. 6 Personal Privacy (PP)**

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 5/23/2019 2:13:33 PM
To: Messier, Dawn [Messier.Dawn@epa.gov]
CC: Wehling, Carrie [Wehling.Carrie@epa.gov]
Subject: RE: perchlorate

Thks

From: Messier, Dawn
Sent: Thursday, May 23, 2019 9:53 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: perchlorate

I'm fine with both.

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

From: Messier, Dawn
Sent: Thursday, May 23, 2019 9:51 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: perchlorate

FRN all good.

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

From: Burneson, Eric
Sent: Thursday, May 23, 2019 9:45 AM
To: Messier, Dawn <Messier.Dawn@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: FW: perchlorate

Please review ASAP and let me know if there are any show stoppers

From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)
Sent: Thursday, May 23, 2019 9:43 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: perchlorate

Final edits.

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 5/22/2019 3:48:56 PM
To: Christ, Lisa [Christ.Lisa@epa.gov]; Johnson, Ann [Johnson.Ann@epa.gov]
Subject: FW: NASA Comments on Perchlorate
Attachments: Perchlorate EO 12866 NASA Review UPDATED 05_20_2019 final.docx; EPA response to NASA comments.docx

If either of you have a minute I would appreciate your review of my response to the NASA comments attached. Note that I decided a point by point response would not be constructive.

From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]
Sent: Monday, May 20, 2019 1:28 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Nickerson, William <Nickerson.William@epa.gov>
Subject: NASA Comments on Perchlorate

Attached please find the comments submitted by NASA on the perchlorate NPRM. I think some sort of a response would be appropriate. Can discuss those reasons – and my thinking on this in general - by phone offline.

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 5/2/2019 5:04:32 PM
To: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
CC: Christ, Lisa [Christ.Lisa@epa.gov]
Subject: RE: Interagency Comments on Draft Perchlorate MCL NPRM (2 of 2)

Please ask Vlad and copy me and Bill

From: Hernandez-Quinones, Samuel
Sent: Thursday, May 02, 2019 12:52 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>
Subject: RE: Interagency Comments on Draft Perchlorate MCL NPRM (2 of 2)

Hi Eric,

As we are reviewing the comments I noticed that one of the documents submitted by CDC appears to be corrupted/Incomplete. The document titled (EPA Perchlorate MCL TSD (CDC).docx) cuts off at chapter 6, so I am unable to see any additional comments submitted on the other chapters.

Can I ask Vlad to resend that file or is it best if those are requested through you?

Thanks
Sam

==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Burneson, Eric
Sent: Tuesday, April 30, 2019 9:25 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>
Cc: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>
Subject: Fwd: Interagency Comments on Draft Perchlorate MCL NPRM (2 of 2)

Sent from my iPhone

Begin forwarded message:

> **From:** "Dorjets, Vlad EOP/OMB" Ex. 6 Personal Privacy (PP)
> **To:** "Nickerson, William" <Nickerson.William@epa.gov>
> **Cc:** "Burneson, Eric" <Burneson.Eric@epa.gov>
> **Subject: Interagency Comments on Draft Perchlorate MCL NPRM (2 of 2)**

Bill,

Per my previous message, please find attached comments from certain interagency reviewers on EPA's draft proposal setting an MCL for perchlorate.

Vlad

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 5/23/2019 3:50:56 PM
To: Hernandez-Quinones, Samuel [hernandez.samuel@epa.gov]; Newcamp, Caitlin [Newcamp.Caitlin@epa.gov]; Khera, Rajiv [Khera.Rajiv@epa.gov]
Subject: FW: Uploaded new versions of Perchlorate, 2040-AF28 into ROCIS

FYI

From: Wadlington, Christina
Sent: Thursday, May 23, 2019 11:47 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: RE: Uploaded new versions of Perchlorate, 2040-AF28 into ROCIS

Got it. Let me check on the PR. I can definitely make changes on the website.

From: Burneson, Eric
Sent: Thursday, May 23, 2019 11:46 AM
To: Wadlington, Christina <Wadlington.Christina@epa.gov>
Cc: Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: FW: Uploaded new versions of Perchlorate, 2040-AF28 into ROCIS

Christina
I did not make any promises to OMB, but below are their thoughts about our press release. Can we make the changes to the last paragraph a this stage? If not in the press release how about the website?

From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]
Sent: Thursday, May 23, 2019 11:37 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: RE: Uploaded new versions of Perchlorate, 2040-AF28 into ROCIS

Eric – I'm choosing not to think about the final yet but will look forward to it at some point in the future. Also, thank you for the kind words below.

In regards to the press release, I think it would be a good idea to add language on what perchlorate is to provide important context for the public. Also, the solicitation of comment risks confusing people since it is limited to a subset of items listed in the NPRM and does not make the important point that EPA is actually taking comment on a lot more than that.

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Thursday, May 23, 2019 11:19 AM
To: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]
Cc: Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: RE: Uploaded new versions of Perchlorate, 2040-AF28 into ROCIS

Vlad:

Many thanks to you on your excellent work coordinating the review of this very important action. We appreciate your careful consideration of all the key issues and your balanced approach to resolving them in a way that assures the public can provide informed input. We look forward to working with you on the final action for this contaminant and on other key drinking water regulatory issues.

Per your request pasted below is the draft of the press statement we expect will be going out today.

DRAFT PRESS RELEASE

EPA Seeks Comment on Proposed Options for Regulating Perchlorate in Drinking Water

WASHINGTON – Today, the U.S. Environmental Protection Agency (EPA) released a notice of proposed rulemaking that seeks public input on a range of options regarding the regulation of perchlorate in public drinking water systems. Perchlorate comes from both natural and manmade sources. It is formed naturally via atmospheric processes and can be found within mineral deposits in certain geographical areas. It is also produced in the United States for use in solid fuels to power rockets, missiles, and fireworks. For the general population, most perchlorate exposure is through the ingestion of contaminated food or drinking water.

The agency is seeking comment on a proposed National Primary Drinking Water Regulation (NPDWR) for perchlorate to establish a Maximum Contaminant Level (MCL) and a health-based Maximum Contaminant Level Goal (MCLG) at 56 micrograms per liter.

In addition, the agency is seeking comment on three alternative regulatory options:

- An MCL and MCLG for perchlorate set at 18 micrograms per liter.
- An MCL and MCLG for perchlorate set at 90 micrograms per liter.
- Withdrawal of the agency's 2011 determination to regulate perchlorate in drinking water.

The agency is requesting comment on all relevant aspects of the proposed rule but is especially interested in the perchlorate monitoring and reporting requirements for public water systems and a list of treatment technologies that would enable water systems to comply with the MCL, including affordable compliance technologies for small systems serving 10,000 persons or less. EPA is also requesting comment on its methodology for deriving the MCLG, the underlying assumptions and analysis of its cost and benefit estimates, and other specific items listed in the proposed rule.

EPA will accept public comment on the proposal for 60 days after publication in the Federal Register via >http://www.regulations.gov< [Docket ID No. EPA-HQ-OW-2018-0780].

From: Dorjets, Vlad EOP/OMB **Ex. 6 Personal Privacy (PP)**
Sent: Thursday, May 23, 2019 10:58 AM
To: Manibusan, Mary <Manibusan.Mary@epa.gov>; Adams, Darryl <Adams.Darryl@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Nurse, Leanne <Nurse.Leanne@epa.gov>
Subject: RE: Uploaded new versions of Perchlorate, 2040-AF28 into ROCIS

OMB has concluded its review of the Perchlorate rule. I realize this review had some particular challenges so we want to thank everybody for all their hard work and thoughtful responses to OMB and interagency comments.

We understand that EPA is planning on signing and rolling out this rule later today. We would appreciate it if you could send us your roll-out material in advance so that we can could take a quick look to see how EPA is planning on messaging this NPRM.

From: Manibusan, Mary <Manibusan.Mary@epa.gov>
Sent: Thursday, May 23, 2019 10:44 AM
To: Adams, Darryl <Adams.Darryl@epa.gov>
Cc: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)>; Burneson, Eric <Burneson.Eric@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Nurse, Leanne <Nurse.Leanne@epa.gov>
Subject: Re: Uploaded new versions of Perchlorate, 2040-AF28 into ROCIS

Vlad,
Please confirm when OMB has officially concluded.
Thanks,
Mary

Sent from my iPhone

On May 23, 2019, at 10:41 AM, Adams, Darryl <Adams.Darryl@epa.gov> wrote:

> Vlad et al,
> I've uploaded the new versions into ROCIS. Please let me if there are any issues. Thank you.
>
> <image003.jpg>
>
> Darryl Adams
> Regulatory Management Division
> Office of Policy, U.S. EPA
> 202 564-6569
> Mail Code 1803A, Room 3512D WJC North

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 4/23/2019 12:51:28 PM
To: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
Subject: RE: Proposed Perchlorate NPDWR

Thanks Sam. Vlad is out today so I think we will have to go with the version I sent yesterday.

From: Hernandez-Quinones, Samuel
Sent: Tuesday, April 23, 2019 7:54 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Hi Eric,

There was a typo in slide #15. Bullet 1 should read "live" instead of life. "Estimate annual number of live births given entry point population:"

I have updated the slide in the attached document. Let me know if you want me to send the revised file to Vlad.

Thanks
Sam

==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Burneson, Eric
Sent: Monday, April 22, 2019 12:18 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Sam: Thank you. I made some additional changes to slide 7 in the attached. I will send these slides along with the TSD to Vlad shortly.

From: Hernandez-Quinones, Samuel
Sent: Monday, April 22, 2019 10:25 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Hi Eric,

Attached are the revised slides. I also was able to fix the formatting issue with the MCLG TSD document, let me know if this version works for you.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Burneson, Eric
Sent: Monday, April 22, 2019 9:58 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Sam for slides 8 and 10 can we change the order of the presentation to have the proposed 2 IQ point decrement in the middle?

From: Hernandez-Quinones, Samuel
Sent: Monday, April 22, 2019 9:22 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Hi Eric,

Attached you will find the revised MCLG Derivation TSD document and the proposed Slides for the upcoming Thursday Meeting. I am working on revising the Occurrence document and will have it ready by COB today.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Burneson, Eric
Sent: Monday, April 22, 2019 8:45 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>

Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: FW: Proposed Perchlorate NPDWR

Sam:
Can we connect today to discuss the status of documents that we need to get to OMB.

I believe we owe them the
MCLG report,
the slide presentation and now
the Occurrence and Monitoring document.
Thanks in advance

From: Christ, Lisa
Sent: Sunday, April 21, 2019 11:51 AM
To: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Nickerson, William <Nickerson.William@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Vlad,
The HRRCA has not been publicly released as all of the support documents for the proposal are still draft. We sent the draft HRRCA at the same time the proposal was sent to OMB. I'm attaching it again here with the proposal.
Lisa

From: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)>
Sent: Friday, April 19, 2019 1:37 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Sam – One more request. I'm seeing lots of references in HRRCA to EPA's *Perchlorate Occurrence and Monitoring Report* dated 2018 (so assume it's been released already) but it does not come up in a Google search and is not included among the other key Perchlorate documents on your website. Could you please sent that to me too?

From: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Sent: Friday, April 19, 2019 12:58 PM
To: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Hi Vlad,

I just noticed that I inadvertently provided an earlier version of Volume I which Eric forwarded to you. Attached is a revised version of Volume 1 which incorporates minor editorial changes to the document. Sorry for the inconvenience.

Also, in response to your request I am attaching Volumes 2 and 3 of the Report.

Thanks

Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)
Sent: Friday, April 19, 2019 12:01 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Eric/Lisa – Could you please share Volumes II and III?

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Wednesday, April 17, 2019 4:23 PM
To: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Vlad:
We can provide the requested support documents. The first document has been shared previously with many of the other Federal Agencies (see my email to Jim Kim on July 11, 2018) but we are happy to share this document again. It is attached to this email. The second document is currently under revision to incorporate some of the modifications we made just prior to submitting the proposed NPDWR. We expect to be able to send this document early next week.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)
Sent: Tuesday, April 16, 2019 3:54 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Eric,

Kevin Bromberg has apparently already skimmed (if not actually read) the NPRM and is requesting two documents referenced in the preamble: the "proposed approaches to inform the derivation of a maximum contaminant level goal for perchlorate in drinking water" (reference 2018d) and the TSD (reference 2018e). Could you please let me know the status of these two documents? In case they're not currently available or will not be available soon it would help me to understand what they documents do and do not contain.

Vlad

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Tuesday, April 16, 2019 1:10 PM
To: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>
Subject: Proposed Perchlorate NPDWR

Vlad
Thanks for touching base regarding the perchlorate proposed drinking water regulation. As we discussed I have blocked time on April 25 at 3:00 pm for a briefing to the other Federal Agency's on the perchlorate proposal. We will send an updated presentation to you early next week for distribution to the other Agency partners. I am assuming this will be a teleconference but let me know if you or other Federal partners would be interested in coming to EPA Offices for the meeting and I can book a larger room for the discussion.
As I mentioned I will be out of the office Thursday and Friday this week but if you have questions about the draft proposal you can contact Lisa Christ in my absence. Lisa's number is 202 564 8354.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 5/20/2019 5:31:35 PM
To: Christ, Lisa [Christ.Lisa@epa.gov]; Huff, Lisa [Huff.Lisa@epa.gov]
CC: Khera, Rajiv [Khera.Rajiv@epa.gov]; Hernandez-Quinones, Samuel [hernandez.samuel@epa.gov]; Messier, Dawn [Messier.Dawn@epa.gov]; Mclain, Jennifer [Mclain.Jennifer@epa.gov]
Subject: FW: NASA Comments on Perchlorate
Attachments: Perchlorate EO 12866 NASA Review UPDATED 05_20_2019 final.docx

From: Dorjets, Vlad EOP/OMB Ex. 6 Personal Privacy (PP)
Sent: Monday, May 20, 2019 1:28 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Nickerson, William <Nickerson.William@epa.gov>
Subject: NASA Comments on Perchlorate

Attached please find the comments submitted by NASA on the perchlorate NPRM. I think some sort of a response would be appropriate. Can discuss those reasons – and my thinking on this in general - by phone offline.

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 3/5/2019 9:46:02 PM
To: Christ, Lisa [Christ.Lisa@epa.gov]; Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Guilaran, Yu-Ting [Guilaran.Yu-Ting@epa.gov]
CC: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]; Khera, Rajiv [Khera.Rajiv@epa.gov]
Subject: RE: Perchlorate

I have sent a note to Vlad and Bill with the Thursday afternoon (2 and 4) options. I send out a schedule request when Vlad gets back to me.

From: Christ, Lisa
Sent: Tuesday, March 05, 2019 3:35 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>
Cc: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: RE: Perchlorate

Below are times when you, me, Sam, Rajiv and Lynn are available.
Wed 3/6 @ 11am-noon or 3-4pm
Th 3/7 @ 1-2pm, 2-3pm, 4-5pm

From: Burneson, Eric
Sent: Monday, March 04, 2019 5:53 PM
To: Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: FW: Perchlorate

FYI: OMB wants a briefing. I think we can use materials we prepared for the OCSPP discussion a few weeks ago. We may need science support from ORD on this.

From: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)
Sent: Monday, March 04, 2019 5:07 PM
To: Nickerson, William <Nickerson.William@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>
Subject: Perchlorate

Bill,

Before you submit perchlorate for OMB review (which, hopefully, will be very soon), I would like to request a staff-level briefing so that we can get an understanding of what is in the rule. Specifically, we are interested in getting an overview of what regulatory options EPA plans on proposing and how EPA plans to quantify the associated costs and benefits. Please note that Rosario should be making a similar request to Brittany later today. I'm hoping we can do this in a brief call sometime later this week.

Thanks,

Vlad

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 4/16/2019 8:11:52 PM
To: Christ, Lisa [Christ.Lisa@epa.gov]; Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
Subject: RE: Proposed Perchlorate NPDWR

We would also need to reflect the text added to the preamble recently to describe the basis for the alternatives.

From: Christ, Lisa
Sent: Tuesday, April 16, 2019 4:11 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR
Importance: High

Sam – is "Deriving a Maximum Contaminant Level Goal for Perchlorate in Drinking Water" ready? Did we need to update this for the 90 ppb alternative?

From: Burneson, Eric
Sent: Tuesday, April 16, 2019 4:08 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

I don't and we can increase credibility in providing them. If they are ready please send them to me now.

From: Christ, Lisa
Sent: Tuesday, April 16, 2019 4:03 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Subject: FW: Proposed Perchlorate NPDWR

Eric,
Below are the documents Kevin is requesting? Any concerns with providing them?
Sam,
Can you provide these?

USEPA. (2018d). Proposed approaches to inform the derivation of a maximum contaminant level goal for perchlorate in drinking water.
USEPA. (2018e). Technical support Document: Deriving a Maximum Contaminant Level Goal for Perchlorate in Drinking Water.

From: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)
Sent: Tuesday, April 16, 2019 3:54 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Eric,

Kevin Bromberg has apparently already skimmed (if not actually read) the NPRM and is requesting two documents referenced in the preamble: the "proposed approaches to inform the derivation of a maximum contaminant level goal for perchlorate in drinking water" (reference 2018d) and the TSD (reference 2018e). Could you please let me know the status of these two documents? In case they're not currently available or will not be available soon it would help me to understand what they documents do and do not contain.

Vlad

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Tuesday, April 16, 2019 1:10 PM
To: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>
Subject: Proposed Perchlorate NPDWR

Vlad
Thanks for touching base regarding the perchlorate proposed drinking water regulation. As we discussed I have blocked time on April 25 at 3:00 pm for a briefing to the other Federal Agency's on the perchlorate proposal. We will send an updated presentation to you early next week for distribution to the other Agency partners. I am assuming this will be a teleconference but let me know if you or other Federal partners would be interested in coming to EPA Offices for the meeting and I can book a larger room for the discussion.
As I mentioned I will be out of the office Thursday and Friday this week but if you have questions about the draft proposal you can contact Lisa Christ in my absence. Lisa's number is 202 564 8354.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 4/16/2019 8:09:29 PM
To: Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Guilaran, Yu-Ting [Guilaran.Yu-Ting@epa.gov]
Subject: FW: Proposed Perchlorate NPDWR

FYI

From: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)
Sent: Tuesday, April 16, 2019 3:54 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>
Subject: RE: Proposed Perchlorate NPDWR

Eric,

Kevin Bromberg has apparently already skimmed (if not actually read) the NPRM and is requesting two documents referenced in the preamble: the "proposed approaches to inform the derivation of a maximum contaminant level goal for perchlorate in drinking water" (reference 2018d) and the TSD (reference 2018e). Could you please let me know the status of these two documents? In case they're not currently available or will not be available soon it would help me to understand what they documents do and do not contain.

Vlad

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Tuesday, April 16, 2019 1:10 PM
To: Dorjets, Vlad EOP/OMB <V Ex. 6 Personal Privacy (PP)
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>
Subject: Proposed Perchlorate NPDWR

Vlad
Thanks for touching base regarding the perchlorate proposed drinking water regulation. As we discussed I have blocked time on April 25 at 3:00 pm for a briefing to the other Federal Agency's on the perchlorate proposal. We will send an updated presentation to you early next week for distribution to the other Agency partners. I am assuming this will be a teleconference but let me know if you or other Federal partners would be interested in coming to EPA Offices for the meeting and I can book a larger room for the discussion.
As I mentioned I will be out of the office Thursday and Friday this week but if you have questions about the draft proposal you can contact Lisa Christ in my absence. Lisa's number is 202 564 8354.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 4/4/2019 11:34:47 PM
To: Nickerson, William [Nickerson.William@epa.gov]
Subject: Fwd: Revised Perchlorate FRN
Attachments: Perchlorate Proposed NPDWR Redline 4-4-19.docx; ATT00001.htm

FYI on our status. See below

Sent from my iPhone

Begin forwarded message:

> **From:** "Burneson, Eric" <Burneson.Eric@epa.gov>
> **Date:** April 4, 2019 at 6:21:17 PM EDT
> **To:** "Mclain, Jennifer" <Mclain.Jennifer@epa.gov>, "Guilaran, Yu-Ting" <Guilaran.Yu-Ting@epa.gov>
> **Cc:** "'Joe Tiago (Tiago.Joseph@epa.gov)'" <Tiago.Joseph@epa.gov>, "Hernandez-Quinones, Samuel" <hernandez.samuel@epa.gov>, "Khera, Rajiv" <Khera.Rajiv@epa.gov>, "Christ, Lisa" <Christ.Lisa@epa.gov>, "Messier, Dawn" <Messier.Dawn@epa.gov>, "Wehling, Carrie" <Wehling.Carrie@epa.gov>
> **Subject: RE: Revised Perchlorate FRN**
>
> Jennifer: Because we have had issues transmitting multiple files, I am resending this redline document in case it did not come through in the last email.
> Eric
>
> **From:** Burneson, Eric
> **Sent:** Thursday, April 04, 2019 6:17 PM
> **To:** Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>
> **Cc:** Joe Tiago (Tiago.Joseph@epa.gov) <Tiago.Joseph@epa.gov>; Hernandez-Quinones, Samuel <hernandez.samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
> **Subject:** Revised Perchlorate FRN
>
> Jennifer:
> Attached for transmission to the OW IO are revised draft notices for a Proposed National Primary Drinking Water Regulation. The first attachment is a clean version of the revised document and the second is a redline document that shows the changes made since the last OW-IO review.

Ex. 5 Deliberative Process (DP)

The attached materials incorporate the comments that we received from you and from OGC. OGC has concluded that the drafts they reviewed "meets the consent decree obligations." Please let us know if you have any questions or concerns with the attached documents.

Eric Burneson, P.E.

Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 4/4/2019 10:17:16 PM
To: Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Guilaran, Yu-Ting [Guilaran.Yu-Ting@epa.gov]
CC: Joe Tiago (Tiago.Joseph@epa.gov) [Tiago.Joseph@epa.gov]; Hernandez-Quinones, Samuel [hernandez.samuel@epa.gov]; Khera, Rajiv [Khera.Rajiv@epa.gov]; Christ, Lisa [Christ.Lisa@epa.gov]; Messier, Dawn [Messier.Dawn@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]
Subject: Revised Perchlorate FRN
Attachments: EO12866_SDWA NPDWR 2040-AF28 FRN Perchlorate Rule 20190404.docx; Perchlorate Proposed NPDWR Redline 4-4-19.docx

Jennifer:
Attached for transmission to the OW IO are revised draft notices for a Proposed National Primary Drinking Water Regulation. The first attachment is a clean version of the revised document and the second is a redline document that shows the changes made since the last OW-IO review.

The changes made to the document include:

Ex. 5 Deliberative Process (DP)

The attached materials incorporate the comments that we received from you and from OGC. OGC has concluded that the drafts they reviewed "meets the consent decree obligations." Please let us know if you have any questions or concerns with the attached documents.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 7/3/2018 4:31:48 PM
To: Johnson, Ann [Johnson.Ann@epa.gov]
Subject: FW: Perchlorate
Attachments: NRDC v. EPA Final Court-Approved CD.pdf

FYI

From: Burneson, Eric
Sent: Tuesday, July 03, 2018 12:17 PM
To: 'Dorjets, Vlad EOP/OMB' <Ex. 6 Personal Privacy (PP)
Subject: RE: Perchlorate

Attached

From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)
Sent: Tuesday, July 03, 2018 9:57 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Subject: RE: Perchlorate

Could you please send me the consent decree?

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Tuesday, July 3, 2018 9:38 AM
To: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)
Subject: RE: Perchlorate

Vlad
Thanks for your note. We are still in the deliberative process here at the Agency and I don't have information at this stage about how we will proceed right now but I will touch base with you soon.
Eric

From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)
Sent: Monday, July 02, 2018 4:17 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Subject: Perchlorate

Eric,

Hope you're doing well. I just wanted to check in with you on the status of perchlorate. Now that the peer reviewers have issued their reports, could you please confirm me for me what the next step is for EPA? Presumably, if EPA chose to establish a MCL the next step would be a proposed rule. However, it is unclear to me what kind of action the agency could take if it decided not to set a MCL that would comply with the court order. Feel free to give me a call if you would prefer to discuss this by phone.

Vlad

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 7/3/2018 4:31:28 PM
To: Johnson, Ann [Johnson.Ann@epa.gov]
Subject: FW: Perchlorate

FYI

From: Dorjets, Vlad EOP/OMB [**Ex. 6 Personal Privacy (PP)**
Sent: Tuesday, July 03, 2018 9:37 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Subject: RE: Perchlorate

Eric – Brittany Bolen provided some more clarity on this issue for us last night. You can disregard the email below but you will receive a different request shortly.

From: Dorjets, Vlad EOP/OMB
Sent: Monday, July 2, 2018 4:17 PM
To: 'Burneson, Eric' <Burneson.Eric@epa.gov>
Subject: Perchlorate

Eric,

Hope you're doing well. I just wanted to check in with you on the status of perchlorate. Now that the peer reviewers have issued their reports, could you please confirm me for me what the next step is for EPA? Presumably, if EPA chose to establish a MCL the next step would be a proposed rule. However, it is unclear to me what kind of action the agency could take if it decided not to set a MCL that would comply with the court order. Feel free to give me a call if you would prefer to discuss this by phone.

Vlad

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 7/3/2018 4:30:58 PM
To: Johnson, Ann [Johnson.Ann@epa.gov]
Subject: FW: Perchlorate

FYI

From: Burneson, Eric
Sent: Tuesday, July 03, 2018 9:38 AM
To: 'Dorjets, Vlad EOP/OMB' <Vladik_Dorjets@omb.eop.gov>
Subject: RE: Perchlorate

Vlad
Thanks for your note. We are still in the deliberative process here at the Agency and I don't have information at this stage about how we will proceed right now but I will touch base with you soon.
Eric

From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)
Sent: Monday, July 02, 2018 4:17 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Subject: Perchlorate

Eric,

Hope you're doing well. I just wanted to check in with you on the status of perchlorate. Now that the peer reviewers have issued their reports, could you please confirm me for me what the next step is for EPA? Presumably, if EPA chose to establish a MCL the next step would be a proposed rule. However, it is unclear to me what kind of action the agency could take if it decided not to set a MCL that would comply with the court order. Feel free to give me a call if you would prefer to discuss this by phone.

Vlad

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 7/3/2018 1:56:21 PM
To: Mclain, Jennifer [Mclain.Jennifer@epa.gov]
Subject: Fwd: Perchlorate

Sent from my iPhone

Begin forwarded message:

From: "Dorjets, Vlad EOP/OMB" <Ex. 6 Personal Privacy (PP)
Date: July 3, 2018 at 9:37:28 AM EDT
To: "Burneson, Eric" <Burneson.Eric@epa.gov>
Subject: RE: Perchlorate

Eric – Brittany Bolen provided some more clarity on this issue for us last night. You can disregard the email below but you will receive a different request shortly.

From: Dorjets, Vlad EOP/OMB
Sent: Monday, July 2, 2018 4:17 PM
To: 'Burneson, Eric' <Burneson.Eric@epa.gov>
Subject: Perchlorate

Eric,

Hope you're doing well. I just wanted to check in with you on the status of perchlorate. Now that the peer reviewers have issued their reports, could you please confirm me for me what the next step is for EPA? Presumably, if EPA chose to establish a MCL the next step would be a proposed rule. However, it is unclear to me what kind of action the agency could take if it decided not to set a MCL that would comply with the court order. Feel free to give me a call if you would prefer to discuss this by phone.

Vlad

Message

From: Burneson, Eric [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2CACB9A8D49F49AF80531E9E2CCB9018-EBURNESO]
Sent: 7/2/2018 8:59:21 PM
To: Mclain, Jennifer [Mclain.Jennifer@epa.gov]
Subject: FW: Perchlorate

FYI

From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]
Sent: Monday, July 02, 2018 4:17 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Subject: Perchlorate

Eric,

Hope you're doing well. I just wanted to check in with you on the status of perchlorate. Now that the peer reviewers have issued their reports, could you please confirm me for me what the next step is for EPA? Presumably, if EPA chose to establish a MCL the next step would be a proposed rule. However, it is unclear to me what kind of action the agency could take if it decided not to set a MCL that would comply with the court order. Feel free to give me a call if you would prefer to discuss this by phone.

Vlad

Message

From: Flaharty, Stephanie [Flaharty.Stephanie@epa.gov]
Sent: 6/21/2019 11:25:47 AM
To: Christ, Lisa [Christ.Lisa@epa.gov]; Huff, Lisa [Huff.Lisa@epa.gov]; Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]; Wadlington, Christina [Wadlington.Christina@epa.gov]; Tiago, Joseph [Tiago.Joseph@epa.gov]; Corr, Elizabeth [Corr.Elizabeth@epa.gov]
Subject: FW: Perchlorate is about to publish in the FR
Attachments: Perchlorate Prroposed Rule FRN.pre-pub 6.21.19.docx

Attached is the final Perchlorate proposed rule clean ,pre-pub notice, which reflects OFR comments.

From: Flaharty, Stephanie
Sent: Thursday, June 20, 2019 3:50 PM
To: Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Rodgers-Jenkins, Crystal <Rodgers-Jenkins.Crystal@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>; Corr, Elizabeth <Corr.Elizabeth@epa.gov>
Subject: Perchlorate is about to publish in the FR
Importance: High

Public inspection will be Tuesday, June 25th, followed by publication on June 26th.

Your document is about to publish in the Federal Register. This publication date has been confirmed with the Office of the Federal Register.
Title: National Primary Drinking Water Regulations: Regulation of Perchlorate
FRL #: 9994-68-OW
Docket #: EPA-HQ-OW-2018-0780
Published Date: 06/26/2019
Comments Due By: 08/26/2019

6560-50-P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 141, and 142

[EPA-HQ-OW-2018-0780; FRL-9994-68-OW]

RIN 2040-AF28

National Primary Drinking Water Regulations: Perchlorate

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule, request for public comment.

SUMMARY: The Environmental Protection Agency (EPA) is proposing a drinking water regulation for perchlorate and a health-based Maximum Contaminant Level Goal (MCLG) in accordance with the Safe Drinking Water Act (SDWA). The EPA is proposing to set both the enforceable Maximum Contaminant Level (MCL) for the perchlorate regulation and the perchlorate MCLG at 0.056 mg/L (56 µg/L). The EPA is proposing requirements for water systems to conduct monitoring and reporting for perchlorate and to provide information about perchlorate to their consumers through public notification and consumer confidence reports. This proposal includes requirements for primacy agencies that implement the public water system supervision program under the SDWA. This proposal also includes a list of treatment technologies that would enable water systems to comply with the MCL, including affordable compliance technologies for small systems serving 10,000 persons or less.

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DATES: Comments must be received on or before **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].** Under the Paperwork Reduction Act (PRA), comments on the information collection provisions are best assured of consideration if the Office of Management and Budget (OMB) receives a copy of your comments on or before **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].**

ADDRESSES: Submit your comments, identified by Docket ID No. **EPA-HQ-OW-2018-0780**, at https://www.regulations.gov. Follow the online instructions for submitting comments. Once submitted, comments cannot be edited or removed from Regulations.gov. The EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (i.e. on the web, cloud, or other file sharing system). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit http://www2.epa.gov/dockets/commenting-epa-dockets.

FOR FURTHER INFORMATION CONTACT: Samuel Hernandez, Office of Ground Water and Drinking Water, Standards and Risk Management Division (Mail Code 4607M),

Environmental Protection Agency, 1200 Pennsylvania Avenue, NW, Washington, DC 20460; telephone number: (202) 564-1735; email address: hernandez.samuel@epa.gov.

SUPPLEMENTARY INFORMATION: In addition to the proposed regulation, the EPA is requesting comment on three alternatives: 1) whether the MCL and MCLG for perchlorate should be set at 0.018 mg/L (18 µg/L), 2) whether the MCL and MCLG for perchlorate should be set at 0.090 mg/L (90 µg/L), or 3) whether instead of issuing a national primary drinking water regulation, the EPA should withdraw the Agency's February 11, 2011, determination to regulate perchlorate in drinking water based on new information that indicates that perchlorate does not occur in public water systems with a frequency and at levels of public health concern and there may not be a meaningful opportunity for health risk reduction through a drinking water regulation. Under this last alternative, the final action would be a withdrawal of the determination to regulate and there would be no MCLG or national primary drinking water regulation for perchlorate. This proposed rule is organized as follows:

I. General Information

A. What is the EPA Proposing?

B. Does This Action Apply to Me?

II. Background

A. What is Perchlorate?

B. Statutory Authority

C. Statutory Framework and Regulatory History

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III. Assessment and Modeling of the Health Effects of Perchlorate

A. 2008 Preliminary Regulatory Determinations

B. 2009 Supplemental Request for Comment and 2011 Final Regulatory Determination

C. Science Advisory Board Recommendations

D. Perchlorate Model Development and Peer Reviews

E. Sensitive Population for Deriving MCLG

F. BBDR Model Specification for the Sensitive Population

G. Epidemiological Literature

H. Identifying a Point of Departure for Developing the MCLG

I. Translate PODs to RfDs

J. Translate RfD into an MCLG

IV. Maximum Contaminant Level Goal and Alternatives

V. Maximum Contaminant Level and Alternatives

VI. Occurrence

VII. Analytical Methods

VIII. Monitoring and Compliance Requirements

A. What are the Proposed Monitoring Requirements?

B. Can States Grant Monitoring Waivers?

C. How are System MCL Violations Determined?

D. When Must Systems Complete Initial Monitoring?

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E. Can Systems Use Grandfathered Data to Satisfy the Initial Monitoring Requirements?

IX. Safe Drinking Water Act Right to Know Requirements

A. What are the Consumer Confidence Report Requirements?

B. What are the Public Notification Requirements?

X. Treatment Technologies

A. What are the Best Available Technologies?

B. What are the Small System Compliance Technologies?

XI. Rule Implementation and Enforcement

A. What are the Requirements for Primacy?

B. What are the State Record Keeping Requirements?

C. What are the State Reporting Requirements?

XII. Health Risk Reduction Cost Analysis

A. Identifying Affected Entities

B. Method for Estimating Costs

C. Method for Estimating Benefits

D. Comparison of Costs and Benefits

XIII. Uncertainty Analysis

A. Uncertainty in the MCLG Derivation

B. Uncertainty in the Economic Analysis

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XIV. Request for Comment on Proposed Rule

XV. Request for Comment on Potential Regulatory Determination Withdrawal

XVI. Statutory and Executive Order Reviews

A. *Executive Order 12866: Regulatory Planning and Review and Executive Order 13563 Improving Regulation and Regulatory Review*

B. *Executive Order 13771: Reducing Regulations and Controlling Regulatory Costs*

C. *Paperwork Reduction Act*

D. *Regulatory Flexibility Act (RFA)*

E. *Unfunded Mandates Reform Act*

F. *Executive Order 13132: Federalism*

G. *Executive Order 13175: Consultation and Coordination with Indian Tribal Governments*

H. *Executive Order 13045: Protection of Children from Environmental Health and Safety Risks*

I. *Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution, or Use*

J. *National Technology Transfer and Advancement Act of 1995*

K. *Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*

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XVII. Consultations with the Science Advisory Board, National Drinking Water Advisory Council, and the Secretary of Health and Human Services

XVIII. References

I. General Information

A. What is the EPA Proposing?

This action contains a proposal and three alternatives for public comment. First, the EPA proposes to establish a Maximum Contaminant Level Goal (MCLG) and National Primary Drinking Water Regulation (NPDWR) for perchlorate in public water supplies. The EPA proposes an MCLG of 56 µg/L, and to regulate perchlorate in drinking water at an enforceable maximum contaminant level (MCL) of 56 µg/L.

The EPA is proposing an NPDWR for perchlorate in accordance with its February 11, 2011, (76 FR 7762) determination to regulate perchlorate under the SDWA. Based on the best available peer reviewed science at that time, the EPA found that perchlorate met the SDWA's three criteria for regulating a contaminant: 1) the contaminant may have an adverse effect on the health of persons, 2) the contaminant is known to occur or there is a substantial likelihood that the contaminant will occur in public water systems (PWSs) with a frequency and at levels of public health concern, and 3) in the sole judgment of the Administrator, regulation of such contaminant presents a meaningful opportunity for health risk reduction for persons served by PWSs.

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Second, as explained in more detail below, the EPA is soliciting comment on two alternative MCLG/MCL values of 18 µg/L and 90 µg/L respectively. Third, in light of new considerations that have come to the EPA's attention since it issued its positive regulatory determination in 2011, including information on lower levels of occurrence of perchlorate than the EPA had previously believed to exist and new analysis of the concentration that represents a level of health concern, this action also discusses and requests comment on an alternative action under which the EPA would withdraw its 2011 determination to regulate perchlorate. Under this alternative, there would be no MCLG or NPDWR for perchlorate.

B. Does This Action Apply to Me?

Entities that could potentially be affected include the following:

Category	**Examples of potentially affected entities**
Public water systems	Community water systems Non-transient, non-community water systems
State and tribal agencies	Agencies responsible for drinking water regulatory development and enforcement

This table is not intended to be exhaustive, but rather provides a guide for readers regarding entities that could be affected by this action. To determine whether your facility or activities could be affected by this action, you should carefully examine this proposed rule. If you have questions regarding the applicability of this action to a particular entity, consult the person listed in the FOR FURTHER INFORMATION CONTACT section.

II. Background

A. What is Perchlorate?

Perchlorate is a negatively charged inorganic ion that is comprised of one chlorine atom bound to four oxygen atoms (ClO_4-), which is highly stable and mobile in the aqueous environment. Perchlorate comes from both natural and manmade sources. It is formed naturally via atmospheric processes and can be found within mineral deposits in certain geographical areas. It is also produced in the United States, and the most common compounds include ammonium perchlorate and potassium perchlorate used primarily as oxidizers in solid fuels to power rockets, missiles, and fireworks. For the general population, most perchlorate exposure is through the ingestion of contaminated food or drinking water.

B. Statutory Authority

Section 1412(b)(1)(A) of the SDWA requires the EPA to establish NPDWRs for contaminants that may have an adverse effect on the health of persons; that are known to occur or there is a substantial likelihood that the contaminant will occur in public water systems with a frequency and at levels of public health concern; and where in the sole judgment of the Administrator, regulation of such contaminant presents a meaningful opportunity for health risk reduction for persons served by public water systems.

C. Statutory Framework and Regulatory History

Section 1412(b)(1)(B)(i) of the SDWA requires the EPA to publish every five years a Contaminant Candidate List (CCL). The CCL is a list of drinking water contaminants that are

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known or anticipated to occur in public water systems and are not currently subject to the EPA drinking water regulations. The EPA uses the CCL to identify priority contaminants for regulatory decision-making and information collection. Contaminants listed on the CCL may require future regulation under the SDWA. The EPA included perchlorate on the first, second, and third CCLs published in 1998, 2005, and 2009.

Once listed on the CCL, the Agency continues to collect data on CCL contaminants to better understand their potential health effects and to determine the levels at which they occur in drinking water. Section 1412(b)(1)(B)(ii) requires that, every five years, the EPA, after public comment, issue a determination whether or not to regulate at least five contaminants on the CCL. For any contaminant that the EPA determines meets the criteria for regulation, under Section 1412(b)(1)(E), the EPA must issue a proposed national primary drinking water regulation within two years and issue a final regulation 18 months after the proposal (which may be extended by 9 months).

As part of its responsibilities under the SDWA, the EPA implements section 1445(a)(2), "Monitoring Program for Unregulated Contaminants." This section requires that once every five years, the EPA issue a list of no more than 30 unregulated contaminants to be monitored by public water system. This monitoring is implemented through the Unregulated Contaminant Monitoring Rule (UCMR), which collects data from community water systems (CWS) and non-transient, non-community water systems (NTNCWS). The UCMR collects data from a census of large water systems (serving more than 10,000 people) and from a statistically representative

sample of small water systems. On September 17, 1999, the EPA published its first UCMR (64 FR 50556) which required all large systems and a representative sample of small systems to monitor for perchlorate and 25 other contaminants (USEPA, 1999, 2000b).

The EPA and other federal agencies asked the National Research Council (NRC) to evaluate the health implications of perchlorate ingestion. The NRC concluded that perchlorate exposure inhibits the transport of iodide[1] into the thyroid by a protein molecule knows as the sodium/iodide symporter (NIS), which may lead to decreases in two hormones, thyroxine (T3) and triiodothyronine (T4) and increases in thyroid-stimulating hormone (TSH) [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"a1mn5hjprkt","properties":{"formattedCitation":"(National Research Council (NRC), 2005b)","plainCitation":"(National Research Council (NRC), 2005b)","noteIndex":0},"citationItems":[{"id":350,"uris":["http://zotero.org/groups/945096/items/TN6HMC9D"],"uri":["http://zotero.org/groups/945096/items/TN6HMC9D"],"itemData":{"id":350,"type":"book","title":"Health Implications of Perchlorate Ingestion","publisher":"National Academies Press","publisher-place":"Washington, DC","event-place":"Washington, DC","author":[{"literal":"National Research Council (NRC)"}],"issued":{"date-parts":[["2005"]]}}}],"schema":"https://github.com/citation-style-

[1] For the purposes of this FRN, "iodine" will be used to refer to dietary intake before entering the body. Once in the body, "iodide" will be used to refer to the ionic form.

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language/schema/raw/master/csl-citation.json"}]. Additionally, the NRC concluded that the most sensitive population to perchlorate exposure are "the fetuses of pregnant women who might have hypothyroidism or iodide deficiency" (p. 178). The EPA established a reference dose (RfD) consistent with the recommended National Research Council RfD of 0.7 µg/kg/day for perchlorate. The reference dose is an estimate of a daily exposure to humans that is likely to be without an appreciable risk of adverse effects. This RfD was based on a study [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"a3u94lt6me","properties":{"formattedCitation":"(Greer, Goodman, Pleus, & Greer, 2002)","plainCitation":"(Greer, Goodman, Pleus, & Greer, 2002)","noteIndex":0},"citationItems":[{"id":387,"uris":["http://zotero.org/groups/945096/items/6AKUNIX6"],"uri":["http://zotero.org/groups/945096/items/6AKUNIX6"],"itemData":{"id":387,"type":"article-journal","title":"Health effects assessment for environmental perchlorate contamination: the dose response for inhibition of thyroidal radioiodine uptake in humans","container-title":"Environmental Health Perspectives","page":"927","volume":"110","issue":"9","author":[{"family":"Greer","given":"Monte A."},{"family":"Goodman","given":"Gay"},{"family":"Pleus","given":"Richard C."},{"family":"Greer","given":"Susan E."}],"issued":{"date-parts":[["2002"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}] of perchlorate's inhibition of radioactive iodine uptake in healthy adults and the application of an uncertainty factor of 10 for intraspecies

variability [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"0oHz805e","properties":{"formattedCitation":"(USEPA, 2005b)","plainCitation":"(USEPA, 2005b)","noteIndex":0},"citationItems":[{"id":980,"uris":["http://zotero.org/groups/945096/items/LHANJBR6"],"uri":["http://zotero.org/groups/945096/items/LHANJBR6"],"itemData":{"id":980,"type":"article","title":"Integrated Risk Information System (IRIS) Chemical Assessment Summary: Perchlorate (ClO4-) and Perchlorate Salts","publisher":"USEPA National Center for Environmental Assessment","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2005"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}].

In October 2008, the EPA published a preliminary regulatory determination not to regulate perchlorate in drinking water and requested public comment (73 FR 60262). In that preliminary determination, the EPA tentatively concluded that perchlorate did not occur with a frequency and at levels of public health concern and that development of a regulation did not present a meaningful opportunity for health risk reduction for persons served by public water systems. The EPA derived and used a Health Reference Level (HRL) of 15 µg/L based on the RfD of 0.7 µg/kg/day in making this conclusion [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"FZ6WMtAv","properties":{"formattedCitation":"(USEPA, 2008a)","plainCitation":"(USEPA, 2008a)","noteIndex":0},"citationItems":[{"id":934,"uris":["http://zotero.org/groups/945096/item

s/HBX88QM9"],"uri":["http://zotero.org/groups/945096/items/HBX88QM9"],"itemData":{"id":934,"type":"article-journal","title":"Drinking water: Preliminary regulatory determination on perchlorate","container-title":"Federal Register","volume":"73","issue":"198","abstract":"SUMMARY: This action presents EPA's preliminary regulatory determination for perchlorate in accordance with the Safe Drinking Water Act (SDWA). The Agency has determined that a national primary drinking water regulation (NPDWR) for perchlorate would not present \"a meaningful opportunity for health risk reduction for persons served by public water systems.\" The SDWA requires EPA to make determinations every five years of whether to regulate at least five contaminants on the Contaminant Candidate List (CCL). EPA included perchlorate on the first and second CCLs that were published in the Federal Register on March 2, 1998 and February 24, 2005. Most recently, EPA presented final regulatory determinations regarding 11 contaminants on the second CCL in a notice published in the Federal Register on July 30, 2008. In today's action, EPA presents supporting rationale and requests public comment on its preliminary regulatory determination for perchlorate. EPA will make a final regulatory determination for perchlorate after considering comments and information provided in the 30-day comment period following this notice. EPA plans to publish a health advisory for perchlorate at the time the Agency publishes its final regulatory determination to provide State and local public health officials with technical information that they may use in addressing local contamination.","ISSN":"ISSN 0097-6326 EISSN 2167-2520","shortTitle":"Federal Register","journalAbbreviation":"Fed.

Reg.","language":"English","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2008"]]}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. Based primarily on the UCMR 1 occurrence data, the EPA estimated that less than 1% of drinking water systems (serving approximately 1 million people) had perchlorate levels above the HRL of 15 µg/L. Based on this information the Agency determined that perchlorate did not occur frequently at levels of health concern. The EPA also determined that there was not a meaningful opportunity for a NPDWR to reduce health risks.

In January 2009 the EPA published an interim health advisory for perchlorate of 15 µg/L, consistent with the HRL derivation for perchlorate of 15 µg/L described above. Health Advisories are non-enforceable and non-regulatory and provide technical information to state agencies and other public health officials on health effects, analytical methodologies, and treatment technologies associated with drinking water contamination. Health Advisories provide the public, including the most sensitive populations, with a margin of protection from a lifetime of exposure. For perchlorate, the health advisory was developed for subchronic exposure (USEPA 2008d).

In August 2009, the EPA published a supplemental request for comment with a new analysis that derived potential alternative HRLs for 14 life stages, including infants and children. The analysis used the RfD of 0.7 µg/kg/day and life stage-specific bodyweight and exposure information (74 FR 41883; USEPA, 2009a). After careful consideration of public comments on

the October 2008 and August 2009 notices, on February 11, 2011, the EPA published its determination to regulate perchlorate (76 FR 7762; USEPA, 2011a). The Agency stated then that when considering the alternative HRL benchmarks described in the 2009 notice, the likelihood of perchlorate to occur at levels of concern had significantly increased in comparison to the levels described on the 2008 preliminary negative determination. The EPA concluded that as many as 16 million people could potentially be exposed to perchlorate at levels of concern, up from 1 million people originally described in the 2008 notice.

In its 2011 determination, the Agency found that perchlorate may have an adverse effect on the health of persons, that it is known to occur in public drinking water systems with a frequency and at levels that present a public health concern, and in the judgment of the Administrator, regulation of perchlorate presented a meaningful opportunity for health risk reduction for persons served by public water systems. As a result of the determination, and as required by Section 1412(b)(1)(E), the EPA initiated the process to develop an MCLG and NPDWR for perchlorate as described in this notice.

In September 2012, the U.S. Chamber of Commerce (the Chamber) submitted to the EPA a Request for Correction under the Information Quality Act regarding the EPA's regulatory determination. In the request, the Chamber claimed that the UCMR 1 data did not comply with data quality guidelines and were not representative of current conditions. In response to this request, the EPA reassessed the data and removed certain source water samples that could be paired with appropriate follow-up samples located at the entry point to the distribution system.

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The EPA also updated the UCMR 1 data for systems in California and Massachusetts using state compliance data to reflect current occurrence conditions after state regulatory limits for perchlorate were implemented.

In response to a lawsuit brought to enforce the deadlines in Section 1412(b)(1)(E), the U.S. District Court for the Southern District of New York entered a consent decree, requiring the EPA to propose an NPDWR with a proposed MCLG for perchlorate in drinking water no later than October 31, 2018, and finalize an NPDWR and MCLG for perchlorate in drinking water no later than December 19, 2019. The deadline for the EPA to propose an NPDWR with a proposed MCLG for perchlorate in drinking water was later extended to May 28, 2019. The consent decree is available in the docket for today's proposed rule.

III. Assessment and Modeling of the Health Effects of Perchlorate

Perchlorate inhibits uptake of iodide into the thyroid gland by competitively binding to the NIS (ATSDR, 2008; Greer et al., 2002; NRC, 2005; SAB 2013; Taylor et al., 2013). Iodide is necessary for the synthesis of thyroid hormones and decreased iodide uptake into the thyroid can adversely affect thyroid hormone production (SAB for the U.S. EPA, 2013; Blount et al., 2006; Steinmaus et al., 2007, 2013, 2016, McMullen et al., 2017; Knight et al., 2018). These changes in thyroid hormone levels in a pregnant woman may be linked to changes in the neurodevelopment of her offspring (SAB for the U.S. EPA, 2013; Korevaar et al., 2016; Fan and Wu, 2016; Wang et al., 2016; Alexander et al., 2017; Thompson et al., 2018). In addition, alterations in thyroid homeostasis may impact other body systems including the reproductive (Alexander et al., 2017;

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Hou et al., 2016; Maraka et al., 2016) and cardiovascular systems (Asvold et al., 2012; Sun et al., 2017).

The mode of action of perchlorate toxicity has been proposed as follows: exposure to perchlorate is known to inhibit the uptake of iodide by the thyroid gland through the NIS (NRC, 2005; SAB for the U.S. EPA, 2013). A sufficient inhibition of iodide uptake results in iodide deficiency within the thyroid. Given that T3 and T4 require iodide for production, a decrease in intra-thyroidal iodide can result in decreased production of these hormones. This could in turn result in increased TSH, the hormone that acts on the thyroid gland to stimulate iodide uptake to increase thyroid hormone production [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"eF6zWm7L","properties":{"formattedCitation":"(ATSDR, 2008; Blount, Pirkle, Osterloh, Valentin-Blasini, & Caldwell, 2006; National Research Council (NRC), 2005; Steinmaus, Miller, Cushing, Blount, & Smith, 2013; Steinmaus et al., 2016)","plainCitation":"(ATSDR, 2008; Blount, Pirkle, Osterloh, Valentin-Blasini, & Caldwell, 2006; National Research Council (NRC), 2005; Steinmaus, Miller, Cushing, Blount, & Smith, 2013; Steinmaus et al., 2016)","noteIndex":0},"citationItems":[{"id":428,"uris":["http://zotero.org/groups/945096/items/UIANA947"],"uri":["http://zotero.org/groups/945096/items/UIANA947"],"itemData":{"id":428,"type":"bill","title":"Toxicological Profile for Perchlorates","author":[{"family":"ATSDR","given":""}],"issued":{"date-parts":[["2008"]]}}},{"id":203,"uris":["http://zotero.org/groups/945096/items/UW4TFPNI"],"uri

":["http://zotero.org/groups/945096/items/UW4TFPNI"],"itemData":{"id":203,"type":"article-journal","title":"Urinary perchlorate and thyroid tormone levels in adolescent and adult men and women living in the United States","container-title":"Environmental Health Perspectives","page":"1865-1871","volume":"114","issue":"12","source":"CrossRef","DOI":"10.1289/ehp.9466","ISSN":"0091-6765","language":"en","author":[{"family":"Blount","given":"Benjamin C."},{"family":"Pirkle","given":"James L."},{"family":"Osterloh","given":"John D."},{"family":"Valentin-Blasini","given":"Liza"},{"family":"Caldwell","given":"Kathleen L."}],"issued":{"date-parts":[["2006"]]}}},{"id":349,"uris":["http://zotero.org/groups/945096/items/TN6HMC9D"],"uri":["http://zotero.org/groups/945096/items/TN6HMC9D"],"itemData":{"id":349,"type":"book","title":"Health Implications of Perchlorate Ingestion","publisher":"National Academies Press","publisher-place":"Washington, DC","event-place":"Washington, DC","author":[{"literal":"National Research Council (NRC)"}],"issued":{"date-parts":[["2005"]]}}},{"id":39,"uris":["http://zotero.org/groups/945096/items/35VPNIKR"],"uri":["http://zotero.org/groups/945096/items/35VPNIKR"],"itemData":{"id":39,"type":"article-journal","title":"Combined effects of perchlorate, thiocyanate, and iodine on thyroid function in the national health and nutrition examination survey 2007-8","container-title":"Environmental research","volume":"123","source":"www.ncbi.nlm.nih.gov","abstract":"Perchlorate, thiocyanate, and low iodine intake can all decrease iodide intake into the thyroid gland. This can

reduce thyroid hormone production since iodide is a key component of thyroid hormone. Previous research has suggested that each of these factors

...","URL":"https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3857960/","DOI":"10.1016/j.envres.2013.01.005","note":"PMID: 23473920","language":"en","author":[{"family":"Steinmaus","given":"Craig"},{"family":"Miller","given":"Mark D."},{"family":"Cushing","given":"Lara"},{"family":"Blount","given":"Benjamin C."},{"family":"Smith","given":"Allan H."}],"issued":{"date-parts":[["2013",5]]},"accessed":{"date-parts":[["2017",5,5]]}},{"id":211,"uris":["http://zotero.org/groups/945096/items/H4FH49VS"],"uri":["http://zotero.org/groups/945096/items/H4FH49VS"],"itemData":{"id":211,"type":"article-journal","title":"Thyroid hormones and moderate exposure toperchlorate during pregnancy in women in southern California","container-title":"Environmental Health Perspectives","page":"861-867","volume":"124","issue":"6","source":"PubMed","abstract":"BACKGROUND: Findings from national surveys suggest that everyone in the United States is exposed to perchlorate. At high doses, perchlorate, thiocyanate, and nitrate inhibit iodide uptake into the thyroid and decrease thyroid hormone production. Small changes in thyroid hormones during pregnancy, including changes within normal reference ranges, have been linked to cognitive function declines in the offspring.\nOBJECTIVES: We evaluated the potential effects of low

environmental exposures to perchlorate on thyroid function.\nMETHODS: Serum thyroid hormones and anti-thyroid antibodies and urinary perchlorate, thiocyanate, nitrate, and iodide concentrations were measured in 1,880 pregnant women from San Diego County, California, during 2000-2003, a period when much of the area's water supply was contaminated from an industrial plant with perchlorate at levels near the 2007 California regulatory standard of 6 μg/L. Linear regression was used to evaluate associations between urinary perchlorate and serum thyroid hormone concentrations in models adjusted for urinary creatinine and thiocyanate, maternal age and education, ethnicity, and gestational age at serum collection.\nRESULTS: The median urinary perchlorate concentration was 6.5 μg/L, about two times higher than in the general U.S.\nPOPULATION: Adjusted associations were identified between increasing log10 perchlorate and decreasing total thyroxine (T4) [regression coefficient (β) = -0.70; 95% CI: -1.06, -0.34], decreasing free thyroxine (fT4) (β = -0.053; 95% CI: -0.092, -0.013), and increasing log10 thyroid-stimulating hormone (β = 0.071; 95% CI: 0.008, 0.133).\nCONCLUSIONS: These results suggest that environmental perchlorate exposures may affect thyroid hormone production during pregnancy. This could have implications for public health given widespread perchlorate exposure and the importance of thyroid hormone in fetal neurodevelopment.\nCITATION: Steinmaus C, Pearl M, Kharrazi M, Blount BC, Miller MD, Pearce EN, Valentin-Blasini L, DeLorenze G, Hoofnagle AN, Liaw J. 2016. Thyroid hormones and moderate exposure to perchlorate during pregnancy in women in Southern California. Environ Health Perspect 124:861-867;

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http://dx.doi.org/10.1289/ehp.1409614.","DOI":"10.1289/ehp.1409614","ISSN":"1552-9924","note":"PMID: 26485730\nPMCID: PMC4892913","journalAbbreviation":"Environ. Health Perspect.","language":"eng","author":[{"family":"Steinmaus","given":"Craig"},{"family":"Pearl","given":"Michelle"},{"family":"Kharrazi","given":"Martin"},{"family":"Blount","given":"Benjamin C."},{"family":"Miller","given":"Mark D."},{"family":"Pearce","given":"Elizabeth N."},{"family":"Valentin-Blasini","given":"Liza"},{"family":"DeLorenze","given":"Gerald"},{"family":"Hoofnagle","given":"Andrew N."},{"family":"Liaw","given":"Jane"}],"issued":{"date-parts":[["2016",6]]}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. For populations with developing brains (e.g., fetuses, neonates, and children), disruptions in homeostatic thyroid hormone function can result in adverse neurodevelopmental effects (Alexander et al., 2017; Glinoer & Delange, 2000; Glinoer & Rovet, 2009; SAB for the U.S. EPA, 2013). Specifically, decreased maternal thyroid hormone levels during pregnancy, including in the hypothyroxinemic range[2], have been linked to decrements in neurocognitive function in offspring (Alexander et al., 2017; Thompson et al., 2018; Wang et al., 2016). There is also limited evidence to suggest an association with other adverse neurodevelopmental outcomes including ADHD, expressive language delay, reduced

[2] Maternal hypothyroxinemia is defined as TSH in the reference range and fT4 in the lower percentiles. The SAB notes that hypothyroxinemia has been defined by a "variety of cutoffs…ranging from fT4 below the 10th or 5th percentiles to below the 2.5th percentile" (SAB, 2013, p.10) in the population.

school performance, autism, and delayed cognitive development (Alexander et al., 2017; Ghassabian, Bongers-Schokking, Henrichs, Jaddoe, & Visser, 2011; Gyllenberg et al., 2016; Henrichs et al., 2010; Korevaar et al., 2016, Noten et al., 2015; Pop et al., 2003, 1999; SAB for the U.S. EPA, 2013; van Mil et al., 2012).

The difficulty in estimating the likelihood and magnitude of the potential implications of perchlorate's mode of action on expressed neurodevelopmental health effects in humans exposed to perchlorate during development is the lack of robust epidemiological studies, especially in sensitive populations. Therefore, based on the known mode of action of perchlorate the Agency estimated potential health risks using a novel approach suggested by the EPA's Science Advisory Board (SAB for the U.S. EPA, 2013). The EPA's approach to estimating perchlorate risks has evolved over time with improved research and modeling capabilities. The following sections describe information sources the EPA used in its assessment as well as the regulatory process followed by the Agency in its decision making.

A. 2008 Preliminary Regulatory Determinations

In 2005, at the request of the EPA and other federal agencies, the NRC evaluated the health implications of perchlorate ingestion. The NRC concluded that perchlorate exposure could inhibit the transport of iodide into the thyroid, leading to thyroid hormone deficiency (NRC, 2005). A significant inhibition of iodide uptake results in intra-thyroid iodide deficiency, decreased synthesis of T3 and T4, and increased TSH. The NRC also concluded that a prolonged decrease of thyroid hormones is potentially more likely to have adverse effects in sensitive

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populations (e.g., the fetuses of pregnant women who might have hypothyroidism or iodide deficiency). Based on these findings, the NRC recommended a reference dose of 0.7 µg/kg/day.

Based on NRC's analysis, the EPA established a perchlorate reference dose (RfD) of 0.7 µg/kg/day in 2005 (USEPA, 2005). This value was based on a no observed effect level (NOEL) of 7 µg/kg/day identified from a study (Greer, Goodman, Pleus, & Greer, 2002) of perchlorate's inhibition of radioactive iodine uptake in healthy adults and the application of an uncertainty factor of 10 for intraspecies variability.

As discussed above, in 2008, the EPA derived an HRL of 15 µg/L using the RfD of 0.7 µg/kg/day, a default bodyweight of 70 kg, a default drinking water consumption rate of 2 L/day, and a perchlorate-specific relative source contribution (RSC) of 62 percent that was derived for a pregnant woman (USEPA, 2008a) (73 FR 60262). The RSC is the percentage of the RfD remaining for drinking water after other sources of exposure to perchlorate (i.e., food) have been considered. The EPA's HRL was calculated to offer a margin of protection against adverse health effects to the subpopulation identified by the NAS as likely the most sensitive to the effects of perchlorate exposure, fetuses.

B. 2009 Supplemental Request for Comment and 2011 Final Regulatory Determination

The EPA received over 33,000 comments in response to its 2008 preliminary determination to not regulate perchlorate (USEPA, 2011a). After reviewing the comments, the EPA developed alternative HRLs for other sensitive populations in addition to fetuses of pregnant women. The EPA developed alternative HRLs for 14 life stages including infants and

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children. The EPA also evaluated the occurrence of perchlorate at levels above these alternative HRLs using the UCMR 1 occurrence data.

The analysis used the RfD of 0.7 µg/kg/day and life stage-specific bodyweight and exposure information (i.e., drinking water intake, RSC) for each of the 14 life stages evaluated. The resulting HRLs ranged from 1 µg/L to 47 µg/L. In August 2009, the EPA published a supplemental request for comment with the new analysis and HRLs (74 FR 41883; USEPA, 2009a). After careful consideration of public comments, on February 11, 2011, the EPA published its final determination to regulate perchlorate (76 FR 7762; USEPA, 2011a).

C. Science Advisory Board Recommendations

As required by Section 1412(d) of the SDWA, as part of the NPDWR development process, the EPA requested comments from the Science Advisory Board (SAB) in 2012, seeking guidance on how best to consider and interpret the life stage information, the epidemiologic and biomonitoring data since the NRC report, physiologically-based pharmacokinetic (PBPK) analyses, and the totality of perchlorate health information to derive an MCLG for perchlorate. The SAB recommended the following:

- derive a perchlorate MCLG that addresses sensitive life stages through physiologically based pharmacokinetic/pharmacodynamic (PBPK/PD) modeling based upon perchlorate's mode of action rather than the default MCLG approach using the RfD and specific chemical exposure parameters;

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- expand the modeling approach to account for thyroid hormone perturbations and potential adverse neurodevelopmental outcomes from perchlorate exposure;
- utilize a mode-of-action framework for developing the MCLG that links the steps in the proposed mechanism leading from perchlorate exposure through iodide uptake inhibition – to thyroid hormone changes – and finally to neurodevelopmental impacts; and
- "Extend the [BBDR] model expeditiously to…provide a key tool for linking early events with subsequent events as reported in the scientific and clinical literature on iodide deficiency, changes in thyroid hormone levels, and their relationship to neurodevelopmental outcomes during sensitive early life stages" (SAB for the U.S. EPA, 2013, p. 19).

This SAB-proposed framework would incorporate the previous endpoint of iodide uptake inhibition that was the basis for the RfD as part of a broader and more comprehensive framework that links perchlorate exposure to adverse neurodevelopmental outcomes. It also focuses on the smaller changes in thyroid hormones (specifically free T4 (fT4)) that are associated with maternal hypothyroxinemia and subsequent adverse neurodevelopmental health effects rather than the significant changes in thyroid hormones (both fT4 and TSH) that are associated with hypothyroidism.

D. Perchlorate Model Development and Peer Reviews

To address the SAB recommendations, the EPA revised an existing PBPK/PD model that describes the dynamics of perchlorate, iodide, and thyroid hormones in a woman during the third

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trimester of pregnancy (Lumen, Mattie, & Fisher, 2013; USEPA, 2009b). The EPA also created its own Biologically Based Dose Response (BBDR) models that included the additional sensitive life stages identified by the SAB, i.e., breast- and bottle-fed neonates and infants (SAB for the U.S. EPA, 2013, p. 19).

To determine whether the Agency had implemented the SAB recommendations for modeling thyroid hormone changes, the EPA convened an independent peer review panel to evaluate the BBDR models in January 2017 (External Peer Reviewers for USEPA, 2017). In addition to estimating effects on breast fed infants, several reviewers recommended that the EPA shift the primary focus of its analysis to modeling the exposure implications to the fetus during early pregnancy. This was based on the knowledge that fetuses lack a functioning thyroid gland until approximately 16 gestational weeks and the substantial epidemiological evidence linking early pregnancy low fT4 levels with adverse neurodevelopmental outcomes [ADDIN EN.CITE <EndNote><Cite><Author>Morreale de Escobar</Author><Year>2004</Year><RecNum>49</RecNum><DisplayText>(G Morreale de Escobar, Obregón, & Escobar del Rey, 2004)</DisplayText><record><rec-number>49</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1437077734">49</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Morreale de Escobar, G</author><author>Obregón, M J</author><author>Escobar del Rey, F</author></authors></contributors><titles><title>Role of

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thyroid hormone during early brain development</title><secondary-title>European Journal of Endocrinology</secondary-title></titles><periodical><full-title>European Journal of Endocrinology</full-title></periodical><pages>U25-U37</pages><volume>151</volume><number>Suppl 3</number><dates><year>2004</year><pub-dates><date>November 1, 2004</date></pub-dates></dates><urls><related-urls><url>http://www.eje-online.org/content/151/Suppl_3/U25.abstract</url></related-urls></urls><electronic-resource-num>10.1530/eje.0.151U025</electronic-resource-num></record></Cite></EndNote>]. Specifically, the SAB recommended that the EPA use specific sensitive populations to develop the MCLG for perchlorate: "the fetuses of hypothyroxinemic pregnant women, and infants exposed to perchlorate through either water-based formula preparations or the breast milk of lactating women" (SAB for the U.S. EPA, 2013, p. 19).

The EPA considered all recommendations from the 2017 peer review. The previously developed BBDR model describing perchlorate's effects in the third trimester (Lumen, Mattie, & Fisher, 2013; USEPA, 2009b) was calibrated only for that phase of pregnancy, not for the first trimester, and lacked a description of TSH signaling (feedback) that becomes significant as individuals become hypothyroxinemic or hypothyroid. In particular, this signaling was considered necessary to accurately predict responses of women with very low iodine intake, which was also part of the 2017 peer review recommendations. Therefore, the Lumen et al., (2009b) model needed to be revised to address these recommendations and the EPA

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implemented those changes needed to increase the scientific rigor of the model and modeling results. These modifications include:

- Extending the model to early pregnancy;
- Incorporating biological feedback control of hormone production via TSH signaling, such that the model can describe lower levels of iodide nutrition;
- Calibrating the model and evaluating its behavior for upper and lower percentiles of the population, as well as the population median; and
- Conducting an uncertainty analysis for key parameters.

The EPA convened a second independent peer review panel in January 2018 to evaluate these updates to the BBDR model. The EPA also presented several approaches in the draft *Proposed Approaches to Inform the Derivation of a Maximum Contaminant Level Goal for Perchlorate in Drinking Water* (MCLG Approaches Report) to link the thyroid hormone changes in a pregnant mother predicted by the BBDR model to neurodevelopmental effects using evidence from the epidemiological literature (External Peer Review for U.S. EPA, 2018). The 2018 peer review identified a variety of strengths and limitations of the modeling (to be discussed in more detail later in this notice). The peer review panel was largely supportive of the efforts described in the MCLG Approaches Report, as evidenced by the following from the peer review final report:

> *Overall, the panel agreed that the EPA and its collaborators have prepared a highly innovative state-of-the-science set of quantitative tools to evaluate*

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neurodevelopmental effects that could arise from drinking water exposure to perchlorate. While there is always room for improvement of the models, with limited additional work to address the committee's comments [in the peer-reviewed report], the current models are fit-for-purpose to determine an MCLG (External Peer Reviewers for U.S. EPA, 2018, p. 2).

The EPA also presented an alternative, population-based approach evaluating the shift in the proportion of the population that would fall below a hypothyroxinemic cut point, given exposure to perchlorate (Section 7 of the MCLG Approaches Report). This approach does not directly connect the BBDR output to a neurodevelopmental endpoint. However, for pregnant women in early pregnancy, this shift could be related to avoiding an increase in the population of offspring's risk of adverse neurodevelopmental impacts. The 2018 peer review identified strengths associated with this approach, including

1) the central premise, that hypothyroxinemia is associated with adverse neurodevelopmental effects is supported by a large number of studies, including categorical studies; 2) this approach encompasses a variety of adverse neurodevelopmental outcomes, as indicated by these studies, rather than focusing on one or a limited number of adverse outcomes, as with the two-stage approach; and 3) this approach avoids all of the uncertainties associated with determining a quantitative relationship between a specific maternal fT4 level and the magnitude

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an adverse neurodevelopmental effect. (External Peer Reviewers for U.S. EPA, 2018, p. 7)

The peer reviewers expressed concern about hypothyroxinemia being a precursor effect, rather than an adverse health outcome, which they argued may create difficulties in explaining the basis for an MCLG based on this approach to some audiences. However, the EPA has used precursor effects as the basis for setting regulatory and non-regulatory limits previously. The peer-review panel also expressed concern that a standard definition of hypothyroxinemia has not yet been established, as clinicians use varying fT4 thresholds to define their own working definition of the condition. This also could lead to difficulties communicating the population at risk for developing this precursor effect as a result of perchlorate exposure.

Ultimately, the EPA chose to develop the MCLG using dose-response functions from the epidemiological literature to estimate neurodevelopmental impacts in the offspring of pregnant women exposed to perchlorate. The EPA selected this proposed approach because it is consistent with the SDWA's definition of an MCLG to avoid adverse health effects and because it is most consistent with the SAB recommendations. The EPA is requesting public comment in Section XIV on the adequacies and uncertainties of the methodology to derive the MCLG including the decision not to pursue this population-based approach for setting the MCLG.

Based on the comments of the peer reviewers, the EPA's final analysis informing the derivation of the MCLG and benefits of avoided perchlorate exposure is based upon a 2-step approach to modeling the neurodevelopmental effects on offspring of pregnant women exposed

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to perchlorate in drinking water (see Figure 1). In summary, because of the known mode of action, the lack of epidemiological studies particularly in the sensitive populations and the direction of the SAB to use a "data-driven approach [which] represents a more rigorous way to address differences in biology and exposure between adults and sensitive life stages" (p. 2, SAB 2013 for U.S. EPA), the EPA uses a combination of the BBDR model that simulates perchlorate potential impacts on maternal thyroid hormones during pregnancy and the epidemiology literature that relates incremental changes in maternal thyroid hormones to neurodevelopmental outcomes in children. The following sections describe the approach in greater detail, highlighting each step in which decisions and assumptions were made.

Figure 1. Two-Step Modeling Approach to Link Maternal Perchlorate Exposure to Measurable Adverse Neurodevelopmental Impacts in Offspring

[EMBED Visio.Drawing.15]

Note: Process figure does not imply the strength of scientific evidence.

E. Sensitive Population for Deriving MCLG

SDWA 1412(b)(4)(A) requires MCLGs to be set at a concentration in water "at which no known or anticipated adverse effects on the health of persons occur and which allows an adequate margin of safety." SDWA 1412(b)(3)(C)(V) further requires that the EPA "consider the effects of the contaminant on the general population and on groups within the general population such as infants, children, pregnant women, the elderly, individuals with a history of serious illness, or other subpopulations that are identified as likely to be at greater risk of adverse health effects due to exposure to contaminants in drinking water than the general population." The EPA

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has interpreted these requirements to establish MCLGs that avoid adverse effects within the portions of the population that are at greater risk of adverse effects from exposure to the contaminant. The EPA is proposing an MCLG that is developed to protect the fetuses of a first trimester pregnant mother with low-iodine intake levels (i.e., 75 µg/kg/day), low fT4 levels (i.e., 10th percentile of an fT4 distribution for individuals with 75 µg/day iodine intake), and weak TSH feedback strength (i.e., TSH feedback is reduced to be approximately 60 percent less effective than for the median individual). The choice of this population is consistent with discussion by the NRC (2005), and the SAB (2013). The EPA believes that by protecting this population, the other sensitive populations (i.e., breast- and bottle-fed infants) will also be protected. This conclusion is based on the EPA's analysis of predictions of the impact of perchlorate on fT4 levels from the original EPA BBDR model (which was peer reviewed in January of 2017) and an analysis of the literature on the connection between altered thyroid hormones in these life stages, and neurodevelopmental outcomes.

The EPA's original BBDR model demonstrated that perchlorate had minimal impact on the thyroid hormone levels for 30-, 60-, and 90-day formula-fed infants, even at doses as high as 20 µg/kg/day. Specifically, the model demonstrated that "the range of iodine levels in formula is sufficient to almost entirely offset the effects of perchlorate exposure at 30, 60 and 90 days" [ADDIN EN.CITE <EndNote><Cite><Author>U.S. EPA</Author><Year>2016</Year><RecNum>246</RecNum><Suffix>`; p. 73</Suffix><DisplayText>(U.S. EPA, 2016; p. 73)</DisplayText><record><rec-

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number>246</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1468339271">246</key></foreign-keys><ref-type name="Generic">13</ref-type><contributors><authors><author>U.S. EPA,</author></authors><secondary-authors><author>Paul Schlosser, Teresa Leavens, and Santhini Ramasamy</author></secondary-authors></contributors><titles><title>Biologically based dose response models for the effect of perchlorate on thyroid hormones in the infant, breast feeding mother, pregnant mother, and fetus: model development, revision, and preliminary dose-response analyses </title><secondary-title>Peer Review Draft</secondary-title></titles><dates><year>2016</year></dates><urls></urls></record></Cite></EndNote>]. As a result of these findings the EPA concluded that any MCLG based on the fetus of the first trimester hypothyroxinemic pregnant mother would also protect the formula-fed infant.

To determine if the same would be true for the breast-fed infant, the EPA compared the predicted percent change in fT4 experienced at given doses of perchlorate for both the breast-fed infant and the first trimester pregnant mother at varying doses of iodine intake[3] (50 to 100 µg/day). Assuming 2 or 4 µg/kg/day of perchlorate, the first trimester hypothyroxinemic pregnant mother has a greater percent change in fT4 compared to the 30 and 60 day breast-fed infant at all maternal iodine intake levels evaluated, except for the 30 day breast-fed infant of a mother consuming only 50 µg/day iodine. However, given that the original BBDR model did not

[3]Given that the current version of the BBDR model contains a TSH feedback loop and the infant models previously developed did not contain this feedback loop, this comparison is done with the feedback loop turned off.

have a TSH feedback loop, T4, fT4, T3 and fT3 predictions for lactating mothers with less than 75 µg/day iodine intake were considered highly uncertain because the thyroid hormone levels had fallen into the hypothyroid range.

The Agency found that there are reports in the scientific literature suggesting that minor perturbations in thyroid hormone levels in the first trimester mother may adversely impact her offspring's neurodevelopment. Specifically, some studies show that children exposed gestationally to maternal hypothyroxinemia (without hypothyroidism) have a higher risk of reduced levels of global and specific cognitive abilities, as well as increased rates of behavior problems including greater dysregulation in early infancy and attentional disorders in childhood [ADDIN EN.CITE ADDIN EN.CITE.DATA]. Notably these effects are correlated with both degree [ADDIN EN.CITE ADDIN EN.CITE.DATA] and duration [ADDIN EN.CITE <EndNote><Cite><Author>Pop</Author><Year>2003</Year><RecNum>25</RecNum><DisplayText>(Pop et al., 2003)</DisplayText><record><rec-number>25</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1432047641">25</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Pop, V J</author><author>Brouwers, E P</author><author>Vader, H L</author><author>Vulsma, T</author><author>van Baar, A L</author><author>de Vijlder, J J</author></authors></contributors><titles><title>Maternal hypothyroxinemia during early pregnancy and subsequent child development: a 3-year follow-up study</title><secondary-title>Clinical Endocrinology</secondary-

title></titles><periodical><full-title>Clinical Endocrinology</full-title></periodical><pages>282-288</pages><volume>59</volume><section>282</section><dates><year>2003</year></dates><urls></urls></record></Cite></EndNote>] of maternal hypothyroxinemia [ADDIN EN.CITE <EndNote><Cite><Author>SAB</Author><Year>2013</Year><RecNum>50</RecNum><Suffix>`; p. 10</Suffix><DisplayText>(SAB, 2013; p. 10)</DisplayText><record><rec-number>50</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1437138201">50</key></foreign-keys><ref-type name="Government Document">46</ref-type><contributors><authors><author>SAB,</author></authors><secondary-authors><author>U.S. Environmental Protection Agency,</author></secondary-authors></contributors><titles><title>Advice on approaches to derive a maximum contaminant level goal for perchlorate. EPA-SAB-13-004</title></titles><dates><year>2013</year></dates><pub-location>Washington, DC</pub-location><urls></urls></record></Cite></EndNote>].

The EPA did not find analogous evidence linking minor perturbations in thyroid hormones during infancy to adverse neurodevelopmental outcomes in infants. This finding is consistent with conclusions by the California Environmental Protection Agency (CalEPA) in their assessment of a public health goal for perchlorate [ADDIN EN.CITE <EndNote><Cite ExcludeAuth="1"><Author>California Environmental Protection Agency

(CalEPA)</Author><Year>2015</Year><RecNum>62</RecNum><Prefix>CalEPA`, </Prefix><Suffix>`; p. 90</Suffix><DisplayText>(CalEPA, 2015; p. 90)</DisplayText><record><rec-number>62</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1437413166">62</key></foreign-keys><ref-type name="Government Document">46</ref-type><contributors><authors><author>California Environmental Protection Agency (CalEPA),</author></authors><secondary-authors><author>Office of Environmental Health Hazard Assessment</author></secondary-authors></contributors><titles><title>Public health goal for perchlorate in drinking water</title></titles><dates><year>2015</year></dates><urls></urls></record></Cite></EndNote>].

Specifically, two studies evaluated both the impact of maternal hypothyroxinemia and infant fT4 levels on subsequent neurodevelopmental outcomes. [ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Costeira</Author><Year>2011</Year><RecNum>7</RecNum><DisplayText>Costeira et al. (2011)</DisplayText><record><rec-number>7</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1432047629">7</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Costeira, M. J.</author><author>Oliveira, P</author><author>Santos, N C</author><author>Ares, S</author><author>Sáenz-Rico,

B</author><author>Morreale de Escobar, G</author><author>Palha, J A</author></authors></contributors><titles><title>Psychomotor development of children from an iodine-deficient region</title><secondary-title>The Journal of Pediatrics</secondary-title></titles><periodical><full-title>The Journal of Pediatrics</full-title></periodical><pages>447-453</pages><volume>159</volume><number>3</number><dates><year>2011</year></dates><urls></urls><electronic-resource-num>10.1016/j.jpeds.2011.02.034</electronic-resource-num></record></Cite></EndNote>] found that children born to mothers with low fT4 in the first trimester had increased odds of mild-to-severe delays in psychomotor development compared to children born to mothers with normal fT4 levels. However, the authors found that neonatal thyroid status (measured on day 3 after birth) did not influence development. Additionally, [ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Henrichs</Author><Year>2010</Year><RecNum>928</RecNum><DisplayText>Henrichs et al. (2010)</DisplayText><record><rec-number>928</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1495206433">928</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Henrichs, J.</author><author>Bongers-Schokking, J. J.</author><author>Schenk, J. J.</author><author>Ghassabian, A.</author><author>Schmidt, H. G.</author><author>Visser, T. J.</author><author>Hooijkaas, H.</author><author>de Muinck Keizer-Schrama, S.

M.</author><author>Hofman, A.</author><author>Jaddoe, V. V.</author><author>Visser, W.</author><author>Steegers, E. A.</author><author>Verhulst, F. C.</author><author>de Rijke, Y. B.</author><author>Tiemeier, H.</author></authors></contributors><titles><title>Maternal thyroid function during early pregnancy and cognitive functioning in early childhood: The generation R study</title><secondary-title>Journal of Clinical Endocrinology and Metabolism</secondary-title><alt-title>J Clin Endocrinol Metab</alt-title><short-title>Journal of Clinical Endocrinology and Metabolism</short-title></titles><periodical><full-title>Journal of Clinical Endocrinology and Metabolism</full-title></periodical><alt-periodical><full-title>J Clin Endocrinol Metab</full-title></alt-periodical><pages>4227-4234</pages><volume>95</volume><number>9</number><dates><year>2010</year></dates><isbn>ISSN 0021-972X
EISSN 1945-7197</isbn><label>758743</label><urls><related-urls><url>http://dx.doi.org/10.1210/jc.2010-0415</url></related-urls></urls><electronic-resource-num>10.1210/jc.2010-0415</electronic-resource-num><language>English</language></record></Cite></EndNote>] found in their evaluation that although maternal hypothyroxinemia was associated with language delay and nonverbal cognitive delay, the neonatal thyroid status (thyroid hormones measured in cord blood) did not explain the relationship between maternal hypothyroxinemia, early pregnancy, and children's cognitive impairment.

The SAB pointed to two lines of evidence supporting their suggestion of the infant as a potentially sensitive population to perchlorate: preterm infants that experience transient hypothyroxinemia of prematurity (THOP) and infants that experience congenital hypothyroidism (SAB for the U.S. EPA, 2013). Thus, sufficient thyroid hormone levels in infancy are necessary for the infant brain to develop properly. However, the best evidence linking perturbations in thyroid hormone levels to disrupted neurodevelopment for infants are in individuals with significant thyroid deficiencies manifesting as clinical conditions (e.g., THOP and congenital hypothyroidism). It is unclear and unknown if minor perturbations in thyroid hormones in infants, such as those that could be caused by environmental levels of perchlorate, would result in adverse neurodevelopmental outcomes similar to those seen in the literature for the offspring of first trimester pregnant mothers with hypothyroxinemia. Given the lack of evidence demonstrating minor perturbations in infant fT4 levels as being associated with neurodevelopmental outcomes, the EPA has concluded that it is appropriate to derive the perchlorate MCLG to protect the first trimester fetus of a pregnant mother with low-iodine intake. The EPA concludes that an MCLG calculated to offer a margin of protection against adverse health effects to these fetuses targets the most sensitive lifestage and will be protective of other potentially sensitive life stages as well.

F. BBDR Model Specification for the Sensitive Population

The BBDR model used to develop the proposed MCLG has two main components:

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- A pharmacokinetic model for perchlorate and iodide, which describes chemical absorption, distribution, metabolism, and excretion of perchlorate and iodide; and
- A pharmacodynamic model, which describes the joint effect of varying perchlorate and iodide blood concentrations on thyroidal uptake of iodide and subsequent production of thyroid hormones, including fT4.

The pharmacokinetic model component contains a physiological description of a human mother and fetus during pregnancy (e.g., organ volumes, blood flows) and chemical-specific information (e.g., partition coefficients, volume of distribution, rate constants for transport, metabolism, and elimination) that enable a prediction of perchlorate and iodide internal concentration at the critical target (i.e., thyroidal sodium-iodide symporter of the mother) in association with a particular exposure scenario (route of exposure, age, dose level). This component of the model is similar to many other PBPK models. Because perchlorate does not undergo metabolism in vivo (Clewell et al., 2007), potential uncertainty from this factor of the model is avoided since it does not need to be described.

The pharmacodynamic component of the model uses this internal concentration to simulate how the chemical will act within a known mechanism of action to perturb host systems and lead to a toxic effect.

Thus, the BBDR model estimates serum thyroid hormone levels in the mother at specific gestational weeks, given specific levels of iodine intake, the TSH feedback loop strength, and perchlorate doses. As noted above, to be health protective the EPA chose to model a sensitive

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individual (an adult woman with low iodine through the first trimester of pregnancy) to derive an MCLG, thereby protecting both this target sensitive population with an adequate margin of safety and those who are less sensitive with an even larger margin of safety.

The BBDR model simulates perchlorate's impact on thyroid hormones at each gestational week from conception to week 16. To derive the MCLG, the EPA selected outputs for gestational week 13 to correspond with the thyroid hormone data reported in Korevaar et al., (2016), which is the basis for the Agency's quantitative relationship between maternal thyroid hormone levels and neurodevelopmental impacts.

Individuals with low iodine intake have increased sensitivity to perchlorate's impact on thyroid hormone levels because the functional iodide reserve of the hypothalamic-pituitary-thyroid (HPT) system is limited [ADDIN EN.CITE <EndNote><Cite><Author>Leung</Author><Year>2010</Year><RecNum>1160</RecNum><DisplayText>(Leung, Pearce, & Braverman, 2010)</DisplayText><record><rec-number>1160</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1495206437">1160</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Leung, A. M.</author><author>Pearce,</author><author>Braverman</author></authors></contributors><titles><title>Perchlorate, iodine and the thyroid</title><secondary-title>Best Practice and Research: Clinical Endocrinology and Metabolism</secondary-title><alt-title>Best Pract Res

Clin Endocrinol Metab</alt-title><short-title>Best Practice and Research: Clinical Endocrinology and Metabolism</short-title></titles><alt-periodical><full-title>Best Pract Res Clin Endocrinol Metab</full-title></alt-periodical><pages>133-141</pages><volume>24</volume><number>1</number><dates><year>2010</year></dates><isbn>ISSN 1521-690X
EISSN 1532-1908</isbn><label>755955</label><work-type>Review</work-type><urls><related-urls><url>http://dx.doi.org/10.1016/j.beem.2009.08.009</url></related-urls></urls><electronic-resource-num>10.1016/j.beem.2009.08.009</electronic-resource-num><language>English</language></record></Cite></EndNote>]. The EPA selected an iodine intake level of 75 µg/day to simulate an individual with low-iodine intake. This value represents an intake between the 15th and 20th percentile of the women of child bearing age population distribution of estimated iodine intake from the National Health and Nutrition Examination Survey (NHANES). The EPA considered using a lower iodine intake level of 50 µg/day, which represents approximately the 5th percentile of the NHANES distribution. At 50 µg/day of iodine intake, however, the BBDR model predicts TSH levels that would be elevated to within the clinically hypothyroid range before exposure to any perchlorate[4] (TSH

[4] For the purposes of this analysis, the EPA evaluated the American Thyroid Association's (ATA's) 2017 recommendations for defining hypothyroidism [ADDIN EN.CITE <EndNote><Cite><Author>Alexander</Author><Year>2017</Year><RecNum>1895</RecNum><DisplayText>(Alexander et al., 2017)</DisplayText><record><rec-number>1895</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1497970921">1895</key></foreign-keys><ref-type

name="Journal Article">17</ref-type><contributors><authors><author>Alexander, E. K.</author><author>Pearce, E. N.</author><author>Brent, G. A.</author><author>Brown, R. S.</author><author>Chen, H.</author><author>Dosiou, C., </author><author>Sullivan, S.</author></authors></contributors><titles><title>2017 Guidelines of the American Thyroid Association for the diagnosis and management of thyroid disease during pregnancy and the postpartum</title><secondary-title>Thyroid</secondary-title></titles><periodical><full-title>Thyroid</full-title></periodical><pages>315-389</pages><volume>27</volume><number>3</number><dates><year>2017</year></dates><urls></urls></record></Cite></EndNote>]. Specifically the ATA recommends "in the pregnancy setting, maternal hypothyroidism is defined as a TSH concentration elevated beyond the upper limit of the pregnancy-specific reference range" [ADDIN EN.CITE <EndNote><Cite><Author>Alexander</Author><Year>2017</Year><RecNum>1895</RecNum><Pages>332</Pages><DisplayText>(Alexander et al., 2017, p. 332)</DisplayText><record><rec-number>1895</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1497970921">1895</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Alexander, E. K.</author><author>Pearce, E. N.</author><author>Brent, G. A.</author><author>Brown, R. S.</author><author>Chen, H.</author><author>Dosiou, C., </author><author>Sullivan, S.</author></authors></contributors><titles><title>2017 Guidelines of the American Thyroid Association for the diagnosis and management of thyroid disease during pregnancy and the postpartum</title><secondary-title>Thyroid</secondary-title></titles><periodical><full-title>Thyroid</full-title></periodical><pages>315-389</pages><volume>27</volume><number>3</number><dates><year>2017</year></dates><urls></urls></record></Cite></EndNote>]. ATA goes on to state, in the absence of population- and trimester-specific reference ranges defined by a provider's institute or laboratory, that the TSH reference ranges should be obtained from similar patient populations. From their recommended studies with trimester-specific data on a U.S. population, Lambert-Meserlian et al. [ADDIN EN.CITE <EndNote><Cite ExcludeAuth="1"><Author>Lambert-Messerlian</Author><Year>2008</Year><RecNum>100</RecNum><DisplayText>(2008)</DisplayText><record><rec-number>100</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1443808320">100</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Lambert-Messerlian, Geralyn</author><author>McClain, Monica</author><author>Haddow, James E</author><author>Palomaki, Glenn E</author><author>Canick, Jacob A</author><author>Cleary-Goldman, Jane</author><author>Malone, Fergal D</author><author>Porter, T Flint</author><author>Nyberg, David A</author><author>Bernstein, Peter</author></authors></contributors><titles><title>First-and second-trimester thyroid hormone reference data in pregnant women: a FaSTER (First-and Second-Trimester Evaluation of Risk for aneuploidy) Research Consortium study</title><secondary-title>American journal of obstetrics and gynecology</secondary-title></titles><periodical><full-title>American journal of obstetrics and gynecology</full-title></periodical><pages>62-e1</pages><volume>199</volume><number>1</number><dates><year>2008</year></dates><publisher>Elsevier</publisher><isbn>0002-9378</isbn><urls></urls></record></Cite></EndNote>] is the largest U.S.-based population with a reference range upper bound of 3.37 mIU/L for the first trimester (and 3.35 mIU/L for the second trimester). Therefore, these values were used to compare to BBDR output TSH values in the first trimester (or second trimester in cases of gestational weeks 15 and 16) to determine the presence of hypothyroidism.

ranges between 4.51 and 5.41 milli-international units per liter (mIU/L) at zero dose of perchlorate when evaluating gestational weeks 12 or 13). In contrast, at 75 µg/day iodine, the BBDR modeled concentrations of serum fT4 and TSH are significantly reduced from the population median but are still within the euthyroid range. Thus, the intake of 75 µg/day is a better approximation of the sensitive population – the offspring of pregnant women who have low fT4.

TSH increases in response to decreases in T4 have been captured in numerous studies that document the relationship between these hormones[ADDIN EN.CITE ADDIN EN.CITE.DATA]. The EPA designed the BBDR model to depict this feedback regulation by adjusting a set of three parameters: the number of sodium-iodide symporter sites, the T4 synthesis rate, and the T3 synthesis rate. The BBDR model allows for variability in the strength of the TSH feedback by varying these parameters with a variable called "pTSH." For the MCLG analysis, the EPA used a pTSH value of 0.398, which is the ratio of a median value for TSH from NHANES (non-pregnant women) to the 97.5 percentile value from NHANES (non-pregnant women). This value represents an assumption that sensitive individuals with high TSH and average fT4 levels exist, and this is because the stimulus strength of TSH is proportionally weaker. The EPA chose to use a low TSH feedback coefficient to ensure the MCLG is protective of the sensitive population.

Example output from the BBDR model for gestational week 13 and a low TSH feedback coefficient is presented in Table III-1.

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Table III-1. Summary of BBDR Model Results for fT4 Levels: Pregnant Women at Gestational Week 13, Assuming Low (75 µg/day) Iodine Intake and with Muted TSH feedback strength[a][]

Perchlorate Dose (µg/kg/day)	Percentile fT4 (pmol/L)[b] (% decrease from 0 dose)			
	2.5th	5th	10th	50th
0	5.57	6.09	6.70	8.84
1	5.50 (-1.26%)	6.02 (-1.15%)	6.63 (-1.04%)	8.77 (-0.79%)
2	5.43 (-2.45%)	5.96 (-2.24%)	6.56 (-2.04%)	8.71 (-1.54%)
3	5.37 (-3.59%)	5.96 (-3.28%)	6.50 (-2.98%)	8.64 (-2.26%)
4	5.31 (-4.68%)	5.83 (-4.28%)	6.44 (-3.89%)	8.58 (-2.95%)
5	5.25 (-5.73%)	5.77 (-5.23%)	6.38 (-4.76%)	8.52 (-3.60%)
6	5.19 (-6.73%)	5.72 (-6.14%)	6.33 (-5.59%)	8.47 (-4.23%)
7	5.14 (-7.69%)	5.66 (-7.02%)	6.27 (-6.39%)	8.41 (-4.84%)

[a] pTSH = 0.398; see USEPA, (2018b) for additional information on pTSH.

[b] The 50th percentile is direct output from the BBDR model, and additional percentiles are estimated by assuming a normal distribution with a SD of 1.67. All of the examined study data demonstrated a positive skew, and overall the lognormal function demonstrated a better fit than a normal distribution. Despite this, the available study data only accounted for variation due to gestation week and did not account for variation in perchlorate and iodine intake in the measured populations. Because perchlorate and iodine can affect fT4 levels, and this relationship produced the estimated median BBDR values, the distribution around values estimated by the model from perchlorate and iodine intake should account for a small reduction in variation due to the effect of perchlorate and iodine intake. Additionally, as iodine has a demonstrated lognormal distribution with strong right skew (e.g. Blount et al., 2007) and is predicted to have a stronger effect on fT4 than perchlorate (see Section 3). The EPA assumed the error around predicted fT4 would likely be closer to normal than lognormal after accounting for perchlorate and iodine intake.

When modeling changes in fT4, the baseline level of fT4 affects the magnitude of changes seen as a result of perchlorate exposure. Therefore, to predict the impact of perchlorate exposure on the population distribution of fT4 for the identified sensitive population, the EPA estimated a distribution for fT4 plasma concentrations around the median modeled values based on fT4 data from studies that were used to calibrate the BBDR model (C. Li et al., 2014; Männistö et al., 2011; Zhang et al., 2016). The EPA assumed the variation around predicted fT4 concentrations for women with low fT4 of childbearing age would likely be close to normal after accounting for perchlorate and iodine intake, and thus estimated a combined standard deviation (SD) using the distributional information from each of the studies (C. Li et al., 2014; Männistö et al., 2011; Zhang et al., 2016). The EPA then used the estimated combined SD to predict a distribution of fT4 around the median fT4 estimated by the BBDR model. To protect the most sensitive population from adverse effects, the EPA chose to use the 10th percentile from this distribution of baseline fT4 to conduct its analyses to account for variability in thyroid hormones in the population[5].

G. Epidemiological Literature

The SAB recommended that the EPA integrate BBDR model results with data on neurodevelopmental outcomes from epidemiological studies. There is substantial epidemiological evidence that early pregnancy hypothyroxinemia is a risk factor for a variety of

[5] For a discussion on the details of the BBDR model, including uncertainties associated with the model the reader is directed to section 3.5 of the MCLG Approaches Report.

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adverse neurodevelopmental outcomes, including those related to both cognition and behavior (Costeira et al., 2011; Finken, van Eijsden, Loomans, Vrijkotte, & Rotteveel, 2013; Ghassabian et al., 2014; Gyllenberg et al., 2016; Henrichs et al., 2010; Júlvez et al., 2013; Kooistra, Crawford, van Baar, Brouwers, & Pop, 2006; Korevaar et al., 2016; Y. Li et al., 2010; Oostenbroek et al., 2017; Päkkilä et al., 2015; Pop et al., 2003, 1999; Roman et al., 2013; van Mil et al., 2012). These individual studies showing that maternal hypothyroxinemia is associated with offspring neurodevelopment are also supported by three meta-analyses (including one full systematic review), all of which conclude maternal hypothyroxinemia is associated with increased risk of cognitive delay, intellectual impairment, or lower scores on performance tests when considering the entire body of evidence on this topic [ADDIN EN.CITE ADDIN EN.CITE.DATA]. Additionally, the American Thyroid Association concludes that "overall, available evidence appears to show an association between hypothyroxinemia and cognitive development of the offspring" (Alexander et al., 2017, p. 337).

The EPA did not conduct a full systematic review and weight of evidence evaluation between maternal thyroid hormones and neurodevelopmental outcomes given: 1) the body of scientific literature regarding this association, and 2) the SAB recommendation that the EPA "consider available data on potential adverse health effects (neurodevelopmental outcomes) due to thyroid hormone level perturbations regardless of the cause of those perturbations" (p. 25). Instead, the EPA conducted a "methodologic approach to reviewing the literature" to evaluate the body of literature on this topic. This approach assisted in extrapolating the relationship

modeled by the BBDR model to neurodevelopmental outcomes by concentrating on studies that allowed for evaluation of incremental changes in fT4 as they relate to incremental changes in neurodevelopmental outcomes. More specifically, the EPA only used studies that had sufficient data to show a quantitative relationship between maternal fT4 and a neurodevelopmental outcome. The EPA acknowledges that by not giving any weight to the studies that did not show a quantitative relationship between fT4 and neurodevelopmental outcomes, the Agency may be overestimating the dose of perchlorate that may be associated with adverse neurodevelopmental outcomes. This is a health protective decision that adds to the margin of safety.

Ultimately, the EPA developed a dose-response function that estimates incremental changes in a neurodevelopmental endpoint based on a given change in thyroid hormone concentration (fT4), which could be linked to a given dose of perchlorate using the BBDR model.

The specifics of this "methodologic approach to reviewing the literature" follow. First, the EPA identified and screened the available 71 epidemiological studies, which potentially pertained to altered maternal thyroid hormone levels and offspring neurodevelopment to identify candidates based on the following criteria:

- Compatible with the sensitive life stages identified by the NRC and SAB;
- Continuous measure of thyroid hormone values (versus categorical values);
- Low risk of bias based on analysis using the National Toxicology Program's Office of Health Assessment and Translation (OHAT) Risk of Bias (ROB) tool score; and

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- Access to underlying data.

Second, using these screening steps, the EPA categorized all 71 studies into three groups. One group consisted of studies that were not compatible[6] with extending the BBDR model (40 studies). Another group consisted of papers that were relevant to the pertinent life stages but did not have data from which a dose-response analysis could be conducted (15 studies). This includes studies that compared differences between groups, for example studies of offspring of mothers with hypothyroxinemia versus offspring of mothers without hypothyroxinemia. Consequently, these studies may have provided insight into the maternal thyroid hormone and offspring neurodevelopment relationship but did not have enough information to develop a continuous dose-response function. The last group of papers had data that may inform a dose-response function (16 studies). This last group of papers included publications that may have had categorical analyses but also presented data that assessed fT4 as a continuous variable and the outcome of interest. In most instances, the continuous fT4 variable encompassed the full range for fT4 and not just the hypothyroxinemic range. After excluding one paper due to a high risk of bias (Kastakina et al., 2006) 15 papers remained that potentially had dose-response data between

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[6] For example, if the study evaluated the impact of only neonatal thyroid hormones (i.e., at a potentially sensitive life stage), it cannot be used because the BBDR model is specific to early pregnancy. Further, if the study evaluates a population with an existing disease (i.e., hypothyroidism) that may have a different response to perchlorate compared to the euthyroid population, it was not considered compatible with BBDR model results. Additionally, if the study does not include information on T4 or fT4, it does not assist in understanding the implications of the BBDR modeling results. Another reason for exclusion at this stage include that the study does not have a population with an exposure window (i.e., when the thyroid hormone measurements are taken) that overlaps with the outputs for the BBDR model. Specifically, the study should evaluate thyroid hormone levels in pregnant mothers between conception and gestational week 16. The neurodevelopmental outcomes could be measured at any life stage.

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a continuous measure of fT4 and various neurodevelopmental outcomes describing cognition, behavior and other outcomes. The EPA notes that by selecting the papers that potentially had dose response data the Agency is deviating from the systematic weight of evidence review approach to identify those studies that the SAB recommended we examine to derive the MCLG.

Third, from these 15 papers five were selected for dose response assessment - four related to cognition[ADDIN EN.CITE ADDIN EN.CITE.DATA] and one related to behavior [ADDIN EN.CITE

<EndNote><Cite><Author>Endendijk</Author><Year>2017</Year><RecNum>1915</RecNum><DisplayText>(Endendijk, Wijnen, Pop, & van Baar, 2017)</DisplayText><record><rec-number>1915</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1503500102">1915</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Endendijk, J.J.</author><author>Wijnen, H.A.</author><author>Pop, V.J.</author><author>van Baar, A.L.</author></authors></contributors><titles><title>Maternal thyroid hormone trajectories during pregnancy and child behavioral problems</title><secondary-title>Horm Behav</secondary-title></titles><periodical><full-title>Horm Behav</full-title></periodical><pages>84-92</pages><volume>94</volume><dates><year>2017</year></dates><urls></urls></record></Cite></EndNote>]. The other ten papers were excluded for a variety of reasons including

updated analyses being presented in a different paper for which dose-response analysis was being conducted, lack of all the data needed to complete a dose-response assessment (e.g., dose-response results were presented as "per standard deviation of fT4" but the standard deviation needed to fully interpret the results for a continuous function was not presented in the paper, statistical methods presented in the paper were insufficient to allow for the derivation of a concentration response function), or a lack of a relationship between maternal fT4 as a continuous variable and the outcome of interest evaluated in the paper. For example, Noten et al., (2015) found a relationship between maternal hypothyroxinemia and offspring arithmetic test performance. However, maternal fT4 as a continuous variable across the entire fT4 range was not associated with arithmetic test performance. Given this null finding, as well as the lack of published literature evaluating maternal fT4 as a continuous variable and arithmetic test performance, it would be difficult for the Agency to justify setting an MCLG based on changes in this endpoint.

As laid out for the peer reviewers, for each study that met the criteria identified above for dose-response modeling, a relationship between maternal thyroid hormone levels (specifically fT4) and offspring neurodevelopment was derived (see USEPA, 2018b). These relationships were either presented in the original published paper or derived by the EPA through either the digitization of figures or through re-analysis of data provided by the study authors. The EPA used the upper effect estimate (the upper bound of the 95th percent confidence interval) from

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each study to assure consideration of the populations likely to be at greater risk from the dose of perchlorate associated with a given change in fT4.

Table III-2 provides a summary of the changes in fT4 predicted to produce a 1, 2, and 3 percent decrease in any given neurodevelopmental effect and corresponding perchlorate doses. The choice of 1, 2, and 3% is based on the analyses for IQ, Mental Development Index (MDI), and Psychomotor Development Index (PDI). Specifically, a 1%, 2%, or 3% change from the standardized mean for each test (i.e., 100 points) equates to a 1, 2, or 3 point change, respectively. The analyses for anxiety/depression score and SD of reaction time are based on a 1%, 2%, or 3% change from the study mean of each measure, which for anxiety/depression is 0.01, 0.02, or 0.03 points, respectively, and for reaction time is 2.7, 5.4, and 8.1 milliseconds (study mean SD of reaction time = 270 ms), respectively (Endendijk et al., 2017; Finken et al., 2013).

These results provide the potential impacts of perchlorate on maternal fT4 (as predicted by the BBDR model) and subsequent neurodevelopmental impacts (derived from the epidemiologic literature[7]).

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[7] For a more complete description of all the studies evaluated the reader is directed to Sections 5 and 6 of the MCLG Approaches Report. For a discussion on the uncertainties related to the approach the reader is directed specifically to section 6.5.

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Table III-2. Estimated Dose of Perchlorate per 1, 2, and 3 Percent Decrease[a] in Neurodevelopment for the Population of Low-Iodine Intake Women of Reproductive Age Based on Upper Effect Estimates at the 10th Percentile fT4 Level[b]

Study	Endpoint	Dose-Response Function	β (95% CI)	ΔfT4 in pmol/L Associated with a 1% to 3% Decrease in Endpoint (% ΔfT4 from 0 dose perchlorate, iodine intake = 75 µg/day)[a,b,c]			Dose of Perchlorate per 1% to 3% Decrease in Endpoint (µg/kg/day)[a,b,c]		
				1%	2%	3%	1%	2%	3%
Korevaar et al., (2016) Quadratic	IQ	$\Delta IQ = (\beta_1 \times lnfT4_2 + \beta_2 \times ln(fT4_2)^2) - (\beta_1 \times lnfT4_1 + \beta_2 \times ln(fT4_1)^2)$	β1 = 33.8 (9.8, 57.8) β2 = -6.2 (-10.6, -1.9)	-0.13 (1.9%)	-0.25 (3.8%)	-0.38 (5.7%)	1.9	3.9	6.1
Korevaar et al., (2016) EPA independent analysis	IQ	$\Delta IQ = (\beta_1 \times \ln(fT4_2)) - (\beta_1 \times \ln(fT4_1))$	17.26 (3.77, 30.75)	-0.21 (3.1%)	-0.41 (6.2%)	-0.61 (9.2%)	3.1	6.7	10.8
Pop et al., (2003)	MDI	$\Delta MDI = \beta \times \Delta fT4$	6.3 (1.92, 10.6)	-0.09 (1.0%)	-0.19 (2.8%)	-0.28 (4.2%)	1.3	2.8	4.3
Pop et al., (2003)	PDI	$\Delta PDI = \beta \times \Delta fT4$	8.4 (4.0, 12.8)	-0.08 (0.9%)	-0.16 (2.4%)	-0.23 (3.5%)	1.1	2.3	3.5

Study	Endpoint	Dose-Response Function	β (95% CI)	ΔfT4 in pmol/L Associated with a 1% to 3% Decrease in Endpoint (% ΔfT4 from 0 dose perchlorate, iodine intake = 75 µg/day)[a,b,c]			Dose of Perchlorate per 1% to 3% Decrease in Endpoint (µg/kg/day)[a,b,c]		
				1%	2%	3%	1%	2%	3%
Pop et al., (1999)	PDI	$\Delta PDI = \beta \times \Delta fT4$	8.5 (0.01, 17.0)	-0.06 (0.6%)	-0.12 (1.8%)	-0.18 (2.6%)	0.8	1.7	2.6
Endendijk et al., (2017)	Anxiety/ depression score	$\Delta AD = \left(\frac{1}{\beta * fT4_2}\right) - \left(\frac{1}{\beta * fT4_1}\right)$	0.12 (0.11, 0.13)	-0.03 (0.45 %)	-0.08 (1.2%)	-0.12 (1.9%)	0.4	1.1	1.8
Finken et al., (2013)	SD of reaction time	ΔSD Reaction Time (ms) = β × Δ fT4	-4.9 (-9.5, -0.2)	-0.28 (4.2%)	-0.57 (8.5%)	-0.85[d] (12.7 %)	4.4	9.8	16.5[d]

[a]. The analyses for IQ, Mental Development Index (MDI), and Psychomotor Development Index (PDI) are based on a 1%, 2%, or 3% change from the standardized mean for each test (i.e., 100 points), which equates to a 1, 2, or 3 point change, respectively. The analyses for anxiety/depression score and SD of reaction time are based on a 1%, 2%, or 3% change from the study mean of each measure, which for anxiety/depression is 0.01, 0.02, or 0.03 points, respectively, and for reaction time is 2.7, 5.4, and 8.1 milliseconds (study mean SD of reaction time = 270 ms), respectively.

[b]. This is based on the regression analysis for the range of fT4 data within each study using the upper beta estimates from the 95% CI. These results are for the low-iodide intake population of 75 µg/day. In all functions, fT4 is in units of pmol/L.

[c]. The BBDR model with a pTSH of 0.398 was used for these analyses.

[d]. The value which results in a 3% change in the standard deviation of reaction time falls between 16 and 17 µg/kg/day. Because data was not available on the changes of fT4 at doses between 16 and 17 µg/kg/day perchlorate, the EPA took the midpoint of the range of values for the change in fT4 at 16 and 17 µg/kg//day and assumed the dose of perchlorate associated with this change was the midpoint between 16 and 17 µg/kg/day.

H. Identifying a Point of Departure for Developing the MCLG

From the seven analyses presented in Table III-2 above, the EPA chose to use its independent analysis of the Korevaar et al., (2016) data (comprising of 3,600 useable mother/child data pairs) as the basis for calculating the point of departure (POD) for the MCLG. There are three reasons for this selection: 1) there is sufficient quantitative data to derive a health impact function for the sensitive population of interest; 2) the analysis adjusts for an appropriate set of confounders, and 3) the neurodevelopmental endpoint – intelligence quotient (IQ) – is more straightforward to interpret because there is more national and cross-national data available (more on the selection of this endpoint below). The other studies presented in Table III-2 do not provide one or more of these features (USEPA, 2018b).

The five identified papers evaluated a variety of endpoints with Korevaar et al., (2016) evaluating IQ, Pop, Kuijpens, et al., (1999) and Pop, Brouwers, et al., (2003) using the Bayley Scale to evaluate PDI and MDI, Finken, van Eijsden, Loomans, Vrijkotte, and Rotteveel (2013) evaluating the SD of reaction time, and Endendijk, Wijnen, Pop, and van Baar (2017) evaluating anxiety/depression scores using the Child Behavioral Check List (CBCL). The SD of reaction time from Finken et al., (2013) was not well-received by the peer reviewers (External Peer Review for U.S. EPA, 2018) because it is difficult to ascertain the true implications of a change in the SD of reaction time. The Endendijk et al., (2017) study was identified after the peer review so no feedback was given on the appropriateness of the endpoint; however, the

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anxiety/depression raw score is not an intuitively interpretable endpoint. Further, neither the Endendijk et al., (2017) nor the Finken et al., (2013) analyses had functions for the sensitive life stage (i.e., their analyses were based on the full range of fT4 levels and did not concentrate on the impacts of low-end fT4 levels). For these reasons, the Endendijk et al., (2017) and Finken et al., (2013) papers were not selected for further evaluation.

The Korevaar et al., (2016) original and independent analyses are preferable compared to the Pop, Kuijpens, et al., (1999) and Pop, Brouwers, et al., (2003) studies because neither function derived from the Pop et al., studies was adjusted for confounders. Additionally, both Pop et al., papers have an N < 50 compared to the Korevaar et al., analyses, which have an N of greater than 3,600.[8]

Although the original Korevaar et al., (2016) analysis was the most rigorous analysis available in the literature to date, the Korevaar et al., (2016) EPA reanalysis was chosen over the original analysis because it included modifications to the analysis at the suggestion of the peer review panel. The revised analysis controls for a more parsimonious set of confounders (e.g., previously included variables such as infant gender, maternal parity, birthweight, mother's body mass index (BMI), and gestational age at blood draw that are not related to both the exposure and the outcome were excluded), thus decreasing the chances of overfitting the estimation of the association between maternal fT4 and child IQ. The EPA was prompted to revisit the original

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[8] The original Korevaar et al. (2016) analysis included 3,839 mother/child pairs. The EPA reanalysis of the Korevaar et al. (2016) data had a slightly lower N of 3,609 due to the exclusion of subjects with imputed values for maternal fT4.

Korevaar et al., (2016) model because of the feedback received during the peer review of the MCLG Approaches Report. Specifically, a member of the peer-review panel expressed the following suggestion:

> *Korevaar et al., [2016] controlled for instrumental variables (e.g. gestational week at fT4 measurement) as well as variables that are consequences of altered fT4 (e.g. maternal BMI), which may have biased estimates. This study also assumed a log-linear relation between fT4 and the outcome but it is unclear whether the data fit this functional form better than a linear form. Reanalysis of the data performed by EPA should not include the variables noted above, which may have driven measures of association towards the null, and should investigate the most appropriate functional form to inform decisions about transformation of fT4 values* (External Peer Reviewers for U.S. EPA, 2018, pp. 61–62).

The EPA responded to this suggestion by developing a causal model for the effect of maternal fT4 on child IQ to identify the minimum set of confounding variables, testing the proper functional form of the relationship between maternal fT4 and child IQ in the Korevaar et al., (2016) data, and making decisions about data quality and influential data points in the analysis. That is, the EPA determined that there were values of the independent variable of interest, fT4, in the original analysis that were imputed using multiple imputations. This could have impacted the effect estimate of the independent variable of interest with data that were not directly measured. The EPA reanalysis excludes these non-measured values. Subsequently, the

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EPA selected the Korevaar et al., (2016) reanalysis as the most appropriate function from which to assess the relationship between fT4 and IQ [9].

As indicated above, the EPA has utilized a health protective approach to this analysis consistent with the SDWA definition of the MCLG. The peer reviewers commented that this approach was fit-for-purpose. In particular, the Agency assumed it could estimate risk reductions based on evidence of a quantifiable relationship between thyroid hormone changes and neurodevelopmental outcomes. The existence of a quantifiable relationship between thyroid hormone changes and neurodevelopmental outcomes has strong support from the literature on the subject; however, not every study identified an association between maternal fT4 and the specified outcome of interest, and the state of the science on this relationship is constantly evolving. As explained earlier, the results of the EPA's dose-response literature review identified 31 studies that evaluated the association between maternal thyroid hormone levels and offspring neurodevelopment, with neurodevelopment defined using a variety of endpoints related to cognition, behavior, and other outcomes such as autism. Among these studies, only 16 were deemed to potentially possess information that could inform a dose-response relationship. The other 15 only presented data on categorical analyses assessing the impact of maternal hypothyroxinemia on the neurodevelopmental outcomes of interest. Therefore, because the data

[9] A more complete description of the EPA independent analysis of the Korevaar et al. (2016) data can be found in Section 6.3.2 of the MCLG Approaches Report.

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presented was only a comparison of two groups, there was not information that could be used to inform a dose-response function.

Of the 16 studies that potentially had data to inform a dose-response function, 10 evaluated cognition using a variety of tests including various IQ tests (three papers; Ghassabian et al., 2014; Korevaar et al., 2016; Moleti et al., 2016), Bayley Scales of Infant Development (two papers; Pop et al., 1999; Pop et al., 2003), and other validated tests associated with child cognition such as expressive language delay or test performance (five papers; Finken et al., 2013; Henrichs et al., 2010; Kastakina et al., 2006; Noten et al., 2015; Oken et al., 2009). Six of these papers found a statistically significant relationship between maternal fT4, as a continuous variable, and offspring cognitive outcome (Korevaar et al., 2016; Pop et al., 1999; Pop et al., 2003; Finken et al., 2013; Henrichs et al., 2010, Kastakina et al., 2006). However, there were studies where maternal fT4 as a continuous variable was not significantly associated with the outcome of interest. For example, in Ghassabian et al., (2014) the authors found maternal hypothyroxinemia to be associated with an average of a 4.3-point reduction in IQ in their offspring compared to offspring of non-hypothyroxinemic mothers. Nevertheless, when assessing the relationship between the continuous measure of maternal fT4 as a continuous variable (across the entire range of fT4 levels) and child IQ, the authors did not find a significant relationship. Additionally, Moleti et al., (2016) found the relationship between maternal fT4 and child IQ to be consistently inversely associated with IQ scores, but their assessment failed to

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reach statistical significance. This study included fewer than 60 study participants and was considered by the authors to be a pilot assessment.

In addition to the cognitive effects assessed and modeled, the EPA identified four papers that assessed maternal fT4 status and behavioral outcomes (Endendijk et al., 2017; Ghassabian et al., 2011; Modesto et al., 2015; Oostenbroek et al., 2017), one paper that assessed maternal fT4 status and autism (Roman et al., 2013) and one paper that evaluated odds of a schizophrenia diagnosis as associated with maternal thyroid hormone status (Gyllenberg et al., 2016). From this group of papers, the majority of papers found an association either between maternal hypothyroxinemia or maternal fT4 as a continuous variable and the outcome of interest (Endendijk et al., 2017; Modesto et al., 2015; Oostenbroek et al., 2017; Roman et al., 2013; Gyllenberg et al., 2016). However, this was not always the case as exemplified by Ghassabian et al., (2011) and Gyllenberg et al., (2016). Although Endendijk et al., (2017) found maternal fT4 to have a significant adverse impact on anxiety/depression using the Child Behavioral Check List (CBCL), Ghassabian et al., (2011) did not find any association between maternal thyroid hormone status and offspring score on various components of the CBCL. Additionally, Gyllenberg et al., (2016) found maternal hypothyroxinemia during early to mid-gestation was associated with 70% increased odds of schizophrenia diagnosis in offspring of hypothyroxinemic mothers compared to the offspring of non-hypothyroxinemic mothers. Gyllenberg et al., (2016) also found an association with odds of schizophrenia diagnosis using conditional logistic regression when assessing fT4 as a continuous variable across the entire fT4 range (i.e., not just

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the hypothyroxinemic range); however, this relationship was attenuated after controlling for smoking.

Not every paper the EPA located in its literature review found a statistically significant association between maternal fT4 as a continuous variable (i.e., the initially identified 16 studies identified as potentially useful to inform a dose-response function) and the neurodevelopmental outcome of interest. However, many studies located in the EPA literature review, several meta-analyses (Fan & Wu, 2016; Thompson et al., 2018 and Wang et al., 2016), the American Thyroid Association (Alexander et al., 2017) and the U.S. EPA's SAB (2013) have concluded there is a relationship between maternal hypothyroxinemia and various neurodevelopmental outcomes. The relationship between maternal fT4 levels and neurodevelopmental outcomes appears strongest in the hypothyroxinemic range, and when looking at the entire range of fT4 as a continuous variable (as opposed to a categorical cut off), the significant relationship between the two variables may dissipate. Therefore, the EPA has concentrated on the neurodevelopmental impacts of changes in fT4 in the lower range of fT4 from the Korevaar et al., (2016) data. In an attempt to minimize uncertainty, the EPA reanalyzed the data collected by Korevaar et al., (2016) using a spline function that estimates a coefficient specifically for the low range of the fT4 data.

There are a variety of neurodevelopmental endpoints used to examine behavior and cognition in children (e.g., intelligence quotient (IQ), motor skills, vocabulary and language development, stimulus responsiveness, etc.). The EPA selected IQ decrements because this was

the endpoint evaluated in the Korevaar et al., (2016) study. The EPA determined that the Korevaar study was the most rigorous analysis that examined the relationship between decreased thyroid hormones and neurodevelopmental effects. As such, in the derivation of the MCLG, IQ is a surrogate for a suite of potential neurodevelopmental effects that might occur to the offspring of hypothyroxinemic and iodine deficient mothers.

There are several different tests that are widely used to measure IQ in children, including the Stanford-Binet and the Wechsler Intelligence Scale for Children (WISC) (Sternberg et al., 2001). Each of these tests is intended to assess a child's global functioning and uses a numerical IQ point scale (Beres et al., 2000). IQ scores are standardized by age and sex group with a mean score of 100 points and a standard deviation of 15 (Beres et al., 2000). Although the specific tasks differ by test, all IQ tests contain a number of tasks to assess diverse skills (Sternberg et al., 2001). For example, the WISC test evaluates full-scale IQ using a combination of verbal and performance scales (verbal IQ and performance IQ may also be assessed separately) (Beres et al., 2000). The verbal scale includes tasks such as arithmetic, vocabulary, and comprehension, while the performance scale includes tasks such as picture completion, block design, and object assembly (Beres et al., 2000). The WISC was standardized using a sample of 2200 U.S. children aged 6 to 16 years old (Seashore et al., 1950). It has been well validated and has demonstrated high reliability, with a reliability coefficient of 0.96 observed across age groups (Beres et al., 2000).

Associations have been found between IQ scores and both educational achievement and attainment, though observed correlations vary widely. In a review of the literature, Sternberg et al., (2001) suggest that IQ scores explain approximately 25% of the variance in academic achievement. Evidence also suggests that IQ is linked to career outcomes and job performance, with observed correlations ranging from approximately 0.2 to 0.6 (Sternberg et al., 2001). Research suggests that children's rearing environment, including parental education, while growing up may increase IQ scores in adolescence by several points (e.g., Kendler et al., 2015).

IQ scores have been used to help diagnose disorders such as intellectual disability and to identify children for placement into specialized learning programs (Beres et al., 2000). For example, in the Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-V) IQ scores are used in an individual's comprehensive assessment to determine intellectual disability, which pairs standardized testing of intelligence with a clinical assessment of adaptive functioning. Intellectual disability is considered for individuals with an IQ score of about 70 or below (American Psychiatric Association, 2013).

The EPA uses a variety of science policy approaches to select points of departure for developing regulatory values. For instance, in noncancer risk assessment the EPA often uses a percentage change in value. When assessing toxicological data, a 10 percent extra risk (for discrete data), or a 1 standard deviation (i.e., 15 IQ points) change from the mean (for continuous data) is often used (USEPA, 2012). A smaller response to inform a POD has been applied when using epidemiological literature because there is an inherently more direct relationship between

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the study results and the exposure context and health endpoint. Given the difficulty in identifying a response below which no adverse impact occurs when considering a continuous outcome in the human population, the EPA looked to its Benchmark Dose Guidance (2012) for insight regarding a starting point. Specifically, "[a] BMR of 1% has typically been used for quantal human data from epidemiology studies" (p. 21, USEPA, 2012).

For the specific context of setting an MCLG for perchlorate, the EPA made a policy decision to evaluate the level of perchlorate in water associated with a 1 percent decrease, a 2 percent decrease, and a 3 percent decrease in the mean population IQ (i.e., 1, 2 and 3 IQ points). The EPA selected IQ as a surrogate for neurodevelopmental effects based upon its evaluation of the epidemiologic literature describe above. The need to utilize the best available peer reviewed data to inform scientific assumptions and policy choices to meet the statutory requirements associated with developing an MCLG under the SDWA highlights the challenges associated with regulating chemicals for which potential effects are indirect, and scientific data do not address all uncertainties. The Agency must make a policy decision informed by science, consistent with statutory requirements even in situations where the data do not provide clear choices. To develop the proposed MCLG for perchlorate, the EPA made a policy decision to use a 2 IQ point decrement in the population-distribution of IQ for the sensitive population. By selecting this approach, the EPA is not establishing a precedent for future Agency actions on other contaminants for which there is concern about potential thyroid effects, either under the SDWA or other statutory frameworks.

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Applying these response rates to the results from the reanalysis of Korevaar et al., (2016), results in a POD dose of 3.1 μg/kg/day for a 1 point decrease in the sensitive population's IQ, a POD dose of 6.7 μg/kg/day for a 2 point decrease in the sensitive population's IQ, and a POD dose of 10.8 μg/kg/day for a 3 point decrease in the sensitive population's IQ. These PODs associated with a 1, 2, or 3 point decrease from the standardized mean IQ are calculated for the most sensitive population. Specifically, the POD is designed to provide an adequate margin of safety for the fetuses of mothers with fT4 at the 10th percentile of a population with iodine intake of 75 μg/day and a TSH feedback loop that is less than 60% as effective as individuals with median TSH feedback loop efficacy. That is, the analysis is designed to protect the population of fetuses of mothers with suboptimal thyroid functioning. For these reasons, and for the methodological reasons described previously, the EPA believes that the selection of these parameters and this point of departure assures no known or anticipated adverse effects on the health of the most sensitive population and allows for an adequate margin of safety.

I. Translate PODs to RfDs

When deriving an RfD the EPA evaluates whether to apply uncertainty/variability factors to account for heterogeneity of effect in the target population and data gaps (USEPA, 2002). As presented in *A Review of the RfD & RfC Processes* (USEPA, 2002) the EPA considers the following uncertainty factors: inter-individual variability, interspecies uncertainty, extrapolating from subchronic to chronic exposure, extrapolating from a lowest-observed adverse effect level (LOAEL) rather than from a no-observed-adverse-effect-level (NOAEL), and an incomplete

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database. The factors are intended to account for: 1) variation in susceptibility among the members of the human population (i.e., inter-individual or intraspecies variability); 2) uncertainty in extrapolating animal data to humans (i.e., interspecies uncertainty); 3) uncertainty in extrapolating from data obtained in a study with less-than-lifetime exposure (i.e., extrapolating from subchronic to chronic exposure); 4) uncertainty in extrapolating from a LOAEL rather than from a NOAEL; and 5) uncertainty associated with extrapolation when the database is incomplete. (U.S. EPA, 2011b) The EPA has considered each of these factors in deriving an RfD to inform an MCLG for perchlorate.

The EPA considered variation and uncertainty in the relationship between exposure and response among the members of the human population (i.e., uncertainty factor (UF) for within-human variability/ inter-individual variability, UF_H). For this analysis a UF of 3 is used. The approach taken to derive the RfD attempts to address variability between the general population and the sensitive population. Specifically, the EPA was able to modify the strength of the TSH feedback loop and iodine intake levels in the BBDR model and concentrate on the dose-response relationship between lower level (as opposed to median level) fT4 and neurodevelopmental outcomes. However, there is still uncertainty in the relationship between perchlorate exposure and subsequent neurodevelopmental outcomes[10]. There are very few toxicokinetic calibration data available for the perchlorate to thyroid hormone relationship described in the BBDR model.

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[10] For a more complete discussion on the uncertainties in the analysis the reader is directed to Sections 3.5 and 6.5 of the MCLG Approaches Report.

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On the toxicodynamic side of the BBDR model, aspects such as competitive inhibition at the NIS, depletion of iodide stores under different iodine intake levels and physiological states, and the ability of the TSH feedback loop to compensate for perturbations in thyroid function each have their own uncertain features. There are also uncertainties linking maternal fT4 levels to offspring IQ. These uncertainties include the population for which dose-response information is available (i.e., no study is U.S. based), a lack of study information on the iodine intake status for the population for which the dose-response information is available, uncertainties around the methods used to assess maternal fT4 measurement during pregnancy, and uncertainties related to the true distribution of fT4 for a given iodine intake.

Further, as discussed in section III.C. of this preamble the EPA believes that protecting the fetus of a hypothyroxinemic woman will protect other identified sensitive life stages. However, there is some uncertainty due to the lack of information linking incremental changes in infant thyroid hormone levels to adverse neuorodevelopmental outcomes. In addition, this analysis is assuming that protecting a first trimester fetus from alterations in maternal fT4 will protect the fetus throughout pregnancy. This is based on epidemiologic evidence that shows the relationship between first trimester maternal fT4 and neurodevelopmental outcomes. This is potentially because before mid-gestation, the mother is the only source of thyroid hormone for the fetus (Morreale de Escobar et al., 2004). Therefore, when evaluating maternal fT4 as associated with neurodevelopmental outcomes it is critical to understand the first-trimester levels. Later in gestation, when the fetal thyroid begins secreting thyroid hormones, maternal fT4

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may no longer be a good surrogate for the thyroid hormone levels available to the fetus. Given that the fetal thyroid has had little time to develop, its iodine storage is much less than that of an adult, hence there may be more sensitivity to short-term fluctuations in iodine availability and uptake that may have little impact on maternal levels. Therefore, there is some uncertainty about the impact perchlorate may have on the fetal thyroid gland, and subsequent neurodevelopmental impacts, in later trimesters of pregnancy. The immature fetal HPT axis has very limited capacity to increase output of thyroid hormones (Savin, Cvejić, Nedić, & Radosavljević, 2003; van Den Hove, Beckers, Devlieger, De Zegher, & De Nayer, 1999), so the fetal HPT may not be able to adjust output in the face of reduced maternal fT4 supply and perchlorate exposure. Therefore, as described above, the EPA selected an intraspecies UF of 3 to account for the uncertainties in modeling the impacts of perchlorate ingestion on the thyroid hormone levels for pregnant mothers with low iodide intake, and the uncertainties in predicting the neurodevelopmental effects of these thyroid hormone changes on their children.

The EPA considered but did not derive a Data-Dependent Extrapolation Factor (DDEF) for this analysis. As described above, the UFs are applied based on the uncertainties in the perchlorate to thyroid hormone and thyroid hormone to neurodevelopment relationship[11]. As noted above, the Agency has opted to apply a UF of 3 to the POD, which adds an adequate margin of safety to the MCLG derivation. Section 4.4.5.3 (p 4-42) of *A Review of the RfD & RfC*

[11]As explained in U.S. EPA, 2014 "UFs incorporate both extrapolation components that address variability (heterogeneity between species or within a population) and components that address uncertainty (i.e., lack of knowledge)…whereas DDEFs focus on variability" (p. 7, US EPA, 2014).

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Processes recommends reducing the intraspecies UF from a default of 10 "only if data are sufficiently representative of the exposure/dose-response data for the most susceptible subpopulation(s)" (p. xviii, USEPA, 2002).The EPA selected a UF of 3 instead of the full 10 because the modeled groups within the population that are identified as likely to be at greater risk to perchlorate in drinking water (i.e., the fetus of the iodide deficient pregnant mother) and has selected model parameters to account for the most sensitive individuals in that group (i.e., muted TSH feedback, low fT4 values, low-iodine intake).

Below we list the other uncertainty factors added and the justification.

- Uncertainty in extrapolating animal data to humans (i.e., interspecies uncertainty) (uncertainty factor, animal-to-human, UF_A). For this analysis an UF of 1 is used because this factor is not applicable since animal studies were not used to develop the BBDR model nor were they used to relate alterations in maternal fT4 to IQ.
- Uncertainty in extrapolating data obtained in a study with less-than-lifetime exposure to lifetime exposure (i.e., extrapolating from subchronic to chronic exposure, UF_S). An uncertainty factor of 1 is used. Extrapolating from subchronic to chronic exposures did not occur as the BBDR model was designed to assess long-term steady-state conditions in the non-pregnant woman and week-to-week variation in pregnancy, rather than short-term (hour-to-hour or day-to-day) fluctuations.
- Uncertainty in extrapolating from a LOAEL rather than from a NOAEL (uncertainty factor, LOAEL-to-NOAEL, UF_L). A more sophisticated BBDR modeling approach, coupled with

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extrapolation to changes in IQ using linear regression, was used to determine a POD that would not be expected to represent an adverse effect. Subsequently an uncertainty factor of 1 is used. LOAELs and NOAELs were not identified or used in this approach.

- Uncertainty factor for database deficiency to address the potential for deriving an inadequately protective RfD in the instance where the available database provides an incomplete characterization of the chemical's toxicity (database deficiency, UF_D; USEPA, 2002). An uncertainty factor of 1 is used as "[t]he mode of action of perchlorate toxicity is well understood" (SAB for the U.S. EPA, 2013, p. 2).
- The product of all the uncertainty factors (UF_H) is 3 (3 x 1 x 1 x 1 x 1).

Below we generate RfD's for each of the points of departure.

Using the POD of 6.7 µg/kg/day based on a 2 percent decrease in the population standardized mean IQ from the EPA's independent analysis of the Korevaar et al., (2016) data, the EPA can derive a RfD by incorporating the UF_H, which results in the following:

$$RfD = \frac{POD}{UF_H} = \frac{6.7}{3} = 2.2 \ \frac{\mu g/kg}{day}$$

Using an alternative POD of 3.1 µg/kg/day based on a 1 percent decrease in the population standardized mean IQ from the EPA's independent analysis of the Korevaar et al., (2016) data, the EPA can derive an RfD by incorporating the UF_H. This results in the following:

$$RfD = \frac{POD}{UF_H} = \frac{3.1}{3} = 1.0 \ \frac{\mu g/kg}{day}$$

Using an alternative POD of 10.8 µg/kg/day based on a 3 percent decrease in the population standardized mean IQ from the EPA's independent analysis of the Korevaar et al., (2016) data, the EPA can derive an RfD by incorporating the UF_H. This results in the following:

$$RfD = \frac{POD}{UF_H} = \frac{10.8}{3} = 3.6\ \frac{\mu g/kg}{day}$$

J. Translate RfD into an MCLG

To translate the RfD (µg/kg/day) to a concentration in drinking water (µg/L), the EPA used the following equation:

$$W\ \left(\frac{\mu g}{L}\right) = \frac{RfD}{DWI} \times RSC_w$$

where:

W = drinking water concentration of perchlorate in micrograms per liter (µg/L);

RfD = reference dose (1.03 µg/kg/day for a 1 percent decrease in IQ, 2.23 µg/kg/day for a 2 percent decrease in IQ, or 3.6 µg/kg/day for a 3 percent decrease in IQ);

DWI = bodyweight-adjusted drinking water ingestion rate (L/kg/day); and

RSC_W = relative source contribution of drinking water to overall perchlorate exposure.

To calculate the MCLGs, the EPA selected the 90th percentile body-weight adjusted drinking water ingestion rate specific to women of childbearing age (i.e., non-pregnant, non-lactating, 15–44 years of age (0.032 L/kg/day). This decision is consistent with the analysis used in deriving an RSC, which was performed using food consumption information for a population of women of childbearing age from NHANES. The 90th percentile is chosen to account for

variability in drinking water ingestion rates, but also adds another layer of health protection for 90% of women (Table III-3).

The EPA did not use water intake data for pregnant women because the sample sizes were too small to be statistically stable. The use of the drinking water intake for 15-44 year old women is consistent with the analysis used in deriving an RSC_w (described below), which was performed using food consumption information for a population of women of childbearing age from NHANES. The EPA acknowledges there is a difference in the age range defining women of childbearing age used to develop the drinking water ingestion rate and that used to develop the RSC (20 – 44 years of age). The age range used to develop the RSC was based on the range of ages used to define women of childbearing age in developing the BBDR model. However, the EPA's Exposure Factors Handbook (USEPA, 2011c) identifies drinking water ingestion rates for women 15-44 years of age as corresponding to women of childbearing age.

The age range used for women of childbearing age in the BBDR model fits within the age range used to develop the ingestion rates provided in the Exposure Factors Handbook. Thus, the Agency believes the difference in the age ranges will have minimal impact on the resulting MCLG analysis.

Table III-3. Consumers-Only Estimated Direct and Indirect Community Water Ingestion Rates from Kahn and Stralka (2008) (L/kg/day)

Female Population Categories	Sample Size	Mean	90th Percentile	95th Percentile
Pregnant	65	0.014[a]	0.033[a]	0.043[a]
Lactating	33	0.026[a]	0.054[a]	0.055[a]

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Female Population Categories	Sample Size	Mean	90th Percentile	95th Percentile
Non-pregnant, non-lactating, 15 to 44 years of age	2,028	0.015	0.032	0.038
[a] The sample size does not meet minimum reporting requirements to make statistically reliable estimates as described in the *Third Report on Nutrition Monitoring in the United States*, 1994-1996 (FASEB/LSRO, 1995).				

Individuals are exposed to perchlorate through ingestion of both food and drinking water (ATSDR 2008, Huber et al., 2011). In calculating the MCLGs, the EPA applies a relative source contribution (RSC) to the RfD to account for the percentage of the RfD remaining for drinking water after other sources of exposure to perchlorate have been considered. Thus, the RSC for drinking water is based on the following equation where "Food" is the perchlorate dose from food ingestion:

$$RSC = \frac{RfD - Food}{RfD} \times 100\%$$

To estimate the dose of perchlorate for women of childbearing age coming from food, the EPA implemented a data integration methodology that combined demographic variables, food consumption estimates, and perchlorate contamination estimates in food from multiple sources (USEPA, 2019c). These sources include:

- The NHANES data available from the Centers for Disease Control and Prevention's (CDC) National Center for Health Statistics (NCHS) including the What We Eat in America (WWEIA) 24-hour food diary data (CDC & NCHS, 2007, 2009, 2011); and

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- The Food and Drug Administration's (FDA's) Total Diet Study (TDS) (U.S. Food and Drug Administration (FDA), 2015), which analyzes contaminants in about 280 kinds of food and beverages commonly consumed by the U.S. population.

The NHANES data provided individual food consumption profiles for female participants age 20-44 (the women of childbearing age range used for the BBDR model). The EPA matched TDS perchlorate concentrations with each food consumed by a participant and calculated each participant's daily perchlorate dose (μg/kg/day) from food using the participant's body weight. The EPA estimated each participant's perchlorate dose using both mean and 95th percentile perchlorate concentrations in food. The details of these assumptions are explained on page 5-5 of the Technical Support Document: Deriving a Maximum Contaminant Level Goal for Perchlorate in Drinking Water (USEPA 2019c). Specifically, the EPA calculated both the mean and the 95th percentile of the perchlorate levels in each food based on the 20 samples included in the TDS data. In order to estimate the 95th percentile from the 20 samples, the EPA used the second-highest test result for each food to represent the 95th percentile concentration. While simple, this method avoids the need to assume a distributional shape for the samples, and has been used in recent publications of TDS data for iodine [ADDIN EN.CITE <EndNote><Cite><Author>Carriquiry</Author><Year>2016</Year><RecNum>2008</RecNum><DisplayText>(Carriquiry et al., 2016)</DisplayText><record><rec-number>2008</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1530039524">2008</key></foreign-keys><ref-type name="Journal

Article">17</ref-type><contributors><authors><author>Carriquiry, A. L. </author><author>Spungen, J. H.</author><author>Murphy, S. P.</author><author>Pehrsson, P. R.</author><author>Dwyer, J. T.</author><author>Juan, W.</author><author>Wirtz, M. S. </author></authors></contributors><titles><title>Variation in the iodine concentrations of foods: considerations for dietary assessment</title><secondary-title>The American Journal of Clinical Nutrition</secondary-title></titles><periodical><full-title>The American Journal of Clinical Nutrition</full-title></periodical><pages>877S–887S</pages><volume>104</volume><number>Suppl 3</number><dates><year>2016</year></dates><urls></urls></record></Cite></EndNote>]. The aforementioned method for identifying the 95th percentile concentration of perchlorate from food was selected over other, more "statistically based" methods for estimating percentiles as it avoids the need to assume a distributional shape for the samples. The EPA determined that it was more reliable to assume the empirically derived distribution as the basis for selecting the 95th percentile (i.e., assuming the distribution was equal to the distribution of samples collected in the TDS), as opposed to forcing a distributional shape, such as normal or log-normal, onto the data that may not necessarily be appropriate. With the chosen method, we can at least be sure that the distributional shape is appropriate for the data at hand, whereas by choosing the alternative that assumes a distributional shape, in many instances we would not even be certain of that. The EPA used these individual bodyweight-adjusted perchlorate doses from food to calculate distributions of perchlorate dose from food for the population of women age 20-44.

Table III-4 presents the mean and selected percentiles of the distribution of perchlorate dose from food for women ages 20-44, for both mean and 95th percentile perchlorate concentrations in food based on the TDS. To calculate the RSC, the EPA selected the 90th percentile dose of perchlorate from food, assuming a scenario where the food contained the 95th percentile perchlorate concentration. This corresponds to a perchlorate dose for food of 0.45 µg/kg/day. The EPA chose to use the 90th percentile bodyweight-adjusted perchlorate consumption from food using the 95th percentile TDS results to estimate the perchlorate RSC from drinking water. The EPA believes this is the most appropriate value for perchlorate consumption from food to ensure the protection of potentially highly exposed individuals. Given the range of perchlorate concentrations in food, and that food is the only other exposure source being considered in the RSC analysis, the EPA believes it is sufficiently protective to estimate the MCLG for drinking water using the 90th percentile bodyweight-adjusted perchlorate consumption based on the 95th percentile perchlorate food concentrations in TDS. This assures that highly exposed individuals from this most sensitive population are considered in the evaluation of whether perchlorate is found at levels of health concern.

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Table III-4. Perchlorate Dose from Food (µg/kg/day) in U.S. Women Ages 20-44 using the mean and 95th Percentile TDS Results[1]

Level of Bodyweight Adjusted Perchlorate Consumption from Population Distribution	Perchlorate Dose from Food (µg/kg/day)	
	Based on Mean Concentrations of Perchlorate in Food	Based on 95th Percentile Concentrations of Perchlorate in Food
Mean	0.09 – 0.12	0.23 – 0.24
50th Percentile	0.08 – 0.10	0.17 – 0.19
90th Percentile	0.18 – 0.21	**0.45**
99th Percentile	0.33 – 0.38	1.16 – 1.17

[1] Ranges are due to various approaches for handling values <level of detection. If no range is presented all approaches resulted in the same value.
Bolded value represents the selected value

The EPA used the drinking water intake and perchlorate dose from food to calculate MCLGs for the three RfD values. Table III-5 shows the RSC values for the three RfD values and the corresponding MCLGs calculated using the EPA's standard equation.

Table III-5. Estimates for RSC and MCLG by RfD

RfD[a] (µg/kg/day)	RSCw[b] (percent)	DWI (L/kg/day)	MCLG[c] (µg/L)
1.0	56%	0.032	18
2.2	80%	0.032	56
3.6	80%[d]	0.032	90

a. The RfD values corresponding to protecting the fetus of a first trimester pregnant mother with low-iodine intake levels (i.e., 75 µg/kg/day), low fT4 levels (i.e., 10th percentile of a fT4 distribution for individuals with 75 µg/day iodine intake), and weak TSH feedback strength (i.e., TSH feedback is reduced to be approximately 60 percent less effective than for the median individual) from either a 1-point IQ loss, 2-point IQ loss, or a 3-point IQ loss, respectively.

b. The EPA calculated RSC values based on the following equation given a Food intake of 0.45 µg/kg/day:

$$RSC = \frac{RfD - Food}{RfD} \times 100\%$$

c. The EPA calculated the MCLG values based on the following equation given the respective RfD and RSC values and the DWI:

$$W\left(\frac{\mu g}{L}\right) = \frac{RfD}{DWI} \times RSC_w$$

d. The calculated RSC value using the equation in footnote b is 88 percent. However, the EPA has opted to follow previously established recommendations which employs a ceiling of 80 percent for the RSC value (USEPA 2000d).

IV. Maximum Contaminant Level Goal and Alternatives

Section 1412(a)(3) of the SDWA requires the EPA to propose a maximum contaminant level goal (MCLG) simultaneously with the NPDWR. The MCLG is defined in Section 1412(b)(4)(A) as "the level at which no known or anticipated adverse effects on the health of persons occurs and which allows an adequate margin of safety." The EPA is proposing an MCLG of 56 µg/L based on the rationale and methodology described in Section III above. The derivation of the proposed MCLG uses a point of departure based upon a two percent decrease in IQ for offspring of hypothyroxinemic women of child bearing age have with low iodine intake. The EPA selected a 2 percent decrease in IQ for the proposed perchlorate MCLG because this represents a small change in IQ, well below one standard deviation for the subpopulation of interest.

As described in Section III, the EPA has selected model parameters and other factors for the derivation of the MCLG that are health protective, including the focus on the most sensitive

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life stage. The EPA believes that the selection of the combination of protective parameters and this point of departure assures no known or anticipated adverse effects on the health of the most sensitive subpopulation and allows for an adequate margin of safety. The EPA also acknowledges the uncertainties in the derivation of the proposed (and alternative) MCLGs. The EPA acknowledges in particular the challenge associated with selecting the decrement of IQ that represents an adverse effect at the population level and the uncertainties in predicting the dose of perchlorate that may result in a particular IQ decrement given the absence of robust human epidemiological data directly linking perchlorate exposure to IQ decrements. The Agency seeks comment on the alternative MCLG values of 18 µg/L and 90 µg/L, which the EPA derived using the methodology described in Section III based on a one percent and three percent decrease in IQ, respectively.

V. Maximum Contaminant Level and Alternatives

Under section 1412(b)(4)(B) of the SDWA, the EPA must establish a maximum contaminant level (MCL) as close to the MCLG as is feasible. The EPA evaluated available analytical methods to determine the lowest concentration at which perchlorate can be measured and evaluated the treatment technologies for perchlorate that have been examined under field conditions (USEPA 2018a, 2019b). The EPA determined that setting an MCL equal to the proposed MCLG of 56 µg/L is feasible given that the approved analytical method for perchlorate for UCMR 1 has a minimum reporting level (MRL) of 4 µg/L (USEPA 1999, 2000c) and that

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available treatment technologies can treat to concentrations well below 56 µg/L (USEPA, 2018c). Therefore, the EPA is proposing to set the MCL for perchlorate at 56 µg/L.

Because the EPA is taking comment on alternative MCLG values of 18 µg/L and 90 µg/L the Agency evaluated the feasibility of setting an MCL at these levels. The EPA determined that the proposed MCL of 56 µg/L is feasible, therefore a higher MCL alternative such as 90 µg/L is also feasible. The EPA has concluded that analytical methods are capable of measuring perchlorate at 18 µg/L and that treatment technologies have been demonstrated to achieve this level under field conditions (USEPA 2018a, 2019b). Therefore, the EPA is requesting comment on the feasibility of the proposed MCL of 56 µg/L as well as the feasibility of the alternative MCLs of 18 µg/L and 90 µg/L.

As the occurrence analysis in section VI demonstrates, there is infrequent occurrence of perchlorate at 18 µg/L, 56 µg/L, or 90 µg/L. Therefore, the EPA did not evaluate alternative MCL values greater than the corresponding MCLG values. The purpose for evaluating alternative MCL values is to determine whether there is an MCL at which benefits justify the costs of setting an MCL. Given infrequent occurrence, the majority of the costs associated with establishing an NPDWR for perchlorate are for administrative and initial monitoring activities (see section XI.B), which will not be significantly affected by MCL values greater than corresponding MCLG values.

When proposing an MCL, the EPA must publish, and seek public comment on, the health risk reduction and cost analyses (HRRCA) of each alternative MCL considered (SDWA Section

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1412(b)(3)(C)(i)), including: the quantifiable and nonquantifiable health risk reduction benefits attributable to MCL compliance; the quantifiable and nonquantifiable health risk reduction benefits of reduced exposure to co-occurring contaminants attributable to MCL compliance; the quantifiable and nonquantifiable costs of MCL compliance; the incremental costs and benefits of each alternative MCL; the effects of the contaminant on the general population and sensitive subpopulations likely to be at greater risk of exposure; any adverse health risks posed by compliance; and other factors such as data quality and uncertainty. The EPA provides this information in section XII in this preamble. The EPA must base its action on the best available, peer-reviewed science and supporting studies, taking into consideration the quality of the information and the uncertainties in the benefit-cost analysis (SDWA Section 1412(b)(3)). The following sections, as well as the health effects discussion in section III document the science and studies that the EPA relied upon to develop estimates of benefits and costs and understand the impact of uncertainty on the Agency's analysis.

VI. Occurrence

The UCMR 1 is the primary source of occurrence data the EPA relied on to estimate the number of water systems (and associated population) expected to be exposed at levels of perchlorate which could potentially exceed the proposed and alternative MCL levels. Since UCMR 1 data was first used to inform the Agency actions on the 2008 preliminary regulatory determination and the 2011 final regulatory determination, the Agency has modified its analysis of the UCMR 1 data set in response to concerns raised by stakeholders regarding the data quality

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and to represent current conditions at some States that have enacted perchlorate regulations since the UCMR 1 data was collected. Despite these updates, the EPA continues to rely on the UCMR 1 data because they are the best available data collected in accordance with accepted methods from a census of the large water systems (serving more than 10,000 people) and a statistically representative sample of small water systems that provides the best available, national assessment of perchlorate occurrence in drinking water.

In 1999, the EPA developed the first round of the UCMR program in accordance with SDWA requirements to provide national occurrence information on unregulated contaminants (USEPA, 1999, 2000b). The UCMR 1 required sampling from systems in all 50 States, the District of Columbia, four U.S. territories, and tribal lands in five EPA Regions including:

- all 3,097 large (serving more than 10,000 people) CWSs and NTNCWSs, which analyzed either four quarterly samples collected at 3-month intervals (surface water sources), or two samples collected 5 to 7 months apart (ground water sources); and
- a statistically representative selection of 800 small CWSs and NTNCWSs, which analyzed either four quarterly samples collected at 3-month intervals (surface water sources) or two samples collected 5 to 7 months apart (ground water sources).

Water systems submitted UCMR 1 sampling results to the EPA from 2001 until 2005. Water systems were required to analyze samples for 26 contaminants including perchlorate. The EPA established a minimum reporting level of 4 µg/L for perchlorate in the UCMR.

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The EPA conducted a data quality review of the UCMR 1 data submitted by systems prior to analyzing the occurrence data for the 2011 perchlorate regulatory determination. The UCMR 1 dataset used by the EPA included 34,331 samples with 637 measurements of perchlorate above the minimum reporting level from 3,865 systems.

In September of 2012, the EPA received a "Request for Correction" letter from the United States Chamber of Commerce regarding information and data (i.e., the occurrence of perchlorate in drinking water) used by the EPA in its 2011 determination to regulate perchlorate. The U.S. Chamber of Commerce letter stated that the EPA relied upon: 1) data that did not comply with data quality guidelines and 2) data that was not representative of current conditions.

In response[12] to the U.S. Chamber of Commerce, the EPA conducted a detailed assessment of the source water sample detections and determined that it was most appropriate to exclude the source water sample detections from the UCMR 1 perchlorate data set when those samples had appropriate follow-up entry point samples that were included in the UCMR 1 perchlorate data set. In contrast, any source water sample perchlorate detections for which no follow-up entry point sampling was conducted by PWSs were retained in the UCMR 1 perchlorate data set. As a result of the assessment, the EPA removed 199 source water samples (97 detections) that could be paired with a second follow-up sample located at the entry point to

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[12] See the EPA response letter at https://www.epa.gov/sites/production/files/2017-08/documents/12004-response_0.pdf

the distribution system. Following this convention, the resulting UCMR 1 data set contains 34,132 perchlorate samples from 3,865 systems with a total of 540 detections from 149 PWSs.

Table VI-1 shows sample distribution by system size category and measurement status. It also shows the number of entry points and systems where perchlorate measurements were reported. The entry point estimates differ from the system estimates because many water systems have more than one entry point. For example, a ground water system with two wells that has separate connections to the distribution system has two entry points.

In response to the U.S. Chamber of Commerce request, the EPA has also reassessed the UCMR 1 data in light of the adoption of regulatory limits in two states. Massachusetts promulgated a drinking water standard for perchlorate of 2 μg/L in 2006 [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"8DPpSrv3","properties":{"formattedCitation":"(MassDEP, 2006)","plainCitation":"(MassDEP, 2006)","noteIndex":0},"citationItems":[{"id":151,"uris":["http://zotero.org/groups/945096/items/9893MBZH"],"uri":["http://zotero.org/groups/945096/items/9893MBZH"],"itemData":{"id":151,"type":"personal_communication","title":"Letter to Public Water Suppliers concerning new perchlorate regulations","URL":"https://www.mass.gov/lists/perchlorate-background-information-and-standards#perchlorate---final-standards-","author":[{"literal":"MassDEP"}],"issued":{"date-parts":[["2006"]]}}}],"schema":"https://github.com/citation-style-

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language/schema/raw/master/csl-citation.json"}], and California promulgated a drinking water standard of 6 μg/L in 2007 [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"cfr6HNhg","properties":{"formattedCitation":"(California Department of Public Health, 2007)","plainCitation":"(California Department of Public Health, 2007)","noteIndex":0},"citationItems":[{"id":150,"uris":["http://zotero.org/groups/945096/items/RA45NKLQ"],"uri":["http://zotero.org/groups/945096/items/RA45NKLQ"],"itemData":{"id":150,"type":"personal_communication","title":"State Adoption of a Perchlorate Standard","URL":"https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/perchlorate/AdoptionMemotoWaterSystems-10-2007.pdf","author":[{"literal":"California Department of Public Health"}],"issued":{"date-parts":[["2007"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. Systems in these states are now required to keep perchlorate levels in drinking water below their state limits, which are lower than the proposed MCL and alternative MCLs. Therefore, the UCMR 1 sampling results from systems in these states do not reflect the current occurrence and exposure conditions. For the purpose of estimating the costs and benefits of the proposed rule, the EPA assumed that no additional monitoring and treatment costs would be incurred by the systems in the States of California and Massachusetts. Systems in California account for some of the perchlorate measurements reported below. The notes in the tables below indicate whether results include or exclude systems in California and Massachusetts.

To update the occurrence data for systems sampled during UCMR 1 from the States of California and Massachusetts, the EPA identified all systems and corresponding entry points which had reported perchlorate detections in UCMR 1. Once the systems and entry points with detections were appropriately identified, the EPA then used a combination of available data from Consumer Confidence Reports (CCRs) and perchlorate compliance monitoring data from California (https://sdwis.waterboards.ca.gov/PDWW/) and Massachusetts (https://www.mass.gov/service-details/public-water-supplier-document-search) to match current compliance monitoring data (where available) to the corresponding water systems and entry points sampled during UCMR 1.

Out of the 540 detections previously described the EPA updated data for 321 detections (320 from California systems and 1 from a Massachusetts system). The convention used by the EPA to accomplish the substitution of data was to match entry points with compliance data for active entry points based on most recently reported compliance monitoring data, if more than one data point was reported for an entry point, the assigned value is an average of the annual monitoring results at the entry point. In cases were the EPA could not find updated entry point data, then the original data from UCMR 1 for such entry point was kept.

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Table VI-1. UCMR 1 Data Summary Statistics

Item	Small System Sample	Large System Census	Sum
Total samples	3,295	30,837	34,132
Sample measurements ≥ 4 µg/L	15	525	540
Sample measurements > 18 µg/L	1	16	17
Sample measurements > 56 µg/L	0	2	2
Sample measurements > 90 µg/L	0	1	1
Total entry points	1,454	13,482	14,936
Entry points at which measurements ≥ 4 µg/L	8	328	336
Entry points at which measurements > 18 µg/L	1	16	17
Entry points at which measurements > 56 µg/L	0	2	2
Entry points at which measurements > 90 µg/L	0	1	1
Total systems	797	3,068	3,865
Systems at which measurements ≥ 4 µg/L	8	141	149
Systems at which measurements > 18 µg/L	1	14	15
Systems at which measurements > 56 µg/L	0	2	2
Systems at which measurements > 90 µg/L	0	1	1

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"UAoGFPZv","properties":{"formattedCitation":"(USEPA, 2018)","plainCitation":"(USEPA, 2018)","noteIndex":0},"citationItems":[{"id":969,"uris":["http://zotero.org/groups/945096/items/YERQWPRZ"],"uri":["http://zotero.org/groups/945096/items/YERQWPRZ"],"itemData":{"id":969,"type":"article","title":"Perchlorate Occurrence and Monitoring Report","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. The total row counts and counts of measurements ≥ 4 µg/L identify all instances where perchlorate was detected at or above the minimum reporting level, including water systems in California and Massachusetts, which account for 537 systems in total and 51 systems at which measurements ≥4 µg/L. The instances where perchlorate measurements equal or exceed either 18 µg/L, 56µg/L, or 90 µg/L exclude results from California and Massachusetts because water systems in these States must meet limits below 18 µg/L. The small system counts reflect sample results that have not been extrapolated to small systems nationwide.

Table VI-2 shows the service populations that correspond with the occurrence summary in Table VI-1. The entry point population estimates reflect the assumption that system population is uniformly distributed across entry points; e.g., the entry point population for a system with two entry points is one-half the total system population.

Table VI-2. UCMR1 Data Service Population Summary Statistics

Item	Small System Sample	Large System Census	Sum
Total entry point population	2,760,570	222,853,101	225,613,671
Population served by entry points at which measurements ≥ 4 µg/L	9,484	4,281,937	4,291,420
Population served by entry points at which measurements > 18 µg/L	2,155	618,406	620,560
Population served by entry points at which measurements > 56 µg/L	0	32,432	32,432
Population served by entry points at which measurements > 90 µg/L	0	25,972	25,972
Total system population	2,760,570	222,853,101	225,613,671
Population served by systems at which measurements ≥ 4 µg/L	13,483	16,159,082	16,172,565
Population served by systems at which measurements >18 µg/L	4,309	696,871	701,180
Population served by systems at which measurements > 56 µg/L	0	64,733	64,733
Population served by systems at which measurements > 90 µg/L	0	25,972	25,972

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Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"ChxDKgDr","properties":{"formattedCitation":"(USEPA, 2018)","plainCitation":"(USEPA, 2018)","noteIndex":0},"citationItems":[{"id":969,"uris":["http://zotero.org/groups/945096/items/YERQWPRZ"],"uri":["http://zotero.org/groups/945096/items/YERQWPRZ"],"itemData":{"id":969,"type":"article","title":"Perchlorate Occurrence and Monitoring Report","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. The populations for entry points/systems with measurements ≥ 4 µg/L identify all instances where perchlorate was detected at or above the minimum reporting level, including water systems in California and Massachusetts, which account for 39.6 million of the 225.6 million total population in UCMR 1, and 1.9 million of the 4.3 million population served by entry points at which measurements ≥4 µg/L. The instances where perchlorate measurements equal or exceed either 18 µg/L, 56µg/L, or 90 µg/L exclude results from California and Massachusetts because water systems in these States must meet limits below 18 µg/L. The small system counts reflect sample results that have not been extrapolated to small systems nationwide.

As shown in the tables, 149 systems serving 16.2 million people had measured levels of perchlorate greater than the minimum reporting level. However, many of these systems have several entry points with no measured levels of perchlorate greater than the minimum reporting level; at the entry point level, the exposed population is approximately 4.3 million people served by 336 entry points. Because the uniform population distribution assumption may over or underestimate the service population of any particular entry point, the entry point estimates are uncertain. The system population estimates serve as upper bounds on exposure.

The EPA used entry point maximum measurements to estimate potential baseline occurrence and exposure at levels that exceed the proposed MCL and alternative MCLs. The maximum measurements indicate perchlorate levels that occurred in at least one quarterly sample among surface water systems and at least one semi-annual sample among ground water systems.

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Table VI-3 through Table VI-5 show the occurrence and exposure estimates based on the 56 µg/L, 18 µg/L MCL, and 90 µg/L values, respectively. Each table provides estimates of the entry points at which the maximum perchlorate concentrations exceed the MCL value. The tables also report the system-level information for these entry points.

Table VI-3: Estimated Perchlorate Occurrence and Exposure: Entry Point Max Exceeds 56 µg/L

Affected Entity	Small Systems	Large Systems	Total Systems
Entry points	0	2	2
Population served	0	32,432	32,432
Water systems	0	2	2
Population served	0	64,733	64,733

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"adhRbcXq","properties":{"formattedCitation":"(USEPA, 2018c)","plainCitation":"(USEPA, 2018c)","noteIndex":0},"citationItems":[{"id":155,"uris":["http://zotero.org/groups/945096/items/YERQWPRZ"],"uri":["http://zotero.org/groups/945096/items/YERQWPRZ"],"itemData":{"id":155,"type":"article","title":"Perchlorate Occurrence and Monitoring Report","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}].

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Table VI-4: Estimated Perchlorate Occurrence and Exposure: Entry Point Max Exceeds 18 µg/L

Affected Entity	Small Systems[1]	Large Systems	Total Systems
Entry points	1	16	17
Population served	2,155	618,406	620,560
Water systems	1	14	15
Population served	4,309	696,871	701,180

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"z4saRTHP","properties":{"formattedCitation":"(USEPA, 2018c)","plainCitation":"(USEPA, 2018c)","noteIndex":0},"citationItems":[{"id":155,"uris":["http://zotero.org/groups/945096/items/YERQWPRZ"],"uri":["http://zotero.org/groups/945096/items/YERQWPRZ"],"itemData":{"id":155,"type":"article","title":"Perchlorate Occurrence and Monitoring Report","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}].

1. The values shown in the table are estimates based on the UCMR 1 data. The EPA also applied the statistical sampling weights to the results to extrapolate results to national results. The entry point at which a measurement exceeds 18 µg/L is one of 20 in its sample stratum; no other sample in the stratum had a measurement of perchlorate greater than the minimum reporting level. The entry point population of 2,155 represents 5.31% of the total population served by the six UCMR 1 systems in the stratum (40,574). Currently, the stratum population of 774,780 accounts for 1.32% of the 58.7 million national population served by small systems. Thus, the UCMR 1 results indicate that 0.07% (5.31% x 1.32%) of small system customers (approximately 41,100) may be exposed to perchlorate greater than 18 µg/L.

Table VI-5: Estimated Perchlorate Occurrence and Exposure: Entry Point Max Exceeds 90 µg/L

Affected Entity	Small Systems[1]	Large Systems	Total Systems
Entry points	0	1	1
Population served	0	25,972	25,972
Water systems	0	1	1
Population served	0	25,972	25,972

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"z4saRTHP","properties":{"formattedCitation":"(USEPA, 2018c)","plainCitation":"(USEPA, 2018c)","noteIndex":0},"citationItems":[{"id":155,"uris":["http://zotero.org/groups/945096/items/YERQWPRZ"],"uri":["http://zotero.org/groups/945096/items/YERQWPRZ"],"itemData":{"id":155,"type":"article","title":"Perchlorate Occurrence and Monitoring Report","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}].

In summary, the perchlorate occurrence information suggests that at an MCL of 56 µg/L, two systems (0.004% of all water systems in the U.S.) would exceed the regulatory threshold. One of these two systems would exceed the alternative MCL of 90 µg/L. In addition, at an MCL of 18 µg/L, there would be 15 systems (0.03% of all water systems in the U.S.) that would exceed the regulatory threshold.

VII. Analytical Methods

The SDWA directs the EPA to set a contaminant's MCL as close to its MCLG as is ''feasible'', the definition of which includes an evaluation of the feasibility of performing

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chemical analysis of the contaminant at standard drinking water laboratories. Specifically, the SDWA directs the EPA to determine that it is economically and technologically feasible to ascertain the level of the contaminant being regulated in water in public water systems (Section 1401(1)(C)(i)). NPDWRs are also to contain ''criteria and procedures to assure a supply of drinking water which dependably complies with such [MCLs]; including accepted methods for quality control and testing procedures to insure compliance with such levels.'' (Section 1401(1)(D)).

To comply with these requirements, the EPA considers method performance under relevant laboratory conditions, their likely prevalence in certified drinking water laboratories, and the associated analytical costs. The EPA has developed five analytical methods for the identification and quantification of perchlorate in drinking water that meet these criteria. The proposed EPA methods for perchlorate are: 314.0, 314.1, 314.2, 331.0, and 332.0. A detailed description of these methods is presented in the Perchlorate Occurrence and Monitoring Report (USEPA, 2019b).

The EPA Methods 314.0, 314.1, 314.2, 331.0, and 332.0 underwent the EPA's analytical method development and validation processes. The validation process includes a protocol for modifications to any existing EPA-approved analytical methods and a protocol for new determinative techniques. Both validation protocols are rigorous and consider many technical aspects of analytical method performance, including: detection limits; instrument calibration; precision and analyte recovery; analyte retention times; evaluation of blanks; development of

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Quality Control acceptance criteria; analysis of field samples; and other technical aspects of sample analysis and data reporting. All of the proposed EPA analytical methods provide performance data to demonstrate their capability to reliably and consistently measure perchlorate in drinking water at the proposed and alternate MCLs.

EPA Method 314.0, "Determination of Perchlorate in Drinking Water Using Ion Chromatography" (Revision 1.0, USEPA, 1999a) has a method detection limit (MDL) of 0.53 µg/L. Single-laboratory mean percent recovery in various aqueous matrices range from 86% to 113% with Relative Standard Deviations (RSDs) of 1.0% to 12.8%. A minimum reporting level (MRL) is not specified in the method; however, a range of 3.0 to 5.0 µg/L is cited as a benchmark range for quality assurance/quality control (QA/QC) procedures. The MRL is to be established as either a concentration that is greater than three times the laboratory MDL or at a concentration that yields a response greater than a signal to noise ratio of five. In either case, the MRL must not be below the lowest instrument calibration standard (USEPA, 1999a). Method 314.0 was widely adopted as the standard perchlorate method.

After the EPA published Method 314.0, the Agency adopted additional method development goals for the analysis of perchlorate in drinking water including: 1) reducing MRL to less than 1 µg/L through the application of sample concentration techniques, microbore analytical columns, and advanced detection systems (i.e., mass spectrometry), 2) further increasing the tolerance for high ionic strength matrices, and 3) enhancing measurement selectivity.

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EPA Method 314.1, "Determination of Perchlorate in Drinking Water Using Inline Column Concentration/Matrix Elimination Ion Chromatography with Suppressed Conductivity Detection" (Revision 1.0, USEPA, 2005b) documents the EPA single-laboratory Lowest Concentration Minimum Reporting Levels (LCMRLs) of less than 0.2 µg/L (DL = 0.03 µg/L) using online sample pre-concentration. The method uses matrix diversion to handle high ionic strength matrices (up to 1,000 mg/L TDS) and added confirmation analysis using a second analytical column (USEPA, 2005b).

EPA Method 314.2, "Determination of Perchlorate in Drinking Water Using Two-Dimensional Ion Chromatography with Suppressed Conductivity Detection" (USEPA, 2008c) documents the EPA single-laboratory LCMRLs of less than 0.1 µg/L (DLs < 0.02 µg/L) using large volume injection. The method uses 2-D chromatography to handle high ionic strength matrices (up to 1,000 mg/L total dissolved solids [TDS]) and eliminates the need for separate confirmation analysis (USEPA, 2008c).

EPA Method 331.0, "Determination of Perchlorate in Drinking Water by Liquid Chromatography Electrospray Ionization Mass Spectrometry" (Revision 1.0, USEPA, 2005c) documents the EPA single-laboratory LCMRLs of less than 0.1 µg/L (DLs < 0.01 µg/L), applied multiple analytical advancements to a liquid chromatography (LC) analysis including a perchlorate selective LC column (AS-21), mass spectrometry (MS) or MS/MS detection for selectivity and sensitivity, and a custom labeled internal standard ($Cl^{18}O_4^-$) (USEPA, 2005c).

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EPA Method 332.0, "Determination of Perchlorate in Drinking Water by Ion Chromatography with Suppressed Conductivity and Electrospray Ionization Mass Spectrometry" (USEPA, Revision 1.0, 2005d) documents the EPA single-laboratory LCMRL of 0.1 µg/L (DL = 0.02 µg/L), applied multiple analytical advancements in an IC analysis including suppressed conductivity IC, MS or MS/MS selectivity and sensitivity, and a custom labeled internal standard ($Cl^{18}O_4$) (USEPA, 2005d).

VIII. Monitoring and Compliance Requirements

A. What are the Proposed Monitoring Requirements?

The EPA is proposing to require CWS and NTNCWSs to monitor for perchlorate in accordance with the standardized monitoring framework set out in 40 CFR 141 Subpart C (Standardized Monitoring Framework). Public water systems must sample entry points to the distribution system consistent with requirements in 40 CFR 141.23(a).

Under the Standardized Monitoring Framework, the monitoring frequency for a public water system is dependent on previous monitoring results and whether a monitoring waiver has been granted. The EPA is proposing that consistent with the standardized monitoring framework water systems would be initially required to monitor quarterly for perchlorate. The EPA is also proposing that based upon the monitoring results States would be able to reduce the monitoring frequency to annually, once every three years or once every nine years if the State concludes that the system is reliably and consistently below the MCL. If a water system exceeds the perchlorate

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MCL, the system is in violation and triggered into quarterly monitoring for that sampling point in the next quarter after the violation occurred (40 CFR 141.23(c)(7)). The state may allow the system to return to the reduced monitoring frequency when the state determines that the system is reliably and consistently below the MCL. However, the state cannot make a determination that the system is reliably and consistently below the MCL until a minimum of 2 consecutive ground water or 4 consecutive surface water samples below the MCL have been collected (40 CFR 141.23(c)(8)). All systems must comply with the sampling requirements, unless a waiver has been granted in writing by the state (40 CFR 141.23(c)(6)).

B. Can States Grant Monitoring Waivers?

Under this proposal, water systems may apply to the state, and states may grant, a 9-year monitoring waiver for perchlorate if the conditions described in 40 CFR 141.23(c)(3)-(6) are met. A state may grant a waiver for surface water systems after three rounds of annual monitoring with results less than the MCL and for groundwater systems after conducting three rounds of monitoring with results less than the MCL. One sample must be collected during the nine-year compliance cycle that the waiver is effective, and the waiver must be renewed every nine years.

C. How are System MCL Violations Determined?

Under this proposal, violations of the perchlorate MCL would be determined in a manner consistent with 40 CFR 141.23(i)(3). Compliance with the perchlorate MCL would be determined based on one sample if the level is below the MCL. If the level of perchlorate

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exceeds the MCL at any entry point in the initial sample, a confirmation sample is required within two weeks of the system's receipt of notification of the analytical result of the first sample, in accordance with 141.23(f)(1). Compliance shall be determined based on the average of the initial and confirmation samples.

D. When Must Systems Complete Initial Monitoring?

Pursuant to Section 1412(b)(10), this rule would be effective three years after promulgation. To satisfy initial monitoring requirements, CWS serving populations greater than 10,000 persons must collect 4 quarterly samples for perchlorate during the second compliance period of the fourth compliance cycle (January 1, 2023– December 31, 2025) of the Standardized Monitoring Framework. NTNCWS and CWSs serving 10,000 persons or less must collect 4 quarterly samples during the third compliance period of the fourth compliance cycle (January 1, 2026 – December 31, 2028) of the Standardized Monitoring Framework.

E. Can Systems use Grandfathered Data to Satisfy the Initial Monitoring Requirements?

As proposed today, systems would be allowed to use grandfathered perchlorate data collected after January 1, 2020, to satisfy the initial monitoring requirements. To satisfy initial perchlorate monitoring requirements, a system with appropriate historical monitoring data for each entry point to the distribution system could use the monitoring data from the compliance monitoring period between January 1, 2020, and December 31, 2022, for CWSs serving greater than 10,000 persons and between January 1, 2023, and December 31, 2025, for NTNCWs and for CWSs serving 10,000 or fewer persons.

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IX. Safe Drinking Water Act Right to Know Requirements

A. What are the Consumer Confidence Report Requirements?

A community water system must prepare and deliver to its customers an annual Consumer Confidence Report (CCR) in accordance with requirements in 40 CFR 141 Subpart O. A CCR provides customers with information about their local drinking water quality as well as information regarding the water system compliance with drinking water regulations. Under this proposal CWSs would be required to report perchlorate information in their CCR.

B. What are the Public Notification Requirements?

All public water systems must give the public notice for all violations of NPDWRs and for other situations. Under this proposal, violations of the perchlorate MCL would be designated as Tier 1 and as such, public water systems would be required to comply with 40 CFR 141.202. As described in Section III of this proposal, fetuses of first trimester pregnant women with low iodine are the most sensitive subpopulation, therefore, per 40 CFR 141.202(b)(1), notification of an MCL violation should be provided as soon as practicable but no later than 24 hours after the system learns of the violation under this proposal.

X. Treatment Technologies

Systems that exceed the perchlorate MCL will need to adopt new treatment or another strategy to reduce perchlorate to a level that meets the MCL. When the EPA establishes an MCL for a drinking water contaminant, Section 1412(b)(4)(E) of the SDWA requires that the Agency "list the technology, treatment techniques, and other means which the Administrator finds to be

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feasible for purposes of meeting [the MCL]," which are referred to as best available technologies (BAT). These BATs are used by states to establish conditions for source water variances under Section 1415(a). Furthermore, Section 1412(b)(4)(E)(ii) requires that the Agency identify small system compliance technologies (SSCT), which are affordable treatment technologies, or other means that can achieve compliance with the MCL (or treatment technique, where applicable). The lack of an affordable SSCT for a contaminant triggers certain additional procedures which can result in states issuing small system variances under Section 1412(e) of the SDWA.

The Agency solicits public comment on the choice of available treatment technologies discussed in this section.

A. What are the Best Available Technologies?

The Agency identifies the best available technologies (BAT) as those meeting the following criteria: (1) the capability of a high removal efficiency; (2) a history of full-scale operation; (3) general geographic applicability; (4) reasonable cost based on large and metropolitan water systems; (5) reasonable service life; (6) compatibility with other water treatment processes; and (7) the ability to bring all of the water in a system into compliance. The Agency is proposing the following technologies as BAT for removal of perchlorate from drinking water based its review of the treatment and cost literature (USEPA, 2018a):

- ion exchange;
- biological treatment; and
- centralized reverse osmosis.

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There are also non-treatment options that might be used for compliance in lieu of installing and operating treatment technologies. These include blending existing water sources, replacing a perchlorate-contaminated source of drinking water with a new source (e.g., a new well), and purchasing compliant water from another system. Below are brief descriptions of each proposed BAT.

Ion Exchange.

Ion exchange is a physical and chemical separation process that can achieve high perchlorate removal rates. Feed water passes through a vessel containing a bed of resin made of synthetic beads or gel. As feed water moves through the resin, an ionic contaminant such as perchlorate exchanges for an ion (typically chloride) on the resin. Demonstrated removal efficiencies for perchlorate are typically in the high 90 percent range and can achieve concentrations less than 4 µg/L in treated water [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"s9dVZckb","properties":{"formattedCitation":"(Drago & Leserman, 2011; Membrane Technology, 2006; Siemens Water Technologies, 2009; The Interstate Technology & Regulatory Council (ITRC) Team, 2008)","plainCitation":"(Drago & Leserman, 2011; Membrane Technology, 2006; Siemens Water Technologies, 2009; The Interstate Technology & Regulatory Council (ITRC) Team, 2008)","noteIndex":0},"citationItems":[{"id":1048,"uris":["http://zotero.org/groups/945096/items/KIPNEQUM"],"uri":["http://zotero.org/groups/945096/items/KIPNEQUM"],"itemData":{"id":1048,"type":"paper-conference","title":"Castaic Lake Water Agency Operating Experience with

Lead-Lag Anion Exchange for Perchlorate Removal","container-title":"Proceedings of the American Water Works Association Water Quality Technology Conference","event":"Water Quality Technology Conference","author":[{"family":"Drago","given":"J.A."},{"family":"Leserman","given":"J.R."}],"issued":{"date-parts":[["2011",11]]}}},{"id":1154,"uris":["http://zotero.org/groups/945096/items/2DBS6UYD"],"uri":["http://zotero.org/groups/945096/items/2DBS6UYD"],"itemData":{"id":1154,"type":"article","title":"News: Ion=Exchange System Removes Perchlorate","publisher":"Membrane Technology","author":[{"literal":"Membrane Technology"}],"issued":{"date-parts":[["2006",4]]}}},{"id":1125,"uris":["http://zotero.org/groups/945096/items/6WYYWFY2"],"uri":["http://zotero.org/groups/945096/items/6WYYWFY2"],"itemData":{"id":1125,"type":"report","title":"Case Study: Municipality in the State of Massachusetts","author":[{"literal":"Siemens Water Technologies"}],"issued":{"date-parts":[["2009"]]}}},{"id":1118,"uris":["http://zotero.org/groups/945096/items/5PV8GPIA"],"uri":["http://zotero.org/groups/945096/items/5PV8GPIA"],"itemData":{"id":1118,"type":"article","title":"Technical/Regulatory Guidance: Remediation Technologies for Perchlorate Contamination in Water and Soil","URL":"http://www.eosremediation.com/download/Perchlorate/ITRC%20PERC-2.pdf","author":[{"literal":"The Interstate Technology & Regulatory Council (ITRC) Team"}],"issued":{"date-parts":[["2008",3]]},"accessed":{"date-

parts":[["2018",10,13]]}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. The operation continues until enough of the resin's available ion exchange sites have ions from the feed water and the resin no longer effectively removes the target contaminant, i.e., the contaminant "breaks through" the treatment process. At this point, the resin must be disposed and replaced or regenerated. The length of time until resin must be replaced or regenerated is known as bed life and is a critical factor in the cost effectiveness of ion exchange as a treatment technology. One measurement of bed life is the volume of water that can be treated before breakthrough – called bed volumes – the number of times the resin bed can be filled before breakthrough. Several factors affect bed life, including the presence of competing ions such as nitrate and the type of resin used. Resin types tested for perchlorate removal include strong-base polyacrylic, strong-base polystyrenic (including nitrate-selective), weak-base polyacrylic, weak-base polystyrenic, and perchlorate-selective. Based on studies of the effect of competing ions on performance, perchlorate-selective resins can achieve bed lives ranging from 105,000 to 170,000 bed volumes [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"cxQjBTo8","properties":{"formattedCitation":"(Blute, Seidel, McGuire, Qin, & Byerrum, 2006; Russell, Qin, Blute, McGuire, & Williams, 2008; Wu & Blute, 2010)","plainCitation":"(Blute, Seidel, McGuire, Qin, & Byerrum, 2006; Russell, Qin, Blute, McGuire, & Williams, 2008; Wu & Blute, 2010)","noteIndex":0},"citationItems":[{"id":1076,"uris":["http://zotero.org/groups/945096/items/8Z7K9ZUJ"],"uri":["http://zotero.org/groups/945096/items/8Z7K9ZUJ"],"itemData":{"id":107

6,"type":"speech","title":"Bench and Pilot Testing of High Capacity, Single-Pass Ion Exchange Resins for Perchlorate Removal","publisher-place":"San Antonio, TX","event":"2006 AWWA Annual Conference & Exposition","event-place":"San Antonio, TX","author":[{"family":"Blute","given":"N.K."},{"family":"Seidel","given":"C.J."},{"family":"McGuire","given":"M.J."},{"family":"Qin","given":"D."},{"family":"Byerrum","given":"J."}],"issued":{"date-parts":[["2006",6]]}}},{"id":1132,"uris":["http://zotero.org/groups/945096/items/NLAFHBV2"],"uri":["http://zotero.org/groups/945096/items/NLAFHBV2"],"itemData":{"id":1132,"type":"speech","title":"Pilot Testing of Single Pass Perchlorate-Selective Ion Exchange Resins at Three Utilities in the Main San Gabriel Basin","publisher-place":"Cincinnati, OH","event":"AWWA Water Quality Technology Conference & Exposition","event-place":"Cincinnati, OH","author":[{"family":"Russell","given":"C.G."},{"family":"Qin","given":"G."},{"family":"Blute","given":"N.K."},{"family":"McGuire","given":"M.J."},{"family":"Williams","given":"C."}],"issued":{"date-parts":[["2008",11]]}}},{"id":1094,"uris":["http://zotero.org/groups/945096/items/2QPEXW23"],"uri":["http://zotero.org/groups/945096/items/2QPEXW23"],"itemData":{"id":1094,"type":"speech","title":"Perchlorate Removal Using Single-Pass Ion Exchange Resin - Pilot Testing Purolite A532E at the San Gabriel B6 Plant","publisher-place":"Hollywood, CA","event":"2010 California-Nevada AWWA Spring Conference","event-place":"Hollywood, CA","author":[{"family":"Wu","given":"X."},{"family":"Blute","given":"N.K."}],"issued":{"dat

e-parts":[["2010",3,31]]}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}].

Perchlorate-selective resin cannot be easily regenerated for reuse; the exhausted resin must be disposed (i.e., operated on a 'throw-away' basis). This mode of operation, however, avoids the production of liquid residuals in the form of spent regenerant. Therefore, in combination with the long bed life, single-use perchlorate-selective ion exchange can be a cost-effective treatment option in spite of the need to dispose of the perchlorate-contaminated resin. Build-up of arsenic or uranium on the resin may affect waste disposal options, although studies of perchlorate-selective resins show that arsenic concentrations remain below regulatory limits for hazardous waste disposal and uranium concentrations generally remain below those that require special handling as radioactive waste [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"I0SaZZiL","properties":{"formattedCitation":"(Blute et al., 2006; Russell et al., 2008; Wu & Blute, 2010)","plainCitation":"(Blute et al., 2006; Russell et al., 2008; Wu & Blute, 2010)","noteIndex":0},"citationItems":[{"id":1076,"uris":["http://zotero.org/groups/945096/items/8Z7K9ZUJ"],"uri":["http://zotero.org/groups/945096/items/8Z7K9ZUJ"],"itemData":{"id":1076,"type":"speech","title":"Bench and Pilot Testing of High Capacity, Single-Pass Ion Exchange Resins for Perchlorate Removal","publisher-place":"San Antonio, TX","event":"2006 AWWA Annual Conference & Exposition","event-place":"San Antonio, TX","author":[{"family":"Blute","given":"N.K."},{"family":"Seidel","given":"C.J."},{"family":"McGuire","given":"M.J."},{"family":"Qin","given":"D."},{"family":"Byerrum","given":"J."}],"i

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ssued":{"date-parts":[["2006",6]]}},{"id":1132,"uris":["http://zotero.org/groups/945096/items/NLAFHBV2"],"uri":["http://zotero.org/groups/945096/items/NLAFHBV2"],"itemData":{"id":1132,"type":"speech","title":"Pilot Testing of Single Pass Perchlorate-Selective Ion Exchange Resins at Three Utilities in the Main San Gabriel Basin","publisher-place":"Cincinnati, OH","event":"AWWA Water Quality Technology Conference & Exposition","event-place":"Cincinnati, OH","author":[{"family":"Russell","given":"C.G."},{"family":"Qin","given":"G."},{"family":"Blute","given":"N.K."},{"family":"McGuire","given":"M.J."},{"family":"Williams","given":"C."}],"issued":{"date-parts":[["2008",11]]}}},{"id":1094,"uris":["http://zotero.org/groups/945096/items/2QPEXW23"],"uri":["http://zotero.org/groups/945096/items/2QPEXW23"],"itemData":{"id":1094,"type":"speech","title":"Perchlorate Removal Using Single-Pass Ion Exchange Resin - Pilot Testing Purolite A532E at the San Gabriel B6 Plant","publisher-place":"Hollywood, CA","event":"2010 California-Nevada AWWA Spring Conference","event-place":"Hollywood, CA","author":[{"family":"Wu","given":"X."},{"family":"Blute","given":"N.K."}],"issued":{"date-parts":[["2010",3,31]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. Ion exchange can increase the corrosivity of treated water [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"dcLyBjzj","properties":{"formattedCitation":"(Berlien, 2003; Betts, 1998; USEPA, 2005b)","plainCitation":"(Berlien, 2003; Betts, 1998; USEPA,

2005b)","noteIndex":0},"citationItems":[{"id":1079,"uris":["http://zotero.org/groups/945096/items/8PB22K95"],"uri":["http://zotero.org/groups/945096/items/8PB22K95"],"itemData":{"id":1079,"type":"report","title":"La Puente Valley County Water District's Experience with ISEP","collection-title":"Presentation of Carollo Engineers, Inc. and Association of California Water Agencies","author":[{"family":"Berlien","given":"M.J."}],"issued":{"date-parts":[["2003",4]]}}},{"id":1078,"uris":["http://zotero.org/groups/945096/items/BNWD5VQP"],"uri":["http://zotero.org/groups/945096/items/BNWD5VQP"],"itemData":{"id":1078,"type":"article-journal","title":"Rotation ion-exchange system removes perchlorate","page":"454A-455A","volume":"32","journalAbbreviation":"Environ. Sci. Technol.","author":[{"family":"Betts","given":"K.S."}],"issued":{"date-parts":[["1998"]]}}},{"id":1208,"uris":["http://zotero.org/groups/945096/items/EWAQ4GEK"],"uri":["http://zotero.org/groups/945096/items/EWAQ4GEK"],"itemData":{"id":1208,"type":"article","title":"Perchlorate Treatment Technology Update: Federal Facilities Forum Issue Paper","publisher":"Office of Solid Waste and Emergency Response. EPA 542-R-05-015","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2005",5]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}] because of the addition of chloride ions and/or removal of carbonates and bicarbonates. Such instances can be addressed by adding or adjusting corrosion control.

Biological Treatment.

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Biological treatment uses bacteria to reduce perchlorate to chlorate, chlorite, chloride, and oxygen. Biological treatment can destroy the perchlorate ion, eliminating the need for management of perchlorate-bearing waste streams. Removal effectiveness exceeds 90 percent for bench-scale tests and full-scale treatment plant studies [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"CnYkqct9","properties":{"formattedCitation":"(Kotlarz, Upadhyaya, Togna, & Raskin, 2016; Upadhyaya, Kotlarz, Togna, & Raskin, 2015; U.S. Department of Defense (U.S. DoD), 2008, 2009; T. D. Webster & Crowley, 2010, 2016; T. D. Webster & Litchfield, 2017)","plainCitation":"(Kotlarz, Upadhyaya, Togna, & Raskin, 2016; Upadhyaya, Kotlarz, Togna, & Raskin, 2015; U.S. Department of Defense (U.S. DoD), 2008, 2009; T. D. Webster & Crowley, 2010, 2016; T. D. Webster & Litchfield, 2017)","noteIndex":0},"citationItems":[{"id":1019,"uris":["http://zotero.org/groups/945096/items/E5WRR4HD"],"uri":["http://zotero.org/groups/945096/items/E5WRR4HD"],"itemData":{"id":1019,"type":"article-journal","title":"Evaluation of electron donors for biological perchlorate removal highlights the importance of diverse perchlorate-reducing populations","container-title":"Environmental Science: Water Research & Technology","page":"1049-1063","volume":"2","author":[{"family":"Kotlarz","given":"N."},{"family":"Upadhyaya","given":"G."},{"family":"Togna","given":"P."},{"family":"Raskin","given":"L."}],"issued":{"date-parts":[["2016"]]}}},{"id":1106,"uris":["http://zotero.org/groups/945096/items/KLWCLIE4"],"uri":["http://zotero.org/groups/945096/items/KLWCLIE4"],"itemData":{"id":1106,"type":"article-journal","title":"Carbohydrate-Based Electron Donor for Biological Nitrate and Perchlorate

Removal From Drinking Water","container-title":"Journal - American Water Works Association","page":"E674-E684","volume":"107","issue":"12","source":"Wiley Online Library","abstract":"This study evaluated the feasibility of replacing acetic acid with a commercial carbohydrate-based electron donor (CBED) for removal of nitrate and perchlorate (ClO4–) from drinking water. Bench-scale biologically active carbon fixed-bed and fluidized-bed reactors (FXBR and FLBR, respectively), with an initial empty bed contact time (EBCT) of 42.8 min, were fed simulated groundwater containing 15 mg/L nitrate as nitrogen and 200 µg/L ClO4–. EBCT in the FLBR after final expansion was 80.5 min. During the first 100 days using acetic acid at 125 mg/L chemical oxygen demand (COD), complete nitrate removal was achieved in both systems, whereas perchlorate in the FXBR and FLBR effluents remained below 3 and 6 µg/L ClO4–, respectively. For comparable removals, influent COD requirement was higher with the CBED. Biomass yields with acetic acid and the CBED were 0.54–0.58 and 0.59–0.74 mg CODbiomass/mg CODsubstrate, respectively. The higher yield with the CBED resulted in more frequent maintenance requirements.","DOI":"10.5942/jawwa.2015.107.0143","ISSN":"1551-8833","language":"en","author":[{"family":"Upadhyaya","given":"Giridhar"},{"family":"Kotlarz","given":"Nadine"},{"family":"Togna","given":"Paul"},{"family":"Raskin","given":"Lutgarde"}],"issued":{"date-parts":[["2015",12,1]]}}},{"id":1110,"uris":["http://zotero.org/groups/945096/items/VE5JI4GQ"],"uri":["http://zotero.org/groups/945096/items/VE5JI4GQ"],"itemData":{"id":1110,"type":"report","title":"Perchlorate Removal, Destruction, and Field Monitoring Demonstration (Drinking

Water - Pilot Scale)","collection-title":"ESTCP Cost and Performance Report (ER-0312)","author":[{"literal":"U.S. Department of Defense (U.S. DoD)"}],"issued":{"date-parts":[["2008"]]}},{"id":1116,"uris":["http://zotero.org/groups/945096/items/9FHLVTXY"],"uri":["http://zotero.org/groups/945096/items/9FHLVTXY"],"itemData":{"id":1116,"type":"report","title":"Demonstration of a Full-Scale Fluidized Bed Bioreactor for the Treatment of Perchlorate at Low Concentrations in Groundwater","genre":"Environmental Security Technology Certification Program (ESTCP) Final Report (ER-0543)","author":[{"family":"U.S. Department of Defense (U.S. DoD)","given":""}],"issued":{"date-parts":[["2009"]]}},{"id":1093,"uris":["http://zotero.org/groups/945096/items/BI7SF8HW"],"uri":["http://zotero.org/groups/945096/items/BI7SF8HW"],"itemData":{"id":1093,"type":"speech","title":"Full-Scale Implementation of a Biological Fluidized Bed Drinking Water Treatment Plant for Nitrate and Perchlorate Treatment","publisher-place":"Ontario, CA","event":"2010 Water Education Foundation Water Quality and Regulatory Conference","event-place":"Ontario, CA","author":[{"family":"Webster","given":"T.D."},{"family":"Crowley","given":"T.J."}],"issued":{"date-parts":[["2010",11,3]]}},{"id":989,"uris":["http://zotero.org/groups/945096/items/BI5LYMZP"],"uri":["http://zotero.org/groups/945096/items/BI5LYMZP"],"itemData":{"id":989,"type":"speech","title":"Biological treatment of perchlorate in groundwater.","event":"AWWA Annual Conference and Exposition","author":[{"family":"Webster","given":"T.D."},{"family":"Crowley","given":"T.J."

}],"issued":{"date-parts":[["2016",6,21]]}}},{"id":990,"uris":["http://zotero.org/groups/945096/items/64HZKA2M"],"uri":["http://zotero.org/groups/945096/items/64HZKA2M"],"itemData":{"id":990,"type":"article-journal","title":"Full-scale biological treatment of nitrate and perchlorate for potable water production","container-title":"Journal AWWA","page":"30-40","volume":"109","issue":"5","author":[{"family":"Webster","given":"T.D."},{"family":"Litchfield","given":"M.H."}],"issued":{"date-parts":[["2017"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. Although biological treatment is a relatively new technology for treatment of drinking water in the United States, the State of California has identified biological treatment (along with ion exchange) as one of two best available technologies for achieving compliance with its standard for perchlorate in drinking water (California Code of Regulations, Title 22, Chapter 15, Section 64447.2). The California BAT specifies a fluidized bed, although studies suggest that a fixed bed is also effective. The first full-scale fluidized bed facility using biological treatment of perchlorate to supply municipal drinking water began operation in 2016 [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"nKwIqjde","properties":{"formattedCitation":"(T. D. Webster & Crowley, 2016; T. D. Webster & Litchfield, 2017)","plainCitation":"(T. D. Webster & Crowley, 2016; T. D. Webster & Litchfield, 2017)","noteIndex":0},"citationItems":[{"id":989,"uris":["http://zotero.org/groups/945096/items/

BI5LYMZP"],"uri":["http://zotero.org/groups/945096/items/BI5LYMZP"],"itemData":{"id":989
,"type":"speech","title":"Biological treatment of perchlorate in groundwater.","event":"AWWA
Annual Conference and
Exposition","author":[{"family":"Webster","given":"T.D."},{"family":"Crowley","given":"T.J."
}],"issued":{"date-
parts":[["2016",6,21]]}}},{"id":990,"uris":["http://zotero.org/groups/945096/items/64HZKA2M"
],"uri":["http://zotero.org/groups/945096/items/64HZKA2M"],"itemData":{"id":990,"type":"arti
cle-journal","title":"Full-scale biological treatment of nitrate and perchlorate for potable water
production","container-title":"Journal AWWA","page":"30-
40","volume":"109","issue":"5","author":[{"family":"Webster","given":"T.D."},{"family":"Litch
field","given":"M.H."}],"issued":{"date-
parts":[["2017"]]}}}],"schema":"https://github.com/citation-style-
language/schema/raw/master/csl-citation.json"}]. Raw water quality will affect process design,
in particular, temperature affects the rate of biomass growth; at temperatures below 10 degrees
Celsius, growth is inhibited and bioremediation becomes infeasible [ADDIN ZOTERO_ITEM
CSL_CITATION {"citationID":"ISPg08cl","properties":{"formattedCitation":"(Dugan, 2010b,
2010a; Dugan et al., 2009)","plainCitation":"(Dugan, 2010b, 2010a; Dugan et al.,
2009)","noteIndex":0},"citationItems":[{"id":1047,"uris":["http://zotero.org/groups/945096/item
s/X3WWHCXS"],"uri":["http://zotero.org/groups/945096/items/X3WWHCXS"],"itemData":{"i
d":1047,"type":"speech","title":"The Impact of Temperature on Biological Perchlorate Removal

and Downstream Effluent Polishing","publisher-place":"U.S. Environmental Protection Agency, Office of Research and Development, National Risk Management Research Laboratory","event-place":"U.S. Environmental Protection Agency, Office of Research and Development, National Risk Management Research Laboratory","author":[{"family":"Dugan","given":"N.R."}],"issued":{"date-parts":[["2010",12,8]]}}},{"id":1046,"uris":["http://zotero.org/groups/945096/items/IIXUW45F"],"uri":["http://zotero.org/groups/945096/items/IIXUW45F"],"itemData":{"id":1046,"type":"article","title":"Supporting data for presentation: The Impact of Temperature on Biological Perchlorate Removal and Downstream Effluent Polishing","publisher":"U.S. Environmental Protection Agency, Office of Research and Development, National Risk Management Research Laboratory","author":[{"family":"Dugan","given":"N.R."}],"issued":{"date-parts":[["2010",12,8]]}}},{"id":1045,"uris":["http://zotero.org/groups/945096/items/FLVLSXCS"],"uri":["http://zotero.org/groups/945096/items/FLVLSXCS"],"itemData":{"id":1045,"type":"speech","title":"The Impact of Temperature on Anaerobic Biological Perchlorate Treatment","publisher-place":"Seattle, WA","event":"2009 AWWA Water Quality Technology Conference & Exposition","event-place":"Seattle, WA","author":[{"family":"Dugan","given":"N.R."},{"family":"Williams","given":"D.J."},{"family":"Meyer","given":"M."},{"family":"Schneider","given":"R.R."},{"family":"Speth","given":"T.F."},{"family":"Metz","given":"D.H."}],"issued":{"date-parts":[["2009"]]}}}],"schema":"https://github.com/citation-style-

language/schema/raw/master/csl-citation.json"}]. This factor limits the feasibility of biological treatment in areas that experience low water temperatures during winter. In addition, bacteria in bioreactors require nutrients to grow and effectively reduce perchlorate. Therefore, some source waters may require supplemental addition of nutrients such as nitrogen or phosphorus [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"NDoHjLOr","properties":{"formattedCitation":"(Harding Engineering and Environmental Services (ESE), 2001; U.S. Department of Defense (U.S. DoD), 2008a, 2009)","plainCitation":"(Harding Engineering and Environmental Services (ESE), 2001; U.S. Department of Defense (U.S. DoD), 2008a, 2009)","noteIndex":0},"citationItems":[{"id":1139,"uris":["http://zotero.org/groups/945096/items/ZPGXUZPL"],"uri":["http://zotero.org/groups/945096/items/ZPGXUZPL"],"itemData":{"id":1139,"type":"report","title":"Final: Phase 2 Treatibility Study Report, Aerojet GET E/F Treatment Facility, Sacramento, California","collection-title":"Prepared for U.S. Environmental Protection Agency Region IX and Baldwin Park Operable Unit Cooperating Respondents, San Gabriel Basin,California","author":[{"family":"Harding Engineering and Environmental Services (ESE)","given":""}],"issued":{"date-parts":[["2001"]]}}},{"id":1074,"uris":["http://zotero.org/groups/945096/items/2ZCNIFHT"],"uri":["http://zotero.org/groups/945096/items/2ZCNIFHT"],"itemData":{"id":1074,"type":"report","title":"Direct Fixed-bed Biological Perchlorate Destruction Demonstration","genre":"ESTCP Final Report (ER-0544)","author":[{"literal":"U.S. Department of Defense (U.S.

DoD)"}],"issued":{"date-parts":[["2008",9,25]]}},{"id":1081,"uris":["http://zotero.org/groups/945096/items/9FHLVTXY"],"uri":["http://zotero.org/groups/945096/items/9FHLVTXY"],"itemData":{"id":1081,"type":"report","title":"Demonstration of a Full-Scale Fluidized Bed Bioreactor for the Treatment of Perchlorate at Low Concentrations in Groundwater","genre":"Environmental Security Technology Certification Program (ESTCP) Final Report (ER-0543)","author":[{"family":"U.S. Department of Defense (U.S. DoD)","given":""}],"issued":{"date-parts":[["2009"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}].

Although the process does not produce perchlorate-contaminated wastes, periodic removal of excess biomass, e.g., through backwash, will be required. The backwash water is non-toxic and can be discharged to a sanitary sewer [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"f4qlOob5","properties":{"formattedCitation":"(U.S. Department of Defense (U.S. DoD), 2008, 2009)","plainCitation":"(U.S. Department of Defense (U.S. DoD), 2008, 2009)","noteIndex":0},"citationItems":[{"id":1110,"uris":["http://zotero.org/groups/945096/items/VE5JI4GQ"],"uri":["http://zotero.org/groups/945096/items/VE5JI4GQ"],"itemData":{"id":1110,"type":"report","title":"Perchlorate Removal, Destruction, and Field Monitoring Demonstration (Drinking Water - Pilot Scale)","collection-title":"ESTCP Cost and Performance Report (ER-0312)","author":[{"literal":"U.S. Department of Defense (U.S. DoD)"}],"issued":{"date-

parts":[["2008"]]}}},{"id":1116,"uris":["http://zotero.org/groups/945096/items/9FHLVTXY"],"uri":["http://zotero.org/groups/945096/items/9FHLVTXY"],"itemData":{"id":1116,"type":"report","title":"Demonstration of a Full-Scale Fluidized Bed Bioreactor for the Treatment of Perchlorate at Low Concentrations in Groundwater","genre":"Environmental Security Technology Certification Program (ESTCP) Final Report (ER-0543)","author":[{"family":"U.S. Department of Defense (U.S. DoD)","given":""}],"issued":{"date-parts":[["2009"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}] or recycled following clarification. Typically, post-treatment of treated water also will be required because biological treatment increases soluble microbial organic products, depletes oxygen, and can add turbidity and sulfides [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"ySKwU3Em","properties":{"formattedCitation":"(Dordelmann, 2009; Harding Engineering and Environmental Services (ESE), 2001; U.S. Department of Defense (U.S. DoD), 2008; T. D. Webster & Crowley, 2016; T. D. Webster & Litchfield, 2017)","plainCitation":"(Dordelmann, 2009; Harding Engineering and Environmental Services (ESE), 2001; U.S. Department of Defense (U.S. DoD), 2008; T. D. Webster & Crowley, 2016; T. D. Webster & Litchfield, 2017)","noteIndex":0},"citationItems":[{"id":1051,"uris":["http://zotero.org/groups/945096/items/Z7PC3BME"],"uri":["http://zotero.org/groups/945096/items/Z7PC3BME"],"itemData":{"id":1051,"type":"speech","title":"Full-Scale Biological Denitrification Plants in Germany, Austria and

Poland","publisher-place":"Seattle, WA","event":"2009 AWWA Water Quality Technology Conference & Exposition","event-place":"Seattle, WA","author":[{"family":"Dordelmann","given":"O."}],"issued":{"date-parts":[["2009",11]]}}},{"id":1026,"uris":["http://zotero.org/groups/945096/items/ZPGXUZPL"],"uri":["http://zotero.org/groups/945096/items/ZPGXUZPL"],"itemData":{"id":1026,"type":"report","title":"Final: Phase 2 Treatibility Study Report, Aerojet GET E/F Treatment Facility, Sacramento, California","collection-title":"Prepared for U.S. Environmental Protection Agency Region IX and Baldwin Park Operable Unit Cooperating Respondents, San Gabriel Basin,California","author":[{"family":"Harding Engineering and Environmental Services (ESE)","given":""}],"issued":{"date-parts":[["2001"]]}}},{"id":1110,"uris":["http://zotero.org/groups/945096/items/VE5JI4GQ"],"uri":["http://zotero.org/groups/945096/items/VE5JI4GQ"],"itemData":{"id":1110,"type":"report","title":"Perchlorate Removal, Destruction, and Field Monitoring Demonstration (Drinking Water - Pilot Scale)","collection-title":"ESTCP Cost and Performance Report (ER-0312)","author":[{"literal":"U.S. Department of Defense (U.S. DoD)"}],"issued":{"date-parts":[["2008"]]}}},{"id":989,"uris":["http://zotero.org/groups/945096/items/BI5LYMZP"],"uri":["http://zotero.org/groups/945096/items/BI5LYMZP"],"itemData":{"id":989,"type":"speech","title":"Biological treatment of perchlorate in groundwater.","event":"AWWA Annual Conference and Exposition","author":[{"family":"Webster","given":"T.D."},{"family":"Crowley","given":"T.J."

}],"issued":{"date-parts":[["2016",6,21]]}}},{"id":990,"uris":["http://zotero.org/groups/945096/items/64HZKA2M"],"uri":["http://zotero.org/groups/945096/items/64HZKA2M"],"itemData":{"id":990,"type":"article-journal","title":"Full-scale biological treatment of nitrate and perchlorate for potable water production","container-title":"Journal AWWA","page":"30-40","volume":"109","issue":"5","author":[{"family":"Webster","given":"T.D."},{"family":"Litchfield","given":"M.H."}],"issued":{"date-parts":[["2017"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. The treatment process, however, can result in removal of co-occurring contaminants such as nitrate (Upadhyaya et al., 2015; Webster and Crowley, 2010; Webster and Lichfield, 2017).

Reverse Osmosis.

Reverse osmosis is a membrane filtration process that physically removes perchlorate ions from drinking water. This process separates a solute such as perchlorate ions from a solution by forcing the solvent to flow through a membrane at a pressure greater than the normal osmotic pressure. The membrane is semi-permeable, transporting different molecular species at different rates. Water and low-molecular weight solutes pass through the membrane and are removed as permeate, or filtrate. Dissolved and suspended solids are rejected by the membrane and are removed as concentrate or reject. This technique does not destroy the perchlorate ion and,

therefore, creates a subsequent need for disposal or treatment of perchlorate-contaminated waste (the concentrate).

Membranes may remove ions from feed water by a sieving action (called steric exclusion), or by electrostatic repulsion of ions from the charged membrane surface. Across multiple bench- and pilot-scale studies, reverse osmosis membranes consistently achieve perchlorate removal greater than 80 percent and up to 98 percent [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"edXX3GgQ","properties":{"formattedCitation":"(Liang, Scott, Palencia, & Bruno, 1998; Nam et al., 2005; Yoon, Amy, & Yoon, 2005; Yoon, Yoon, Amy, & Her, 2005)","plainCitation":"(Liang, Scott, Palencia, & Bruno, 1998; Nam et al., 2005; Yoon, Amy, & Yoon, 2005; Yoon, Yoon, Amy, & Her, 2005)","noteIndex":0},"citationItems":[{"id":985,"uris":["http://zotero.org/groups/945096/items/IQVVPD73"],"uri":["http://zotero.org/groups/945096/items/IQVVPD73"],"itemData":{"id":985,"type":"paper-conference","title":"Investigation of Treatment Options for Perchlorate Removal.","publisher":"La Verne, CA: Metropolitan Water District of Southern California","publisher-place":"San Diego, CA","event":"AWWA Water Quality Technology Conference","event-place":"San Diego, CA","author":[{"family":"Liang","given":"S."},{"family":"Scott","given":"K.N."},{"family":"Palencia","given":"L.S."},{"family":"Bruno","given":"J."}],"issued":{"date-parts":[["1998"]]}}},{"id":986,"uris":["http://zotero.org/groups/945096/items/YHEV76YW"],"uri":["http://zotero.org/groups/945096/items/YHEV76YW"],"itemData":{"id":986,"type":"paper-

conference","title":"Perchlorate Rejection by High-Pressure Membranes and Brine Stream Treatment by Chemical and Biological Processes.","publisher-place":"Phoenix, AZ","event":"American Water Works Association Membrane Technology Conference","event-place":"Phoenix, AZ","author":[{"family":"Nam","given":"S."},{"family":"Kim","given":"S."},{"family":"Choi","given":"H."},{"family":"Yoon","given":""},{"family":"Silverstein","given":"J."},{"family":"Amy","given":"G."}],"issued":{"date-parts":[["2005"]]}}},{"id":992,"uris":["http://zotero.org/groups/945096/items/HPHVBSWB"],"uri":["http://zotero.org/groups/945096/items/HPHVBSWB"],"itemData":{"id":992,"type":"article-journal","title":"Transport of target anions, chromate (Cr (VI)), arsenate (As (V)), and perchlorate (ClO4), through RO, NF, and UF membranes.","container-title":"Water Science and Technology","page":"327-334","volume":"51","issue":"6-7","author":[{"family":"Yoon","given":"J."},{"family":"Amy","given":"G."},{"family":"Yoon","given":"Y."}],"issued":{"date-parts":[["2005"]]}}},{"id":991,"uris":["http://zotero.org/groups/945096/items/IIJW6E8Q"],"uri":["http://zotero.org/groups/945096/items/IIJW6E8Q"],"itemData":{"id":991,"type":"article-journal","title":"Determination of perchlorate rejection and associated inorganic fouling (scaling) for reverse osmosis and nanofiltration membranes under various operating conditions","container-title":"Journal of Environmental Engineering","page":"726-733","author":[{"family":"Yoon","given":"J."},{"family":"Yoon","given":"Y."},{"family":"Am

y","given":"G."},{"family":"Her","given":"N."}],"issued":{"date-parts":[["2005",5]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. While water quality affects process design (e.g., recovery rate, cleaning frequency, and antiscalant selection), it has relatively little effect on perchlorate removal effectiveness of reverse osmosis membranes. Reverse osmosis generates a relatively large concentrate stream, which will contain perchlorate as well as other rejected dissolved solids, which will require disposal. The large concentrate stream also means less treated water is available for distribution (e.g., 70 to 85 percent of source water), which is a disadvantage for systems with limited water supply. Because reverse osmosis can increase the corrosivity of the treated water, it may require post-treatment or blending with bypass water. Reverse osmosis can, however, remove co-occurring contaminants including arsenic and chromium-VI (Amy, Yoon, and Amy, 2005).

B. What are the Small System Compliance Technologies?

The EPA is proposing the SSCT shown in Table X-1. The table shows which of the BAT listed above are also affordable for each small system size category listed in Section 1412(b)(4)(E)(ii) of the SDWA. The Agency identified these technologies based on an analysis of treatment effectiveness and affordability [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"J9AlL73G","properties":{"formattedCitation":"(USEPA, 2018a)","plainCitation":"(USEPA, 2018a)","noteIndex":0},"citationItems":[{"id":1210,"uris":["http://zotero.org/groups/945096/ite

ms/QBLZF9AR"],"uri":["http://zotero.org/groups/945096/items/QBLZF9AR"],"itemData":{"id"
:1210,"type":"article","title":"Best Available Technologies and Small System Compliance
Technologies for Perchlorate in Drinking Water.","publisher":"EPA ***-*-*-
****","author":[{"literal":"USEPA"}],"issued":{"date-
parts":[["2018"]]}}],"schema":"https://github.com/citation-style-
language/schema/raw/master/csl-citation.json"}].

Table X-1: Proposed SSCT for Perchlorate Removal

System Size (Population Served)	Ion Exchange	Biological Treatment	Reverse Osmosis	Point-of-Use Reverse Osmosis
25-500	Yes	No	No	Yes
501-3,300	Yes	Yes	Yes	Yes
3,301-10,000	Yes	Yes	Yes	Not applicable[a]

a. For perchlorate, the EPA has determined that implementing and maintaining this option for systems larger than 3,300 people (greater than 1 MGD design flow) is likely to be impractical.

The SSCT listed in Table X-1 include a point-of-use (POU) version of reverse osmosis in addition to the ion exchange, biological treatment and reverse osmosis technologies described in the previous section. This technology can be used by small systems to comply with the proposed MCL and, therefore, meets the effectiveness requirement for an SSCT. For perchlorate removal, NSF/ANSI Standard 58: Reverse Osmosis Drinking Water Treatment Systems includes a protocol that requires a reverse osmosis unit to be able to reduce perchlorate from a challenge level of 130 µg/L to a target level of 4 µg/L (NSF, 2004). Organizations (e.g., NSF International, Underwriters Laboratories, Water Quality Association) provide third-party testing and

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certification that POU devices meet drinking water treatment standards. There are no perchlorate certification standards for other types of POU devices such as those using ion exchange media.

The operating principle for POU reverse osmosis devices is the same as centralized reverse osmosis: steric exclusion and electrostatic repulsion of ions from the charged membrane surface. In addition to a reverse osmosis membrane for dissolved ion removal, POU reverse osmosis devices often have a sediment pre-filter and a carbon filter in front of the reverse osmosis membrane, a 3- to 5-gallon treated water storage tank, and a carbon filter between the tank and the tap.

The EPA identified the SSCT using the affordability criteria methodology it developed for drinking water rules [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"LHgBHn5b","properties":{"formattedCitation":"(USEPA, 1998)","plainCitation":"(USEPA, 1998)","noteIndex":0},"citationItems":[{"id":1215,"uris":["http://zotero.org/groups/945096/items/399QNBY4"],"uri":["http://zotero.org/groups/945096/items/399QNBY4"],"itemData":{"id":1215,"type":"article","title":"Variance Technology Findings for Contaminants Regulated Before 1996","publisher":"EPA 815–R– 98–003. September","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["1998"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. The analysis method is a comparison of estimated incremental household costs for perchlorate treatment to an expenditure margin, which

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is the difference between baseline household water costs and a threshold equal to 2.5% of median household income. Table X-2 shows the expenditure margins derived for the analysis. These margins show the cap on affordable incremental annual expenditures.

Table X-2: Expenditure Margins for SSCT Affordability Analysis

System Size (Population Served)	Median Household Income[a] (a)	Affordability Threshold[b] (b) = 2.5% x a	Baseline Water Cost[c] (c)	Expenditure Margin (d) = b - c
25-500	$52,791	$1,320	$341	$979
501-3,300	$51,093	$1,277	$395	$883
3,301-10,000	$55,975	$1,399	$412	$987

Source: *Best Available Technologies and Small System Compliance Technologies for Perchlorate in Drinking Water* [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"2scXqyv0","properties":{"formattedCitation":"(USEPA, 2018a)","plainCitation":"(USEPA, 2018a)","noteIndex":0},"citationItems":[{"id":1210,"uris":["http://zotero.org/groups/945096/items/QBLZF9AR"],"uri":["http://zotero.org/groups/945096/items/QBLZF9AR"],"itemData":{"id":1210,"type":"article","title":"Best Available Technologies and Small System Compliance Technologies for Perchlorate in Drinking Water.","publisher":"EPA ***-*-*-****","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]

a. MHI based on U.S. Census 2010 American Community Survey (ACS) 5-year estimates [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"x096Tc8Y","properties":{"formattedCitation":"(U.S. Census Bureau, 2010)","plainCitation":"(U.S. Census Bureau, 2010)","noteIndex":0},"citationItems":[{"id":1225,"uris":["http://zotero.org/groups/945096/items/WJ35QNBT"],"uri":["http://zotero.org/groups/945096/items/WJ35QNBT"],"itemData":{"id":1225,"type":"article","title":"American Community Survey, 5-year Estimates (2006-2010)","author":[{"family":"U.S. Census Bureau","given":""}],"issued":{"date-parts":[["2010"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}] stated in 2010 dollars, adjusted to 2017 dollars using the CPI (for all items) for areas under 50,000 persons [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"7Rg9m81J","properties":{"formattedCitation":"(Bureau of Labor Statistics (BLS), 2018b)","plainCitation":"(Bureau of Labor Statistics (BLS), 2018b)","noteIndex":0},"citationItems":[{"id":1226,"uris":["http://zotero.org/groups/945096/items/GTI7H6YK"],"uri":["http://zotero.org/groups/945096/items/GTI7H6YK"],"itemData":{"id":1226,"type":"article","title":"CPI--All Urban Consumers (all items), for areas under 50,000 persons","author":[{"family":"Bureau of Labor Statistics (BLS)","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}].
b. Affordability threshold equals 2.5 percent of MHI.
c. Household water costs derived from 2006 Community Water System Survey [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"fS2Ibu6t","properties":{"formattedCitation":"(USEPA, 2009c)","plainCitation":"(USEPA, 2009c)","noteIndex":0},"citationItems":[{"id":163,"uris":["http://zotero.org/groups/945096/items/DZNAAV6M"],"uri":["http://zotero.org/groups/945096/items/DZNAAV6M"],"itemData":{"id":163,"type":"article","title":"2006 Community Water System Survey - Volume II: Detailed Tables and Survey Methodology","URL":"https://www.epa.gov/dwstandardsregulations/community-water-system-survey","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2009",5]]},"accessed":{"date-parts":[["2018",8,17]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}], based on residential revenue per connection within each size category, adjusted to 2017 dollars based on the CPI (for all items) for areas under 50,000 persons.

Table X-3 shows the estimates of per-household costs by treatment technology and size category generated using the treatment cost method described in section XII.B as well as *Best*

Available Technologies and Small System Compliance Technologies for Perchlorate in Drinking Water [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"z6GYvRh1","properties":{"formattedCitation":"(USEPA, 2018a)","plainCitation":"(USEPA, 2018a)","noteIndex":0},"citationItems":[{"id":1210,"uris":["http://zotero.org/groups/945096/items/QBLZF9AR"],"uri":["http://zotero.org/groups/945096/items/QBLZF9AR"],"itemData":{"id":1210,"type":"article","title":"Best Available Technologies and Small System Compliance Technologies for Perchlorate in Drinking Water.","publisher":"EPA ***-*-*-****","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}] and *Technologies and Costs for Treating Perchlorate-Contaminated Waters* [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"18aKvRLD","properties":{"formattedCitation":"(USEPA, 2018f)","plainCitation":"(USEPA, 2018f)","noteIndex":0},"citationItems":[{"id":147,"uris":["http://zotero.org/groups/945096/items/VUJUPN7L"],"uri":["http://zotero.org/groups/945096/items/VUJUPN7L"],"itemData":{"id":147,"type":"article","title":"Technologies and Costs for Treating Perchlorate-Contaminated Waters","publisher":"EPA ***-*-*-****","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-

language/schema/raw/master/csl-citation.json"}]. Costs in bold font do not exceed the corresponding expenditure margin and, therefore, meet the SSCT affordability criterion. Therefore, the EPA has determined that there are affordable small system compliance technologies available and the Agency is not proposing any variance technologies.

Table X-3: Annual Incremental Cost Estimates for SSCT Affordability Analysis

System Size (Population Served)	Ion Exchange	Biological Treatment	Reverse Osmosis	Point-of-Use Reverse Osmosis
25-500	**$378 to $610**	$2,146 to $3,709	$2,272 to $2,671	**$265 to $271**
501-3,300	**$98 to $148**	**$324 to $566**	**$561 to $688**	**$250 to $251**
3,301-10,000	**$104 to $153**	**$211 to $315**	**$431 to $493**	Not applicable[a]

Source: *Best Available Technologies and Small System Compliance Technologies for Perchlorate in Drinking Water* [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"8y1WSJT4","properties":{"formattedCitation":"(USEPA, 2018a)","plainCitation":"(USEPA, 2018a)","noteIndex":0},"citationItems":[{"id":1210,"uris":["http://zotero.org/groups/945096/items/QBLZF9AR"],"uri":["http://zotero.org/groups/945096/items/QBLZF9AR"],"itemData":{"id":1210,"type":"article","title":"Best Available Technologies and Small System Compliance Technologies for Perchlorate in Drinking Water.","publisher":"EPA ***-*-*-****","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}], which describes the different WBS model input assumptions that result in ranges of per-household costs shown; bold font indicates cost estimates that do not exceed the corresponding expenditure margin.

a. For perchlorate, the EPA has determined that implementing and maintaining a POU program for systems larger than 3,300 people (greater than 1 MGD design flow) is likely to be impractical.

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XI. Rule Implementation and Enforcement

A. What are the Requirements for Primacy?

This section describes the regulations and other procedures and policies primacy entities must adopt, or have in place, to implement the proposed perchlorate rule. States must continue to meet all other conditions of primacy in 40 CFR part 142. Section 1413 of the SDWA establishes requirements that primacy entities (States or Indian Tribes) must meet to maintain primary enforcement responsibility (primacy) for its public water systems. These include: (1) Adopting drinking water regulations that are no less stringent than federal NPDWRs in effect under sections 1412(a) and 1412(b) of the Act, (2) Adopting and implementing adequate procedures for enforcement, (3) Keeping records and making reports available on activities that the EPA requires by regulation, (4) Issuing variances and exemptions (if allowed by the State) under conditions no less stringent than allowed by SDWA Sections 1415 and 1416, and (5) Adopting and being capable of implementing an adequate plan for the provision of safe drinking water under emergency situations.

40 CFR part 142 sets out the specific program implementation requirements for States to obtain primacy for the Public Water Supply Supervision Program, as authorized under section 1413 of the Act.

To implement the perchlorate rule, States would be required to adopt revisions at least as stringent as the proposed provisions in 40 CFR 141.6 (Effective Dates); 40 CFR 141.23

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(Inorganic chemical sampling and analytical requirements); 40 CFR 141.51 (Maximum contaminant level goals for inorganic contaminants); 40 CFR 141.60 (Effective Dates); 40 CFR 141.62 (Maximum contaminant levels for inorganic contaminants); Appendix A to Subpart O ([Consumer Confidence Report] Regulated contaminants); Appendix A to Subpart Q (NPDWR violations and other situations requiring public notice); Appendix B to Subpart Q (Standard health effects language for public notification); and 40 CFR 142.62 (Variances and exemptions from the maximum contaminant levels for organic and inorganic contaminants). Under 40 CFR 142.12(b), all primacy States/territories/tribes would be required to submit a revised program to the EPA for approval within two years of promulgation of any final perchlorate NPDWR or could request an extension of up to two years in certain circumstances.

B. What are the State Record Keeping Requirements?

The current regulations in 40 CFR 142.14 require States with primary enforcement responsibility (i.e., primacy) to keep records of analytical results to determine compliance, system inventories, sanitary surveys, State approvals, vulnerability and waiver determinations, monitoring requirements, monitoring frequency decisions, enforcement actions, and the issuance of variances and exemptions. The State record keeping requirements remain unchanged and would apply to perchlorate as with any other regulated contaminant.

C. What are the State Reporting Requirements?

Currently, States must report to the EPA information under 40 CFR 142.15 regarding violations, variances and exemptions, enforcement actions and general operations of State public

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water supply programs. The State reporting requirements remain unchanged and would apply to perchlorate as with any other regulated contaminant. However, the perchlorate MCL could result in a greater frequency of reporting by certain states. See discussion of Paperwork Reduction Act compliance in Section XVI for more information.

XII. Health Risk Reduction Cost Analysis

Section 1412(b)(3)(C) of the 1996 Amendments to the SDWA requires the EPA to prepare a Health Risk Reduction and Cost Analysis (HRRCA) in support of any NPDWR that includes an MCL. This section addresses the HRRCA requirements as indicated:

- Quantifiable and non-quantifiable health risk reduction benefits for which there is a factual basis in the rulemaking record to conclude that such benefits are likely to occur as the result of treatment to comply with each level (Sections XII.C and XII.D);
- Quantifiable and non-quantifiable health risk reduction benefits for which there is a factual basis in the rulemaking record to conclude that such benefits are likely to occur from reductions in co-occurring contaminants that may be attributed solely to compliance with the MCL, excluding benefits resulting from compliance with other proposed or promulgated regulations (Section XII.C);
- Quantifiable and non-quantifiable costs for which there is a factual basis in the rulemaking record to conclude that such costs are likely to occur solely as a result of compliance with the MCL, including monitoring, treatment, and other costs, and

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excluding costs resulting from compliance with other proposed or promulgated regulations (Section XII.B and XII.D);

- The incremental costs and benefits associated with each alternative MCL considered (Section XII.D);
- The effects of the contaminant on the general population and on groups within the general population, such as infants, children, pregnant women, the elderly, individuals with a history of serious illness, or other sensitive populations that are identified as likely to be at greater risk of adverse health effects due to exposure to contaminants in drinking water than the general population (Section XII.C and Section III);
- Any increased health risk that may occur as the result of compliance, including risks associated with co-occurring contaminants (Section XII.C); and
- Other relevant factors, including the quality and extent of the information, the uncertainties in the analysis, and factors with respect to the degree and nature of the risk (Section XII.E).

A. Identifying Affected Entities

If the EPA issues a final NPDWR for perchlorate, it would affect the following entities: CWSs and NTNCWSs that must meet the proposed MCL and monitoring and reporting requirements; and primacy agencies that must adopt and enforce the MCL as well as the monitoring and reporting requirements. All of these entities would incur costs, including administrative costs, monitoring and reporting costs, and – in a limited number of cases – costs

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to reduce perchlorate levels in drinking water to meet the proposed MCL using treatment or nontreatment options. Section B below summarizes the method the EPA used to estimate these costs.

The systems that reduce perchlorate concentrations will reduce associated health risks. The EPA developed a method to estimate the potential benefits of reduced perchlorate exposure among the service populations of systems with elevated baseline perchlorate levels. Section C below summarizes this method used to estimate these benefits.

Section D below provides the cost and benefit estimates. The EPA prepared the Health Risk Reduction Cost Analysis of the Proposed Perchlorate Rule (USEPA, 2019a), which is available in the docket for the proposed rule. Section XIII summarizes and discusses key uncertainties in the cost and benefit analyses.

B. Method for Estimating Costs

Some costs associated with an NPDWR are incurred by all CWS and NTNCWS (e.g. monitoring and reporting) while others are only incurred by systems with perchlorate levels exceeding the MCL. The EPA estimated costs for CWS and NTNCWS to monitor and report perchlorate levels and also estimated the costs for a subset of public water systems with perchlorate levels greater than the proposed MCL to install and operate treatment. The EPA assumed that affected water systems would adopt ion exchange treatment because it is the most cost-effective treatment option and easy to operate on a 'throw-away' basis. If site-specific nontreatment options are available and lower cost, then this assumption might overstate costs.

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The EPA also estimated the costs for States and other primacy agencies to assure systems implement the rule and to report information to the EPA.

The EPA estimated initial costs for all CWS and NTNCWS operators to read and understand the rule and provide training to their staff to implement the proposed rule. The EPA also estimated the recurring costs for all CWS and NTNCWS operators to conduct monitoring, report results, and apply for waivers. For the purpose of these estimates, the EPA assumed that both small and large systems would require the same amount of time to read the rule, apply for a waiver, and collect a water sample but that it would take large systems twice as long to provide initial training to their staff. Table XII-1 summarizes the frequency and labor hour assumptions for this analysis.

Table XII-1: Labor Hours for Drinking Water Systems Administrative and Monitoring Requirements

Activity	Frequency	Small System Hours	Large System Hours
Read the rule	one time per system	4	4
Provide initial training	one time per system	16	32
Apply to State for monitoring waiver	once every 9 years per eligible system	16	16
Collect a single finished water sample[1]	per monitoring event	1	1

Source (USEPA, 2000a). The EPA's cost analysis reflects full MCL compliance and therefore the EPA did not estimate Tier 1 notification costs.

1. The estimate is per sample. Therefore, a system conducting a year of quarterly monitoring at three entry points incurs a total of 12 hours of labor to complete the task (3 entry points x 4 samples x 1 hour per sample).

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Systems will incur monitoring costs over the analysis period. The EPA estimated monitoring frequency based on the proposed initial monitoring requirements, the standard monitoring framework requirements for inorganic contaminants, and the proposed implementation schedule. The estimated number of monitoring samples over the analysis period shown in Table XII-2 reflect the following phases:

1. Initial monitoring; four quarterly samples at every CWS and NTNCWS entry point.

2. Preliminary regular monitoring before waiver application: three regular monitoring samples for every CWS and NTNCWS entry point (collected annually at surface water system entry points and triennially at ground water system entry points).

3. Long-term monitoring at either (a) regular monitoring frequency for entry points at systems not granted waivers (60% of surface water system and 10% of ground water systems), or (b) reduced monitoring frequency for entry points at systems receiving waivers from primacy agencies (40% of surface water systems and 90% of ground water systems), which is one sample during every nine-year compliance monitoring cycle.

Table XII-2: Estimates of Compliance Monitoring Samples by Phase and System Type, Size, and Source Water

Monitoring Phase (sampling frequency)	System Type, Size, and Source Water	Number of Entry Points[1]	Aggregate Samples[2]
1. Initial monitoring (4 quarterly samples in one year)	All CWS and NTNCWS	92,656	370,624

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Monitoring Phase (sampling frequency)	System Type, Size, and Source Water	Number of Entry Points[1]	Aggregate Samples[2]
2. Preliminary regular monitoring (3 annual entry point samples for surface water systems and 3 triennial entry point samples for ground water systems)	All CWS and NTNCWS	92,654	277,962
3a. Long-term monitoring, no waiver (annual entry point samples)	60% of large surface water CWS	3,324	86,424
	60% of small surface water CWS and all surface water NTNCWS	6,064	139,472
3a. Long-term monitoring, no waiver (triennial entry point samples)	10% of large ground water CWS	680	4,080
	10% of small ground water CWS and all ground water NTNCWS	7,021	35,105
3b. Long-term monitoring, waiver (1 sample every 9 years)	40% of large surface water CWS	2,216	4,432
	40% of small surface water CWS and all surface water NTNCWS	4,043	8,086
3b. Long-term monitoring, waiver (1 sample every 9 years)	90% of large ground water CWS	6,117	12,234
	90% of small ground water CWS and all ground water NTNCWS	63,189	63,189

Source: Perchlorate Benefit-Cost Analysis Spreadsheet available in the proposed rule docket (EPA-HQ-OW-2018-0780).

1. The EPA estimated a total of 92,656 entry points based on the total number of potentially affected systems in SDWIS/FED and the average number of entry points per system in the UCMR 1 data by size category and source water. The initial monitoring phase includes all entry points. The EPA assumed that the two entry points with MCL exceedances at the proposed MCL of 56 μg/L would continue to take quarterly samples for the duration of the analysis period, for a total of 232 samples. Thus, they are excluded from the estimates for the subsequent phases of regular and long-term monitoring. Primacy agencies may, however, allow monitoring to return to a regular schedule if treatment process operation can reliably and consistently reduce perchlorate below the MCL.
2. For Phase 3, the estimate of aggregate samples is the product of the number of entry points and the frequency of sampling during the remaining years of the analysis period. For example, large surface water CWS without a waiver conduct long-term annual monitoring for 26 years because they complete preliminary regular monitoring in year 9. In contrast, large ground water CWS without a waiver begin long-term triennial monitoring in year 16 because their preliminary regular monitoring phase lasts for 9 years (3 triennial samples) instead of 3 years (3 annual samples). The estimates also reflect schedule differences by size because large CWS begin monitoring schedules three years earlier than small CWS and all NTNCWS.

To estimate costs to CWSs and NTNCWSs associated with time spent on compliance monitoring and other administrative costs, the EPA generally uses the labor rate[13] for full-time treatment plant operators in CWSs from USEPA [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"5g8IJ6Eh","properties":{"formattedCitation":"(2011)","plainCitation":"(2011)","noteIndex":0},"citationItems":[{"id":992,"uris":["http://zotero.org/groups/945096/items/FHCVSMRC"],"uri":["http://zotero.org/groups/945096/items/FHCVSMRC"],"itemData":{"id":992,"type":"article","title":"Labor Cost for National Drinking Water Rules","author":[{"family":"USEPA","given":""}],"issued":{"date-

[13] Updated to 2017$ using the BLS Employment Cost Index for Total Compensation for Private industry workers in Utilities.

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parts":[["2011"]]}},"suppress-author":true}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}], which vary based on the size of the system. The EPA calculated a weighted average fully loaded hourly wage rate for water systems of $34.71.

Additionally, the EPA assumed that systems will incur an average analytical cost of $64 per sample, which is the average cost per sample obtained from multiple laboratories for perchlorate quantitation using Method 314.0.

To estimate treatment cost, the EPA utilized the occurrence data described in Section VI to estimate the number of system entry points that exceed the proposed and alternative MCLs. The EPA estimated costs that those water systems would incur to install and maintain treatment using its work breakdown structure (WBS) cost estimating models. The WBS models are spreadsheet-based engineering models for individual treatment technologies, linked to a central database of component unit costs. The WBS approach involves breaking a process down into discrete components for the purpose of estimating costs and produce a comprehensive assessment of the capital and operating requirements for a treatment system[14]. The EPA used the WBS models to generate total capital and O&M cost estimates for each technology and nontreatment option for up to 49 different system flow rates. The EPA generated separate estimates that correspond to different water sources (groundwater or surface water), three

[14] The document *Technologies and Costs for Treating Perchlorate-Contaminated Waters* (USEPA, 2018c) contains more complete discussion of the WBS models and the cost estimating approach.

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different cost levels (low, mid, and high), and different technology-specific scenarios (e.g., 105,000 or 170,000 bed volumes for ion exchange). The EPA used the mid-cost estimates for ion exchange to generate expected costs for all entry points requiring perchlorate removal. This technology cost-effectively removes perchlorate, but its ability to remove co-occurring contaminants depends on influent characteristics and process design. Therefore, the EPA did not assume that treatment might result in ancillary quantifiable or non-quantifiable benefits of removing co-occurring ions such as nitrate. Treatment costs include waste disposal for spent resin, but do not include post-treatment costs for corrosion control because blending rates at most entry points should not result in much chloride addition or changes in corrosivity.

For purposes of estimating the costs and benefits, the EPA assumed that CWSs and NTNCWSs in California and Massachusetts would not incur additional cost or realize benefits because these States currently regulate perchlorate at a more stringent level than the proposed MCL and alternative MCL. For each entry point in the UCMR 1 dataset outside of these two States, the EPA compared the maximum observed perchlorate concentration to the MCL to identify those that have an exceedance of the proposed MCL. The EPA assumed that these entry points would incur costs for an additional confirmation sample and would need to implement treatment to meet the MCL. For each entry point, the EPA estimated the design flow and the average flow by service populations based on the Agency's prior analysis of the relationships between these values (USEPA, 2000b). The Agency assumed blending of treated water and untreated water would be used to meet an average treatment target equal to 80 percent of the

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MCL (for an MCL of 56 μg/L the blending target would be 45 μg/L) given a 95 percent removal effectiveness until perchlorate breakthrough. The Agency applied the capital cost and O&M cost curves from the WBS models to the design and average flows adjusted for blending. When small systems in the UCMR 1 sample incurred treatment costs, the EPA extrapolated the costs on a per capita basis to the estimate of national population exposure derived using the small system population sampling weights.

For the primacy agencies that will implement and enforce the rule (including 49 States, one tribal nation and 5 territories), the EPA estimated upfront costs incurred during the three years between rule promulgation and the effective date to read and understand the rule, adopt regulatory changes, and provide training to CWSs and NTNCWSs and Agency staff. Primacy agencies will also have recurring costs to review waiver applications and monitoring reports. Table XII-3 summarizes the labor hour assumptions for these activities. The EPA requests comments on these assumptions.

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Table XII-3: Labor Hours for Primacy Agency Administrative Requirements

Activity	Frequency	Hours
Read and understand the rule, adopt regulatory changes[1]	one time per Agency	416
Provide initial training and assistance to water systems[2]	total per Agency	2,080
Provide initial training to staff[2]	total per Agency	250
Review waiver applications	once every 9 years per eligible system	8
Review monitoring reports	per monitoring event	1

Source (USEPA, 2000a)

1. The EPA assumed that two States that already regulate perchlorate in drinking water would not incur the incremental burdens in this table to regulate perchlorate under the proposed rule because they already incur baseline costs for perchlorate regulation including monitoring costs. The Agency assumed, however, that the two States would incur an average of 40 hours to confirm that their existing requirements are at least as protective as the proposed rule.
2. The EPA assumed that all training hours occur in a single year, although the hours may actually occur over time. The total hour estimates are average values across States.

State labor rates are based on the mean hourly wage rate from Bureau of Labor Statistics (BLS) Standard Occupational Classification code 19-2041 (State Government –Environmental Scientists and Specialists, Including Health). Wages are loaded using a factor calculated from the BLS Employer Costs for Employee Compensation report [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"C1A8zUkj","properties":{"formattedCitation":"(Bureau of Labor Statistics (BLS), 2016 Table 3)","plainCitation":"(Bureau of Labor Statistics (BLS), 2016 Table 3)","noteIndex":0},"citationItems":[{"id":984,"uris":["http://zotero.org/groups/945096/items/L8X3BDZ9"],"uri":["http://zotero.org/groups/945096/items/L8X3BDZ9"],"itemData":{"id":984,"type":"webpage","title":"Employer Cost for Employee Compensation -- September 2016","author":[{"literal":"Bureau of Labor Statistics (BLS)"}],"issued":{"date-

parts":[["2016"]]}},"label":"book","suffix":"Table 3"}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}], for a fully loaded hourly wage rate for States of $50.67. The EPA requests comments on these labor rate assumptions.

The proposed rule provides three years between the effective dates and compliance dates for systems. For the purpose of estimating costs, the EPA assumed that large CWSs would phase in administrative costs, including initial monitoring, and upfront administrative costs uniformly over the 3 years following the effective date (i.e., years 4 to 6 of the analysis period). Similarly, the EPA assumed that small CWSs and NTNCSs will phase in these costs over the subsequent three-year period (i.e., years 7 to 9 of the analysis period). The EPA assumed that, within these periods, all systems would conduct initial monitoring – one year of quarterly monitoring to determine whether perchlorate concentrations are consistently and reliably below the proposed MCL. Thereafter, systems with MCL exceedances would continue to monitor quarterly, while systems below the MCL that obtain waivers will monitor annually for three years (surface water systems) or triennially for 9 years (ground water systems), then incur costs for a waiver application. Thereafter, these systems will continue reduced monitoring - once every nine years - under subsequent waivers. Systems that are below the MCL without waivers will monitor once per year (surface water systems) or once every three years (groundwater). Consistent with [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"mnzEXxZK","properties":{"formattedCitation":"(USEPA, 2008b)","plainCitation":"(USEPA,

2008b)","dontUpdate":true,"noteIndex":0},"citationItems":[{"id":998,"uris":["http://zotero.org/groups/945096/items/QSXYHBID"],"uri":["http://zotero.org/groups/945096/items/QSXYHBID"],"itemData":{"id":998,"type":"article","title":"Draft Information Collection Request for the Disinfectants/Disinfection Byproducts, Chemical, and Radionuclides Rule","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2008",6]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}], the EPA assumed that 90% of groundwater and 40% of surface water systems that have all entry points below the MCL would obtain waivers.

The EPA estimated the costs over a 35-year analysis period, which includes a 3-year period prior to the effective date to allow for State rule adoption activities, a 3-year period after the effective date to allow initial monitoring among large CWSs, and a 3-year period after that to allow initial monitoring for small CWSs and NTNCWSs. Evaluating costs over 35 years covers a full life cycle of the capital investments that large systems make in the 6th year; the WBS estimates of composite useful life of the equipment and infrastructure investment is approximately 30 years. The EPA assumed that treatment modifications will be completed in the final year of the initial monitoring period (i.e., year 6 of the analysis for large CWSs and year 9 for small CWSs and NTNCWSs). The EPA calculated the present value of total costs in each year of the analysis period and discounted to year 1 using both a 3% and 7% discount rate and

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annualized total present value of costs at the same rates over 35 years to obtain a constant total annual cost estimate to compare to total annual benefits.

Water systems typically recover costs through increased household rates, resulting in increased costs at the household level[15]. To calculate the magnitude of the cost increase for systems that exceed the proposed MCL or alternative MCL, the EPA first estimated the number of households that may incur costs as a result of the rule based on the population served by affected CWSs and NTNCWSs and the average household size [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"Q6RKolIZ","properties":{"formattedCitation":"(U.S. Census Bureau, 2017b)","plainCitation":"(U.S. Census Bureau, 2017b)","noteIndex":0},"citationItems":[{"id":1000,"uris":["http://zotero.org/groups/945096/items/CGU3LT9N"],"uri":["http://zotero.org/groups/945096/items/CGU3LT9N"],"itemData":{"id":1000,"type":"article","title":"Average Household Size of Occupied Housing Units by Tenure. American Community Survey 1-Year Estimates: Table B25010","author":[{"family":"U.S. Census Bureau","given":""}],"issued":{"date-parts":[["2017"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. The EPA divided the total annual system-level costs by the number of households served by the system.

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[15] For systems with monitoring costs only, household-level costs will be negligible.

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C. Method for Estimating Benefits

The EPA has taken an approach in evaluating the benefits for perchlorate that is consistent with the SAB's recommendations for the methodology to inform the MCLG for perchlorate. This approach involves a) using a BBDR model to estimate the impact of perchlorate on maternal thyroid hormone levels during the first trimester of pregnancy, and b) using a dose-response function from the epidemiological literature to model the relationship between altered maternal thyroid hormone levels and offspring IQ. Currently available science has limited this quantitative benefits assessment to the relationship between perchlorate and IQ. Given that alterations in thyroid hormones have been associated with other adverse outcomes, including reproductive outcomes (Alexander et al., 2017; Hou et al., 2016; Maraka et al., 2016) and effects on cardiovascular systems (Asvold et al., 2012; Sun et al., 2017) there are likely non-quantified benefits of risk reductions for other endpoints or reduced exposure to co-occurring contaminants, which are addressed below. Uncertainties regarding the quantifiable benefits are also addressed below.

The population impacted by the rule for which benefits can be quantified is specific to live births from mothers who were served by a CWS or NTNCWS with perchlorate concentrations above the potential MCLs. To determine the nationwide population of children that will experience a quantifiable benefit of avoided IQ decrements from reducing maternal perchlorate exposure during pregnancy, the EPA first estimated the total population being served by systems above the MCL based on data from UCMR 1. The EPA then multiplied the total

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population served for each affected CWS and NTNCWS by the proportion of women of childbearing age (aged 15-44) in the US, which is 19.7 percent [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"rCNbGglo","properties":{"formattedCitation":"(U.S. Census Bureau, 2017a)","plainCitation":"(U.S. Census Bureau, 2017a)","noteIndex":0},"citationItems":[{"id":189,"uris":["http://zotero.org/groups/945096/items/ZM7S6H44"],"uri":["http://zotero.org/groups/945096/items/ZM7S6H44"],"itemData":{"id":189,"type":"article","title":"Annual estimates of the resident population by single year of age and sex for the United States: April 1, 2010 to July 1, 2016.","URL":"https://www.census.gov/data/datasets/2016/demo/popest/nation-detail.html#ds","author":[{"literal":"U.S. Census Bureau"}],"issued":{"date-parts":[["2017"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. The number of women of child-bearing age for each entry point was then multiplied by the annual number of live births in the US, or 62 births per 1,000 women (6.2 percent) [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"7XfZyKhY","properties":{"formattedCitation":"(Martin, Hamilton, & Osterman, 2017)","plainCitation":"(Martin, Hamilton, & Osterman, 2017)","noteIndex":0},"citationItems":[{"id":186,"uris":["http://zotero.org/groups/945096/items/MY6LPDKD"],"uri":["http://zotero.org/groups/945096/items/MY6LPDKD"],"itemData":{"id":186,"type":"article","title":"Births in the United States, 2016. NCHS Data Brief No. 287","URL":"https://www.cdc.gov/nchs/data/databriefs/db287.pdf","author":[{"family":"Martin"

,"given":"J.A."},{"family":"Hamilton","given":"B.E."},{"family":"Osterman","given":"M.J.K"}]
,"issued":{"date-parts":[["2017"]]}}],"schema":"https://github.com/citation-style-
language/schema/raw/master/csl-citation.json"}].

The EPA used a two-step dose-response model to estimate health benefits of a reduction in perchlorate exposure as a result of regulating perchlorate in drinking water not to exceed the proposed MCL of 56 µg/L and alternative MCLs of 18 µg/L and 90 µg/L. The first step relates changes in perchlorate to changes in maternal free-thyroxine (fT4) during the first trimester of pregnancy using the EPA's BBDR model. Because the dose-response relationship between perchlorate exposure and maternal fT4 is dependent on maternal iodine intake status, this first-step analysis is repeated for several categories of iodine intake. For the BBDR simulations, the EPA used the 90th percentile ingestion rate to be consistent with the MCLG modeling approach, which may overstate the exposure in the simulation.

The second step of the dose-response model subsequently relates the predicted changes in maternal fT4 from the BBDR model to changes in child IQ using the function estimated in the EPA independent analysis of the [ADDIN ZOTERO_ITEM CSL_CITATION
{"citationID":"iqyVRL6z","properties":{"formattedCitation":"(Korevaar et al.,
2016)","plainCitation":"(Korevaar et al.,
2016)","dontUpdate":true,"noteIndex":0},"citationItems":[{"id":43,"uris":["http://zotero.org/gro
ups/945096/items/B968J6XI"],"uri":["http://zotero.org/groups/945096/items/B968J6XI"],"itemD
ata":{"id":43,"type":"article-journal","title":"Association of maternal thyroid function during

early pregnancy with offspring IQ and brain morphology in childhood: a population-based prospective cohort study","container-title":"The Lancet Diabetes & Endocrinology","page":"35-43","volume":"4","issue":"1","source":"ScienceDirect","abstract":"SummaryBackground\nThyroid hormone is involved in the regulation of early brain development. Since the fetal thyroid gland is not fully functional until week 18–20 of pregnancy, neuronal migration and other crucial early stages of intrauterine brain development largely depend on the supply of maternal thyroid hormone. Current clinical practice mostly focuses on preventing the negative consequences of low thyroid hormone concentrations, but data from animal studies have shown that both low and high concentrations of thyroid hormone have negative effects on offspring brain development. We aimed to investigate the association of maternal thyroid function with child intelligence quotient (IQ) and brain morphology.\nMethods\nIn this population-based prospective cohort study, embedded within the Generation R Study (Rotterdam, Netherlands), we investigated the association of maternal thyroid function with child IQ (assessed by non-verbal intelligence tests) and brain morphology (assessed on brain MRI scans). Eligible women were those living in the study area at their delivery date, which had to be between April 1, 2002, and Jan 1, 2006. For this study, women with available serum samples who presented in early pregnancy (<18 weeks) were included. Data for maternal thyroid-stimulating hormone, free thyroxine, thyroid peroxidase antibodies (at weeks 9–18 of pregnancy), and child IQ (assessed at a median of 6·0 years of age [95% range 5·6–7·9 years]) or brain MRI scans (done at a median of 8·0 years of age [6·2–10·0]) were obtained. Analyses were adjusted for potential confounders including

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concentrations of human chorionic gonadotropin and child thyroid-stimulating hormone and free thyroxine.\nFindings\nData for child IQ were available for 3839 mother–child pairs, and MRI scans were available from 646 children. Maternal free thyroxine concentrations showed an inverted U-shaped association with child IQ (p=0·0044), child grey matter volume (p=0·0062), and cortex volume (p=0·0011). For both low and high maternal free thyroxine concentrations, this association corresponded to a 1·4–3·8 points reduction in mean child IQ. Maternal thyroid-stimulating hormone was not associated with child IQ or brain morphology. All associations remained similar after the exclusion of women with overt hypothyroidism and overt hyperthyroidism, and after adjustment for concentrations of human chorionic gonadotropin, child thyroid-stimulating hormone and free thyroxine or thyroid peroxidase antibodies (continuous or positivity).\nInterpretation\nBoth low and high maternal free thyroxine concentrations during pregnancy were associated with lower child IQ and lower grey matter and cortex volume. The association between high maternal free thyroxine and low child IQ suggests that levothyroxine therapy during pregnancy, which is often initiated in women with subclinical hypothyroidism during pregnancy, might carry the potential risk of adverse child neurodevelopment outcomes when the aim of treatment is to achieve high-normal thyroid function test results.\nFunding\nThe Netherlands Organisation for Health Research and Development (ZonMw) and the European Community's Seventh Framework Programme.","DOI":"10.1016/S2213-8587(15)00327-7","ISSN":"2213-8587","shortTitle":"Association of maternal thyroid function during early pregnancy with offspring IQ and brain morphology in childhood","journalAbbreviation":"The

ED_005043_00078862-00149

Lancet Diabetes & Endocrinology","author":[{"family":"Korevaar","given":"Tim I M"},{"family":"Muetzel","given":"Ryan"},{"family":"Medici","given":"Marco"},{"family":"Chaker","given":"Layal"},{"family":"Jaddoe","given":"Vincent W V"},{"family":"Rijke","given":"Yolanda B","non-dropping-particle":"de"},{"family":"Steegers","given":"Eric A P"},{"family":"Visser","given":"Theo J"},{"family":"White","given":"Tonya"},{"family":"Tiemeier","given":"Henning"},{"family":"Peeters","given":"Robin P"}],"issued":{"date-parts":[["2016",1]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}] study data. Ultimately, the changes in IQ are estimated for each impacted iodine intake group, and all of the impacted iodine intake groups' IQ decrements are averaged together based on the proportion of individuals in each iodine intake category. Table XII-4 shows the specific iodine intake groups and the proportion of non-pregnant women of childbearing age that fall into each group.

Table XII-4: Proportion of Population based on Maternal Iodine Intake Status

Iodine Intake Range (µg/ day) used for Benefits Analysis	Proportion of the population
0 to <55	7.14%
55 to <60	2.15%
60 to <65	1.06%
65 to < 70	1.86%
70 to <75	1.31%
75 to <80	3.10%
80 to <85	2.62%
85 to <90	1.20%
90 to <95	1.83%
95 to <100	2.94%
100 to <125	13.56%
125 to <150	9.08%
150 to <170	10.31%
170 to <300	24.47%
≥300	17.36%

Source: U.S. EPA (2019a).

These changes in child IQ are then monetized using the EPA's estimate of the value of an IQ point. This estimate reflects the discounted present value of lifetime income reductions attributable to a 1-point reduction in IQ at birth. Therefore, the present value depends on the discount rate. At a 3 percent discount rate, the estimate is $18,686 per IQ point; at a 7 percent discount rate the estimate is $3,631.

Other potential benefits not quantified or monetized include additional avoided health effects which cannot currently be monetized, improved public perception of water quality, as well as a possible reduction of other co-occurring contaminants that target the thyroid, such as nitrate, as a result of water treatment for removal of perchlorate. For example, all of the treatment technologies evaluated for this rule (ion exchange, biological treatment, and reverse

osmosis) can also remove co-occurring nitrate from drinking water. Section XIII provides additional discussion of uncertainties in this analysis.

D. Comparison of Costs and Benefits

This section provides the estimates of costs and benefits that the EPA derived using the methods described above. It includes estimates for the proposed and alternative MCLs.

For the proposed MCL of 56 µg/L, Table XII-5 summarizes the total estimated cost of the proposed rule to water systems and primacy agencies, and Table XII-6 summarizes the estimated per-household cost for the system incurring treatment costs[16]. Table XII-7 summarizes the estimated benefits. In both instances, the estimates based on the UCMR 1 sample are also national estimates because treatment costs occur only at large systems; there are no small system treatment costs or related benefits to extrapolate.

[16] For all households served by all of the systems subject to the monitoring costs as well as MCL compliance, the average annual cost is less than $0.20.

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Table XII-5: Summary of Total Annualized Costs at MCL of 56 µg/L (Millions; 2017$)

Cost Component	3% Discount	7% Discount
Drinking Water Systems Treatment Costs	$0.65	$0.70
Drinking Water Systems Monitoring and Administration Costs[1]	$5.93	$6.38
Drinking Water Systems Costs Subtotal	$6.58	$7.07
State Administration Costs	$3.09	$3.20
Total Costs	$9.67	$10.28

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"00m0B8b8","properties":{"formattedCitation":"(USEPA, 2018b)","plainCitation":"(USEPA, 2018b)","noteIndex":0},"citationItems":[{"id":1217,"uris":["http://zotero.org/groups/945096/items/P9YD2GRH"],"uri":["http://zotero.org/groups/945096/items/P9YD2GRH"],"itemData":{"id":1217,"type":"article","title":"Health Risk Reduction and Cost Analysis of the Proposed Perchlorate National Primary Drinking Water Regulation","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. Detail may not sum to total because of independent rounding.

1. Costs include monitoring for all CWS and NTNCWS. Some consecutive systems that purchase 100% of their water from wholesale systems may not be required to monitor for perchlorate provided States allow integrated system agreements to include perchlorate among the monitoring requirements that the wholesale system fulfills for the consecutive system. The potential number of consecutive systems excluded from perchlorate monitoring depends on system and State decisions and, therefore, is unknown. Excluding monitoring costs for approximately 8,400 consecutive systems that do not report a water source facility (e.g., well or intake) in SDWIS/FED from the monitoring cost analysis reduces annualized monitoring costs by $0.8 million.

Table XII-6: Summary of Household-Level Annual Costs for Systems Treating to Comply with MCL at 56 µg/L (2017$)

Cost Range	3% Discount	7% Discount
Minimum	$11	$14
Average	$40	$47
Maximum	$69	$80

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"xTqTuaNv","properties":{"formattedCitation":"(USEPA, 2018b)","plainCitation":"(USEPA, 2018b)","noteIndex":0},"citationItems":[{"id":1217,"uris":["http://zotero.org/groups/945096/items/P9YD2GRH"],"uri":["http://zotero.org/groups/945096/items/P9YD2GRH"],"itemData":{"id":1217,"type":"article","title":"Health Risk Reduction and Cost Analysis of the Proposed Perchlorate National Primary Drinking Water Regulation","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}].

Table XII-7: Summary of Total Annualized Benefits of Avoided Lost IQ Decrements at MCL of 56 µg/L (Millions; 2017$)

Korevaar β distribution	Annual Delta IQ	3% Discount	7% Discount
Upper	243	$3.57	$0.60
Central	136	$2.00	$0.34
Lower	30	$0.44	$0.07

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"T7LDdiyn","properties":{"formattedCitation":"(USEPA, 2018b)","plainCitation":"(USEPA, 2018b)","noteIndex":0},"citationItems":[{"id":1217,"uris":["http://zotero.org/groups/945096/items/P9YD2GRH"],"uri":["http://zotero.org/groups/945096/items/P9YD2GRH"],"itemData":{"id":1217,"type":"article","title":"Health Risk Reduction and Cost Analysis of the Proposed Perchlorate National Primary Drinking Water Regulation","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]

For the alternative MCL of 18 µg/L, Table XII-8 summarizes the total cost of the proposed rule to water systems and primacy agencies, and Table XII-9 summarizes the per-household cost for systems requiring treatment, which vary across the systems. Table XII-10 summarizes the quantified benefits. At this threshold, one entry point for one small system in the UCMR 1 data had an exceedance. Therefore, the EPA extrapolated the treatment costs and benefits from the UCMR 1 estimates to national estimates based on sampling weights.

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Table XII-8: Summary of Total Annualized Costs at MCL of 18 µg/L (Millions; 2017$)

Cost Component	3% Discount (UCMR 1)[1]	7% Discount (UCMR 1)[1]	3% Discount (National)[1]	7% Discount (National)[1]
Drinking Water Systems Treatment Costs	$6.92	$7.29	$7.92	$8.37
Drinking Water Systems Monitoring and Administration Costs	$5.94	$6.38	$5.94	$6.38
Drinking Water Systems Costs Subtotal	$12.85	$13.67	$13.86	$14.75
State Administration Costs	$3.09	$3.21	$3.09	$3.21
Total Costs	$15.95	$16.88	$16.95	$17.96

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"H6Rcd4Hf","properties":{"formattedCitation":"(USEPA, 2018b)","plainCitation":"(USEPA, 2018b)","noteIndex":0},"citationItems":[{"id":1217,"uris":["http://zotero.org/groups/945096/items/P9YD2GRH"],"uri":["http://zotero.org/groups/945096/items/P9YD2GRH"],"itemData":{"id":1217,"type":"article","title":"Health Risk Reduction and Cost Analysis of the Proposed Perchlorate National Primary Drinking Water Regulation","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. Detail may not sum to total because of independent rounding.

1. The EPA applied statistical sampling weights to the results to extrapolate small system results to national results. The entry point at which a measurement exceeds 18 µg/L is one of 20 in its sample stratum; no other sample in the stratum had a measurement of perchlorate greater than the minimum reporting level. The entry point population of 2,155 represents 5.31% of the total population served by the six UCMR 1 systems in the stratum (40,574). Currently, the stratum population of 775,000 accounts for 1.32% of the 58.7 million national population served by small systems. Thus, the UCMR 1 results indicate that 0.07% (5.31% x 1.32%) of small system customers (approximately 41,100) may be exposed to perchlorate greater than 18 µg/L. The EPA calculated per-capita costs for the system and extrapolated to national level based on this population estimate.

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2. Costs include monitoring for all CWS and NTNCWS. Under 40 CFR 141.29 some consecutive systems that purchase 100% of their water from wholesale systems may not be required to monitor for perchlorate provided primacy agencies, with EPA concurrence, allow integrated system agreements to include perchlorate among the monitoring requirements that the wholesale system fulfills for the consecutive system. The potential number of consecutive systems excluded from perchlorate monitoring depends on system and primacy agency decisions and, therefore, is unknown. Excluding monitoring costs for approximately 8,400 consecutive systems that do not report a water source facility (e.g., well or intake) in SDWIS/FED from the monitoring cost analysis reduces annualized monitoring costs by $0.8 million.

Table XII-9: Summary of Household-Level Annual Costs for Systems Treating to Comply with the MCL at 18 µg/L (2017$)

Cost Range	3% Discount (UCMR 1)[1]	7% Discount (UCMR 1)[1]	3% Discount (National)[1]	7% Discount (National)[1]
Minimum	$18	$24	$18	$24
Average	$38	$46	$38	$46
Max	$72	$84	$72	$84

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"uu13kmuC","properties":{"formattedCitation":"(USEPA, 2018b)","plainCitation":"(USEPA, 2018b)","noteIndex":0},"citationItems":[{"id":1217,"uris":["http://zotero.org/groups/945096/items/P9YD2GRH"],"uri":["http://zotero.org/groups/945096/items/P9YD2GRH"],"itemData":{"id":1217,"type":"article","title":"Health Risk Reduction and Cost Analysis of the Proposed Perchlorate National Primary Drinking Water Regulation","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]

1. National cost estimates include extrapolation for one small system entry point to national estimates based on sampling weights. The per-household costs are the same for the sample and national extrapolations because the small system cost extrapolation occurs on a per-capita basis.

Table XII-10: Total and Annualized Benefits of Avoided Lost IQ Decrements at 18 µg/L (Millions; 2017$)

Korevaar β distribution	Annual Delta IQ		UCMR 1		National[1]	
	UCMR 1	National[1]	3% Discount	7% Discount	3% Discount	7% Discount
Upper	442	447	$6.50	$1.10	$6.56	$1.11
Central	248	251	$3.65	$0.62	$3.68	$0.62
Lower	54	55	$0.80	$0.13	$0.80	$0.14

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"EN9pibZj","properties":{"formattedCitation":"(USEPA, 2018b)","plainCitation":"(USEPA, 2018b)","noteIndex":0},"citationItems":[{"id":1217,"uris":["http://zotero.org/groups/945096/items/P9YD2GRH"],"uri":["http://zotero.org/groups/945096/items/P9YD2GRH"],"itemData":{"id":1217,"type":"article","title":"Health Risk Reduction and Cost Analysis of the Proposed Perchlorate National Primary Drinking Water Regulation","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]

1. The EPA applied statistical sampling weights to the results to extrapolate small system results to national results. The entry point at which a measurement exceeds 18 µg/L is one of 20 in its sample stratum; no other sample in the stratum had a measurement of perchlorate greater than the minimum reporting level. The entry point population of 2,155 represents 5.31% of the total population served by the six UCMR 1 systems in the stratum (40,574). Currently, the stratum population of 774,780 accounts for 1.32% of the 58.7 million national population served by small systems. Thus, the UCMR 1 results indicate that 0.07% (5.31% x 1.32%) of small system customers (approximately 41,100) may be exposed to perchlorate greater than 18 µg/L. The EPA assumed that this population would incur benefits equivalent to the sampled entry point's population.

For the alternative MCL of 90 µg/L, Table XII-11 summarizes the total cost of the proposed rule to water systems and primacy agencies, and Table XII-12 summarizes the per-household cost for systems requiring treatment, which vary across the systems. Table XII-13 summarizes the quantified benefits. At this threshold, no small systems in the UCMR 1 data had an exceedance. Therefore, treatment costs and benefits for the UCMR 1 data are the national estimates.

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Table XII-11: Summary of Total Annualized Costs at MCL of 90 µg/L (Millions; 2017$)

Cost Component	3% Discount	7% Discount
Drinking Water Systems Treatment Costs	$0.49	$0.52
Drinking Water Systems Monitoring and Administration Costs[1]	$5.93	$6.37
Drinking Water Systems Costs Subtotal	$6.42	$6.89
State Administration Costs	$3.09	$3.20
Total Costs	$9.51	$10.10

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"00m0B8b8","properties":{"formattedCitation":"(USEPA, 2018b)","plainCitation":"(USEPA, 2018b)","noteIndex":0},"citationItems":[{"id":1217,"uris":["http://zotero.org/groups/945096/items/P9YD2GRH"],"uri":["http://zotero.org/groups/945096/items/P9YD2GRH"],"itemData":{"id":1217,"type":"article","title":"Health Risk Reduction and Cost Analysis of the Proposed Perchlorate National Primary Drinking Water Regulation","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. Detail may not sum to total because of independent rounding.

1. Costs include monitoring for all CWS and NTNCWS. Some consecutive systems that purchase 100% of their water from wholesale systems may not be required to monitor for perchlorate provided States allow integrated system agreements to include perchlorate among the monitoring requirements that the wholesale system fulfills for the consecutive system. The potential number of consecutive systems excluded from perchlorate monitoring depends on system and State decisions and, therefore, is unknown. Excluding monitoring costs for approximately 8,400 consecutive systems that do not report a water source facility (e.g., well or intake) in SDWIS/FED from the monitoring cost analysis reduces annualized monitoring costs by $0.8 million.

Table XII-12: Summary of Household-Level Annual Costs for Systems Treating to Comply with MCL at 90 µg/L (2017$)

Cost Range	3% Discount	7% Discount
Minimum	$65	$76
Average	$65	$76
Maximum	$65	$76

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"xTqTuaNv","properties":{"formattedCitation":"(USEPA, 2018b)","plainCitation":"(USEPA, 2018b)","noteIndex":0},"citationItems":[{"id":1217,"uris":["http://zotero.org/groups/945096/items/P9YD2GRH"],"uri":["http://zotero.org/groups/945096/items/P9YD2GRH"],"itemData":{"id":1217,"type":"article","title":"Health Risk Reduction and Cost Analysis of the Proposed Perchlorate National Primary Drinking Water Regulation","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. There is no variation in costs because treatment costs occur at one entry point. The household costs are slight lower compared to the maximum cost at 56 µg/L because treatment costs to meet an MCL of 90 µg/L are lower than the costs to meet an MCL of 56 µg/L.

Table XII-13: Summary of Total Annualized Benefits of Avoided Lost IQ Decrements at MCL of 90 µg/L (Millions; 2017$)

Korevaar β distribution	Annual Delta IQ	3% Discount	7% Discount
Upper	222	$3.26	$0.55
Central	124	$1.83	$0.31
Lower	27	$0.40	$0.07

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"T7LDdiyn","properties":{"formattedCitation":"(USEPA, 2018b)","plainCitation":"(USEPA, 2018b)","noteIndex":0},"citationItems":[{"id":1217,"uris":["http://zotero.org/groups/945096/items/P9YD2GRH"],"uri":["http://zotero.org/groups/945096/items/P9YD2GRH"],"itemData":{"id":1217,"type":"article","title":"Health Risk Reduction and Cost Analysis of the Proposed Perchlorate National Primary Drinking Water Regulation","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]

Table XII-14 provides a comparison of benefits and costs for three MCL values. First, the table shows the total annual costs and total annual benefits for each MCL. In all cases, the total costs are substantially higher than the potential range of quantifiable benefits. The table also

shows the incremental impact on costs and benefits between an MCL of 56 µg/L and an MCL of 18 µg/L and between an MCL of 90 µg/L and 56 µg/L.

Section 1412(b)(4)(C) of the SDWA requires that when proposing a national primary drinking water regulation, "the Administrator shall publish a determination as to whether the benefits of the maximum contaminant level justify, or do not justify, the costs." The infrequent occurrence of perchlorate at levels of health concern imposes high monitoring and administrative cost burdens on public water systems and the States. Based on a comparison of costs and benefits estimated at the proposed MCL of 56 µg/L using the best available science and data, the EPA Administrator has determined based upon the available information that the benefits of establishing an NPDWR for perchlorate do not justify the associated costs.

Under these circumstances, Section 1412(b)(6)(A) of the SDWA provides, with exceptions not relevant here, that "the Administrator *may*, after notice and opportunity for public comment promulgate a maximum contaminant level for the contaminant that maximizes health risk reduction benefits at a cost that is justified by the benefits." The EPA has evaluated the benefits and costs of alternative MCL values of 18 µg/L and 90 µg/L. However, based upon the available information the Administrator also finds that the benefits of an NPDWR at the alternative MCL values would not justify the resulting rule costs. The alternative MCLs would not increase net benefits, while compliance costs associated mainly with nationwide CWS monitoring requirements would remain relatively similar. Consistent with the discretion afforded the Agency by SDWA Section 1412(b)(6)(A) to decide whether or not to adjust an MCL to a

level where the benefits justify the costs, the EPA is however proposing, and may finalize, the MCL of 56 µg/L notwithstanding the Agency's determination that benefits would not justify the costs.

Table XII-14: Comparison of Annual Costs and Benefits by MCL (Millions; 2017$)

MCL Value	Cost 3% Discount	Benefit 3% Discount	Cost 7% Discount	Benefit 7% Discount
UCMR 1				
90 µg/L	$9.51	$0.40 - $3.26	$10.10	$0.07 - $0.55
56 µg/L	$9.67	$0.44 - $3.57	$10.28	$0.07 - $0.60
18 µg/L	$15.95	$0.80 - $6.50	$16.88	$0.13 - $1.10
Incremental (from 90 µg/L to 56 µg/L)	$0.16	$0.04 - $0.31	$0.18	$0.0 – 0.05
Incremental (from 56 µg/L to 18 µg/L)	$6.28	$0.36 - $2.93	$6.60	$0.06 - $0.50
National				
90 µg/L	$9.51	$0.40 - $3.26	$10.10	$0.07 - $0.55
56 µg/L[1]	$9.67	$0.44 - $3.57	$10.28	$0.07 - $0.60
18 µg/L	$16.95	$0.80 - $6.56	$17.96	$0.14 - $1.11
Incremental (from 90 µg/L to 56 µg/L)	$0.16	$0.04 - $0.31	$0.18	$0.0 – 0.05
Incremental (from 56 µg/L to 18 µg/L)	$7.28	$0.36 - $2.99	$7.69	$0.07 - $0.51

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"E0mmmXDK","properties":{"formattedCitation":"(USEPA, 2018b)","plainCitation":"(USEPA, 2018b)","noteIndex":0},"citationItems":[{"id":1217,"uris":["http://zotero.org/groups/945096/items/P9YD2GRH"],"uri":["http://zotero.org/groups/945096/items/P9YD2GRH"],"itemData":{"id":1217,"type":"article","title":"Health Risk Reduction and Cost Analysis of the Proposed Perchlorate National Primary Drinking Water Regulation","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. Detail may not sum to total because of independent rounding.

1. For the proposed MCL of 56 µg/L and the alternative MCL of 90 µg/L, the national estimates are the same as the estimates based on UCMR 1 data because there were no small system sample results to extrapolate to national small system estimates. At an MCL of 18 µg/L, national

estimates include extrapolation for one small system entry point to national estimates based on sampling weights described above.

XIII. Uncertainty Analysis

The EPA has presented an extensive discussion of the uncertainties in the key analyses informing this proposal in the uncertainty section of the MCLG Approaches Report and the uncertainties section of the Economic Analysis document (*USEPA, 2018b; USEPA, 2019a)*. A summarized description of these uncertainties are presented below.

A. Uncertainty in the MCLG Derivation

Each input into the analysis to inform the MCLG is a decision point associated with uncertainty. There is uncertainty in different aspects of the BBDR model, ranging from structural and functional relationships to specific parameter values for early pregnancy. There are very few data available to calibrate the pharmacokinetic aspects of the model, particularly at the life stage of interest. Also, the BBDR model does not explicitly consider the effect of the presence of other goitrogens (e.g. thiocyanate, nitrate) or effects of thyroid disease states. Toxicodynamic aspects such as competitive inhibition at the NIS, depletion of iodide stores under different iodine intake levels and physiological states, and the ability of the TSH feedback loop to compensate for perturbations in thyroid function each have their own uncertain features. Additional uncertainty is introduced by linking the BBDR model estimates of maternal fT4 to altered neurodevelopment in offspring. None of the studies used to evaluate potential adverse neurodevelopmental outcomes in offspring born to hypothyroxinemic mothers was performed in the U.S. None of the

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studies measured perchlorate exposure. Not all the studies measured iodide levels in the study populations. The state of the science on the relationship between maternal fT4 levels and offspring neurodevelopment is constantly evolving. There are numerous indices used to assess neurodevelopmental impacts and there is some uncertainty regarding the selection of IQ as the critical endpoint for setting the MCLG.

A recently published paper evaluating the EPA's BBDR model and MCLG Approaches, reiterated the uncertainties the Agency identified in its analyses and questions the use of these quantitative tools for perchlorate in a regulatory context (Clewell et al., 2019).

B. Uncertainty in the Economic Analysis

The EPA provides discussions regarding several sources of uncertainty in the benefit and cost estimates in the Health Risk Reduction and Cost Analysis (USEPA, 2019a). Table XIII-1 provides a summary of sources of uncertainty and their potential effects on estimated costs and benefits. The following discussion addresses uncertainties specific to the benefits analysis.

Table XIII-1. Sources of Uncertainty in Economic Analysis

Description	Potential effect[1]
Baseline Occurrence	
UCMR 1 data are more than one decade old; actual occurrence could be lower (e.g., because of contaminant cleanup) or higher (e.g., because new systems use perchlorate-contaminated source water).	± (benefits and costs will change in the same direction)
UCMR 1 data include a sample of small systems; the Stage 1 results (entry point maximums) indicate that no small systems would exceed 56 µg/L or 90 µg/L and that one small system would exceed 18 µg/L; it is possible that there are additional small systems where the baseline perchlorate is greater than the MCLs that are not captured in the national extrapolation results.	− (benefits and costs will change in the same direction)

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Description	Potential effect[1]
The EPA assumed a uniform distribution of system population served across the entry points; the actual entry point service population could be greater than or less than the estimates.	± (benefits and costs will change in the same direction)
Benefits Analysis	
The health risks and risk reductions are based on maximum recorded concentration estimates and thus do not account for exposures to concentrations greater than or less than this recorded maximum.	± (benefits only)
The EPA assumed that baseline fT4 is equal to the median, which likely underestimates disease benefits as the logarithmic relationship between maternal fT4 and child IQ leads to larger relative changes in fT4, with increasing levels of perchlorate and lower levels of baseline fT4.	− (benefits only)
The EPA assumed a median TSH feedback loop strength for the exposed population does not incorporate the variability in the feedback mechanism of the body's creation of TSH in response to decreasing fT4.	± (benefits only)
The EPA used a 90th percentile water intake rate to derive the MCLG and the dose-response equations for the benefits analysis. This approach results in a protective MCLG value, but may overstate intake for the benefits analysis[2].	+ (benefits only)
The IQ valuation uses estimates that the EPA derived using the same approach as Salkever (1995). Results from other IQ valuation studies might result in higher or lower benefit estimates.	± (benefits only)
The benefits analysis is based on a single health endpoint and the value of the endpoint is based solely on lost earnings.	− (benefits only)
Cost Analysis	
The EPA assumed that systems requiring treatment would incorporate a safety factor – treating to 80% of the proposed MCL or alternative MCL, which increases costs and benefits.	+ (benefits and costs will change in the same direction)
The EPA assumed that all entry points requiring treatment would implement ion exchange, which may overestimate costs if non-treatment is an option for one or more entry points or underestimate costs if site-specific conditions result in higher costs at one or more entry points.	± (costs only)

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Description	Potential effect[1]
The EPA developed a monitoring schedule that assumed a uniform distribution of initial monitoring costs over three years; actual costs will vary.	± (costs only)
The EPA assumed that long-term monitoring costs would occur in the last year of the applicable three-year monitoring period or nine-year monitoring cycle; systems may conduct monitoring in an earlier year of the period or cycle.	− (costs only)
The EPA assumed that 90% of ground water systems and 40% of surface water systems obtain perchlorate monitoring waivers; the actual percentages may vary.	± (costs only)

1. A "–" symbol indicates that benefits and/or costs will tend to be underestimated. A "+" symbol indicates that benefits and/or costs will tend to be overestimated. A "±" symbol indicates an unknown direction of uncertainty, i.e., benefits and/or costs could be underestimated or overestimated.
2. The EPA did not include a perchlorate dietary dose in the benefits analysis, which would be unchanged between baseline and proposed MCL scenarios if many areas do not irrigate with drinking water. For people who obtain a significant portion of their fruit, vegetables, and milk from areas irrigated with the water from the same sources as the drinking water, we would expect their exposure may drop with the reduction of perchlorate in food products used locally. Because of this and the natural log form of the IQ response function, this approach may slightly understate the avoided IQ decrement estimates.

The EPA acknowledges the uncertainty regarding the quantitative health risk reduction. In particular, the Agency assumed it could estimate risk reductions based on evidence of a quantifiable relationship between thyroid hormone changes and neurodevelopmental outcomes.

There are a number of potential benefits of reducing perchlorate in drinking water that were not quantified as part of this analysis, which may result in an underestimate of actual benefits. As described by the SAB "children exposed gestationally to maternal hypothyroxinemia (without hypothyroidism) show reduced levels of global and specific cognitive abilities, as well as increased rates of behavior problems including greater dysregulation in early infancy and

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attentional disorders in childhood (Man et al., 1991; Pop et al., 1999; Pop et al., 2003; Kooistra et al., 2006)" (p. 10, SAB for the U.S. EPA, 2013). The EPA's literature review identified potential relationships between maternal thyroid hormone alterations and the risk of schizophrenia, ADHD, expressive language delay, reduced school performance and increased odds of autism, among others, none of which are being currently quantified in this assessment. Other potentially omitted benefits include risks associated with effects of thyroid disorders in adults, including cardiovascular disease risk; changes in thyroid hormone levels and their relationship with total cholesterol, LDL cholesterol, and triglycerides; as well as a possible relationship between increases in TSH and risk of fatal coronary heart disease. Treating for perchlorate in drinking water could also potentially remove nitrate, which is a co-occurring contaminant and a goitrogen. These additional potential health endpoints are not monetized in this benefits analysis. The assumptions used to account for the previously mentioned variability of the BBDR model inputs and uncertainty surrounding the relationship between maternal fT4 and child IQ discussed above may result in an overestimate of the monetized benefits. Because IQ is a surrogate for broad range of potential neurodevelopmental risks, it is unclear whether the analysis as a whole over- or under-estimates the monetized benefits of a reduction of perchlorate in drinking water.

XIV. Request for Comment on Proposed Rule

While all comments relevant to the national primary drinking water regulation for perchlorate proposed today will be considered by the EPA, comments on the following issues

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will be especially helpful to the EPA in developing a final rule. The EPA specifically requests comment on the following topics.

- The adequacy and uncertainties of the BBDR model developed by the EPA to predict thyroid hormone level changes caused by perchlorate exposure to pregnant women with low iodide intake, including the model and model parameters and assumptions (Section III and Approaches Report).
- The adequacy and uncertainties of the EPA's review and application of the epidemiologic literature to quantify the relationship between thyroid hormone changes in pregnant women and neurodevelopmental effects including the assumptions, the selection of the approach used, and the study used (Section III and Approaches Report).
- The adequacy and uncertainties of the methodology to derive the MCLG including points of departure, assumptions, uncertainty factor, and relative source contribution (Section III and Technical Support Document: Deriving a Maximum Contaminant Level Goal for Perchlorate in Drinking Water).
- The proposed MCLG and MCL of 56 µg/L as well as the alternative MCLG and MCL values of 18 µg/L and of 90 µg/L.
- The feasibility of the proposed MCL of 56 µg/L as well as the feasibility of the alternative MCLs of 18 µg/L and 90 µg/L.
- The adequacy of the underlying assumptions and analysis of occurrence (Section VI).
- The costs and availability of Treatment Technologies (Section X).

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- The adequacy of the underlying estimates, assumptions and analysis used to estimate costs and describe unquantified costs including the estimates of monitoring frequency, likelihood of systems receiving a monitoring waiver, the administrative labor rate and the operator labor rate. (Section XII and the Health Risk Reduction Cost Analysis).
- The adequacy of the underlying estimates, assumptions and analysis used to estimate benefits and describe unquantified benefits (Section XII and the Health Risk Reduction Cost Analysis).
- Potential implementation challenges associated with the proposed perchlorate regulation that the EPA should consider, specifically for small systems.
- The Administrator's finding in accordance with Section 1412(b)(4)(C) of the SDWA that the benefits of the proposed 56 μg/L MCL for perchlorate do not justify the costs, and the information that supports that determination as described in Section XII of this notice.
- The Administrator's proposal to, consistent with the discretion afforded him by SDWA Section 1412(b)(6)(A), adopt an MCL of 56 μg/L notwithstanding the Agency's SDWA Section 1412(b)(4)(C) determination that the benefits of the MCL would not justify its costs.
- The Agency's conclusion that no alternative MCL, including the alternative MCL values of 18 μg/L and 90 μg/L discussed above, would "maximize health risk reduction benefits at a cost that is justified by the benefits" and the information and analytical approaches used to arrive at that conclusion. The EPA is especially interested in comments suggesting other approaches to deriving an MCL for which the benefits justify the costs.

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XV. Request for Comment on Potential Regulatory Determination Withdrawal

The EPA is soliciting comments on withdrawing the 2011 Regulatory Determination (see Section II-C, Regulatory History) based on several factors. First, the findings, described in the occurrence section (section VI) and in the updated health effects assessment (Section III), suggest that perchlorate does not occur in public water systems with a frequency and at levels of public health concern[17] and suggest that the regulation of perchlorate does not present a meaningful opportunity for health risk reduction for persons served by public water systems. The proposed regulation would require over sixty thousand public water systems to monitor for perchlorate, but the available data indicates that very few would find it at levels of public health concern. Specifically, perchlorate occurrence information suggests that at an MCL of 56 µg/L only 2 systems (0.004% of all water systems in the U.S.) would exceed the regulatory threshold. Even at an MCL of 18 µg/L, there would only be 15 systems (0.03% of all water systems in the U.S.) that would exceed the regulatory threshold. Only one system would exceed the alternative MCL of 90 µg/L.

The EPA notes that in 2008, the EPA stated in its preliminary regulatory determination that perchlorate did not occur with a frequency and at levels of public health concern in public water systems based upon the health effects and occurrence information available at that time, which indicated that 0.8% of public water system had perchlorate at levels exceeding the HRL of

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[17] As shown in Section VI of this notice there is infrequent occurrence of perchlorate at either 56 µg/L, 18 µg/L or 90 µg/L, which are the possible levels expected to cause adverse human health effects.

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15 µg/L. The EPA also stated that there was not a meaningful opportunity for a NPDWR to reduce health risks based upon the estimates at that time that 0.9 million people had perchlorate levels above the HRL.

The EPA further notes that the Agency has previously determined CCL1 and CCL2 contaminants did not occur with frequency at levels of public health concern when the percentage of water systems exceeding the HRL were greater than the frequency of perchlorate occurrence level at the proposed MCL (0.004% of all water systems in the U.S.). For example, in 2003 the EPA determined that aldrin did not occur with a frequency and at levels of public health concern based upon data that showed 0.2% of water systems had aldrin at levels greater than the HRL. The EPA also concluded that there was not a meaningful opportunity for health risk reduction for persons served through a drinking water regulation based on this occurrence data and the estimate that these systems above the HRL served approximately 1 million people (USEPA, 2003). In 2008 the EPA determined that DCPA Mono- and Di-Acid degradates did not occur with a frequency and at levels of public health concern based on data that showed 0.03% of water systems exceeded the HRL. The EPA also included that there was not a meaningful opportunity for health risk reduction through a drinking water regulation based on this occurrence data and the estimate that these systems above the HRL served approximately 100,000 people (USEPA, 2008e).

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SDWA Section 1412(b)(1)(A)(iii) states that the determination regarding the meaningful opportunity is "in the sole judgement of the Administrator" and therefore there may be other factors that contribute to this determination for any given contaminant.

If, after consideration of public comment, the EPA withdraws the perchlorate regulatory determination, there will be no NPDWR for perchlorate, although the EPA can re-list perchlorate on the CCL and proceed to regulation in the future if the occurrence or risk information changes. As with other unregulated contaminants, the EPA could address the limited instances of elevated levels of perchlorate by working with the states or using its SDWA Section 1431 imminent and substantial endangerment or Section 1412(b)(1)(f) health assessment authorities, as appropriate. The EPA also requests comments on what guidance it could provide the public if the regulatory determination for perchlorate is withdrawn.

XVI. Statutory and Executive Order Reviews

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review

This action is a significant regulatory action since it raises novel legal or policy issues. It was submitted to the Office of Management and Budget (OMB) for review. Any changes made in response to OMB recommendations have been documented in the docket.

The EPA evaluated the potential costs to States and utilities and the potential benefits of the proposed rule. This analysis, *Health Risk Reduction Cost Analysis of the Proposed Perchlorate Rule (USEPA, 2019a)* is available in the docket and is summarized in section XI.

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B. Executive Order 13771: Reducing Regulations and Controlling Regulatory Costs

This action is expected to be an Executive Order 13771 regulatory action. Details on the estimated costs of this proposed rule can be found in the EPA's analysis of the potential costs and benefits associated with this action.

C. Paperwork Reduction Act

The information collection requirements in this proposed rule have been submitted for approval to the Office of Management and Budget (OMB) under the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq*. The information collection requirements are not enforceable until OMB approves them.

The monitoring information collected as a result of this rule will allow the States and the EPA to evaluate compliance with the rule. For the first 3-year period following rule promulgation, the major information requirements concern primacy agency activities to implement the rule including adopting the NPDWR into state regulations, providing training to state and PWS employees, updating their monitoring data systems, and reviewing system monitoring data and waiver requests. Compliance actions for drinking water systems (including monitoring, administration, and treatment costs) would not begin until after Year 3 due to the proposed effective date of this rule.

The estimate of annual average burden hours for the proposed rule during the first three years following promulgation is 48,539 hours. The annual average cost estimate is $7.4 million for labor. The burden hours per response is 2,648 hours and the cost per response is $134,159.

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The frequency of response (average responses per respondent) is 1 for primacy agencies, annually (for upfront administrative activities to implement the rule). The estimated number of likely respondents is 55 over the three-year period (for an average of 18.3 each year).

Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for the EPA's regulations are listed in 40 CFR part 9.

Submit your comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including the use of automated collection techniques, to the EPA at the public docket established for this rule, which includes the ICR, Docket ID No. **EPA-HQ-OW-2018-0780**. You may also send your ICR-related comments to OMB's Office of Information and Regulatory Affairs via email to OIRA_submission@omb.eop.gov, Attention: Desk Officer for the EPA. Since OMB is

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required to make a decision concerning the ICR between 30 and 60 days after receipt, OMB must receive comments no later than **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]**. The EPA will respond to any ICR-related comments in the final rule.

D. Regulatory Flexibility Act (RFA)

I certify that this action will not have a significant economic impact on a substantial number of small entities under the RFA. The Agency has determined that the proposed MCL of 56 μg/L will not result in annual costs that exceed one percent of revenue for small systems affected by the proposed rule.

The small entities subject to the requirements of this action are public water systems serving 10,000 or fewer persons. This is the threshold specified by Congress in the 1996 Amendments to the Safe Drinking Water Act for small system flexibility provisions. In accordance with the RFA requirements, the EPA proposed using this alternative definition in the Federal Register, (63 FR 7620, February 13, 1998), requested public comment, consulted with the Small Business Administration (SBA), and expressed its intention to use the alternative definition for all future drinking water regulations in the Consumer Confidence Reports regulation (63 FR 44511, August 19, 1998). As stated in that final rule, the alternative definition is applied to this proposed regulation.

The proposed rule contains provisions that would affect 58,325 CWS and NTNCWS serving 10,000 or fewer people. In order to meet the proposed rule requirements, all of these

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systems will need to conduct perchlorate monitoring. At the proposed MCL of 56 µg/L, the UCMR 1 monitoring data indicate that no small systems would be required to incur costs to reduce the levels of perchlorate in drinking water, therefore, all small PWSs will incur monitoring costs only. Impacts on small entities are described in more detail in Chapter 7 of the Health Risk Reduction Cost Analysis of the Proposed Perchlorate Rule (USEPA, 2019a). Table XII-1 and Table XII-2 show the annual compliance costs of the proposed rule on the small entities by system size for public and private systems, respectively. Based on a comparison of annual costs with annual revenue estimates, the EPA has determined that no small systems will experience an impact of one percent or greater of average annual revenues (USEPA 2019a).

Table XII-1: Annualized Monitoring and Administrative Costs as a Percentage of Average Annual Revenue for Small Public CWSs by Size Category

Size Category	Average Annual Revenues[a]	3% Discount[b]	7% Discount[b]
Population served <100	$224,248	$88 (0.04%)	$94 (0.04%)
Population served 101-500	$197,315	$88 (0.04%)	$94 (0.05%)
Population served 501-3,300	$202,382	$88 (0.04%)	$94 (0.05%)
Population served 3,301-10,000	$1,092,187	$88 (0.01%)	$94 (0.01%)

Source: Perchlorate Benefit-Cost Analysis Spreadsheet available in the proposed rule docket (EPA-HQ-OW-2018-0780)

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a. Based on the CWSS [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"ZkgC4dzL","properties":{"formattedCitation":"(USEPA, 2009c Table 65)","plainCitation":"(USEPA, 2009c Table 65)","noteIndex":0},"citationItems":[{"id":924,"uris":["http://zotero.org/groups/945096/items/DZNAAV6M"],"uri":["http://zotero.org/groups/945096/items/DZNAAV6M"],"itemData":{"id":924,"type":"article","title":"2006 Community Water System Survey - Volume II: Detailed Tables and Survey Methodology","URL":"https://www.epa.gov/dwstandardsregulations/community-water-system-survey","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2009",5]]},"accessed":{"date-parts":[["2018",8,16]]}},"suffix":"Table 65"}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}] and updated to 2017$ based on the chained consumer price index for fuels and utilities in U.S. city average, all urban consumers [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"rkwEpGYT","properties":{"formattedCitation":"(Bureau of Labor Statistics (BLS), 2018a)","plainCitation":"(Bureau of Labor Statistics (BLS), 2018a)","noteIndex":0},"citationItems":[{"id":984,"uris":["http://zotero.org/groups/945096/items/E3I7HRK8"],"uri":["http://zotero.org/groups/945096/items/E3I7HRK8"],"itemData":{"id":984,"type":"article","title":"Chained consumer price index for fuels and utilities in U.S. city average, all urban consumers, 2000 to 2018","author":[{"literal":"Bureau of Labor Statistics (BLS)"}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. Revenues include all sources of revenue including water revenue, non-water revenue, and municipal transfers to water systems.
b. Total annual monitoring and administrative costs for PWSs are approximately $6.6 million to $7.1 million annually (Exhibit 5 5), with $5.1 million to $5.5 million accruing to small PWSs. Based on 58,325 small systems, this yields an average annual per-system cost of $88 (3% discount rate) to $94 (7% discount rate).

Table XII-2: Annualized Monitoring and Administrative Costs as a Percentage of Average Annual Revenue for Small Private CWSs by Size Category

Size Category	Average Annual Revenues[a]	3% Discount[b]	7% Discount[b]
Population served <100	$139,911	$88 (0.06%)	$94 (0.07%)
Population served 101-500	$351,974	$88 (0.03%)	$94 (0.03%)
Population served 501-3,300	$254,706	$88 (0.03%)	$94 (0.03%)
Population served 3,301-10,000	$951,692	$88 (0.01%)	$94 (0.01%)

Source: Perchlorate Benefit-Cost Analysis Spreadsheet available in the proposed rule docket (EPA-HQ-OW-2018-0780)

a. Based on the CWSS [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"ZkgC4dzL","properties":{"formattedCitation":"(USEPA, 2009c Table 65)","plainCitation":"(USEPA, 2009c Table 65)","noteIndex":0},"citationItems":[{"id":924,"uris":["http://zotero.org/groups/945096/items/DZNAAV6M"],"uri":["http://zotero.org/groups/945096/items/DZNAAV6M"],"itemData":{"id":924,"type":"article","title":"2006 Community Water System Survey - Volume II: Detailed Tables and Survey Methodology","URL":"https://www.epa.gov/dwstandardsregulations/community-water-system-survey","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2009",5]]},"accessed":{"date-parts":[["2018",8,16]]}},"suffix":"Table 65"}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}] and updated to 2017$ based on the chained consumer price index for fuels and utilities in U.S. city average, all urban consumers [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"rkwEpGYT","properties":{"formattedCitation":"(Bureau of Labor Statistics (BLS), 2018a)","plainCitation":"(Bureau of Labor Statistics (BLS), 2018a)","noteIndex":0},"citationItems":[{"id":984,"uris":["http://zotero.org/groups/945096/items/E3I7HRK8"],"uri":["http://zotero.org/groups/945096/items/E3I7HRK8"],"itemData":{"id":984,"type":"article","title":"Chained consumer price index for fuels and utilities in U.S. city average, all urban consumers, 2000 to 2018","author":[{"literal":"Bureau of Labor Statistics (BLS)"}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. Revenues include all sources of revenue including water revenue and non-water revenue.
b. Total annual monitoring and administrative costs for PWSs are approximately $6.6 million to $7.1 million annually (Exhibit 5 5), with $5.1 million to $5.5 million accruing to small PWSs. Based on 58,325 small systems, this yields an average annual per-system cost of $88 (3% discount rate) to $94 (7% discount rate).

E. Unfunded Mandates Reform Act

This action does not contain an unfunded mandate of $100 million or more as described in UMRA, 2 U.S.C. 1531–1538. The action imposes minimal enforceable duty on any state, local or tribal governments or the private sector

Based on the cost estimates detailed in Section XI, the EPA determined that compliance costs in any given year would be below the threshold set in UMRA, with maximum single-year

costs of approximately $10.2 million. The EPA has determined that this rule contains a federal mandate that would not result in expenditures of $100 million or more for State, local, and Tribal governments, in the aggregate, or the private sector in any one year.

F. Executive Order 13132: Federalism

This action does not have federalism implications. It will not have substantial direct effects of greater than $25 million on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government. Annual costs are estimated to range from $9.6 million at a 3 percent discount rate to $10.2 million using a 7 percent, with $6.5 million to $7.0 million annually accruing to public entities. The EPA has concluded that this proposed rule may be of interest because it may impose direct compliance costs on State or local governments, and the federal government will not provide the funds necessary to pay those costs.

G. Executive Order 13175: Consultation and Coordination with Indian Tribal Governments

The EPA has concluded that this proposed rule may have Tribal implications, because it may impose direct compliance costs on Tribal governments, and the federal government would not provide the funds necessary to pay those costs. The EPA has identified 768 water systems with 1,167 entry points under Native American ownership that may be subject to the proposed rule. They would bear an estimated total annualized cost of $74,100 at a 3 percent discount rate ($79,625 at 7 percent) to implement this rule as proposed, with all costs attributable to

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monitoring and administrative costs. Estimated average annualized cost per system ranges from $96 at a 3 percent discount rate to $104 at a 7 percent discount rate.

Accordingly, the EPA provides the following Tribal summary impact statement as required by section 5(b) of Executive Order 13175. The EPA consulted with representatives of Tribal officials early in the process of developing this proposed regulation to permit them to have meaningful and timely input into its development. The EPA conducted consultation with Indian Tribes which included a webinar with interested tribes on February 28, 2012, to request input and provide rulemaking information to interested parties. A meeting summary report is available on the docket for public inspection (USEPA 2012a). The EPA notes that 751 of the 768 Tribal systems identified by the Agency as subject to the proposed rule are small systems that are expected to incur only monitoring costs. Due to the health risks associated with perchlorate, capital expenditures needed for compliance with the rule would be eligible for federal funding sources, specifically the Drinking Water State Revolving Fund. In the spirit of Executive Order 13175, and consistent with the EPA policy to promote communications between the EPA and Tribal governments, the EPA specifically solicits additional comment on this proposed rule from Tribal officials.

H. Executive Order 13045: Protection of Children from Environmental Health and Safety Risks

This action is not subject to Executive Order 13045 because it is not economically significant as defined in Executive Order 12866; however, the environmental health risk addressed by this action may have a disproportionate effect on children. Accordingly, the EPA

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evaluated the environmental health or safety effects of perchlorate on children. The results of this evaluation are contained in the Health Effects Technical Support Document (USEPA 2018a) and described in section III of this preamble. The EPA has evaluated the risk associated with perchlorate in drinking water for the sensitive subpopulation – offspring of pregnant women exposed to perchlorate during the first trimester – and established a proposed MCLG that is protective of this subpopulation as well as other children. The EPA also estimated the health risk reduction of the proposed and alternative MCLs. This analysis is described in the Health Risk Reduction and Cost Analysis for the proposed rule (USEPA 2019a) and is summarized in section XI of this preamble. Copies of the Health Effects Technical Support Document and Economic Analysis and supporting information are available in the public docket for today's proposal.

I. Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution, or Use

This rule is not a ''significant energy action'' as defined in Executive Order 13211, ''Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use'' (66 FR 28355 (May 22, 2001)) because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy. This determination is based on the following analysis.

The first consideration is whether the proposed rule would adversely affect the supply of energy. The proposed rule does not regulate power generation, either directly or indirectly. The public and private water systems that the proposed rule regulates do not generate power. Further, the cost increases borne by customers of water utilities as a result of the proposed rule are a low

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percentage of the total cost of water, except for a few water systems that might install treatment technologies and would likely spread that cost over their customer base. In sum, the proposed rule does not regulate the supply of energy, does not generally regulate the utilities that supply energy, and is unlikely to affect significantly the customer base of energy suppliers. Thus, the proposed rule would not translate into adverse effects on the supply of energy.

The second consideration is whether the proposed rule would adversely affect the distribution of energy. The proposed rule does not regulate any aspect of energy distribution. The water systems that are regulated by the proposed rule already have electrical service. At the proposed MCL, one entry point at one system may require incremental power to operate new treatment processes. The increase in peak electricity demand at water utilities is negligible. Therefore, the EPA estimates that the existing connections are adequate and that the proposed rule has no discernable adverse effect on energy distribution.

The third consideration is whether the proposed rule would adversely affect the use of energy. Because only one system is expected to add treatment technologies that use electrical power, this potential impact on sector demand or overall national demand for power is negligible.

Based on its analysis of these considerations, the EPA has concluded that proposed rule is not likely to have a significant adverse effect on the supply, distribution, or use of energy.

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J. National Technology Transfer and Advancement Act of 1995 and 1 CFR part 51

The proposed rule could involve voluntary consensus standards in that it would require monitoring for Perchlorate. The EPA proposed five analytical methods for the identification and quantification of perchlorate in drinking water. The EPA methods 314.0, 314.1, 314.2, 331.0, and 332.0 incorporate quality control criteria which allow accurate quantitation of perchlorate. Additional information about the analytical methods is available in section VII of this notice. The EPA has made, and will continue to make, these documents generally available through [HYPERLINK "http://www.regulations.gov"] and at the U.S. Environmental Protection Agency Drinking Water Docket, William Jefferson Clinton West Building, 1301 Constitution Ave NW, Room 3334, Washington, DC 20460, call (202) 566-2426

The EPA's monitoring and sampling protocols generally include voluntary consensus standards developed by agencies such as ASTM International, Standard Methods and other such bodies wherever the EPA deems these methodologies appropriate for compliance monitoring. The EPA welcomes comments on this aspect of the proposed rulemaking and, specifically, invites the public to identify potentially-applicable voluntary consensus standards and to explain why such standards should be used in this regulation. The Director of the Federal Register approved the voluntary consensus standards incorporated by referenced in § 141.23 of the proposed regulatory text as of April 11, 2007.

K. Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

The EPA has determined that this proposed rule would not have disproportionately high and adverse human health or environmental effects on minority or low-income populations because it would increase the level of environmental protection for all affected populations without having any disproportionately high and adverse human health or environmental effects on any population, including any minority or low-income population.

The public is invited to comment on this aspect of the proposed rulemaking and, specifically, to recommend additional methods to address Environmental Justice concerns from establishing a drinking water rule for perchlorate in drinking water.

XVII. Consultations with the Science Advisory Board, National Drinking Water Advisory Council, and the Secretary of Health and Human Services

In accordance with sections 1412(d) and 1412(e) of the Safe Drinking Water Act (SDWA), the Agency consulted with the National Drinking Water Advisory Council (NDWAC or the Council); the Secretary of Health and Human Services; and with the EPA Science Advisory Board. The Agency consulted with NDWAC during the Council's October 4-5, 2012 meeting. A summary of the NDWAC recommendations is available in the National Drinking Water Advisory Council, Fall 2012 Meeting Summary Report (NDWAC, 2012b) and the docket for this proposed rule. The EPA carefully considered NDWAC recommendations during the development of a proposed drinking water rule for perchlorate.

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On May 29, 2012, the EPA sought guidance from the EPA Science Advisory Board (SAB) on how best to consider and interpret life stage information, epidemiological and biomonitoring data since the publication of the National Research Council 2005 report, the Agency's physiologically-based pharmacokinetic (PBPK) analyses, and the totality of perchlorate health information to derive a Maximum Contaminant Level Goal (MCLG) for perchlorate (USEPA, 2012; NRC, 2005). On May 29, 2013, the EPA received significant input from SAB, summarized in the report, SAB Advice on Approaches to Derive a Maximum Contaminant Level Goal for Perchlorate (USEPA, 2013a).

On July 15, 2013, the EPA responded by stating that the Agency would consider all the recommendations from the SAB, as it continued working on the development of the rulemaking process for perchlorate (USEPA 2013b). To address SAB recommendations, the EPA collaborated with Food and Drug Administration (FDA) scientists to develop PBPK/pharmacodynamic (PD), or biologically based dose-response (BBDR), models that incorporate all available health related information on perchlorate to predict changes in thyroid hormones in sensitive life stages exposed to different dietary iodide and perchlorate levels (USEPA 2017). As recommended by SAB, the EPA developed these models based upon perchlorate's mode of action (i.e., iodide uptake inhibition by the thyroid) (USEPA 2013a). Additional details are in section III.C. of this notice and in the Health Effects of Perchlorate support document located in the docket for this proposed rule.

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In accordance with SAB recommendations, the EPA developed a two-stage approach to integrate BBDR model results with data on neurodevelopmental outcomes from epidemiological studies, this approach allowed the Agency to link maternal thyroid hormones levels as a result of low iodine intake and perchlorate exposure, to derive an MCLG that directly addresses the most sensitive life stage (USEPA 2013a).

On March 25, 2019, the EPA consulted with the Department of Health and Human Services (HHS). The EPA provided information to HHS officials on the draft proposed perchlorate regulation and considered HHS input as part of the interagency review described in section XVII.A.

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List of Subjects

40 CFR Part 141

Chemicals, Incorporation by reference, Indians-lands, Intergovernmental relations, Radiation protection, Reporting and recordkeeping requirements, Water supply.

40 CFR Part 142

Administrative practice and procedure, Chemicals, Indians-lands, Radiation protection, Reporting and recordkeeping requirements, Water supply.

ED_005043_00078862-00206

Dated: May 23, 2019.

_____

Andrew R. Wheeler,

Administrator.

ED_005043_00078862-00207

For the reasons stated in the preamble, the Environmental Protection Agency proposes to amend 40 CFR parts 141 and 142 as follows:

PART 141—NATIONAL PRIMARY DRINKING WATER REGULATIONS

1. The authority citation for part 141 continues to read as follows:

   Authority: 42 U.S.C. 300f, 300g-1, 300g-2, 300g-3, 300g-4, 300g-5, 300g-6, 300j-4, 300j-9, and 300j-11.

2. Amend § 141.6 by revising paragraph (a) and adding paragraph (l) to read as follows:

Subpart A—General

§ 141.6 Effective dates.

(a) Except as provided in paragraphs (b) through (l) of this section the regulations set forth in this part shall take effect on June 24, 1977.

*****

(l) The regulations contained in the revisions to §§ 141.23(a)(4)(i), 141.23(a)(5), 141.23(c),141.23(f)(1), 141.23(i)(1)-(2), 141.23(k)(1)-(3), 141.23(k)(3)(ii), 141.51(b), 141.60(b)(5), 141.62(b), 141.62(c), 141.62(e), Appendix A to Subpart O and Appendix A and B to Subpart Q are effective for the purposes of compliance on [**DATE OF PUBLICATION OF FINAL RULE IN THE FEDERAL REGISTER**].

3. Amend § 141.23 by:

a. In paragraph (a)(4)(i) table:

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i. Revising the table heading; and

ii. Adding an entry for "Perchlorate" in alphabetical order;

b. In paragraph (a)(5), after the text "nickel," adding the text "perchlorate,";

c. In paragraph (c), after the text "nickel," adding the text "perchlorate,";

d. Adding paragraph (c)(10);

e. In paragraph (f)(1), after the text "nickel," adding the text "perchlorate,";

f. In paragraphs (i)(1) and (2), after the text "nickel," adding the text "perchlorate,";

g. Revising paragraph (i)(3);

h. In paragraph (k)(1):

i. Revising the introductory text; and

ii. In the table, adding the table designation, redesignating entries 21 through 26 as 22 through 27, and adding a new entry 21;

i. In paragraph (k)(2):

i. In the introductory paragraph, after the text "nitrite," adding the text "perchlorate,"; and

ii. In the table, adding the table designation and adding, in alphabetical order, an entry for "Perchlorate";

j. In paragraph (k)(3):

i. In the introductory paragraph, after the text "nitrite" adding the text ", perchlorate,"; and

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ii. In paragraph (ii) table, adding the table designation, and adding in alphabetical order, an entry for "Perchlorate";

The revisions and additions read as follows:

Subpart C—Monitoring and Analytical Requirements

§141.23 Inorganic chemical sampling and analytical requirements.

*****

(a)***

(4)***

(i)***

TABLE 1 TO PARAGRAPH (a)(4)(i) -- DETECTION LIMITS FOR INORGANIC CONTAMINANTS (COMPOSITED SAMPLES)

Contaminant	MCL (mg/l)	Methodology	Detection limit (mg/l)
**	**	**	*

Perchlorate	0.056	Ion Chromatography	0.00053
		Inline Column Concentration/Matrix Elimination Ion Chromatography with Suppressed Conductivity Detection	0.00003
		Two-Dimensional Ion Chromatography with Suppressed Conductivity Detection	0.000012-0.000018
		Liquid Chromatography Electrospray Ionization Mass Spectrometry	0.000005 (Tandem Mass Spectrometry [MS/MS]) 0.000008 (Selected Ion Monitoring [SIM])
		Ion Chromatography with Suppressed Conductivity and Electrospray Ionization Mass Spectrometry	0.00002
**	**	**	*

*****

(c)***

(10) Community water systems and non-transient non-community water systems must conduct initial monitoring for perchlorate as follows:

(i) Community water systems serving greater than 10,000 persons without acceptable historic data, as defined below, must collect four consecutive quarterly samples at all sampling points between January 1, 2023 and December 31, 2025.

(ii) Community water systems serving 10,000 or fewer persons and non-transient non-community water systems without acceptable historic data, as defined below,

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must collect four consecutive quarterly samples at all sampling points between January 1, 2026 and December 31, 2028.

(iii) Grandfathering of data: States may allow historical monitoring data collected at a sampling point to satisfy the initial monitoring requirements for that sampling point, for the following situations.

(A) To satisfy initial monitoring requirements, community water systems serving greater than 10,000 persons having only one entry point to the distribution system may use the monitoring data from the compliance monitoring period between January 1, 2020 and December 31, 2022. Community water systems serving 10,000 or fewer persons and non-transient non-community water systems having only one entry point to the distribution system may use the monitoring data from the compliance monitoring period between January 1, 2023 and December 31, 2025.

(B) To satisfy initial monitoring requirements, a system with multiple entry points and having appropriate historical monitoring data for each entry point to the distribution system may use the monitoring data from the compliance monitoring period that began between January 1, 2020 and December 31, 2022, for community water systems serving greater than 10,000 persons and between January 1, 2023 and December 31, 2025, for community water systems serving 10,000 or fewer persons and for non-transient non-community water systems.

(C) To satisfy initial monitoring requirements, a system with appropriate historical data for a representative point in the distribution system may use the monitoring data from the compliance monitoring period between January 1, 2020 and December 31, 2022, for community water systems serving greater than 10,000 persons and between January 1, 2023 and December 31, 2025, for community water systems serving 10,000 or fewer persons and for non-transient non-community water systems, provided that the State finds that the historical data satisfactorily demonstrate that each entry point to the distribution system is expected to be in compliance based upon the historical data and reasonable assumptions about the variability of contaminant levels between entry points. The State must make a written finding indicating how the data conforms to these requirements.

(iv) The State may waive the final two quarters of initial monitoring for perchlorate for a sampling point if the results of the samples from the previous two quarters are below the detection limit.

*****

(i)***

(3) Compliance with the maximum contaminant level for nitrate, nitrite and perchlorate is determined based on one sample if the levels of these contaminants are below the MCLs. If the level of perchlorate exceeds the MCL in the initial sample, a confirmation sample is required in accordance with paragraph (f)(1) of this section

and compliance shall be based on the average of the initial and confirmation sample. If the levels of nitrate and/or nitrite exceed the MCLs in the initial sample, a confirmation sample is required in accordance with paragraph (f)(2) of this section and compliance shall be based on the average of the initial and confirmation sample.

*****

(k)***

(1) Analysis for the following contaminants shall be conducted in accordance with the methods in the following table, or the alternative methods listed in Appendix A to Subpart C of this part, or their equivalent as determined by the EPA. Criteria for analyzing arsenic, barium, beryllium, cadmium, calcium, chromium, copper, lead, nickel, selenium, sodium, and thallium with digestion or directly without digestion, and other analytical test procedures are contained in Technical Notes on Drinking Water Methods, EPA-600/R-94-173, October 1994. This document is available from the National Service Center for Environmental Publications (NSCEP), P.O. Box 42419, Cincinnati, OH 45242-0419 or http://www.epa.gov/nscep/.

Table 2 to paragraph (k)(1)

Contaminant	Methodology[13]	EPA	ASTM[3]	SM[4] (18th, 19th ed.)	SM[4] (20th ed.)	SM Online[22]	Other
*	*	*	*	*	*	*	
21. Perchlorate	Ion Chromatography	314.0[23]					

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	Inline Column Concentration/Matrix Elimination Ion Chromatography with Suppressed Conductivity Detection	314.1[24]					
	Two-Dimensional Ion Chromatography with Suppressed Conductivity Detection	314.2[25]					
	Liquid Chromatography Electrospray Ionization Mass Spectrometry	331.0[26]					
	Ion Chromatography with Suppressed Conductivity and Electrospray Ionization Mass Spectrometry	332.0[27]					
*	*	*	*	*	*	*	

The approved compliance methods for determining perchlorate in drinking water listed in table 1 to paragraph (k) of this section, are incorporated by reference. The Director of the Federal Register approves this incorporation by reference in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies of the material incorporated by reference in this paragraph (k) may be inspected at the U.S. Environmental Protection Agency, EPA Headquarters Library, in the Water Docket, at the EPA Docket Center (EPA/DC), EPA WJC West, Room 3334, 1301 Constitution Ave., NW, Washington, DC 20460. If you wish to obtain this material

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from the EPA Docket Center, call (202) 566-2426. Copies of this material also may be inspected at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call (202) 741-6030, or go to [HYPERLINK "http://www.archives.gov/federal-register/cfr/ibr-locations.html"].

*****

[3]Annual Book of ASTM Standards, ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428, http://www.astm.org.; Annual Book of ASTM Standards 1994, Vols. 11.01 and 11.02; Annual Book of ASTM Standards 1996, Vols. 11.01 and 11.02; Annual Book of ASTM Standards 1999, Vols. 11.01 and 11.02; Annual Book of ASTM Standards 2003, Vols. 11.01 and 11.02.

[4]Standard Methods for the Examination of Water and Wastewater, American Public Health Association, 800 I Street NW., Washington, DC 20001-3710; Standard Methods for the Examination of Water and Wastewater, 18th edition (1992); Standard Methods for the Examination of Water and Wastewater, 19th edition (1995); Standard Methods for the Examination of Water and Wastewater, 20th edition (1998).The following methods from this edition cannot be used: 3111 B, 3111 D, 3113 B, and 3114 B.

*****

[13]Because MDLs reported in EPA Methods 200.7 and 200.9 were determined using a 2x preconcentration step during sample digestion, MDLs determined when samples

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are analyzed by direct analysis (i.e., no sample digestion) will be higher. For direct analysis of cadmium and arsenic by Method 200.7, and arsenic by Method 3120 B, sample preconcentration using pneumatic nebulization may be required to achieve lower detection limits. Preconcentration may also be required for direct analysis of antimony, lead, and thallium by Method 200.9; antimony and lead by Method 3113 B; and lead by Method D3559-90D, unless multiple in-furnace depositions are made.

*****

[22]Standard Methods Online, American Public Health Association, 800 I Street NW., Washington, DC 20001, available at http://www.standardmethods.org. The year in which each method was approved by the Standard Methods Committee is designated by the last two digits in the method number. The methods listed are the only online versions that may be used.

[23] Determination of Perchlorate in Drinking Water Using Ion Chromatography (Revision 1.0, USEPA, 1999a).

[24] Determination of Perchlorate in Drinking Water Using Inline Column Concentration/Matrix Elimination Ion Chromatography with Suppressed Conductivity Detection (Revision 1.0, USEPA, 2005b).

[25] Determination of Perchlorate in Drinking Water Using Two-Dimensional Ion Chromatography with Suppressed Conductivity Detection (USEPA, 2008c).

[26] Determination of Perchlorate in Drinking Water by Liquid Chromatography Electrospray Ionization Mass Spectrometry" (Revision 1.0, USEPA, 2005c).

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[27] Determination of Perchlorate in Drinking Water by Ion Chromatography with Suppressed Conductivity and Electrospray Ionization Mass Spectrometry" (USEPA, Revision 1.0, 2005d).

*****

(2)***

Table 3 to paragraph (k)(2)

Contaminant	Preservative[1]	Container[2]	Time[3]
**	**	**	*
Perchlorate[7]	4 °C	P or G	28 days
**	**	**	*

[1]For cyanide determinations samples must be adjusted with sodium hydroxide to pH 12 at the time off collection. When chilling is indicated the sample must be shipped and stored at 4 °C or less. Acidification of nitrate or metals samples may be with a concentrated acid or a dilute (50% by volume) solution of the applicable concentrated acid. Acidification of samples for metals analysis is encouraged and allowed at the laboratory rather than at the time of sampling provided the shipping time and other instructions in Section 8.3 of EPA Methods 200.7 or 200.8 or 200.9 are followed.

[2]P = plastic, hard or soft; G = glass, hard or soft.

[3]In all cases samples should be analyzed as soon after collection as possible. Follow additional (if any) information on preservation, containers or holding times that is specified in method.

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*****

[7] Sample collection for perchlorate shall be conducted following the requirements specified in the approved methods in 141.23(k)(1) or the alternative methods listed in appendix A of subpart C of this part, or their equivalent as determined by the EPA.

*****

(3)***

(ii)***

Table 4 to paragraph (k)(3)(ii)

Contaminant	Acceptance limit
*******	*******
Perchlorate	± 20% at ≥0.004 mg/L
*******	*******

*****

4. In § 141.51 amend paragraph (b) by adding a designation to the table and by adding in alphabetical order, an entry for "Perchlorate" to read as follows:

Subpart F—Maximum Contaminant Level Goals and Maximum Residual Disinfectant Level Goals

§141.51 Maximum contaminant level goals for inorganic contaminants.

*****

(b)***

Table 1 to paragraph (b)

Contaminant	MCLG (mg/l)
****	***
Perchlorate	0.056
****	***

*****

5. Amend § 141.60 by adding paragraph (b)(5) to read as follows:

Subpart G—National Primary Drinking Water Regulations: Maximum Contaminant Levels and Maximum Residual Disinfectant Levels

§141.60 Effective dates.

*****

(b)***

(5) The effective date for § 141.62(b)(17) is [**DATE OF PUBLICATION OF FINAL RULE IN THE FEDERAL REGISTER**].

6. Amend § 141.62 by:

a. In the table in paragraph (b), adding a designation to the table and an entry for "(17) Perchlorate" at the end of the table;;

b. In the table in paragraph (c), adding a designation to the table, an entry for "Perchlorate" in alphabetical order, and an entry "14 = Biological Treatment" under the undesignated heading entitled "Key to BATs; and

c. Adding paragraph (e).

The revisions and additions read as follows:

§141.62 Maximum contaminant levels for inorganic contaminants.

*****

(b)***

Table 1 to paragraph (b)

Contaminant	MCL (mg/l)
****	***
(17) Perchlorate	0.056

(c)***

TABLE 2 TO PARAGRAPH (C) -- BAT FOR INORGANIC COMPOUNDS LISTED IN SECTION 141.62(B)

Chemical Name	BAT(s)
****	***
Perchlorate	5, 7, 14
****	***

*****

Key to BATs in Table

*****

14 = Biological Treatment

*****

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(e) The Administrator, pursuant to section 1412 of the Act, hereby identified in the following table the affordable technology, treatment technique, or other means available to systems serving 10,000 persons or fewer for achieving compliance with the maximum contaminant level for perchlorate:

Table 3 to paragraph (e) -- **SMALL SYSTEM COMPLIANCE TECHNOLOGIES (SSCTS) FOR PERCHLORATE**

Small system compliance technology	Affordability for listed small system categories
Ion exchange	All size categories.
Reverse osmosis (point of use)	All size categories

7. Amend Appendix A to Subpart O of Part 141 table, under "Inorganic contaminants", by adding an entry for "Perchlorate" in alphabetical order to read as follows:

Subpart O—Consumer Confidence Reports

APPENDIX A TO SUBPART O OF PART 141—REGUATED CONTAMINANTS

Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects language
*	*	*	*	*	*	*
Inorganic contaminants						
*	*	*	*	*	*	*

Perchlorate	0.056	1000	56	56	Perchlorate is commonly used in solid rocket propellants, munitions, fireworks, airbag initiators for vehicles, matches and signal flares. Perchlorate may occur naturally, particularly in arid regions such as the southwestern United States and is found as a natural impurity in nitrate salts used to produce nitrate fertilizers, explosives and other products.	Offspring of pregnant women and infants who drink water containing perchlorate in excess of the MCL could experience delays in their physical or mental development.
*	*	*	*	*	*	*

8. Amend Appendix A to Subpart Q of Part 141 table, under "B. Inorganic contaminants", by adding an entry for "Perchlorate" in alphabetical order to read as follows:

Subpart Q Public Notification of Drinking Water Violations

*****

APPENDIX A TO SUBPART Q OF PART 141—NPDWR VIOLATIONS AND OTHER SITUATIONS REQUIRING PUBLIC NOTICE[1]

Contaminant	MCL/MRDL/TT violations[2]		Monitoring & testing procedure violations	
	Tier of public	Citation	Tier of public	Citation

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	notice required		notice required	
*******				
B. Inorganic Chemicals (IOCs)				
*******				
14. Perchlorate	1	141.62(b)	3	141.23(a), (c), 141.23(f)(1)
*******				

[1] Violations and other situations not listed in this table (e.g., failure to prepare Consumer Confidence Reports), do not require notice, unless otherwise determined by the primacy agency. Primacy agencies may, at their option, also require a more stringent public notice tier (e.g., Tier 1 instead of Tier or Tier 2 instead of Tier 3) for specific violations and situations listed in this Appendix, as authorized under 141.202(a) and 141.203(a).

[2] MCL-Maximum contaminant level, MDRL-Maximum residual disinfectant level, TT-treatment technique

*****

9. Amend Appendix B to Subpart Q of Part 141 table, under "C. Inorganic contaminants", by adding an entry for "Perchlorate" in alphabetical order to read as follows :

APPENDIX B TO SUBPART Q OF PART 141—STANDARD HEALTH EFFECTS LANGUAGE FOR PUBLIC NOTIFICATION

Contaminant	MCLG[1] mg/L	MCL[2] mg/L	Standard health effects language for public notification
*******			
C. Inorganic Chemicals (IOCs)			
*******			

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21. Perchlorate	0.056	0.056	Offspring of pregnant women and infants who drink water containing perchlorate in excess of the MCL could experience delays in their physical or mental development.
*******			

[1] MCLG – Maximum contaminant level goal

[2] MCL – Maximum contaminant level

PART 142—NATIONAL PRIMARY DRINKING WATER REGULATIONS IMPLEMENTATION

10. The authority citation for part 142 continues to read as follows:

Authority: 42 U.S.C. 300f, 300g-1, 300g-2, 300g-3, 300g-4, 300g-5, 300g-6, 300j-4, 300j-9, and 300j-11.

11. In § 142.62 amend the table in paragraph (b) by adding a designation to the table, an entry for "Perchlorate" in alphabetical order; and an entry "13 = Biological Treatment" under the undesignated heading entitled "Key to BATs".

Subpart G—Identification of Best Technology, Treatment Techniques or Other Means Generally Available.

*****

§142.62 Variances and exemptions from the maximum contaminant levels for organic and inorganic chemicals.

*****

(b)***

Table 1 to paragraph (b) -- BAT FOR INORGANIC COMPOUNDS LISTED IN §141.62(b)

Chemical Name	BAT(s)
****	****
Perchlorate	5, 7, 14
****	***

*****

Key to BATs in Table

*****

13 = Biological Treatment

*****

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Message

From: Flaharty, Stephanie [Flaharty.Stephanie@epa.gov]
Sent: 6/18/2019 11:28:45 AM
To: Christ, Lisa [Christ.Lisa@epa.gov]
CC: Smith, Glynda [Smith.Glynda@epa.gov]
Subject: Update on Perchlorate IBR
Attachments: FR 2019-12773_2087259 (1).docx

Lisa,

We received OFR feedback, some edits, and an IBR approval for the proposed rule, as follows:

"Some of the last paragraph added just before section VIII (about page 80) isn't appropriate for this document. (It's boilerplate language developed for EPA programs that IBR state statutes and regulations.) The rest of that paragraph I've moved to the NTTAA/1 CFR part 51 discussion at the end of SUPP INFO because that's where the availability discussion belongs."

Given the comment about moving the added IBR language, I feel comfortable with the edits I made, so I'm going to save time and forward the document back to Chipp in Scheduling.

The added language for availability and in the footnotes won't completely sufficient for the final rule, but it's a good start and it's enough for approval at this proposed rule stage.

Phew...
Steph

6560-50-P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 141, and 142

[EPA-HQ-OW-2018-0780; FRL-9994-68-OW]

RIN 2040-AF28

National Primary Drinking Water Regulations: Proposed Perchlorate Rule

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule, request for public comment.

SUMMARY: The Environmental Protection Agency (EPA) is proposing a drinking water regulation for perchlorate and a health-based Maximum Contaminant Level Goal (MCLG) in accordance with the Safe Drinking Water Act (SDWA). The EPA is proposing to set both the enforceable Maximum Contaminant Level (MCL) for the perchlorate regulation and the perchlorate MCLG at 0.056 mg/L (56 µg/L). The EPA is proposing requirements for water systems to conduct monitoring and reporting for perchlorate and to provide information about perchlorate to their consumers through public notification and consumer confidence reports. This proposal includes requirements for primacy agencies that implement the public water system supervision program under the SDWA. This proposal also includes a list of treatment technologies that would enable water systems to comply with the MCL, including affordable compliance technologies for small systems serving 10,000 persons or less.

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~~In addition to the proposed regulation, the EPA is requesting comment on three alternatives: 1) whether the MCL and MCLG for perchlorate should be set at 0.018 mg/L (18 µg/L), 2) whether the MCL and MCLG for perchlorate should be set at 0.090 mg/L (90 µg/L), or 3) whether instead of issuing a national primary drinking water regulation, the EPA should withdraw the Agency's February 11, 2011, determination to regulate perchlorate in drinking water based on new information that indicates that perchlorate does not occur in public water systems with a frequency and at levels of public health concern and there may not be a meaningful opportunity for health risk reduction through a drinking water regulation. Under this last alternative, the final action would be a withdrawal of the determination to regulate and there would be no MCLG or national primary drinking water regulation for perchlorate.~~

DATES: Comments must be received on or before **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].** Under the Paperwork Reduction Act (PRA), comments on the information collection provisions are best assured of consideration if the Office of Management and Budget (OMB) receives a copy of your comments on or before **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].**

ADDRESSES: Submit your comments, identified by Docket ID No. **EPA-HQ-OW-2018-0780**, at https://www.regulations.gov. Follow the online instructions for submitting comments. Once submitted, comments cannot be edited or removed from Regulations.gov. The EPA may publish any comment received to its public docket. Do not submit electronically any information you

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consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (i.e. on the web, cloud, or other file sharing system). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit http://www2.epa.gov/dockets/commenting-epa-dockets.

FOR FURTHER INFORMATION CONTACT: Samuel Hernandez, Office of Ground Water and Drinking Water, Standards and Risk Management Division (Mail Code 4607M), Environmental Protection Agency, 1200 Pennsylvania Avenue, NW, Washington, DC 20460; telephone number: (202) 564-1735; email address: hernandez.samuel@epa.gov.

SUPPLEMENTARY INFORMATION: In addition to the proposed regulation, the EPA is requesting comment on three alternatives: 1) whether the MCL and MCLG for perchlorate should be set at 0.018 mg/L (18 µg/L), 2) whether the MCL and MCLG for perchlorate should be set at 0.090 mg/L (90 µg/L), or 3) whether instead of issuing a national primary drinking water regulation, the EPA should withdraw the Agency's February 11, 2011, determination to regulate perchlorate in drinking water based on new information that indicates that perchlorate does not occur in public water systems with a frequency and at levels of public health concern and there may not be a meaningful opportunity for health risk reduction through a drinking water regulation. Under

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this last alternative, the final action would be a withdrawal of the determination to regulate and there would be no MCLG or national primary drinking water regulation for perchlorate.

This proposed rule is organized as follows:

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F. *Executive Order 13132: Federalism*

G. *Executive Order 13175: Consultation and Coordination with Indian Tribal Governments*

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H. Executive Order 13045: Protection of Children from Environmental Health and Safety Risks

I. Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution, or Use

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XVII. Consultations with the Science Advisory Board, National Drinking Water Advisory Council, and the Secretary of Health and Human Services

XVIII. References

I. General Information

A. What is the EPA Proposing?

This action contains a proposal and three alternatives for public comment. First, the EPA proposes to establish a Maximum Contaminant Level Goal (MCLG) and National Primary Drinking Water Regulation (NPDWR) for perchlorate in public water supplies. The EPA proposes an MCLG of 56 µg/L, and to regulate perchlorate in drinking water at an enforceable maximum contaminant level (MCL) of 56 µg/L.

The EPA is proposing an NPDWR for perchlorate in accordance with its February 11, 2011, (76 FR 7762) determination to regulate perchlorate under the SDWA. Based on the best available peer reviewed science at that time, the EPA found that perchlorate met the SDWA's

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three criteria for regulating a contaminant: 1) the contaminant may have an adverse effect on the health of persons, 2) the contaminant is known to occur or there is a substantial likelihood that the contaminant will occur in public water systems (PWSs) with a frequency and at levels of public health concern, and 3) in the sole judgment of the Administrator, regulation of such contaminant presents a meaningful opportunity for health risk reduction for persons served by PWSs.

Second, as explained in more detail below, the EPA is soliciting comment on two alternative MCLG/MCL values of 18 µg/L and 90 µg/L respectively. Third, in light of new considerations that have come to the EPA's attention since it issued its positive regulatory determination in 2011, including information on lower levels of occurrence of perchlorate than the EPA had previously believed to exist and new analysis of the concentration that represents a level of health concern, this action also discusses and requests comment on an alternative action under which the EPA would withdraw its 2011 determination to regulate perchlorate. Under this alternative, there would be no MCLG or NPDWR for perchlorate.

B. Does This Action Apply to Me?

Entities that could potentially be affected include the following:

Category	**Examples of potentially affected entities**
Public water systems	Community water systems Non-transient, non-community water systems
State and tribal agencies	Agencies responsible for drinking water regulatory development and enforcement

This table is not intended to be exhaustive, but rather provides a guide for readers regarding entities that could be affected by this action. To determine whether your facility or activities could be affected by this action, you should carefully examine this proposed rule. If you have questions regarding the applicability of this action to a particular entity, consult the person listed in the FOR FURTHER INFORMATION CONTACT section.

II. Background

A. What is Perchlorate?

Perchlorate is a negatively charged inorganic ion that is comprised of one chlorine atom bound to four oxygen atoms (ClO_4-), which is highly stable and mobile in the aqueous environment. Perchlorate comes from both natural and manmade sources. It is formed naturally via atmospheric processes and can be found within mineral deposits in certain geographical areas. It is also produced in the United States, and the most common compounds include ammonium perchlorate and potassium perchlorate used primarily as oxidizers in solid fuels to power rockets, missiles, and fireworks. For the general population, most perchlorate exposure is through the ingestion of contaminated food or drinking water.

B. Statutory Authority

Section 1412(b)(1)(A) of the SDWA requires the EPA to establish NPDWRs for contaminants that may have an adverse effect on the health of persons; that are known to occur or there is a substantial likelihood that the contaminant will occur in public water systems with a frequency and at levels of public health concern; and where in the sole judgment of the

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Administrator, regulation of such contaminant presents a meaningful opportunity for health risk reduction for persons served by public water systems.

C. Statutory Framework and Regulatory History

Section 1412(b)(1)(B)(i) of the SDWA requires the EPA to publish every five years a Contaminant Candidate List (CCL). The CCL is a list of drinking water contaminants that are known or anticipated to occur in public water systems and are not currently subject to the EPA drinking water regulations. The EPA uses the CCL to identify priority contaminants for regulatory decision-making and information collection. Contaminants listed on the CCL may require future regulation under the SDWA. The EPA included perchlorate on the first, second, and third CCLs published in 1998, 2005, and 2009.

Once listed on the CCL, the Agency continues to collect data on CCL contaminants to better understand their potential health effects and to determine the levels at which they occur in drinking water. Section 1412(b)(1)(B)(ii) requires that, every five years, the EPA, after public comment, issue a determination whether or not to regulate at least five contaminants on the CCL. For any contaminant that the EPA determines meets the criteria for regulation, under Section 1412(b)(1)(E), the EPA must issue a proposed national primary drinking water regulation within two years and issue a final regulation 18 months after the proposal (which may be extended by 9 months).

As part of its responsibilities under the SDWA, the EPA implements section 1445(a)(2), "Monitoring Program for Unregulated Contaminants." This section requires that once every five

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years, the EPA issue a list of no more than 30 unregulated contaminants to be monitored by public water system. This monitoring is implemented through the Unregulated Contaminant Monitoring Rule (UCMR), which collects data from community water systems (CWS) and non-transient, non-community water systems (NTNCWS). The UCMR collects data from a census of large water systems (serving more than 10,000 people) and from a statistically representative sample of small water systems. On September 17, 1999, the EPA published its first UCMR (64 FR 50556) which required all large systems and a representative sample of small systems to monitor for perchlorate and 25 other contaminants (USEPA, 1999, 2000b).

The EPA and other federal agencies asked the National Research Council (NRC) to evaluate the health implications of perchlorate ingestion. The NRC concluded that perchlorate exposure inhibits the transport of iodide[1] into the thyroid by a protein molecule knows as the sodium/iodide symporter (NIS), which may lead to decreases in two hormones, thyroxine (T3) and triiodothyronine (T4) and increases in thyroid-stimulating hormone (TSH) [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"a1mn5hjprkt","properties":{"formattedCitation":"(National Research Council (NRC), 2005b)","plainCitation":"(National Research Council (NRC), 2005b)","noteIndex":0},"citationItems":[{"id":350,"uris":["http://zotero.org/groups/945096/item

[1] For the purposes of this FRN, "iodine" will be used to refer to dietary intake before entering the body. Once in the body, "iodide" will be used to refer to the ionic form.

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s/TN6HMC9D"],"uri":["http://zotero.org/groups/945096/items/TN6HMC9D"],"itemData":{"id":350,"type":"book","title":"Health Implications of Perchlorate Ingestion","publisher":"National Academies Press","publisher-place":"Washington, DC","event-place":"Washington, DC","author":[{"literal":"National Research Council (NRC)"}],"issued":{"date-parts":[["2005"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. Additionally, the NRC concluded that the most sensitive population to perchlorate exposure are "the fetuses of pregnant women who might have hypothyroidism or iodide deficiency" (p. 178). The EPA established a reference dose (RfD) consistent with the recommended National Research Council RfD of 0.7 µg/kg/day for perchlorate. The reference dose is an estimate of a daily exposure to humans that is likely to be without an appreciable risk of adverse effects. This RfD was based on a study [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"a3u94lt6me","properties":{"formattedCitation":"(Greer, Goodman, Pleus, & Greer, 2002)","plainCitation":"(Greer, Goodman, Pleus, & Greer, 2002)","noteIndex":0},"citationItems":[{"id":387,"uris":["http://zotero.org/groups/945096/items/6AKUNIX6"],"uri":["http://zotero.org/groups/945096/items/6AKUNIX6"],"itemData":{"id":387,"type":"article-journal","title":"Health effects assessment for environmental perchlorate contamination: the dose response for inhibition of thyroidal radioiodine uptake in humans","container-title":"Environmental Health Perspectives","page":"927","volume":"110","issue":"9","author":[{"family":"Greer","given":"M

onte A."},{"family":"Goodman","given":"Gay"},{"family":"Pleus","given":"Richard C."},{"family":"Greer","given":"Susan E."}],"issued":{"date-parts":[["2002"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}] of perchlorate's inhibition of radioactive iodine uptake in healthy adults and the application of an uncertainty factor of 10 for intraspecies variability [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"0oHz805e","properties":{"formattedCitation":"(USEPA, 2005b)","plainCitation":"(USEPA, 2005b)","noteIndex":0},"citationItems":[{"id":980,"uris":["http://zotero.org/groups/945096/items/LHANJBR6"],"uri":["http://zotero.org/groups/945096/items/LHANJBR6"],"itemData":{"id":980,"type":"article","title":"Integrated Risk Information System (IRIS) Chemical Assessment Summary: Perchlorate (ClO4-) and Perchlorate Salts","publisher":"USEPA National Center for Environmental Assessment","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2005"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}].

In October 2008, the EPA published a preliminary regulatory determination not to regulate perchlorate in drinking water and requested public comment (73 FR 60262). In that preliminary determination, the EPA tentatively concluded that perchlorate did not occur with a frequency and at levels of public health concern and that development of a regulation did not present a meaningful opportunity for health risk reduction for persons served by public water

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systems. The EPA derived and used a Health Reference Level (HRL) of 15 µg/L based on the RfD of 0.7 µg/kg/day in making this conclusion [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"FZ6WMtAv","properties":{"formattedCitation":"(USEPA, 2008a)","plainCitation":"(USEPA, 2008a)","noteIndex":0},"citationItems":[{"id":934,"uris":["http://zotero.org/groups/945096/items/HBX88QM9"],"uri":["http://zotero.org/groups/945096/items/HBX88QM9"],"itemData":{"id":934,"type":"article-journal","title":"Drinking water: Preliminary regulatory determination on perchlorate","container-title":"Federal Register","volume":"73","issue":"198","abstract":"SUMMARY: This action presents EPA's preliminary regulatory determination for perchlorate in accordance with the Safe Drinking Water Act (SDWA). The Agency has determined that a national primary drinking water regulation (NPDWR) for perchlorate would not present \"a meaningful opportunity for health risk reduction for persons served by public water systems." The SDWA requires EPA to make determinations every five years of whether to regulate at least five contaminants on the Contaminant Candidate List (CCL). EPA included perchlorate on the first and second CCLs that were published in the Federal Register on March 2, 1998 and February 24, 2005. Most recently, EPA presented final regulatory determinations regarding 11 contaminants on the second CCL in a notice published in the Federal Register on July 30, 2008. In today's action, EPA presents supporting rationale and requests public comment on its preliminary regulatory determination for perchlorate. EPA will make a final regulatory determination for perchlorate after considering comments and

information provided in the 30-day comment period following this notice. EPA plans to publish a health advisory for perchlorate at the time the Agency publishes its final regulatory determination to provide State and local public health officials with technical information that they may use in addressing local contamination.","ISSN":"ISSN 0097-6326 EISSN 2167-2520","shortTitle":"Federal Register","journalAbbreviation":"Fed. Reg.","language":"English","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2008"]]}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. Based primarily on the UCMR 1 occurrence data, the EPA estimated that less than 1% of drinking water systems (serving approximately 1 million people) had perchlorate levels above the HRL of 15 µg/L. Based on this information the Agency determined that perchlorate did not occur frequently at levels of health concern. The EPA also determined that there was not a meaningful opportunity for a NPDWR to reduce health risks.

In January 2009 the EPA published an interim health advisory for perchlorate of 15 µg/L, consistent with the HRL derivation for perchlorate of 15 µg/L described above. Health Advisories are non-enforceable and non-regulatory and provide technical information to state agencies and other public health officials on health effects, analytical methodologies, and treatment technologies associated with drinking water contamination. Health Advisories provide the public, including the most sensitive populations, with a margin of protection from a lifetime

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of exposure. For perchlorate, the health advisory was developed for subchronic exposure (USEPA 2008d).

In August 2009, the EPA published a supplemental request for comment with a new analysis that derived potential alternative HRLs for 14 life stages, including infants and children. The analysis used the RfD of 0.7 μg/kg/day and life stage-specific bodyweight and exposure information (74 FR 41883; USEPA, 2009a). After careful consideration of public comments on the October 2008 and August 2009 notices, on February 11, 2011, the EPA published its determination to regulate perchlorate (76 FR 7762; USEPA, 2011a). The Agency stated then that when considering the alternative HRL benchmarks described in the 2009 notice, the likelihood of perchlorate to occur at levels of concern had significantly increased in comparison to the levels described on the 2008 preliminary negative determination. The EPA concluded that as many as 16 million people could potentially be exposed to perchlorate at levels of concern, up from 1 million people originally described in the 2008 notice.

In its 2011 determination, the Agency found that perchlorate may have an adverse effect on the health of persons, that it is known to occur in public drinking water systems with a frequency and at levels that present a public health concern, and in the judgment of the Administrator, regulation of perchlorate presented a meaningful opportunity for health risk reduction for persons served by public water systems. As a result of the determination, and as required by Section 1412(b)(1)(E), the EPA initiated the process to develop an MCLG and NPDWR for perchlorate as described in this notice.

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In September 2012, the U.S. Chamber of Commerce (the Chamber) submitted to the EPA a Request for Correction under the Information Quality Act regarding the EPA's regulatory determination. In the request, the Chamber claimed that the UCMR 1 data did not comply with data quality guidelines and were not representative of current conditions. In response to this request, the EPA reassessed the data and removed certain source water samples that could be paired with appropriate follow-up samples located at the entry point to the distribution system. The EPA also updated the UCMR 1 data for systems in California and Massachusetts using state compliance data to reflect current occurrence conditions after state regulatory limits for perchlorate were implemented.

In response to a lawsuit brought to enforce the deadlines in Section 1412(b)(1)(E), the U.S. District Court for the Southern District of New York entered a consent decree, requiring the EPA to propose an NPDWR with a proposed MCLG for perchlorate in drinking water no later than October 31, 2018, and finalize an NPDWR and MCLG for perchlorate in drinking water no later than December 19, 2019. The deadline for the EPA to propose an NPDWR with a proposed MCLG for perchlorate in drinking water was later extended to May 28, 2019. The consent decree is available in the docket for today's proposed rule.

III. Assessment and Modeling of the Health Effects of Perchlorate

Perchlorate inhibits uptake of iodide into the thyroid gland by competitively binding to the NIS (ATSDR, 2008; Greer et al., 2002; NRC, 2005; SAB 2013; Taylor et al., 2013). Iodide is necessary for the synthesis of thyroid hormones and decreased iodide uptake into the thyroid can

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adversely affect thyroid hormone production (SAB for the U.S. EPA, 2013; Blount et al., 2006; Steinmaus et al., 2007, 2013, 2016, McMullen et al., 2017; Knight et al., 2018). These changes in thyroid hormone levels in a pregnant woman may be linked to changes in the neurodevelopment of her offspring (SAB for the U.S. EPA, 2013; Korevaar et al., 2016; Fan and Wu, 2016; Wang et al., 2016; Alexander et al., 2017; Thompson et al., 2018). In addition, alterations in thyroid homeostasis may impact other body systems including the reproductive (Alexander et al., 2017; Hou et al., 2016; Maraka et al., 2016) and cardiovascular systems (Asvold et al., 2012; Sun et al., 2017).

The mode of action of perchlorate toxicity has been proposed as follows: exposure to perchlorate is known to inhibit the uptake of iodide by the thyroid gland through the NIS (NRC, 2005; SAB for the U.S. EPA, 2013). A sufficient inhibition of iodide uptake results in iodide deficiency within the thyroid. Given that T3 and T4 require iodide for production, a decrease in intra-thyroidal iodide can result in decreased production of these hormones. This could in turn result in increased TSH, the hormone that acts on the thyroid gland to stimulate iodide uptake to increase thyroid hormone production [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"eF6zWm7L","properties":{"formattedCitation":"(ATSDR, 2008; Blount, Pirkle, Osterloh, Valentin-Blasini, & Caldwell, 2006; National Research Council (NRC), 2005; Steinmaus, Miller, Cushing, Blount, & Smith, 2013; Steinmaus et al., 2016)","plainCitation":"(ATSDR, 2008; Blount, Pirkle, Osterloh, Valentin-Blasini, & Caldwell, 2006; National Research Council (NRC), 2005; Steinmaus, Miller, Cushing, Blount, & Smith,

2013; Steinmaus et al.,
2016)","noteIndex":0},"citationItems":[{"id":428,"uris":["http://zotero.org/groups/945096/items/
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"type":"bill","title":"Toxicological Profile for
Perchlorates","author":[{"family":"ATSDR","given":""}],"issued":{"date-
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journal","title":"Urinary perchlorate and thyroid tormone levels in adolescent and adult men and
women living in the United States","container-title":"Environmental Health
Perspectives","page":"1865-
1871","volume":"114","issue":"12","source":"CrossRef","DOI":"10.1289/ehp.9466","ISSN":"00
91-6765","language":"en","author":[{"family":"Blount","given":"Benjamin
C."},{"family":"Pirkle","given":"James L."},{"family":"Osterloh","given":"John
D."},{"family":"Valentin-Blasini","given":"Liza"},{"family":"Caldwell","given":"Kathleen
L."}],"issued":{"date-
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i":["http://zotero.org/groups/945096/items/TN6HMC9D"],"itemData":{"id":349,"type":"book","t
itle":"Health Implications of Perchlorate Ingestion","publisher":"National Academies
Press","publisher-place":"Washington, DC","event-place":"Washington,
DC","author":[{"literal":"National Research Council (NRC)"}],"issued":{"date-

parts":[["2005"]]}}},{"id":39,"uris":["http://zotero.org/groups/945096/items/35VPNIKR"],"uri":["http://zotero.org/groups/945096/items/35VPNIKR"],"itemData":{"id":39,"type":"article-journal","title":"Combined effects of perchlorate, thiocyanate, and iodine on thyroid function in the national health and nutrition examination survey 2007-8","container-title":"Environmental research","volume":"123","source":"www.ncbi.nlm.nih.gov","abstract":"Perchlorate, thiocyanate, and low iodine intake can all decrease iodide intake into the thyroid gland. This can reduce thyroid hormone production since iodide is a key component of thyroid hormone. Previous research has suggested that each of these factors ...","URL":"https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3857960/","DOI":"10.1016/j.envres.2013.01.005","note":"PMID: 23473920","language":"en","author":[{"family":"Steinmaus","given":"Craig"},{"family":"Miller","given":"Mark D."},{"family":"Cushing","given":"Lara"},{"family":"Blount","given":"Benjamin C."},{"family":"Smith","given":"Allan H."}],"issued":{"date-parts":[["2013",5]]},"accessed":{"date-parts":[["2017",5,5]]}}},{"id":211,"uris":["http://zotero.org/groups/945096/items/H4FH49VS"],"uri":["http://zotero.org/groups/945096/items/H4FH49VS"],"itemData":{"id":211,"type":"article-journal","title":"Thyroid hormones and moderate exposure toperchlorate during pregnancy in women in southern California","container-title":"Environmental Health Perspectives","page":"861-

867","volume":"124","issue":"6","source":"PubMed","abstract":"BACKGROUND: Findings from national surveys suggest that everyone in the United States is exposed to perchlorate. At high doses, perchlorate, thiocyanate, and nitrate inhibit iodide uptake into the thyroid and decrease thyroid hormone production. Small changes in thyroid hormones during pregnancy, including changes within normal reference ranges, have been linked to cognitive function declines in the offspring.\nOBJECTIVES: We evaluated the potential effects of low environmental exposures to perchlorate on thyroid function.\nMETHODS: Serum thyroid hormones and anti-thyroid antibodies and urinary perchlorate, thiocyanate, nitrate, and iodide concentrations were measured in 1,880 pregnant women from San Diego County, California, during 2000-2003, a period when much of the area's water supply was contaminated from an industrial plant with perchlorate at levels near the 2007 California regulatory standard of 6 μg/L. Linear regression was used to evaluate associations between urinary perchlorate and serum thyroid hormone concentrations in models adjusted for urinary creatinine and thiocyanate, maternal age and education, ethnicity, and gestational age at serum collection.\nRESULTS: The median urinary perchlorate concentration was 6.5 μg/L, about two times higher than in the general U.S.\nPOPULATION: Adjusted associations were identified between increasing log10 perchlorate and decreasing total thyroxine (T4) [regression coefficient (β) = -0.70; 95% CI: -1.06, -0.34], decreasing free thyroxine (fT4) (β = -0.053; 95% CI: -0.092, -0.013), and increasing log10 thyroid-stimulating hormone (β = 0.071; 95% CI: 0.008, 0.133).\nCONCLUSIONS: These results suggest that environmental perchlorate exposures may affect thyroid hormone production

during pregnancy. This could have implications for public health given widespread perchlorate exposure and the importance of thyroid hormone in fetal neurodevelopment.\nCITATION: Steinmaus C, Pearl M, Kharrazi M, Blount BC, Miller MD, Pearce EN, Valentin-Blasini L, DeLorenze G, Hoofnagle AN, Liaw J. 2016. Thyroid hormones and moderate exposure to perchlorate during pregnancy in women in Southern California. Environ Health Perspect 124:861-867; http://dx.doi.org/10.1289/ehp.1409614.","DOI":"10.1289/ehp.1409614","ISSN":"1552-9924","note":"PMID: 26485730\nPMCID: PMC4892913","journalAbbreviation":"Environ. Health Perspect.","language":"eng","author":[{"family":"Steinmaus","given":"Craig"},{"family":"Pearl","given":"Michelle"},{"family":"Kharrazi","given":"Martin"},{"family":"Blount","given":"Benjamin C."},{"family":"Miller","given":"Mark D."},{"family":"Pearce","given":"Elizabeth N."},{"family":"Valentin-Blasini","given":"Liza"},{"family":"DeLorenze","given":"Gerald"},{"family":"Hoofnagle","given":"Andrew N."},{"family":"Liaw","given":"Jane"}],"issued":{"date-parts":[["2016",6]]}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. For populations with developing brains (e.g., fetuses, neonates, and children), disruptions in homeostatic thyroid hormone function can result in adverse neurodevelopmental effects (Alexander et al., 2017; Glinoer & Delange, 2000; Glinoer & Rovet, 2009; SAB for the U.S. EPA, 2013). Specifically, decreased maternal thyroid

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hormone levels during pregnancy, including in the hypothyroxinemic range[2], have been linked to decrements in neurocognitive function in offspring (Alexander et al., 2017; Thompson et al., 2018; Wang et al., 2016). There is also limited evidence to suggest an association with other adverse neurodevelopmental outcomes including ADHD, expressive language delay, reduced school performance, autism, and delayed cognitive development (Alexander et al., 2017; Ghassabian, Bongers-Schokking, Henrichs, Jaddoe, & Visser, 2011; Gyllenberg et al., 2016; Henrichs et al., 2010; Korevaar et al., 2016, Noten et al., 2015; Pop et al., 2003, 1999; SAB for the U.S. EPA, 2013; van Mil et al., 2012).

The difficulty in estimating the likelihood and magnitude of the potential implications of perchlorate's mode of action on expressed neurodevelopmental health effects in humans exposed to perchlorate during development is the lack of robust epidemiological studies, especially in sensitive populations. Therefore, based on the known mode of action of perchlorate the Agency estimated potential health risks using a novel approach suggested by the EPA's Science Advisory Board (SAB for the U.S. EPA, 2013). The EPA's approach to estimating perchlorate risks has evolved over time with improved research and modeling capabilities. The following sections describe information sources the EPA used in its assessment as well as the regulatory process followed by the Agency in its decision making.

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[2] Maternal hypothyroxinemia is defined as TSH in the reference range and fT4 in the lower percentiles. The SAB notes that hypothyroxinemia has been defined by a "variety of cutoffs…ranging from fT4 below the 10th or 5th percentiles to below the 2.5^{th} percentile" (SAB, 2013, p.10) in the population.

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A. 2008 Preliminary Regulatory Determinations

In 2005, at the request of the EPA and other federal agencies, the NRC evaluated the health implications of perchlorate ingestion. The NRC concluded that perchlorate exposure could inhibit the transport of iodide into the thyroid, leading to thyroid hormone deficiency (NRC, 2005). A significant inhibition of iodide uptake results in intra-thyroid iodide deficiency, decreased synthesis of T3 and T4, and increased TSH. The NRC also concluded that a prolonged decrease of thyroid hormones is potentially more likely to have adverse effects in sensitive populations (e.g., the fetuses of pregnant women who might have hypothyroidism or iodide deficiency). Based on these findings, the NRC recommended a reference dose of 0.7 µg/kg/day.

Based on NRC's analysis, the EPA established a perchlorate reference dose (RfD) of 0.7 µg/kg/day in 2005 (USEPA, 2005). This value was based on a no observed effect level (NOEL) of 7 µg/kg/day identified from a study (Greer, Goodman, Pleus, & Greer, 2002) of perchlorate's inhibition of radioactive iodine uptake in healthy adults and the application of an uncertainty factor of 10 for intraspecies variability.

As discussed above, in 2008, the EPA derived an HRL of 15 µg/L using the RfD of 0.7 µg/kg/day, a default bodyweight of 70 kg, a default drinking water consumption rate of 2 L/day, and a perchlorate-specific relative source contribution (RSC) of 62 percent that was derived for a pregnant woman (USEPA, 2008a) (73 FR 60262). The RSC is the percentage of the RfD remaining for drinking water after other sources of exposure to perchlorate (i.e., food) have been considered. The EPA's HRL was calculated to offer a margin of protection against adverse

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health effects to the subpopulation identified by the NAS as likely the most sensitive to the effects of perchlorate exposure, fetuses.

B. 2009 Supplemental Request for Comment and 2011 Final Regulatory Determination

The EPA received over 33,000 comments in response to its 2008 preliminary determination to not regulate perchlorate (USEPA, 2011a). After reviewing the comments, the EPA developed alternative HRLs for other sensitive populations in addition to fetuses of pregnant women. The EPA developed alternative HRLs for 14 life stages including infants and children. The EPA also evaluated the occurrence of perchlorate at levels above these alternative HRLs using the UCMR 1 occurrence data.

The analysis used the RfD of 0.7 µg/kg/day and life stage-specific bodyweight and exposure information (i.e., drinking water intake, RSC) for each of the 14 life stages evaluated. The resulting HRLs ranged from 1 µg/L to 47 µg/L. In August 2009, the EPA published a supplemental request for comment with the new analysis and HRLs (74 FR 41883; USEPA, 2009a). After careful consideration of public comments, on February 11, 2011, the EPA published its final determination to regulate perchlorate (76 FR 7762; USEPA, 2011a).

C. Science Advisory Board Recommendations

As required by Section 1412(d) of the SDWA, as part of the NPDWR development process, the EPA requested comments from the Science Advisory Board (SAB) in 2012, seeking guidance on how best to consider and interpret the life stage information, the epidemiologic and biomonitoring data since the NRC report, physiologically-based pharmacokinetic (PBPK)

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analyses, and the totality of perchlorate health information to derive an MCLG for perchlorate. The SAB recommended the following:

- derive a perchlorate MCLG that addresses sensitive life stages through physiologically based pharmacokinetic/pharmacodynamic (PBPK/PD) modeling based upon perchlorate's mode of action rather than the default MCLG approach using the RfD and specific chemical exposure parameters;
- expand the modeling approach to account for thyroid hormone perturbations and potential adverse neurodevelopmental outcomes from perchlorate exposure;
- utilize a mode-of-action framework for developing the MCLG that links the steps in the proposed mechanism leading from perchlorate exposure through iodide uptake inhibition – to thyroid hormone changes – and finally to neurodevelopmental impacts; and
- "Extend the [BBDR] model expeditiously to…provide a key tool for linking early events with subsequent events as reported in the scientific and clinical literature on iodide deficiency, changes in thyroid hormone levels, and their relationship to neurodevelopmental outcomes during sensitive early life stages" (SAB for the U.S. EPA, 2013, p. 19).

This SAB-proposed framework would incorporate the previous endpoint of iodide uptake inhibition that was the basis for the RfD as part of a broader and more comprehensive framework that links perchlorate exposure to adverse neurodevelopmental outcomes. It also focuses on the smaller changes in thyroid hormones (specifically free T4 (fT4)) that are associated with

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maternal hypothyroxinemia and subsequent adverse neurodevelopmental health effects rather than the significant changes in thyroid hormones (both fT4 and TSH) that are associated with hypothyroidism.

D. Perchlorate Model Development and Peer Reviews

To address the SAB recommendations, the EPA revised an existing PBPK/PD model that describes the dynamics of perchlorate, iodide, and thyroid hormones in a woman during the third trimester of pregnancy (Lumen, Mattie, & Fisher, 2013; USEPA, 2009b). The EPA also created its own Biologically Based Dose Response (BBDR) models that included the additional sensitive life stages identified by the SAB, i.e., breast- and bottle-fed neonates and infants (SAB for the U.S. EPA, 2013, p. 19).

To determine whether the Agency had implemented the SAB recommendations for modeling thyroid hormone changes, the EPA convened an independent peer review panel to evaluate the BBDR models in January 2017 (External Peer Reviewers for USEPA, 2017). In addition to estimating effects on breast fed infants, several reviewers recommended that the EPA shift the primary focus of its analysis to modeling the exposure implications to the fetus during early pregnancy. This was based on the knowledge that fetuses lack a functioning thyroid gland until approximately 16 gestational weeks and the substantial epidemiological evidence linking early pregnancy low fT4 levels with adverse neurodevelopmental outcomes [ADDIN EN.CITE <EndNote><Cite><Author>Morreale de Escobar</Author><Year>2004</Year><RecNum>49</RecNum><DisplayText>(G Morreale de

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Escobar, Obregón, & Escobar del Rey, 2004)</DisplayText><record><rec-number>49</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1437077734">49</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Morreale de Escobar, G</author><author>Obregón, M J</author><author>Escobar del Rey, F</author></authors></contributors><titles><title>Role of thyroid hormone during early brain development</title><secondary-title>European Journal of Endocrinology</secondary-title></titles><periodical><full-title>European Journal of Endocrinology</full-title></periodical><pages>U25-U37</pages><volume>151</volume><number>Suppl 3</number><dates><year>2004</year><pub-dates><date>November 1, 2004</date></pub-dates></dates><urls><related-urls><url>http://www.eje-online.org/content/151/Suppl_3/U25.abstract</url></related-urls></urls><electronic-resource-num>10.1530/eje.0.151U025</electronic-resource-num></record></Cite></EndNote>]. Specifically, the SAB recommended that the EPA use specific sensitive populations to develop the MCLG for perchlorate: "the fetuses of hypothyroxinemic pregnant women, and infants exposed to perchlorate through either water-based formula preparations or the breast milk of lactating women" (SAB for the U.S. EPA, 2013, p. 19).

The EPA considered all recommendations from the 2017 peer review. The previously developed BBDR model describing perchlorate's effects in the third trimester (Lumen, Mattie, &

Fisher, 2013; USEPA, 2009b) was calibrated only for that phase of pregnancy, not for the first trimester, and lacked a description of TSH signaling (feedback) that becomes significant as individuals become hypothyroxinemic or hypothyroid. In particular, this signaling was considered necessary to accurately predict responses of women with very low iodine intake, which was also part of the 2017 peer review recommendations. Therefore, the Lumen et al., (2009b) model needed to be revised to address these recommendations and the EPA implemented those changes needed to increase the scientific rigor of the model and modeling results. These modifications include:

- Eextending the model to early pregnancy;
- iIncorporating biological feedback control of hormone production via TSH signaling, such that the model can describe lower levels of iodide nutrition;
- Ccalibrating the model and evaluating its behavior for upper and lower percentiles of the population, as well as the population median; and
- Cconducting an uncertainty analysis for key parameters.

The EPA convened a second independent peer review panel in January 2018 to evaluate these updates to the BBDR model. The EPA also presented several approaches in the draft *Proposed Approaches to Inform the Derivation of a Maximum Contaminant Level Goal for Perchlorate in Drinking Water* (MCLG Approaches Report) to link the thyroid hormone changes in a pregnant mother predicted by the BBDR model to neurodevelopmental effects using evidence from the epidemiological literature (External Peer Review for U.S. EPA, 2018). The

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2018 peer review identified a variety of strengths and limitations of the modeling (to be discussed in more detail later in this notice). The peer review panel was largely supportive of the efforts described in the MCLG Approaches Report, as evidenced by the following from the peer review final report:

> *Overall, the panel agreed that the EPA and its collaborators have prepared a highly innovative state-of-the-science set of quantitative tools to evaluate neurodevelopmental effects that could arise from drinking water exposure to perchlorate. While there is always room for improvement of the models, with limited additional work to address the committee's comments [in the peer-reviewed report], the current models are fit-for-purpose to determine an MCLG (External Peer Reviewers for U.S. EPA, 2018, p. 2).*

The EPA also presented an alternative, population-based approach evaluating the shift in the proportion of the population that would fall below a hypothyroxinemic cut point, given exposure to perchlorate (Section 7 of the MCLG Approaches Report). This approach does not directly connect the BBDR output to a neurodevelopmental endpoint. However, for pregnant women in early pregnancy, this shift could be related to avoiding an increase in the population of offspring's risk of adverse neurodevelopmental impacts. The 2018 peer review identified strengths associated with this approach, including

> *1) the central premise, that hypothyroxinemia is associated with adverse neurodevelopmental effects is supported by a large number of studies, including*

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categorical studies; 2) this approach encompasses a variety of adverse neurodevelopmental outcomes, as indicated by these studies, rather than focusing on one or a limited number of adverse outcomes, as with the two-stage approach; and 3) this approach avoids all of the uncertainties associated with determining a quantitative relationship between a specific maternal fT4 level and the magnitude an adverse neurodevelopmental effect. (External Peer Reviewers for U.S. EPA, 2018, p. 7)

The peer reviewers expressed concern about hypothyroxinemia being a precursor effect, rather than an adverse health outcome, which they argued may create difficulties in explaining the basis for an MCLG based on this approach to some audiences. However, the EPA has used precursor effects as the basis for setting regulatory and non-regulatory limits previously. The peer-review panel also expressed concern that a standard definition of hypothyroxinemia has not yet been established, as clinicians use varying fT4 thresholds to define their own working definition of the condition. This also could lead to difficulties communicating the population at risk for developing this precursor effect as a result of perchlorate exposure.

Ultimately, the EPA chose to develop the MCLG using dose-response functions from the epidemiological literature to estimate neurodevelopmental impacts in the offspring of pregnant women exposed to perchlorate. The EPA selected this proposed approach because it is consistent with the SDWA's definition of an MCLG to avoid adverse health effects and because it is most consistent with the SAB recommendations. The EPA is requesting public comment in Section

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XIV on the adequacies and uncertainties of the methodology to derive the MCLG including the decision not to pursue this population-based approach for setting the MCLG.

Based on the comments of the peer reviewers, the EPA's final analysis informing the derivation of the MCLG and benefits of avoided perchlorate exposure is based upon a 2-step approach to modeling the neurodevelopmental effects on offspring of pregnant women exposed to perchlorate in drinking water (see Figure 1). In summary, because of the known mode of action, the lack of epidemiological studies particularly in the sensitive populations and the direction of the SAB to use a "data-driven approach [which] represents a more rigorous way to address differences in biology and exposure between adults and sensitive life stages" (p. 2, SAB 2013 for U.S. EPA), the EPA uses a combination of the BBDR model that simulates perchlorate potential impacts on maternal thyroid hormones during pregnancy and the epidemiology literature that relates incremental changes in maternal thyroid hormones to neurodevelopmental outcomes in children. The following sections describe the approach in greater detail, highlighting each step in which decisions and assumptions were made.

Figure 1. Two-Step Modeling Approach to Link Maternal Perchlorate Exposure to Measurable Adverse Neurodevelopmental Impacts in Offspring

[EMBED Visio.Drawing.15]

Note: Process figure does not imply the strength of scientific evidence.

E. Sensitive Population for Deriving MCLG

SDWA 1412(b)(4)(A) requires MCLGs to be set at a concentration in water "at which no known or anticipated adverse effects on the health of persons occur and which allows an

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adequate margin of safety." SDWA 1412(b)(3)(C)(V) further requires that the EPA "consider the effects of the contaminant on the general population and on groups within the general population such as infants, children, pregnant women, the elderly, individuals with a history of serious illness, or other subpopulations that are identified as likely to be at greater risk of adverse health effects due to exposure to contaminants in drinking water than the general population." The EPA has interpreted these requirements to establish MCLGs that avoid adverse effects within the portions of the population that are at greater risk of adverse effects from exposure to the contaminant. The EPA is proposing an MCLG that is developed to protect the fetuses of a first trimester pregnant mother with low-iodine intake levels (i.e., 75 µg/kg/day), low fT4 levels (i.e., 10th percentile of an fT4 distribution for individuals with 75 µg/day iodine intake), and weak TSH feedback strength (i.e., TSH feedback is reduced to be approximately 60 percent less effective than for the median individual). The choice of this population is consistent with discussion by the NRC (2005), and the SAB (2013). The EPA believes that by protecting this population, the other sensitive populations (i.e., breast- and bottle-fed infants) will also be protected. This conclusion is based on the EPA's analysis of predictions of the impact of perchlorate on fT4 levels from the original EPA BBDR model (which was peer reviewed in January of 2017) and an analysis of the literature on the connection between altered thyroid hormones in these life stages, and neurodevelopmental outcomes.

The EPA's original BBDR model demonstrated that perchlorate had minimal impact on the thyroid hormone levels for 30-, 60-, and 90-day formula-fed infants, even at doses as high as

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20 µg/kg/day. Specifically, the model demonstrated that "the range of iodine levels in formula is sufficient to almost entirely offset the effects of perchlorate exposure at 30, 60 and 90 days" [ADDIN EN.CITE <EndNote><Cite><Author>U.S. EPA</Author><Year>2016</Year><RecNum>246</RecNum><Suffix>`; p. 73</Suffix><DisplayText>(U.S. EPA, 2016; p. 73)</DisplayText><record><rec-number>246</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1468339271">246</key></foreign-keys><ref-type name="Generic">13</ref-type><contributors><authors><author>U.S. EPA,</author></authors><secondary-authors><author>Paul Schlosser, Teresa Leavens, and Santhini Ramasamy</author></secondary-authors></contributors><titles><title>Biologically based dose response models for the effect of perchlorate on thyroid hormones in the infant, breast feeding mother, pregnant mother, and fetus: model development, revision, and preliminary dose-response analyses </title><secondary-title>Peer Review Draft</secondary-title></titles><dates><year>2016</year></dates><urls></urls></record></Cite></EndNote>]. As a result of these findings the EPA concluded that any MCLG based on the fetus of the first trimester hypothyroxinemic pregnant mother would also protect the formula-fed infant.

To determine if the same would be true for the breast-fed infant, the EPA compared the predicted percent change in fT4 experienced at given doses of perchlorate for both the breast-fed

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infant and the first trimester pregnant mother at varying doses of iodine intake[3] (50 to 100 µg/day). Assuming 2 or 4 µg/kg/day of perchlorate, the first trimester hypothyroxinemic pregnant mother has a greater percent change in fT4 compared to the 30 and 60 day breast-fed infant at all maternal iodine intake levels evaluated, except for the 30 day breast-fed infant of a mother consuming only 50 µg/day iodine. However, given that the original BBDR model did not have a TSH feedback loop, T4, fT4, T3 and fT3 predictions for lactating mothers with less than 75 µg/day iodine intake were considered highly uncertain because the thyroid hormone levels had fallen into the hypothyroid range.

The Agency found that there are reports in the scientific literature suggesting that minor perturbations in thyroid hormone levels in the first trimester mother may adversely impact her offspring's neurodevelopment. Specifically, some studies show that children exposed gestationally to maternal hypothyroxinemia (without hypothyroidism) have a higher risk of reduced levels of global and specific cognitive abilities, as well as increased rates of behavior problems including greater dysregulation in early infancy and attentional disorders in childhood [ADDIN EN.CITE ADDIN EN.CITE.DATA]. Notably these effects are correlated with both degree [ADDIN EN.CITE ADDIN EN.CITE.DATA] and duration [ADDIN EN.CITE <EndNote><Cite><Author>Pop</Author><Year>2003</Year><RecNum>25</RecNum><DisplayText>(Pop et al., 2003)</DisplayText><record><rec-number>25</rec-number><foreign-

[3]Given that the current version of the BBDR model contains a TSH feedback loop and the infant models previously developed did not contain this feedback loop, this comparison is done with the feedback loop turned off.

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keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1432047641">25</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Pop, V J</author><author>Brouwers, E P</author><author>Vader, H L</author><author>Vulsma, T</author><author>van Baar, A L</author><author>de Vijlder, J J</author></authors></contributors><titles><title>Maternal hypothyroxinemia during early pregnancy and subsequent child development: a 3-year follow-up study</title><secondary-title>Clinical Endocrinology</secondary-title></titles><periodical><full-title>Clinical Endocrinology</full-title></periodical><pages>282-288</pages><volume>59</volume><section>282</section><dates><year>2003</year></dates><urls></urls></record></Cite></EndNote>] of maternal hypothyroxinemia [ADDIN EN.CITE <EndNote><Cite><Author>SAB</Author><Year>2013</Year><RecNum>50</RecNum><Suffix>`; p. 10</Suffix><DisplayText>(SAB, 2013; p. 10)</DisplayText><record><rec-number>50</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1437138201">50</key></foreign-keys><ref-type name="Government Document">46</ref-type><contributors><authors><author>SAB,</author></authors><secondary-authors><author>U.S. Environmental Protection Agency,</author></secondary-authors></contributors><titles><title>Advice on approaches to derive a maximum contaminant level goal for perchlorate. EPA-SAB-13-

004</title></titles><dates><year>2013</year></dates><pub-location>Washington, DC</pub-location><urls></urls></record></Cite></EndNote>].

The EPA did not find analogous evidence linking minor perturbations in thyroid hormones during infancy to adverse neurodevelopmental outcomes in infants. This finding is consistent with conclusions by the California Environmental Protection Agency (CalEPA) in their assessment of a public health goal for perchlorate [ADDIN EN.CITE <EndNote><Cite ExcludeAuth="1"><Author>California Environmental Protection Agency (CalEPA)</Author><Year>2015</Year><RecNum>62</RecNum><Prefix>CalEPA`, </Prefix><Suffix>`; p. 90</Suffix><DisplayText>(CalEPA, 2015; p. 90)</DisplayText><record><rec-number>62</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1437413166">62</key></foreign-keys><ref-type name="Government Document">46</ref-type><contributors><authors><author>California Environmental Protection Agency (CalEPA),</author></authors><secondary-authors><author>Office of Environmental Health Hazard Assessment</author></secondary-authors></contributors><titles><title>Public health goal for perchlorate in drinking water</title></titles><dates><year>2015</year></dates><urls></urls></record></Cite></EndNote>].

Specifically, two studies evaluated both the impact of maternal hypothyroxinemia and infant fT4 levels on subsequent neurodevelopmental outcomes. [ADDIN EN.CITE

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<EndNote><Cite AuthorYear="1"><Author>Costeira</Author><Year>2011</Year><RecNum>7</RecNum><DisplayText>Costeira et al. (2011)</DisplayText><record><rec-number>7</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1432047629">7</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Costeira, M. J.</author><author>Oliveira, P</author><author>Santos, N C</author><author>Ares, S</author><author>Sáenz-Rico, B</author><author>Morreale de Escobar, G</author><author>Palha, J A</author></authors></contributors><titles><title>Psychomotor development of children from an iodine-deficient region</title><secondary-title>The Journal of Pediatrics</secondary-title></titles><periodical><full-title>The Journal of Pediatrics</full-title></periodical><pages>447-453</pages><volume>159</volume><number>3</number><dates><year>2011</year></dates><urls></urls><electronic-resource-num>10.1016/j.jpeds.2011.02.034</electronic-resource-num></record></Cite></EndNote>] found that children born to mothers with low fT4 in the first trimester had increased odds of mild-to-severe delays in psychomotor development compared to children born to mothers with normal fT4 levels. However, the authors found that neonatal thyroid status (measured on day 3 after birth) did not influence development. Additionally, [ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Henrichs</Author><Year>2010</Year><RecNum>928</RecNum>

<DisplayText>Henrichs et al. (2010)</DisplayText><record><rec-number>928</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1495206433">928</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Henrichs, J.</author><author>Bongers-Schokking, J. J.</author><author>Schenk, J. J.</author><author>Ghassabian, A.</author><author>Schmidt, H. G.</author><author>Visser, T. J.</author><author>Hooijkaas, H.</author><author>de Muinck Keizer-Schrama, S. M.</author><author>Hofman, A.</author><author>Jaddoe, V. V.</author><author>Visser, W.</author><author>Steegers, E. A.</author><author>Verhulst, F. C.</author><author>de Rijke, Y. B.</author><author>Tiemeier, H.</author></authors></contributors><titles><title>Maternal thyroid function during early pregnancy and cognitive functioning in early childhood: The generation R study</title><secondary-title>Journal of Clinical Endocrinology and Metabolism</secondary-title><alt-title>J Clin Endocrinol Metab</alt-title><short-title>Journal of Clinical Endocrinology and Metabolism</short-title></titles><periodical><full-title>Journal of Clinical Endocrinology and Metabolism</full-title></periodical><alt-periodical><full-title>J Clin Endocrinol Metab</full-title></alt-periodical><pages>4227-4234</pages><volume>95</volume><number>9</number><dates><year>2010</year></dates><isbn>ISSN 0021-972X
EISSN 1945-7197</isbn><label>758743</label><urls><related-urls><url>http://dx.doi.org/10.1210/jc.2010-0415</url></related-urls></urls><electronic-

resource-num>10.1210/jc.2010-0415</electronic-resource-num><language>English</language></record></Cite></EndNote>] found in their evaluation that although maternal hypothyroxinemia was associated with language delay and nonverbal cognitive delay, the neonatal thyroid status (thyroid hormones measured in cord blood) did not explain the relationship between maternal hypothyroxinemia, early pregnancy, and children's cognitive impairment.

The SAB pointed to two lines of evidence supporting their suggestion of the infant as a potentially sensitive population to perchlorate: preterm infants that experience transient hypothyroxinemia of prematurity (THOP) and infants that experience congenital hypothyroidism (SAB for the U.S. EPA, 2013). Thus, sufficient thyroid hormone levels in infancy are necessary for the infant brain to develop properly. However, the best evidence linking perturbations in thyroid hormone levels to disrupted neurodevelopment for infants are in individuals with significant thyroid deficiencies manifesting as clinical conditions (e.g., THOP and congenital hypothyroidism). It is unclear and unknown if minor perturbations in thyroid hormones in infants, such as those that could be caused by environmental levels of perchlorate, would result in adverse neurodevelopmental outcomes similar to those seen in the literature for the offspring of first trimester pregnant mothers with hypothyroxinemia. Given the lack of evidence demonstrating minor perturbations in infant fT4 levels as being associated with neurodevelopmental outcomes, the EPA has concluded that it is appropriate to derive the perchlorate MCLG to protect the first trimester fetus of a pregnant mother with low-iodine

intake. The EPA concludes that an MCLG calculated to offer a margin of protection against adverse health effects to these fetuses targets the most sensitive lifestage and will be protective of other potentially sensitive life stages as well.

F. BBDR Model Specification for the Sensitive Population

The BBDR model used to develop the proposed MCLG has two main components:

- ~~a~~ A pharmacokinetic model for perchlorate and iodide, which describes chemical absorption, distribution, metabolism, and excretion of perchlorate and iodide; and
- ~~a~~ A pharmacodynamic model, which describes the joint effect of varying perchlorate and iodide blood concentrations on thyroidal uptake of iodide and subsequent production of thyroid hormones, including fT4.

The pharmacokinetic model component contains a physiological description of a human mother and fetus during pregnancy (e.g., organ volumes, blood flows) and chemical-specific information (e.g., partition coefficients, volume of distribution, rate constants for transport, metabolism, and elimination) that enable a prediction of perchlorate and iodide internal concentration at the critical target (i.e., thyroidal sodium-iodide symporter of the mother) in association with a particular exposure scenario (route of exposure, age, dose level). This component of the model is similar to many other PBPK models. Because perchlorate does not undergo metabolism in vivo (Clewell et al., 2007), potential uncertainty from this factor of the model is avoided since it does not need to be described.

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The pharmacodynamic component of the model uses this internal concentration to simulate how the chemical will act within a known mechanism of action to perturb host systems and lead to a toxic effect.

Thus, the BBDR model estimates serum thyroid hormone levels in the mother at specific gestational weeks, given specific levels of iodine intake, the TSH feedback loop strength, and perchlorate doses. As noted above, to be health protective the EPA chose to model a sensitive individual (an adult woman with low iodine through the first trimester of pregnancy) to derive an MCLG, thereby protecting both this target sensitive population with an adequate margin of safety and those who are less sensitive with an even larger margin of safety.

The BBDR model simulates perchlorate's impact on thyroid hormones at each gestational week from conception to week 16. To derive the MCLG, the EPA selected outputs for gestational week 13 to correspond with the thyroid hormone data reported in Korevaar et al., (2016), which is the basis for the Agency's quantitative relationship between maternal thyroid hormone levels and neurodevelopmental impacts.

Individuals with low iodine intake have increased sensitivity to perchlorate's impact on thyroid hormone levels because the functional iodide reserve of the hypothalamic-pituitary-thyroid (HPT) system is limited [ADDIN EN.CITE <EndNote><Cite><Author>Leung</Author><Year>2010</Year><RecNum>1160</RecNum><DisplayText>(Leung, Pearce, & Braverman, 2010)</DisplayText><record><rec-number>1160</rec-number><foreign-keys><key app="EN" db-

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M.</author><author>Pearce,</author><author>Braverman</author></authors></contributors><

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Research: Clinical Endocrinology and Metabolism</secondary-title><alt-title>Best Pract Res

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141</pages><volume>24</volume><number>1</number><dates><year>2010</year></dates>

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resource-num>10.1016/j.beem.2009.08.009</electronic-resource-

num><language>English</language></record></Cite></EndNote>]. The EPA selected an

iodine intake level of 75 µg/day to simulate an individual with low-iodine intake. This value

represents an intake between the 15th and 20th percentile of the women of child bearing age

population distribution of estimated iodine intake from the National Health and Nutrition

Examination Survey (NHANES). The EPA considered using a lower iodine intake level of 50

µg/day, which represents approximately the 5th percentile of the NHANES distribution. At

50 µg/day of iodine intake, however, the BBDR model predicts TSH levels that would be elevated to within the clinically hypothyroid range before exposure to any perchlorate[4] (TSH

[4] For the purposes of this analysis, the EPA evaluated the American Thyroid Association's (ATA's) 2017 recommendations for defining hypothyroidism [ADDIN EN.CITE <EndNote><Cite><Author>Alexander</Author><Year>2017</Year><RecNum>1895</RecNum><DisplayText>(Alexander et al., 2017)</DisplayText><record><rec-number>1895</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1497970921">1895</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Alexander, E. K.</author><author>Pearce, E. N.</author><author>Brent, G. A.</author><author>Brown, R. S.</author><author>Chen, H.</author><author>Dosiou, C., </author><author>Sullivan, S.</author></authors></contributors><titles><title>2017 Guidelines of the American Thyroid Association for the diagnosis and management of thyroid disease during pregnancy and the postpartum</title><secondary-title>Thyroid</secondary-title></titles><periodical><full-title>Thyroid</full-title></periodical><pages>315-389</pages><volume>27</volume><number>3</number><dates><year>2017</year></dates><urls></urls></record></Cite></EndNote>]. Specifically the ATA recommends "in the pregnancy setting, maternal hypothyroidism is defined as a TSH concentration elevated beyond the upper limit of the pregnancy-specific reference range" [ADDIN EN.CITE <EndNote><Cite><Author>Alexander</Author><Year>2017</Year><RecNum>1895</RecNum><Pages>332</Pages><DisplayText>(Alexander et al., 2017, p. 332)</DisplayText><record><rec-number>1895</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1497970921">1895</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Alexander, E. K.</author><author>Pearce, E. N.</author><author>Brent, G. A.</author><author>Brown, R. S.</author><author>Chen, H.</author><author>Dosiou, C., </author><author>Sullivan, S.</author></authors></contributors><titles><title>2017 Guidelines of the American Thyroid Association for the diagnosis and management of thyroid disease during pregnancy and the postpartum</title><secondary-title>Thyroid</secondary-title></titles><periodical><full-title>Thyroid</full-title></periodical><pages>315-389</pages><volume>27</volume><number>3</number><dates><year>2017</year></dates><urls></urls></record></Cite></EndNote>]. ATA goes on to state, in the absence of population- and trimester-specific reference ranges defined by a provider's institute or laboratory, that the TSH reference ranges should be obtained from similar patient populations. From their recommended studies with trimester-specific data on a U.S. population, Lambert-Meserlian et al. [ADDIN EN.CITE <EndNote><Cite ExcludeAuth="1"><Author>Lambert-Messerlian</Author><Year>2008</Year><RecNum>100</RecNum><DisplayText>(2008)</DisplayText><record><rec-number>100</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1443808320">100</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Lambert-Messerlian, Geralyn</author><author>McClain, Monica</author><author>Haddow, James E</author><author>Palomaki, Glenn E</author><author>Canick, Jacob A</author><author>Cleary-Goldman, Jane</author><author>Malone, Fergal D</author><author>Porter, T Flint</author><author>Nyberg, David A</author><author>Bernstein, Peter</author></authors></contributors><titles><title>First-and second-trimester thyroid hormone reference data in pregnant women: a FaSTER (First-and Second-Trimester Evaluation of Risk for aneuploidy) Research Consortium

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ranges between 4.51 and 5.41 milli-international units per liter (mIU/L) at zero dose of perchlorate when evaluating gestational weeks 12 or 13). In contrast, at 75 µg/day iodine, the BBDR modeled concentrations of serum fT4 and TSH are significantly reduced from the population median but are still within the euthyroid range. Thus, the intake of 75 µg/day is a better approximation of the sensitive population – the offspring of pregnant women who have low fT4.

TSH increases in response to decreases in T4 have been captured in numerous studies that document the relationship between these hormones[ADDIN EN.CITE ADDIN EN.CITE.DATA]. The EPA designed the BBDR model to depict this feedback regulation by adjusting a set of three parameters: the number of sodium-iodide symporter sites, the T4 synthesis rate, and the T3 synthesis rate. The BBDR model allows for variability in the strength of the TSH feedback by varying these parameters with a variable called "pTSH." For the MCLG analysis, the EPA used a pTSH value of 0.398, which is the ratio of a median value for TSH from NHANES (non-pregnant women) to the 97.5 percentile value from NHANES (non-pregnant women). This value represents an assumption that sensitive individuals with high TSH

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study</title><secondary-title>American journal of obstetrics and gynecology</secondary-title></titles><periodical><full-title>American journal of obstetrics and gynecology</full-title></periodical><pages>62-e1</pages><volume>199</volume><number>1</number><dates><year>2008</year></dates><publisher>Elsevier</publisher><isbn>0002-9378</isbn><urls></urls></record></Cite></EndNote>] is the largest U.S.-based population with a reference range upper bound of 3.37 mIU/L for the first trimester (and 3.35 mIU/L for the seeond trimester). Therefore, these values were used to compare to BBDR output TSH values in the first trimester (or second trimester in cases of gestational weeks 15 and 16) to determine the presence of hypothyroidism.

and average fT4 levels exist, and this is because the stimulus strength of TSH is proportionally weaker. The EPA chose to use a low TSH feedback coefficient to ensure the MCLG is protective of the sensitive population.

Example output from the BBDR model for gestational week 13 and a low TSH feedback coefficient is presented in Table III-1.

Table III-1. Summary of BBDR Model Results for fT4 Levels: Pregnant Women at Gestational Week 13, Assuming Low (75 µg/day) Iodine Intake and with Muted TSH feedback strength[a][]

Perchlorate Dose (µg/kg/day)	Percentile fT4 (pmol/L)[b] (% decrease from 0 dose)			
	2.5th	5th	10th	50th
0	5.57	6.09	6.70	8.84
1	5.50 (-1.26%)	6.02 (-1.15%)	6.63 (-1.04%)	8.77 (-0.79%)
2	5.43 (-2.45%)	5.96 (-2.24%)	6.56 (-2.04%)	8.71 (-1.54%)
3	5.37 (-3.59%)	5.96 (-3.28%)	6.50 (-2.98%)	8.64 (-2.26%)
4	5.31 (-4.68%)	5.83 (-4.28%)	6.44 (-3.89%)	8.58 (-2.95%)
5	5.25 (-5.73%)	5.77 (-5.23%)	6.38 (-4.76%)	8.52 (-3.60%)
6	5.19 (-6.73%)	5.72 (-6.14%)	6.33 (-5.59%)	8.47 (-4.23%)
7	5.14 (-7.69%)	5.66 (-7.02%)	6.27 (-6.39%)	8.41 (-4.84%)

[a] pTSH = 0.398; see USEPA, (2018b) for additional information on pTSH.
[b] The 50th percentile is direct output from the BBDR model, and additional percentiles are estimated by assuming a normal distribution with a SD of 1.67. All of the examined study data demonstrated a positive skew, and overall the lognormal function demonstrated a better fit than a normal distribution. Despite this, the available study data only accounted for variation due to gestation week and did not account for variation in perchlorate and iodine intake in the measured populations. Because perchlorate and iodine can affect fT4 levels, and this relationship produced the estimated median BBDR values, the distribution around values estimated by the model from perchlorate and iodine intake should account for a small

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reduction in variation due to the effect of perchlorate and iodine intake. Additionally, as iodine has a demonstrated lognormal distribution with strong right skew (e.g. Blount et al., 2007) and is predicted to have a stronger effect on fT4 than perchlorate (see Section 3). The EPA assumed the error around predicted fT4 would likely be closer to normal than lognormal after accounting for perchlorate and iodine intake.

When modeling changes in fT4, the baseline level of fT4 affects the magnitude of changes seen as a result of perchlorate exposure. Therefore, to predict the impact of perchlorate exposure on the population distribution of fT4 for the identified sensitive population, the EPA estimated a distribution for fT4 plasma concentrations around the median modeled values based on fT4 data from studies that were used to calibrate the BBDR model (C. Li et al., 2014; Männistö et al., 2011; Zhang et al., 2016). The EPA assumed the variation around predicted fT4 concentrations for women with low fT4 of childbearing age would likely be close to normal after accounting for perchlorate and iodine intake, and thus estimated a combined standard deviation (SD) using the distributional information from each of the studies (C. Li et al., 2014; Männistö et al., 2011; Zhang et al., 2016). The EPA then used the estimated combined SD to predict a distribution of fT4 around the median fT4 estimated by the BBDR model. To protect the most sensitive population from adverse effects, the EPA chose to use the 10th percentile from this

distribution of baseline fT4 to conduct its analyses to account for variability in thyroid hormones in the population[5].

G. Epidemiological Literature

The SAB recommended that the EPA integrate BBDR model results with data on neurodevelopmental outcomes from epidemiological studies. There is substantial epidemiological evidence that early pregnancy hypothyroxinemia is a risk factor for a variety of adverse neurodevelopmental outcomes, including those related to both cognition and behavior (Costeira et al., 2011; Finken, van Eijsden, Loomans, Vrijkotte, & Rotteveel, 2013; Ghassabian et al., 2014; Gyllenberg et al., 2016; Henrichs et al., 2010; Júlvez et al., 2013; Kooistra, Crawford, van Baar, Brouwers, & Pop, 2006; Korevaar et al., 2016; Y. Li et al., 2010; Oostenbroek et al., 2017; Päkkilä et al., 2015; Pop et al., 2003, 1999; Roman et al., 2013; van Mil et al., 2012). These individual studies showing that maternal hypothyroxinemia is associated with offspring neurodevelopment are also supported by three meta-analyses (including one full systematic review), all of which conclude maternal hypothyroxinemia is associated with increased risk of cognitive delay, intellectual impairment, or lower scores on performance tests when considering the entire body of evidence on this topic [ADDIN EN.CITE ADDIN EN.CITE.DATA]. Additionally, the American Thyroid Association concludes that "overall,

[5] For a discussion on the details of the BBDR model, including uncertainties associated with the model the reader is directed to section 3.5 of the MCLG Approaches Report.

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available evidence appears to show an association between hypothyroxinemia and cognitive development of the offspring" (Alexander et al., 2017, p. 337).

The EPA did not conduct a full systematic review and weight of evidence evaluation between maternal thyroid hormones and neurodevelopmental outcomes given: 1) the body of scientific literature regarding this association, and 2) the SAB recommendation that the EPA "consider available data on potential adverse health effects (neurodevelopmental outcomes) due to thyroid hormone level perturbations regardless of the cause of those perturbations" (p. 25). Instead, the EPA conducted a "methodologic approach to reviewing the literature" to evaluate the body of literature on this topic. This approach assisted in extrapolating the relationship modeled by the BBDR model to neurodevelopmental outcomes by concentrating on studies that allowed for evaluation of incremental changes in fT4 as they relate to incremental changes in neurodevelopmental outcomes. More specifically, the EPA only used studies that had sufficient data to show a quantitative relationship between maternal fT4 and a neurodevelopmental outcome. The EPA acknowledges that by not giving any weight to the studies that did not show a quantitative relationship between fT4 and neurodevelopmental outcomes, the Agency may be overestimating the dose of perchlorate that may be associated with adverse neurodevelopmental outcomes. This is a health protective decision that adds to the margin of safety.

Ultimately, the EPA developed a dose-response function that estimates incremental changes in a neurodevelopmental endpoint based on a given change in thyroid hormone

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concentration (fT4), which could be linked to a given dose of perchlorate using the BBDR model.

The specifics of this "methodologic approach to reviewing the literature" follow. First, the EPA identified and screened the available 71 epidemiological studies, which potentially pertained to altered maternal thyroid hormone levels and offspring neurodevelopment to identify candidates based on the following criteria:

- ~~compatible~~ Compatible with the sensitive life stages identified by the NRC and SAB;
- ~~continuous~~ Continuous measure of thyroid hormone values (versus categorical values);
- ~~low~~ Low risk of bias based on analysis using the National Toxicology Program's Office of Health Assessment and Translation (OHAT) Risk of Bias (ROB) tool score; and
- ~~access~~ Access to underlying data.

Second, using these screening steps, the EPA categorized all 71 studies into three groups. One group consisted of studies that were not compatible[6] with extending the BBDR model (40 studies). Another group consisted of papers that were relevant to the pertinent life stages but did

[6] For example, if the study evaluated the impact of only neonatal thyroid hormones (i.e., at a potentially sensitive life stage), it cannot be used because the BBDR model is specific to early pregnancy. Further, if the study evaluates a population with an existing disease (i.e., hypothyroidism) that may have a different response to perchlorate compared to the euthyroid population, it was not considered compatible with BBDR model results. Additionally, if the study does not include information on T4 or fT4, it does not assist in understanding the implications of the BBDR modeling results. Another reason for exclusion at this stage include that the study does not have a population with an exposure window (i.e., when the thyroid hormone measurements are taken) that overlaps with the outputs for the BBDR model. Specifically, the study should evaluate thyroid hormone levels in pregnant mothers between conception and gestational week 16. The neurodevelopmental outcomes could be measured at any life stage.

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not have data from which a dose-response analysis could be conducted (15 studies). This includes studies that compared differences between groups, for example studies of offspring of mothers with hypothyroxinemia versus offspring of mothers without hypothyroxinemia. Consequently, these studies may have provided insight into the maternal thyroid hormone and offspring neurodevelopment relationship but did not have enough information to develop a continuous dose-response function. The last group of papers had data that may inform a dose-response function (16 studies). This last group of papers included publications that may have had categorical analyses but also presented data that assessed fT4 as a continuous variable and the outcome of interest. In most instances, the continuous fT4 variable encompassed the full range for fT4 and not just the hypothyroxinemic range. After excluding one paper due to a high risk of bias (Kastakina et al., 2006) 15 papers remained that potentially had dose-response data between a continuous measure of fT4 and various neurodevelopmental outcomes describing cognition, behavior and other outcomes. The EPA notes that by selecting the papers that potentially had dose response data the Agency is deviating from the systematic weight of evidence review approach to identify those studies that the SAB recommended we examine to derive the MCLG.

Third, from these 15 papers five were selected for dose response assessment - four related to cognition[ADDIN EN.CITE ADDIN EN.CITE.DATA] and one related to behavior [ADDIN EN.CITE

<EndNote><Cite><Author>Endendijk</Author><Year>2017</Year><RecNum>1915</RecNum><DisplayText>(Endendijk, Wijnen, Pop, & van Baar,

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2017)</DisplayText><record><rec-number>1915</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1503500102">1915</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Endendijk, J.J.</author><author>Wijnen, H.A.</author><author>Pop, V.J.</author><author>van Baar, A.L.</author></authors></contributors><titles><title>Maternal thyroid hormone trajectories during pregnancy and child behavioral problems</title><secondary-title>Horm Behav</secondary-title></titles><periodical><full-title>Horm Behav</full-title></periodical><pages>84-92</pages><volume>94</volume><dates><year>2017</year></dates><urls></urls></record></Cite></EndNote>]. The other ten papers were excluded for a variety of reasons including updated analyses being presented in a different paper for which dose-response analysis was being conducted, lack of all the data needed to complete a dose-response assessment (e.g., dose-response results were presented as "per standard deviation of fT4" but the standard deviation needed to fully interpret the results for a continuous function was not presented in the paper, statistical methods presented in the paper were insufficient to allow for the derivation of a concentration response function), or a lack of a relationship between maternal fT4 as a continuous variable and the outcome of interest evaluated in the paper. For example, Noten et al., (2015) found a relationship between maternal hypothyroxinemia and offspring arithmetic test performance. However, maternal fT4 as a continuous variable across the entire fT4 range was

not associated with arithmetic test performance. Given this null finding, as well as the lack of published literature evaluating maternal fT4 as a continuous variable and arithmetic test performance, it would be difficult for the Agency to justify setting an MCLG based on changes in this endpoint.

As laid out for the peer reviewers, for each study that met the criteria identified above for dose-response modeling, a relationship between maternal thyroid hormone levels (specifically fT4) and offspring neurodevelopment was derived (see USEPA, 2018b). These relationships were either presented in the original published paper or derived by the EPA through either the digitization of figures or through re-analysis of data provided by the study authors. The EPA used the upper effect estimate (the upper bound of the 95th percent confidence interval) from each study to assure consideration of the populations likely to be at greater risk from the dose of perchlorate associated with a given change in fT4.

Table III-2 provides a summary of the changes in fT4 predicted to produce a 1, 2, and 3 percent decrease in any given neurodevelopmental effect and corresponding perchlorate doses. The choice of 1, 2, and 3% is based on the analyses for IQ, Mental Development Index (MDI), and Psychomotor Development Index (PDI). Specifically, a 1%, 2%, or 3% change from the standardized mean for each test (i.e., 100 points) equates to a 1, 2, or 3 point change, respectively. The analyses for anxiety/depression score and SD of reaction time are based on a 1%, 2%, or 3% change from the study mean of each measure, which for anxiety/depression is 0.01, 0.02, or 0.03 points, respectively, and for reaction time is 2.7, 5.4, and 8.1 milliseconds

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(study mean SD of reaction time = 270 ms), respectively (Endendijk et al., 2017; Finken et al., 2013).

These results provide the potential impacts of perchlorate on maternal fT4 (as predicted by the BBDR model) and subsequent neurodevelopmental impacts (derived from the epidemiologic literature[7]).

Table III-2. Estimated Dose of Perchlorate per 1, 2, and 3 Percent Decrease[a] in Neurodevelopment for the Population of Low-Iodine Intake Women of Reproductive Age Based on Upper Effect Estimates at the 10th Percentile fT4 Level[b]

Study	Endpoint	Dose-Response Function	β (95% CI)	ΔfT4 in pmol/L Associated with a 1% to 3% Decrease in Endpoint (% ΔfT4 from 0 dose perchlorate, iodine intake = 75 µg/day)[a,b,c]			Dose of Perchlorate per 1% to 3% Decrease in Endpoint (µg/kg/day)[a,b,c]		
				1%	2%	3%	1%	2%	3%
Korevaar et al., (2016) Quadratic	IQ	$\Delta IQ = (\beta_1 \times lnfT4_2 + \beta_2 \times ln(fT4_2)^2) - (\beta_1 \times lnfT4_1 + \beta_2 \times ln(fT4_1)^2)$	β1 = 33.8 (9.8, 57.8) β2 = -6.2 (-10.6, -1.9)	-0.13 (1.9%)	-0.25 (3.8%)	-0.38 (5.7%)	1.9	3.9	6.1
Korevaar et al.,	IQ	$\Delta IQ = (\beta_1 \times \ln(fT4_2)) - (\beta_1 \times \ln(fT4_1))$	17.26 (3.77, 30.75)	-0.21 (3.1%)	-0.41 (6.2%)	-0.61 (9.2%)	3.1	6.7	10.8

[7] For a more complete description of all the studies evaluated the reader is directed to Sections 5 and 6 of the MCLG Approaches Report. For a discussion on the uncertainties related to the approach the reader is directed specifically to section 6.5.

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Study	Endpoint	Dose-Response Function	β (95% CI)	ΔfT4 in pmol/L Associated with a 1% to 3% Decrease in Endpoint (% ΔfT4 from 0 dose perchlorate, iodine intake = 75 µg/day)[a,b,c]			Dose of Perchlorate per 1% to 3% Decrease in Endpoint (µg/kg/day)[a,b,c]		
(2016) EPA independent analysis									
Pop et al., (2003)	MDI	$\Delta MDI = \beta \times \Delta fT4$	6.3 (1.92, 10.6)	-0.09 (1.0%)	-0.19 (2.8%)	-0.28 (4.2%)	1.3	2.8	4.3
Pop et al., (2003)	PDI	$\Delta PDI = \beta \times \Delta fT4$	8.4 (4.0, 12.8)	-0.08 (0.9%)	-0.16 (2.4%)	-0.23 (3.5%)	1.1	2.3	3.5
Pop et al., (1999)	PDI	$\Delta PDI = \beta \times \Delta fT4$	8.5 (0.01, 17.0)	-0.06 (0.6%)	-0.12 (1.8%)	-0.18 (2.6%)	0.8	1.7	2.6
Endendijk et al., (2017)	Anxiety/ depression score	$\Delta AD = \left(\frac{1}{\beta * fT4_2}\right) - \left(\frac{1}{\beta * fT4_1}\right)$	0.12 (0.11, 0.13)	-0.03 (0.45 %)	-0.08 (1.2%)	-0.12 (1.9%)	0.4	1.1	1.8
Finken et al., (2013)	SD of reaction time	ΔSD Reaction Time (ms) = β × Δ fT4	-4.9 (-9.5, -0.2)	-0.28 (4.2%)	-0.57 (8.5%)	-0.85[d] (12.7 %)	4.4	9.8	16.5[d]

Study	Endpoint	Dose-Response Function	β (95% CI)	ΔfT4 in pmol/L Associated with a 1% to 3% Decrease in Endpoint (% ΔfT4 from 0 dose perchlorate, iodine intake = 75 µg/day)[a,b,c]	Dose of Perchlorate per 1% to 3% Decrease in Endpoint (µg/kg/day)[a,b,c]

[a]. The analyses for IQ, Mental Development Index (MDI), and Psychomotor Development Index (PDI) are based on a 1%, 2%, or 3% change from the standardized mean for each test (i.e., 100 points), which equates to a 1, 2, or 3 point change, respectively. The analyses for anxiety/depression score and SD of reaction time are based on a 1%, 2%, or 3% change from the study mean of each measure, which for anxiety/depression is 0.01, 0.02, or 0.03 points, respectively, and for reaction time is 2.7, 5.4, and 8.1 milliseconds (study mean SD of reaction time = 270 ms), respectively.
[b]. This is based on the regression analysis for the range of fT4 data within each study using the upper beta estimates from the 95% CI. These results are for the low-iodide intake population of 75 µg/day. In all functions, fT4 is in units of pmol/L.
[c]. The BBDR model with a pTSH of 0.398 was used for these analyses.
[d]. The value which results in a 3% change in the standard deviation of reaction time falls between 16 and 17 µg/kg/day. Because data was not available on the changes of fT4 at doses between 16 and 17 µg/kg/day perchlorate, the EPA took the midpoint of the range of values for the change in fT4 at 16 and 17 µg/kg//day and assumed the dose of perchlorate associated with this change was the midpoint between 16 and 17 µg/kg/day.

H. Identifying a Point of Departure for Developing the MCLG

From the seven analyses presented in Table III-2 above, the EPA chose to use its independent analysis of the Korevaar et al., (2016) data (comprising of 3,600 useable mother/child data pairs) as the basis for calculating the point of departure (POD) for the MCLG. There are three reasons for this selection: 1) there is sufficient quantitative data to derive a health impact function for the sensitive population of interest; 2) the analysis adjusts for an appropriate set of confounders, and 3) the neurodevelopmental endpoint – intelligence quotient (IQ) – is more straightforward to interpret because there is more national and cross-national data available

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(more on the selection of this endpoint below). The other studies presented in Table III-2 do not provide one or more of these features (USEPA, 2018b).

The five identified papers evaluated a variety of endpoints with Korevaar et al., (2016) evaluating IQ, Pop, Kuijpens, et al., (1999) and Pop, Brouwers, et al., (2003) using the Bayley Scale to evaluate PDI and MDI, Finken, van Eijsden, Loomans, Vrijkotte, and Rotteveel (2013) evaluating the SD of reaction time, and Endendijk, Wijnen, Pop, and van Baar (2017) evaluating anxiety/depression scores using the Child Behavioral Check List (CBCL). The SD of reaction time from Finken et al., (2013) was not well-received by the peer reviewers (External Peer Review for U.S. EPA, 2018) because it is difficult to ascertain the true implications of a change in the SD of reaction time. The Endendijk et al., (2017) study was identified after the peer review so no feedback was given on the appropriateness of the endpoint; however, the anxiety/depression raw score is not an intuitively interpretable endpoint. Further, neither the Endendijk et al., (2017) nor the Finken et al., (2013) analyses had functions for the sensitive life stage (i.e., their analyses were based on the full range of fT4 levels and did not concentrate on the impacts of low-end fT4 levels). For these reasons, the Endendijk et al., (2017) and Finken et al., (2013) papers were not selected for further evaluation.

The Korevaar et al., (2016) original and independent analyses are preferable compared to the Pop, Kuijpens, et al., (1999) and Pop, Brouwers, et al., (2003) studies because neither function derived from the Pop et al., studies was adjusted for confounders. Additionally, both

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Pop et al., papers have an N < 50 compared to the Korevaar et al., analyses, which have an N of greater than 3,600.[8]

Although the original Korevaar et al., (2016) analysis was the most rigorous analysis available in the literature to date, the Korevaar et al., (2016) EPA reanalysis was chosen over the original analysis because it included modifications to the analysis at the suggestion of the peer review panel. The revised analysis controls for a more parsimonious set of confounders (e.g., previously included variables such as infant gender, maternal parity, birthweight, mother's body mass index (BMI), and gestational age at blood draw that are not related to both the exposure and the outcome were excluded), thus decreasing the chances of overfitting the estimation of the association between maternal fT4 and child IQ. The EPA was prompted to revisit the original Korevaar et al., (2016) model because of the feedback received during the peer review of the MCLG Approaches Report. Specifically, a member of the peer-review panel expressed the following suggestion:

> *Korevaar et al., [2016] controlled for instrumental variables (e.g. gestational week at fT4 measurement) as well as variables that are consequences of altered fT4 (e.g. maternal BMI), which may have biased estimates. This study also assumed a log-linear relation between fT4 and the outcome but it is unclear*

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[8] The original Korevaar et al. (2016) analysis included 3,839 mother/child pairs. The EPA reanalysis of the Korevaar et al. (2016) data had a slightly lower N of 3,609 due to the exclusion of subjects with imputed values for maternal fT4.

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whether the data fit this functional form better than a linear form. Reanalysis of the data performed by EPA should not include the variables noted above, which may have driven measures of association towards the null, and should investigate the most appropriate functional form to inform decisions about transformation of fT4 values (External Peer Reviewers for U.S. EPA, 2018, pp. 61–62).

The EPA responded to this suggestion by developing a causal model for the effect of maternal fT4 on child IQ to identify the minimum set of confounding variables, testing the proper functional form of the relationship between maternal fT4 and child IQ in the Korevaar et al., (2016) data, and making decisions about data quality and influential data points in the analysis. That is, the EPA determined that there were values of the independent variable of interest, fT4, in the original analysis that were imputed using multiple imputations. This could have impacted the effect estimate of the independent variable of interest with data that were not directly measured. The EPA reanalysis excludes these non-measured values. Subsequently, the EPA selected the Korevaar et al., (2016) reanalysis as the most appropriate function from which to assess the relationship between fT4 and IQ[9].

As indicated above, the EPA has utilized a health protective approach to this analysis consistent with the SDWA definition of the MCLG. The peer reviewers commented that this approach was fit-for-purpose. In particular, the Agency assumed it could estimate risk reductions

[9] A more complete description of the EPA independent analysis of the Korevaar et al. (2016) data can be found in Section 6.3.2 of the MCLG Approaches Report.

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based on evidence of a quantifiable relationship between thyroid hormone changes and neurodevelopmental outcomes. The existence of a quantifiable relationship between thyroid hormone changes and neurodevelopmental outcomes has strong support from the literature on the subject; however, not every study identified an association between maternal fT4 and the specified outcome of interest, and the state of the science on this relationship is constantly evolving. As explained earlier, the results of the EPA's dose-response literature review identified 31 studies that evaluated the association between maternal thyroid hormone levels and offspring neurodevelopment, with neurodevelopment defined using a variety of endpoints related to cognition, behavior, and other outcomes such as autism. Among these studies, only 16 were deemed to potentially possess information that could inform a dose-response relationship. The other 15 only presented data on categorical analyses assessing the impact of maternal hypothyroxinemia on the neurodevelopmental outcomes of interest. Therefore, because the data presented was only a comparison of two groups, there was not information that could be used to inform a dose-response function.

Of the 16 studies that potentially had data to inform a dose-response function, 10 evaluated cognition using a variety of tests including various IQ tests (three papers; Ghassabian et al., 2014; Korevaar et al., 2016; Moleti et al., 2016), Bayley Scales of Infant Development (two papers; Pop et al., 1999; Pop et al., 2003), and other validated tests associated with child cognition such as expressive language delay or test performance (five papers; Finken et al., 2013; Henrichs et al., 2010; Kastakina et al., 2006; Noten et al., 2015; Oken et al., 2009). Six of these

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papers found a statistically significant relationship between maternal fT4, as a continuous variable, and offspring cognitive outcome (Korevaar et al., 2016; Pop et al., 1999; Pop et al., 2003; Finken et al., 2013; Henrichs et al., 2010, Kastakina et al., 2006). However, there were studies where maternal fT4 as a continuous variable was not significantly associated with the outcome of interest. For example, in Ghassabian et al., (2014) the authors found maternal hypothyroxinemia to be associated with an average of a 4.3-point reduction in IQ in their offspring compared to offspring of non-hypothyroxinemic mothers. Nevertheless, when assessing the relationship between the continuous measure of maternal fT4 as a continuous variable (across the entire range of fT4 levels) and child IQ, the authors did not find a significant relationship. Additionally, Moleti et al., (2016) found the relationship between maternal fT4 and child IQ to be consistently inversely associated with IQ scores, but their assessment failed to reach statistical significance. This study included fewer than 60 study participants and was considered by the authors to be a pilot assessment.

In addition to the cognitive effects assessed and modeled, the EPA identified four papers that assessed maternal fT4 status and behavioral outcomes (Endendijk et al., 2017; Ghassabian et al., 2011; Modesto et al., 2015; Oostenbroek et al., 2017), one paper that assessed maternal fT4 status and autism (Roman et al., 2013) and one paper that evaluated odds of a schizophrenia diagnosis as associated with maternal thyroid hormone status (Gyllenberg et al., 2016). From this group of papers, the majority of papers found an association either between maternal hypothyroxinemia or maternal fT4 as a continuous variable and the outcome of interest

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(Endendijk et al., 2017; Modesto et al., 2015; Oostenbroek et al., 2017; Roman et al., 2013; Gyllenberg et al., 2016). However, this was not always the case as exemplified by Ghassabian et al., (2011) and Gyllenberg et al., (2016). Although Endendijk et al., (2017) found maternal fT4 to have a significant adverse impact on anxiety/depression using the Child Behavioral Check List (CBCL), Ghassabian et al., (2011) did not find any association between maternal thyroid hormone status and offspring score on various components of the CBCL. Additionally, Gyllenberg et al., (2016) found maternal hypothyroxinemia during early to mid-gestation was associated with 70% increased odds of schizophrenia diagnosis in offspring of hypothyroxinemic mothers compared to the offspring of non-hypothyroxinemic mothers. Gyllenberg et al., (2016) also found an association with odds of schizophrenia diagnosis using conditional logistic regression when assessing fT4 as a continuous variable across the entire fT4 range (i.e., not just the hypothyroxinemic range); however, this relationship was attenuated after controlling for smoking.

Not every paper the EPA located in its literature review found a statistically significant association between maternal fT4 as a continuous variable (i.e., the initially identified 16 studies identified as potentially useful to inform a dose-response function) and the neurodevelopmental outcome of interest. However, many studies located in the EPA literature review, several meta-analyses (Fan & Wu, 2016; Thompson et al., 2018 and Wang et al., 2016), the American Thyroid Association (Alexander et al., 2017) and the U.S. EPA's SAB (2013) have concluded there is a relationship between maternal hypothyroxinemia and various neurodevelopmental outcomes.

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The relationship between maternal fT4 levels and neurodevelopmental outcomes appears strongest in the hypothyroxinemic range, and when looking at the entire range of fT4 as a continuous variable (as opposed to a categorical cut off), the significant relationship between the two variables may dissipate. Therefore, the EPA has concentrated on the neurodevelopmental impacts of changes in fT4 in the lower range of fT4 from the Korevaar et al., (2016) data. In an attempt to minimize uncertainty, the EPA reanalyzed the data collected by Korevaar et al., (2016) using a spline function that estimates a coefficient specifically for the low range of the fT4 data.

There are a variety of neurodevelopmental endpoints used to examine behavior and cognition in children (e.g., intelligence quotient (IQ), motor skills, vocabulary and language development, stimulus responsiveness, etc.). The EPA selected IQ decrements because this was the endpoint evaluated in the Korevaar et al., (2016) study. The EPA determined that the Korevaar study was the most rigorous analysis that examined the relationship between decreased thyroid hormones and neurodevelopmental effects. As such, in the derivation of the MCLG, IQ is a surrogate for a suite of potential neurodevelopmental effects that might occur to the offspring of hypothyroxinemic and iodine deficient mothers.

There are several different tests that are widely used to measure IQ in children, including the Stanford-Binet and the Wechsler Intelligence Scale for Children (WISC) (Sternberg et al., 2001). Each of these tests is intended to assess a child's global functioning and uses a numerical IQ point scale (Beres et al., 2000). IQ scores are standardized by age and sex group with a mean

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score of 100 points and a standard deviation of 15 (Beres et al., 2000). Although the specific tasks differ by test, all IQ tests contain a number of tasks to assess diverse skills (Sternberg et al., 2001). For example, the WISC test evaluates full-scale IQ using a combination of verbal and performance scales (verbal IQ and performance IQ may also be assessed separately) (Beres et al., 2000). The verbal scale includes tasks such as arithmetic, vocabulary, and comprehension, while the performance scale includes tasks such as picture completion, block design, and object assembly (Beres et al., 2000). The WISC was standardized using a sample of 2200 U.S. children aged 6 to 16 years old (Seashore et al., 1950). It has been well validated and has demonstrated high reliability, with a reliability coefficient of 0.96 observed across age groups (Beres et al., 2000).

Associations have been found between IQ scores and both educational achievement and attainment, though observed correlations vary widely. In a review of the literature, Sternberg et al., (2001) suggest that IQ scores explain approximately 25% of the variance in academic achievement. Evidence also suggests that IQ is linked to career outcomes and job performance, with observed correlations ranging from approximately 0.2 to 0.6 (Sternberg et al., 2001). Research suggests that children's rearing environment, including parental education, while growing up may increase IQ scores in adolescence by several points (e.g., Kendler et al., 2015).

IQ scores have been used to help diagnose disorders such as intellectual disability and to identify children for placement into specialized learning programs (Beres et al., 2000). For example, in the Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-V) IQ

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scores are used in an individual's comprehensive assessment to determine intellectual disability, which pairs standardized testing of intelligence with a clinical assessment of adaptive functioning. Intellectual disability is considered for individuals with an IQ score of about 70 or below (American Psychiatric Association, 2013).

The EPA uses a variety of science policy approaches to select points of departure for developing regulatory values. For instance, in noncancer risk assessment the EPA often uses a percentage change in value. When assessing toxicological data, a 10 percent extra risk (for discrete data), or a 1 standard deviation (i.e., 15 IQ points) change from the mean (for continuous data) is often used (USEPA, 2012). A smaller response to inform a POD has been applied when using epidemiological literature because there is an inherently more direct relationship between the study results and the exposure context and health endpoint. Given the difficulty in identifying a response below which no adverse impact occurs when considering a continuous outcome in the human population, the EPA looked to its Benchmark Dose Guidance (2012) for insight regarding a starting point. Specifically, "[a] BMR of 1% has typically been used for quantal human data from epidemiology studies" (p. 21, USEPA, 2012).

For the specific context of setting an MCLG for perchlorate, the EPA made a policy decision to evaluate the level of perchlorate in water associated with a 1 percent decrease, a 2 percent decrease, and a 3 percent decrease in the mean population IQ (i.e., 1, 2 and 3 IQ points). The EPA selected IQ as a surrogate for neurodevelopmental effects based upon its evaluation of the epidemiologic literature describe above. The need to utilize the best available

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peer reviewed data to inform scientific assumptions and policy choices to meet the statutory requirements associated with developing an MCLG under the SDWA highlights the challenges associated with regulating chemicals for which potential effects are indirect, and scientific data do not address all uncertainties. The Agency must make a policy decision informed by science, consistent with statutory requirements even in situations where the data do not provide clear choices. To develop the proposed MCLG for perchlorate, the EPA made a policy decision to use a 2 IQ point decrement in the population-distribution of IQ for the sensitive population. By selecting this approach, the EPA is not establishing a precedent for future Agency actions on other contaminants for which there is concern about potential thyroid effects, either under the SDWA or other statutory frameworks.

Applying these response rates to the results from the reanalysis of Korevaar et al., (2016), results in a POD dose of 3.1 µg/kg/day for a 1 point decrease in the sensitive population's IQ, a POD dose of 6.7 µg/kg/day for a 2 point decrease in the sensitive population's IQ, and a POD dose of 10.8 µg/kg/day for a 3 point decrease in the sensitive population's IQ. These PODs associated with a 1, 2, or 3 point decrease from the standardized mean IQ are calculated for the most sensitive population. Specifically, the POD is designed to provide an adequate margin of safety for the fetuses of mothers with fT4 at the 10th percentile of a population with iodine intake of 75 µg/day and a TSH feedback loop that is less than 60% as effective as individuals with median TSH feedback loop efficacy. That is, the analysis is designed to protect the population of fetuses of mothers with suboptimal thyroid functioning. For these reasons, and for the

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methodological reasons described previously, the EPA believes that the selection of these parameters and this point of departure assures no known or anticipated adverse effects on the health of the most sensitive population and allows for an adequate margin of safety.

I. Translate PODs to RfDs

When deriving an RfD the EPA evaluates whether to apply uncertainty/variability factors to account for heterogeneity of effect in the target population and data gaps (USEPA, 2002). As presented in *A Review of the RfD & RfC Processes* (USEPA, 2002) the EPA considers the following uncertainty factors: inter-individual variability, interspecies uncertainty, extrapolating from subchronic to chronic exposure, extrapolating from a lowest-observed adverse effect level (LOAEL) rather than from a no-observed-adverse-effect-level (NOAEL), and an incomplete database. The factors are intended to account for: 1) variation in susceptibility among the members of the human population (i.e., inter-individual or intraspecies variability); 2) uncertainty in extrapolating animal data to humans (i.e., interspecies uncertainty); 3) uncertainty in extrapolating from data obtained in a study with less-than-lifetime exposure (i.e., extrapolating from subchronic to chronic exposure); 4) uncertainty in extrapolating from a LOAEL rather than from a NOAEL; and 5) uncertainty associated with extrapolation when the database is incomplete. (U.S. EPA, 2011b) The EPA has considered each of these factors in deriving an RfD to inform an MCLG for perchlorate.

The EPA considered variation and uncertainty in the relationship between exposure and response among the members of the human population (i.e., uncertainty factor (UF) for within-

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human variability/ inter-individual variability, UF_H). For this analysis a UF of 3 is used. The approach taken to derive the RfD attempts to address variability between the general population and the sensitive population. Specifically, the EPA was able to modify the strength of the TSH feedback loop and iodine intake levels in the BBDR model and concentrate on the dose-response relationship between lower level (as opposed to median level) fT4 and neurodevelopmental outcomes. However, there is still uncertainty in the relationship between perchlorate exposure and subsequent neurodevelopmental outcomes[10]. There are very few toxicokinetic calibration data available for the perchlorate to thyroid hormone relationship described in the BBDR model. On the toxicodynamic side of the BBDR model, aspects such as competitive inhibition at the NIS, depletion of iodide stores under different iodine intake levels and physiological states, and the ability of the TSH feedback loop to compensate for perturbations in thyroid function each have their own uncertain features. There are also uncertainties linking maternal fT4 levels to offspring IQ. These uncertainties include the population for which dose-response information is available (i.e., no study is U.S. based), a lack of study information on the iodine intake status for the population for which the dose-response information is available, uncertainties around the methods used to assess maternal fT4 measurement during pregnancy, and uncertainties related to the true distribution of fT4 for a given iodine intake.

Further, as discussed in section III.C. of this preamble the EPA believes that protecting

[10] For a more complete discussion on the uncertainties in the analysis the reader is directed to Sections 3.5 and 6.5 of the MCLG Approaches Report.

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the fetus of a hypothyroxinemic woman will protect other identified sensitive life stages. However, there is some uncertainty due to the lack of information linking incremental changes in infant thyroid hormone levels to adverse neuorodevelopmental outcomes. In addition, this analysis is assuming that protecting a first trimester fetus from alterations in maternal fT4 will protect the fetus throughout pregnancy. This is based on epidemiologic evidence that shows the relationship between first trimester maternal fT4 and neurodevelopmental outcomes. This is potentially because before mid-gestation, the mother is the only source of thyroid hormone for the fetus (Morreale de Escobar et al., 2004). Therefore, when evaluating maternal fT4 as associated with neurodevelopmental outcomes it is critical to understand the first-trimester levels. Later in gestation, when the fetal thyroid begins secreting thyroid hormones, maternal fT4 may no longer be a good surrogate for the thyroid hormone levels available to the fetus. Given that the fetal thyroid has had little time to develop, its iodine storage is much less than that of an adult, hence there may be more sensitivity to short-term fluctuations in iodine availability and uptake that may have little impact on maternal levels. Therefore, there is some uncertainty about the impact perchlorate may have on the fetal thyroid gland, and subsequent neurodevelopmental impacts, in later trimesters of pregnancy. The immature fetal HPT axis has very limited capacity to increase output of thyroid hormones (Savin, Cvejić, Nedić, & Radosavljević, 2003; van Den Hove, Beckers, Devlieger, De Zegher, & De Nayer, 1999), so the fetal HPT may not be able to adjust output in the face of reduced maternal fT4 supply and perchlorate exposure. Therefore, as described above, the EPA selected an intraspecies UF of 3 to account for the uncertainties in

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modeling the impacts of perchlorate ingestion on the thyroid hormone levels for pregnant mothers with low iodide intake, and the uncertainties in predicting the neurodevelopmental effects of these thyroid hormone changes on their children.

The EPA considered but did not derive a Data-Dependent Extrapolation Factor (DDEF) for this analysis. As described above, the UFs are applied based on the uncertainties in the perchlorate to thyroid hormone and thyroid hormone to neurodevelopment relationship[11]. As noted above, the Agency has opted to apply a UF of 3 to the POD, which adds an adequate margin of safety to the MCLG derivation. Section 4.4.5.3 (p 4-42) of *A Review of the RfD & RfC Processes* recommends reducing the intraspecies UF from a default of 10 "only if data are sufficiently representative of the exposure/dose-response data for the most susceptible subpopulation(s)" (p. xviii, USEPA, 2002).The EPA selected a UF of 3 instead of the full 10 because the modeled groups within the population that are identified as likely to be at greater risk to perchlorate in drinking water (i.e., the fetus of the iodide deficient pregnant mother) and has selected model parameters to account for the most sensitive individuals in that group (i.e., muted TSH feedback, low fT4 values, low-iodine intake).

Below we list the other uncertainty factors added and the justification.

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[11]As explained in U.S. EPA, 2014 "UFs incorporate both extrapolation components that address variability (heterogeneity between species or within a population) and components that address uncertainty (i.e., lack of knowledge)…whereas DDEFs focus on variability" (p. 7, US EPA, 2014).

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- Uncertainty in extrapolating animal data to humans (i.e., interspecies uncertainty) (uncertainty factor, animal-to-human, UF_A). For this analysis an UF of 1 is used because this factor is not applicable since animal studies were not used to develop the BBDR model nor were they used to relate alterations in maternal fT4 to IQ.
- Uncertainty in extrapolating data obtained in a study with less-than-lifetime exposure to lifetime exposure (i.e., extrapolating from subchronic to chronic exposure, UF_S). An uncertainty factor of 1 is used. Extrapolating from subchronic to chronic exposures did not occur as the BBDR model was designed to assess long-term steady-state conditions in the non-pregnant woman and week-to-week variation in pregnancy, rather than short-term (hour-to-hour or day-to-day) fluctuations.
- Uncertainty in extrapolating from a LOAEL rather than from a NOAEL (uncertainty factor, LOAEL-to-NOAEL, UF_L). A more sophisticated BBDR modeling approach, coupled with extrapolation to changes in IQ using linear regression, was used to determine a POD that would not be expected to represent an adverse effect. Subsequently an uncertainty factor of 1 is used. LOAELs and NOAELs were not identified or used in this approach.
- Uncertainty factor for database deficiency to address the potential for deriving an inadequately protective RfD in the instance where the available database provides an incomplete characterization of the chemical's toxicity (database deficiency, UF_D; USEPA, 2002). An uncertainty factor of 1 is used as "[t]he mode of action of perchlorate toxicity is well understood" (SAB for the U.S. EPA, 2013, p. 2).

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- The product of all the uncertainty factors (UF_H) is 3 (3 x 1 x 1 x 1 x 1).

Below we generate RfD's for each of the points of departure.

Using the POD of 6.7 µg/kg/day based on a 2 percent decrease in the population standardized mean IQ from the EPA's independent analysis of the Korevaar et al., (2016) data, the EPA can derive a RfD by incorporating the UF_H, which results in the following:

$$RfD = \frac{POD}{UF_H} = \frac{6.7}{3} = 2.2\ \frac{\mu g/kg}{day}$$

Using an alternative POD of 3.1 µg/kg/day based on a 1 percent decrease in the population standardized mean IQ from the EPA's independent analysis of the Korevaar et al., (2016) data, the EPA can derive an RfD by incorporating the UF_H. This results in the following:

$$RfD = \frac{POD}{UF_H} = \frac{3.1}{3} = 1.0\ \frac{\mu g/kg}{day}$$

Using an alternative POD of 10.8 µg/kg/day based on a 3 percent decrease in the population standardized mean IQ from the EPA's independent analysis of the Korevaar et al., (2016) data, the EPA can derive an RfD by incorporating the UF_H. This results in the following:

$$RfD = \frac{POD}{UF_H} = \frac{10.8}{3} = 3.6\ \frac{\mu g/kg}{day}$$

J. Translate RfD into an MCLG

To translate the RfD (µg/kg/day) to a concentration in drinking water (µg/L), the EPA used the following equation:

$$W\left(\frac{\mu g}{L}\right) = \frac{RfD}{DWI} \times RSC_w$$

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where:

W = drinking water concentration of perchlorate in micrograms per liter (µg/L);

RfD = reference dose (1.03 µg/kg/day for a 1 percent decrease in IQ, 2.23 µg/kg/day for a 2 percent decrease in IQ, or 3.6 µg/kg/day for a 3 percent decrease in IQ);

DWI = bodyweight-adjusted drinking water ingestion rate (L/kg/day); and

RSC_w = relative source contribution of drinking water to overall perchlorate exposure.

To calculate the MCLGs, the EPA selected the 90th percentile body-weight adjusted drinking water ingestion rate specific to women of childbearing age (i.e., non-pregnant, non-lactating, 15–44 years of age (0.032 L/kg/day). This decision is consistent with the analysis used in deriving an RSC, which was performed using food consumption information for a population of women of childbearing age from NHANES. The 90th percentile is chosen to account for variability in drinking water ingestion rates, but also adds another layer of health protection for 90% of women (Table III-3).

The EPA did not use water intake data for pregnant women because the sample sizes were too small to be statistically stable. The use of the drinking water intake for 15-44 year old women is consistent with the analysis used in deriving an RSC_w (described below), which was performed using food consumption information for a population of women of childbearing age from NHANES. The EPA acknowledges there is a difference in the age range defining women of childbearing age used to develop the drinking water ingestion rate and that used to develop the RSC (20 – 44 years of age). The age range used to develop the RSC was based on the range of

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ages used to define women of childbearing age in developing the BBDR model. However, the EPA's Exposure Factors Handbook (USEPA, 2011c) identifies drinking water ingestion rates for women 15-44 years of age as corresponding to women of childbearing age.

The age range used for women of childbearing age in the BBDR model fits within the age range used to develop the ingestion rates provided in the Exposure Factors Handbook. Thus, the Agency believes the difference in the age ranges will have minimal impact on the resulting MCLG analysis.

Table III-3. Consumers-Only Estimated Direct and Indirect Community Water Ingestion Rates from Kahn and Stralka (2008) (L/kg/day)

Female Population Categories	Sample Size	Mean	90th Percentile	95th Percentile
Pregnant	65	0.014[a]	0.033[a]	0.043[a]
Lactating	33	0.026[a]	0.054[a]	0.055[a]
Non-pregnant, non-lactating, 15 to 44 years of age	2,028	0.015	0.032	0.038

[a] The sample size does not meet minimum reporting requirements to make statistically reliable estimates as described in the *Third Report on Nutrition Monitoring in the United States*, 1994-1996 (FASEB/LSRO, 1995).

Individuals are exposed to perchlorate through ingestion of both food and drinking water (ATSDR 2008, Huber et al., 2011). In calculating the MCLGs, the EPA applies a relative source contribution (RSC) to the RfD to account for the percentage of the RfD remaining for drinking water after other sources of exposure to perchlorate have been considered. Thus, the RSC for drinking water is based on the following equation where "Food" is the perchlorate dose from food ingestion:

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$$RSC = \frac{RfD - Food}{RfD} \times 100\%$$

To estimate the dose of perchlorate for women of childbearing age coming from food, the EPA implemented a data integration methodology that combined demographic variables, food consumption estimates, and perchlorate contamination estimates in food from multiple sources (USEPA, 2019c). These sources include:

- The NHANES data available from the Centers for Disease Control and Prevention's (CDC) National Center for Health Statistics (NCHS) including the What We Eat in America (WWEIA) 24-hour food diary data (CDC & NCHS, 2007, 2009, 2011); and
- The Food and Drug Administration's (FDA's) Total Diet Study (TDS) (U.S. Food and Drug Administration (FDA), 2015), which analyzes contaminants in about 280 kinds of food and beverages commonly consumed by the U.S. population.

The NHANES data provided individual food consumption profiles for female participants age 20-44 (the women of childbearing age range used for the BBDR model). The EPA matched TDS perchlorate concentrations with each food consumed by a participant and calculated each participant's daily perchlorate dose (µg/kg/day) from food using the participant's body weight. The EPA estimated each participant's perchlorate dose using both mean and 95th percentile perchlorate concentrations in food. The details of these assumptions are explained on page 5-5 of the Technical Support Document: Deriving a Maximum Contaminant Level Goal for Perchlorate in Drinking Water (USEPA 2019c). Specifically, the EPA calculated both the mean and the 95th percentile of the perchlorate levels in each food based on the 20 samples included in the TDS

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data. In order to estimate the 95th percentile from the 20 samples, the EPA used the second-highest test result for each food to represent the 95th percentile concentration. While simple, this method avoids the need to assume a distributional shape for the samples, and has been used in recent publications of TDS data for iodine [ADDIN EN.CITE <EndNote><Cite><Author>Carriquiry</Author><Year>2016</Year><RecNum>2008</RecNum><DisplayText>(Carriquiry et al., 2016)</DisplayText><record><rec-number>2008</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1530039524">2008</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Carriquiry, A. L. </author><author>Spungen, J. H.</author><author>Murphy, S. P.</author><author>Pehrsson, P. R.</author><author>Dwyer, J. T.</author><author>Juan, W.</author><author>Wirtz, M. S. </author></authors></contributors><titles><title>Variation in the iodine concentrations of foods: considerations for dietary assessment</title><secondary-title>The American Journal of Clinical Nutrition</secondary-title></titles><periodical><full-title>The American Journal of Clinical Nutrition</full-title></periodical><pages>877S–887S</pages><volume>104</volume><number>Suppl 3</number><dates><year>2016</year></dates><urls></urls></record></Cite></EndNote>]. The aforementioned method for identifying the 95th percentile concentration of perchlorate from food was selected over other, more "statistically based" methods for estimating percentiles as it avoids the need to assume a distributional shape for the samples. The EPA determined that it was

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more reliable to assume the empirically derived distribution as the basis for selecting the 95th percentile (i.e., assuming the distribution was equal to the distribution of samples collected in the TDS), as opposed to forcing a distributional shape, such as normal or log-normal, onto the data that may not necessarily be appropriate. With the chosen method, we can at least be sure that the distributional shape is appropriate for the data at hand, whereas by choosing the alternative that assumes a distributional shape, in many instances we would not even be certain of that. The EPA used these individual bodyweight-adjusted perchlorate doses from food to calculate distributions of perchlorate dose from food for the population of women age 20-44.

Table III-4 presents the mean and selected percentiles of the distribution of perchlorate dose from food for women ages 20-44, for both mean and 95th percentile perchlorate concentrations in food based on the TDS. To calculate the RSC, the EPA selected the 90th percentile dose of perchlorate from food, assuming a scenario where the food contained the 95th percentile perchlorate concentration. This corresponds to a perchlorate dose for food of 0.45 µg/kg/day. The EPA chose to use the 90th percentile bodyweight-adjusted perchlorate consumption from food using the 95th percentile TDS results to estimate the perchlorate RSC from drinking water. The EPA believes this is the most appropriate value for perchlorate consumption from food to ensure the protection of potentially highly exposed individuals. Given the range of perchlorate concentrations in food, and that food is the only other exposure source being considered in the RSC analysis, the EPA believes it is sufficiently protective to estimate the MCLG for drinking water using the 90th percentile bodyweight-adjusted perchlorate

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consumption based on the 95th percentile perchlorate food concentrations in TDS. This assures that highly exposed individuals from this most sensitive population are considered in the evaluation of whether perchlorate is found at levels of health concern.

Table III-4. Perchlorate Dose from Food (µg/kg/day) in U.S. Women Ages 20-44 using the mean and 95th Percentile TDS Results[1]

Level of Bodyweight Adjusted Perchlorate Consumption from Population Distribution	Perchlorate Dose from Food (µg/kg/day)	
	Based on Mean Concentrations of Perchlorate in Food	Based on 95th Percentile Concentrations of Perchlorate in Food
Mean	0.09 – 0.12	0.23 – 0.24
50th Percentile	0.08 – 0.10	0.17 – 0.19
90th Percentile	0.18 – 0.21	**0.45**
99th Percentile	0.33 – 0.38	1.16 – 1.17

[1] Ranges are due to various approaches for handling values <level of detection. If no range is presented all approaches resulted in the same value.
Bolded value represents the selected value

The EPA used the drinking water intake and perchlorate dose from food to calculate MCLGs for the three RfD values. Table III-5 shows the RSC values for the three RfD values and the corresponding MCLGs calculated using the EPA's standard equation.

Table III-5. Estimates for RSC and MCLG by RfD

RfD[a] (µg/kg/day)	RSC_w[b] (percent)	DWI (L/kg/day)	MCLG[c] (µg/L)
1.0	56%	0.032	18
2.2	80%	0.032	56
3.6	80%[d]	0.032	90

a. The RfD values corresponding to protecting the fetus of a first trimester pregnant

mother with low-iodine intake levels (i.e., 75 µg/kg/day), low fT4 levels (i.e., 10th percentile of a fT4 distribution for individuals with 75 µg/day iodine intake), and weak TSH feedback strength (i.e., TSH feedback is reduced to be approximately 60 percent less effective than for the median individual) from either a 1-point IQ loss, 2-point IQ loss, or a 3-point IQ loss, respectively.

b. The EPA calculated RSC values based on the following equation given a Food intake of 0.45 µg/kg/day:

$$RSC = \frac{RfD - Food}{RfD} \times 100\%$$

c. The EPA calculated the MCLG values based on the following equation given the respective RfD and RSC values and the DWI:

$$W\left(\frac{\mu g}{L}\right) = \frac{RfD}{DWI} \times RSC_w$$

d. The calculated RSC value using the equation in footnote b is 88 percent. However, the EPA has opted to follow previously established recommendations which employs a ceiling of 80 percent for the RSC value (USEPA 2000d).

IV. Maximum Contaminant Level Goal and Alternatives

Section 1412(a)(3) of the SDWA requires the EPA to propose a maximum contaminant level goal (MCLG) simultaneously with the NPDWR. The MCLG is defined in Section 1412(b)(4)(A) as "the level at which no known or anticipated adverse effects on the health of persons occurs and which allows an adequate margin of safety." The EPA is proposing an MCLG of 56 µg/L based on the rationale and methodology described in Section III above. The derivation of the proposed MCLG uses a point of departure based upon a two percent decrease in IQ for offspring of hypothyroxinemic women of child bearing age have with low iodine intake. The EPA selected a 2 percent decrease in IQ for the proposed perchlorate MCLG because this represents a small change in IQ, well below one standard deviation for the subpopulation of interest.

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As described in Section III, the EPA has selected model parameters and other factors for the derivation of the MCLG that are health protective, including the focus on the most sensitive life stage. The EPA believes that the selection of the combination of protective parameters and this point of departure assures no known or anticipated adverse effects on the health of the most sensitive subpopulation and allows for an adequate margin of safety. The EPA also acknowledges the uncertainties in the derivation of the proposed (and alternative) MCLGs. The EPA acknowledges in particular the challenge associated with selecting the decrement of IQ that represents an adverse effect at the population level and the uncertainties in predicting the dose of perchlorate that may result in a particular IQ decrement given the absence of robust human epidemiological data directly linking perchlorate exposure to IQ decrements. The Agency seeks comment on the alternative MCLG values of 18 µg/L and 90 µg/L, which the EPA derived using the methodology described in Section III based on a one percent and three percent decrease in IQ, respectively.

V. Maximum Contaminant Level and Alternatives

Under section 1412(b)(4)(B) of the SDWA, the EPA must establish a maximum contaminant level (MCL) as close to the MCLG as is feasible. The EPA evaluated available analytical methods to determine the lowest concentration at which perchlorate can be measured and evaluated the treatment technologies for perchlorate that have been examined under field conditions (USEPA 2018a, 2019b). The EPA determined that setting an MCL equal to the proposed MCLG of 56 µg/L is feasible given that the approved analytical method for perchlorate

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for UCMR 1 has a minimum reporting level (MRL) of 4 µg/L (USEPA 1999, 2000c) and that available treatment technologies can treat to concentrations well below 56 µg/L (USEPA, 2018c). Therefore, the EPA is proposing to set the MCL for perchlorate at 56 µg/L.

Because the EPA is taking comment on alternative MCLG values of 18 µg/L and 90 µg/L the Agency evaluated the feasibility of setting an MCL at these levels. The EPA determined that the proposed MCL of 56 µg/L is feasible, therefore a higher MCL alternative such as 90 µg/L is also feasible. The EPA has concluded that analytical methods are capable of measuring perchlorate at 18 µg/L and that treatment technologies have been demonstrated to achieve this level under field conditions (USEPA 2018a, 2019b). Therefore, the EPA is requesting comment on the feasibility of the proposed MCL of 56 µg/L as well as the feasibility of the alternative MCLs of 18 µg/L and 90 µg/L.

As the occurrence analysis in section VI demonstrates, there is infrequent occurrence of perchlorate at 18 µg/L, 56 µg/L, or 90 µg/L. Therefore, the EPA did not evaluate alternative MCL values greater than the corresponding MCLG values. The purpose for evaluating alternative MCL values is to determine whether there is an MCL at which benefits justify the costs of setting an MCL. Given infrequent occurrence, the majority of the costs associated with establishing an NPDWR for perchlorate are for administrative and initial monitoring activities (see section XI.B), which will not be significantly affected by MCL values greater than corresponding MCLG values.

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When proposing an MCL, the EPA must publish, and seek public comment on, the health risk reduction and cost analyses (HRRCA) of each alternative MCL considered (SDWA Section 1412(b)(3)(C)(i)), including: the quantifiable and nonquantifiable health risk reduction benefits attributable to MCL compliance; the quantifiable and nonquantifiable health risk reduction benefits of reduced exposure to co-occurring contaminants attributable to MCL compliance; the quantifiable and nonquantifiable costs of MCL compliance; the incremental costs and benefits of each alternative MCL; the effects of the contaminant on the general population and sensitive subpopulations likely to be at greater risk of exposure; any adverse health risks posed by compliance; and other factors such as data quality and uncertainty. The EPA provides this information in section XII in this preamble. The EPA must base its action on the best available, peer-reviewed science and supporting studies, taking into consideration the quality of the information and the uncertainties in the benefit-cost analysis (SDWA Section 1412(b)(3)). The following sections, as well as the health effects discussion in section III document the science and studies that the EPA relied upon to develop estimates of benefits and costs and understand the impact of uncertainty on the Agency's analysis.

VI. Occurrence

The UCMR 1 is the primary source of occurrence data the EPA relied on to estimate the number of water systems (and associated population) expected to be exposed at levels of perchlorate which could potentially exceed the proposed and alternative MCL levels. Since UCMR 1 data was first used to inform the Agency actions on the 2008 preliminary regulatory

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determination and the 2011 final regulatory determination, the Agency has modified its analysis of the UCMR 1 data set in response to concerns raised by stakeholders regarding the data quality and to represent current conditions at some States that have enacted perchlorate regulations since the UCMR 1 data was collected. Despite these updates, the EPA continues to rely on the UCMR 1 data because they are the best available data collected in accordance with accepted methods from a census of the large water systems (serving more than 10,000 people) and a statistically representative sample of small water systems that provides the best available, national assessment of perchlorate occurrence in drinking water.

In 1999, the EPA developed the first round of the UCMR program in accordance with SDWA requirements to provide national occurrence information on unregulated contaminants (USEPA, 1999, 2000b). The UCMR 1 required sampling from systems in all 50 States, the District of Columbia, four U.S. territories, and tribal lands in five EPA Regions including:

- all 3,097 large (serving more than 10,000 people) CWSs and NTNCWSs, which analyzed either four quarterly samples collected at 3-month intervals (surface water sources), or two samples collected 5 to 7 months apart (ground water sources); and
- a statistically representative selection of 800 small CWSs and NTNCWSs, which analyzed either four quarterly samples collected at 3-month intervals (surface water sources) or two samples collected 5 to 7 months apart (ground water sources).

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Water systems submitted UCMR 1 sampling results to the EPA from 2001 until 2005. Water systems were required to analyze samples for 26 contaminants including perchlorate. The EPA established a minimum reporting level of 4 μg/L for perchlorate in the UCMR.

The EPA conducted a data quality review of the UCMR 1 data submitted by systems prior to analyzing the occurrence data for the 2011 perchlorate regulatory determination. The UCMR 1 dataset used by the EPA included 34,331 samples with 637 measurements of perchlorate above the minimum reporting level from 3,865 systems.

In September of 2012, the EPA received a "Request for Correction" letter from the United States Chamber of Commerce regarding information and data (i.e., the occurrence of perchlorate in drinking water) used by the EPA in its 2011 determination to regulate perchlorate. The U.S. Chamber of Commerce letter stated that the EPA relied upon: 1) data that did not comply with data quality guidelines and 2) data that was not representative of current conditions.

In response[12] to the U.S. Chamber of Commerce, the EPA conducted a detailed assessment of the source water sample detections and determined that it was most appropriate to exclude the source water sample detections from the UCMR 1 perchlorate data set when those samples had appropriate follow-up entry point samples that were included in the UCMR 1 perchlorate data set. In contrast, any source water sample perchlorate detections for which no follow-up entry point sampling was conducted by PWSs were retained in the UCMR 1

[12] See the EPA response letter at https://www.epa.gov/sites/production/files/2017-08/documents/12004-response_0.pdf

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perchlorate data set. As a result of the assessment, the EPA removed 199 source water samples (97 detections) that could be paired with a second follow-up sample located at the entry point to the distribution system. Following this convention, the resulting UCMR 1 data set contains 34,132 perchlorate samples from 3,865 systems with a total of 540 detections from 149 PWSs.

Table VI-1 shows sample distribution by system size category and measurement status. It also shows the number of entry points and systems where perchlorate measurements were reported. The entry point estimates differ from the system estimates because many water systems have more than one entry point. For example, a ground water system with two wells that has separate connections to the distribution system has two entry points.

In response to the U.S. Chamber of Commerce request, the EPA has also reassessed the UCMR 1 data in light of the adoption of regulatory limits in two states. Massachusetts promulgated a drinking water standard for perchlorate of 2 µg/L in 2006 [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"8DPpSrv3","properties":{"formattedCitation":"(MassDEP, 2006)","plainCitation":"(MassDEP, 2006)","noteIndex":0},"citationItems":[{"id":151,"uris":["http://zotero.org/groups/945096/items/9893MBZH"],"uri":["http://zotero.org/groups/945096/items/9893MBZH"],"itemData":{"id":151,"type":"personal_communication","title":"Letter to Public Water Suppliers concerning new perchlorate regulations","URL":"https://www.mass.gov/lists/perchlorate-background-information-and-standards#perchlorate---final-standards-

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","author":[{"literal":"MassDEP"}],"issued":{"date-parts":[["2006"]]}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}], and California promulgated a drinking water standard of 6 µg/L in 2007 [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"cfr6HNhg","properties":{"formattedCitation":"(California Department of Public Health, 2007)","plainCitation":"(California Department of Public Health, 2007)","noteIndex":0},"citationItems":[{"id":150,"uris":["http://zotero.org/groups/945096/items/RA45NKLQ"],"uri":["http://zotero.org/groups/945096/items/RA45NKLQ"],"itemData":{"id":150,"type":"personal_communication","title":"State Adoption of a Perchlorate Standard","URL":"https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/perchlorate/AdoptionMemotoWaterSystems-10-2007.pdf","author":[{"literal":"California Department of Public Health"}],"issued":{"date-parts":[["2007"]]}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. Systems in these states are now required to keep perchlorate levels in drinking water below their state limits, which are lower than the proposed MCL and alternative MCLs. Therefore, the UCMR 1 sampling results from systems in these states do not reflect the current occurrence and exposure conditions. For the purpose of estimating the costs and benefits of the proposed rule, the EPA assumed that no additional monitoring and treatment costs would be incurred by the systems in the States of California and Massachusetts. Systems in California account for some of the perchlorate measurements reported

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below. The notes in the tables below indicate whether results include or exclude systems in California and Massachusetts.

To update the occurrence data for systems sampled during UCMR 1 from the States of California and Massachusetts, the EPA identified all systems and corresponding entry points which had reported perchlorate detections in UCMR 1. Once the systems and entry points with detections were appropriately identified, the EPA then used a combination of available data from Consumer Confidence Reports (CCRs) and perchlorate compliance monitoring data from California (https://sdwis.waterboards.ca.gov/PDWW/) and Massachusetts (https://www.mass.gov/service-details/public-water-supplier-document-search) to match current compliance monitoring data (where available) to the corresponding water systems and entry points sampled during UCMR 1.

Out of the 540 detections previously described the EPA updated data for 321 detections (320 from California systems and 1 from a Massachusetts system). The convention used by the EPA to accomplish the substitution of data was to match entry points with compliance data for active entry points based on most recently reported compliance monitoring data, if more than one data point was reported for an entry point, the assigned value is an average of the annual monitoring results at the entry point. In cases were the EPA could not find updated entry point data, then the original data from UCMR 1 for such entry point was kept.

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Table VI-1. UCMR 1 Data Summary Statistics

Item	Small System Sample	Large System Census	Sum
Total samples	3,295	30,837	34,132
Sample measurements ≥ 4 µg/L	15	525	540
Sample measurements > 18 µg/L	1	16	17
Sample measurements > 56 µg/L	0	2	2
Sample measurements > 90 µg/L	0	1	1
Total entry points	1,454	13,482	14,936
Entry points at which measurements ≥ 4 µg/L	8	328	336
Entry points at which measurements > 18 µg/L	1	16	17
Entry points at which measurements > 56 µg/L	0	2	2
Entry points at which measurements > 90 µg/L	0	1	1
Total systems	797	3,068	3,865
Systems at which measurements ≥ 4 µg/L	8	141	149
Systems at which measurements > 18 µg/L	1	14	15
Systems at which measurements > 56 µg/L	0	2	2
Systems at which measurements > 90 µg/L	0	1	1

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"UAoGFPZv","properties":{"formattedCitation":"(USEPA, 2018)","plainCitation":"(USEPA, 2018)","noteIndex":0},"citationItems":[{"id":969,"uris":["http://zotero.org/groups/945096/items/YERQWPRZ"],"uri":["http://zotero.org/groups/945096/items/YERQWPRZ"],"itemData":{"id":969,"type":"article","title":"Perchlorate Occurrence and Monitoring Report","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. The total row counts and counts of measurements ≥ 4 µg/L identify all instances where perchlorate was detected at or above the minimum reporting level, including water systems in California and Massachusetts, which account for 537 systems in total and 51 systems at which measurements ≥4 µg/L. The instances where perchlorate measurements equal or exceed either 18 µg/L, 56µg/L, or 90 µg/L exclude results from California and Massachusetts because water systems in these States must meet limits below 18 µg/L. The small system counts reflect sample results that have not been extrapolated to small systems nationwide.

Table VI-2 shows the service populations that correspond with the occurrence summary in Table VI-1. The entry point population estimates reflect the assumption that system population is uniformly distributed across entry points; e.g., the entry point population for a system with two entry points is one-half the total system population.

Table VI-2. UCMR1 Data Service Population Summary Statistics

Item	Small System Sample	Large System Census	Sum
Total entry point population	2,760,570	222,853,101	225,613,671
Population served by entry points at which measurements ≥ 4 µg/L	9,484	4,281,937	4,291,420
Population served by entry points at which measurements > 18 µg/L	2,155	618,406	620,560
Population served by entry points at which measurements > 56 µg/L	0	32,432	32,432
Population served by entry points at which measurements > 90 µg/L	0	25,972	25,972
Total system population	2,760,570	222,853,101	225,613,671
Population served by systems at which measurements ≥ 4 µg/L	13,483	16,159,082	16,172,565
Population served by systems at which measurements >18 µg/L	4,309	696,871	701,180
Population served by systems at which measurements > 56 µg/L	0	64,733	64,733
Population served by systems at which measurements > 90 µg/L	0	25,972	25,972

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Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"ChxDKgDr","properties":{"formattedCitation":"(USEPA, 2018)","plainCitation":"(USEPA, 2018)","noteIndex":0},"citationItems":[{"id":969,"uris":["http://zotero.org/groups/945096/items/YERQWPRZ"],"uri":["http://zotero.org/groups/945096/items/YERQWPRZ"],"itemData":{"id":969,"type":"article","title":"Perchlorate Occurrence and Monitoring Report","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. The populations for entry points/systems with measurements ≥ 4 µg/L identify all instances where perchlorate was detected at or above the minimum reporting level, including water systems in California and Massachusetts, which account for 39.6 million of the 225.6 million total population in UCMR 1, and 1.9 million of the 4.3 million population served by entry points at which measurements ≥4 µg/L. The instances where perchlorate measurements equal or exceed either 18 µg/L, 56µg/L, or 90 µg/L exclude results from California and Massachusetts because water systems in these States must meet limits below 18 µg/L. The small system counts reflect sample results that have not been extrapolated to small systems nationwide.

As shown in the tables, 149 systems serving 16.2 million people had measured levels of perchlorate greater than the minimum reporting level. However, many of these systems have several entry points with no measured levels of perchlorate greater than the minimum reporting level; at the entry point level, the exposed population is approximately 4.3 million people served by 336 entry points. Because the uniform population distribution assumption may over or underestimate the service population of any particular entry point, the entry point estimates are uncertain. The system population estimates serve as upper bounds on exposure.

The EPA used entry point maximum measurements to estimate potential baseline occurrence and exposure at levels that exceed the proposed MCL and alternative MCLs. The maximum measurements indicate perchlorate levels that occurred in at least one quarterly sample among surface water systems and at least one semi-annual sample among ground water systems.

Table VI-3 through Table VI-5 show the occurrence and exposure estimates based on the 56 µg/L, 18 µg/L MCL, and 90 µg/L values, respectively. Each table provides estimates of the entry points at which the maximum perchlorate concentrations exceed the MCL value. The tables also report the system-level information for these entry points.

Table VI-3: Estimated Perchlorate Occurrence and Exposure: Entry Point Max Exceeds 56 µg/L

Affected Entity	Small Systems	Large Systems	Total Systems
Entry points	0	2	2
Population served	0	32,432	32,432
Water systems	0	2	2
Population served	0	64,733	64,733

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"adhRbcXq","properties":{"formattedCitation":"(USEPA, 2018c)","plainCitation":"(USEPA, 2018c)","noteIndex":0},"citationItems":[{"id":155,"uris":["http://zotero.org/groups/945096/items/YERQWPRZ"],"uri":["http://zotero.org/groups/945096/items/YERQWPRZ"],"itemData":{"id":155,"type":"article","title":"Perchlorate Occurrence and Monitoring Report","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}].

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Table VI-4: Estimated Perchlorate Occurrence and Exposure: Entry Point Max Exceeds 18 µg/L

Affected Entity	Small Systems[1]	Large Systems	Total Systems
Entry points	1	16	17
Population served	2,155	618,406	620,560
Water systems	1	14	15
Population served	4,309	696,871	701,180

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"z4saRTHP","properties":{"formattedCitation":"(USEPA, 2018c)","plainCitation":"(USEPA, 2018c)","noteIndex":0},"citationItems":[{"id":155,"uris":["http://zotero.org/groups/945096/items/YERQWPRZ"],"uri":["http://zotero.org/groups/945096/items/YERQWPRZ"],"itemData":{"id":155,"type":"article","title":"Perchlorate Occurrence and Monitoring Report","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}].

1. The values shown in the table are estimates based on the UCMR 1 data. The EPA also applied the statistical sampling weights to the results to extrapolate results to national results. The entry point at which a measurement exceeds 18 µg/L is one of 20 in its sample stratum; no other sample in the stratum had a measurement of perchlorate greater than the minimum reporting level. The entry point population of 2,155 represents 5.31% of the total population served by the six UCMR 1 systems in the stratum (40,574). Currently, the stratum population of 774,780 accounts for 1.32% of the 58.7 million national population served by small systems. Thus, the UCMR 1 results indicate that 0.07% (5.31% x 1.32%) of small system customers (approximately 41,100) may be exposed to perchlorate greater than 18 µg/L.

Table VI-5: Estimated Perchlorate Occurrence and Exposure: Entry Point Max Exceeds 90 µg/L

Affected Entity	Small Systems[1]	Large Systems	Total Systems
Entry points	0	1	1
Population served	0	25,972	25,972
Water systems	0	1	1
Population served	0	25,972	25,972

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"z4saRTHP","properties":{"formattedCitation":"(USEPA, 2018c)","plainCitation":"(USEPA, 2018c)","noteIndex":0},"citationItems":[{"id":155,"uris":["http://zotero.org/groups/945096/items/YERQWPRZ"],"uri":["http://zotero.org/groups/945096/items/YERQWPRZ"],"itemData":{"id":155,"type":"article","title":"Perchlorate Occurrence and Monitoring Report","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}].

In summary, the perchlorate occurrence information suggests that at an MCL of 56 µg/L, two systems (0.004% of all water systems in the U.S.) would exceed the regulatory threshold. One of these two systems would exceed the alternative MCL of 90 µg/L. In addition, at an MCL of 18 µg/L, there would be 15 systems (0.03% of all water systems in the U.S.) that would exceed the regulatory threshold.

VII. Analytical Methods

The SDWA directs the EPA to set a contaminant's MCL as close to its MCLG as is ''feasible'', the definition of which includes an evaluation of the feasibility of performing

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chemical analysis of the contaminant at standard drinking water laboratories. Specifically, the SDWA directs the EPA to determine that it is economically and technologically feasible to ascertain the level of the contaminant being regulated in water in public water systems (Section 1401(1)(C)(i)). NPDWRs are also to contain ''criteria and procedures to assure a supply of drinking water which dependably complies with such [MCLs]; including accepted methods for quality control and testing procedures to insure compliance with such levels.'' (Section 1401(1)(D)).

To comply with these requirements, the EPA considers method performance under relevant laboratory conditions, their likely prevalence in certified drinking water laboratories, and the associated analytical costs. The EPA has developed five analytical methods for the identification and quantification of perchlorate in drinking water that meet these criteria. The proposed EPA methods for perchlorate are: 314.0, 314.1, 314.2, 331.0, and 332.0. A detailed description of these methods is presented in the Perchlorate Occurrence and Monitoring Report (USEPA, 2019b).

The EPA Methods 314.0, 314.1, 314.2, 331.0, and 332.0 underwent the EPA's analytical method development and validation processes. The validation process includes a protocol for modifications to any existing EPA-approved analytical methods and a protocol for new determinative techniques. Both validation protocols are rigorous and consider many technical aspects of analytical method performance, including: detection limits; instrument calibration; precision and analyte recovery; analyte retention times; evaluation of blanks; development of

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Quality Control acceptance criteria; analysis of field samples; and other technical aspects of sample analysis and data reporting. All of the proposed EPA analytical methods provide performance data to demonstrate their capability to reliably and consistently measure perchlorate in drinking water at the proposed and alternate MCLs.

EPA Method 314.0, "Determination of Perchlorate in Drinking Water Using Ion Chromatography" (Revision 1.0, USEPA, 1999a) has a method detection limit (MDL) of 0.53 µg/L. Single-laboratory mean percent recovery in various aqueous matrices range from 86% to 113% with Relative Standard Deviations (RSDs) of 1.0% to 12.8%. A minimum reporting level (MRL) is not specified in the method; however, a range of 3.0 to 5.0 µg/L is cited as a benchmark range for quality assurance/quality control (QA/QC) procedures. The MRL is to be established as either a concentration that is greater than three times the laboratory MDL or at a concentration that yields a response greater than a signal to noise ratio of five. In either case, the MRL must not be below the lowest instrument calibration standard (USEPA, 1999a). Method 314.0 was widely adopted as the standard perchlorate method.

After the EPA published Method 314.0, the Agency adopted additional method development goals for the analysis of perchlorate in drinking water including: 1) reducing MRL to less than 1 µg/L through the application of sample concentration techniques, microbore analytical columns, and advanced detection systems (i.e., mass spectrometry), 2) further increasing the tolerance for high ionic strength matrices, and 3) enhancing measurement selectivity.

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EPA Method 314.1, "Determination of Perchlorate in Drinking Water Using Inline Column Concentration/Matrix Elimination Ion Chromatography with Suppressed Conductivity Detection" (Revision 1.0, USEPA, 2005b) documents the EPA single-laboratory Lowest Concentration Minimum Reporting Levels (LCMRLs) of less than 0.2 µg/L (DL = 0.03 µg/L) using online sample pre-concentration. The method uses matrix diversion to handle high ionic strength matrices (up to 1,000 mg/L TDS) and added confirmation analysis using a second analytical column (USEPA, 2005b).

EPA Method 314.2, "Determination of Perchlorate in Drinking Water Using Two-Dimensional Ion Chromatography with Suppressed Conductivity Detection" (USEPA, 2008c) documents the EPA single-laboratory LCMRLs of less than 0.1 µg/L (DLs < 0.02 µg/L) using large volume injection. The method uses 2-D chromatography to handle high ionic strength matrices (up to 1,000 mg/L total dissolved solids [TDS]) and eliminates the need for separate confirmation analysis (USEPA, 2008c).

EPA Method 331.0, "Determination of Perchlorate in Drinking Water by Liquid Chromatography Electrospray Ionization Mass Spectrometry" (Revision 1.0, USEPA, 2005c) documents the EPA single-laboratory LCMRLs of less than 0.1 µg/L (DLs < 0.01 µg/L), applied multiple analytical advancements to a liquid chromatography (LC) analysis including a perchlorate selective LC column (AS-21), mass spectrometry (MS) or MS/MS detection for selectivity and sensitivity, and a custom labeled internal standard ($Cl^{18}O_4^-$) (USEPA, 2005c).

EPA Method 332.0, "Determination of Perchlorate in Drinking Water by Ion Chromatography with Suppressed Conductivity and Electrospray Ionization Mass Spectrometry" (USEPA, Revision 1.0, 2005d) documents the EPA single-laboratory LCMRL of 0.1 µg/L (DL = 0.02 µg/L), applied multiple analytical advancements in an IC analysis including suppressed conductivity IC, MS or MS/MS selectivity and sensitivity, and a custom labeled internal standard ($Cl^{18}O_4^-$) (USEPA, 2005d).

VIII. Monitoring and Compliance Requirements

A. What are the Proposed Monitoring Requirements?

The EPA is proposing to require CWS and NTNCWSs to monitor for perchlorate in accordance with the standardized monitoring framework set out in 40 CFR 141 Subpart C (Standardized Monitoring Framework). Public water systems must sample entry points to the distribution system consistent with requirements in 40 CFR 141.23(a).

Under the Standardized Monitoring Framework, the monitoring frequency for a public water system is dependent on previous monitoring results and whether a monitoring waiver has been granted. The EPA is proposing that consistent with the standardized monitoring framework water systems would be initially required to monitor quarterly for perchlorate. The EPA is also proposing that based upon the monitoring results States would be able to reduce the monitoring frequency to annually, once every three years or once every nine years if the State concludes that the system is reliably and consistently below the MCL. If a water system exceeds the perchlorate

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MCL, the system is in violation and triggered into quarterly monitoring for that sampling point in the next quarter after the violation occurred (40 CFR 141.23(c)(7)). The state may allow the system to return to the reduced monitoring frequency when the state determines that the system is reliably and consistently below the MCL. However, the state cannot make a determination that the system is reliably and consistently below the MCL until a minimum of 2 consecutive ground water or 4 consecutive surface water samples below the MCL have been collected (40 CFR 141.23(c)(8)). All systems must comply with the sampling requirements, unless a waiver has been granted in writing by the state (40 CFR 141.23(c)(6)).

B. Can States Grant Monitoring Waivers?

Under this proposal, water systems may apply to the state, and states may grant, a 9-year monitoring waiver for perchlorate if the conditions described in 40 CFR 141.23(c)(3)-(6) are met. A state may grant a waiver for surface water systems after three rounds of annual monitoring with results less than the MCL and for groundwater systems after conducting three rounds of monitoring with results less than the MCL. One sample must be collected during the nine-year compliance cycle that the waiver is effective, and the waiver must be renewed every nine years.

C. How are System MCL Violations Determined?

Under this proposal, violations of the perchlorate MCL would be determined in a manner consistent with 40 CFR 141.23(i)(3). Compliance with the perchlorate MCL would be determined based on one sample if the level is below the MCL. If the level of perchlorate

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exceeds the MCL at any entry point in the initial sample, a confirmation sample is required within two weeks of the system's receipt of notification of the analytical result of the first sample, in accordance with 141.23(f)(1). Compliance shall be determined based on the average of the initial and confirmation samples.

D. When Must Systems Complete Initial Monitoring?

Pursuant to Section 1412(b)(10), this rule would be effective three years after promulgation. To satisfy initial monitoring requirements, CWS serving populations greater than 10,000 persons must collect 4 quarterly samples for perchlorate during the second compliance period of the fourth compliance cycle (January 1, 2023– December 31, 2025) of the Standardized Monitoring Framework. NTNCWS and CWSs serving 10,000 persons or less must collect 4 quarterly samples during the third compliance period of the fourth compliance cycle (January 1, 2026 – December 31, 2028) of the Standardized Monitoring Framework.

E. Can Systems use Grandfathered Data to Satisfy the Initial Monitoring Requirements?

As proposed today, systems would be allowed to use grandfathered perchlorate data collected after January 1, 2020, to satisfy the initial monitoring requirements. To satisfy initial perchlorate monitoring requirements, a system with appropriate historical monitoring data for each entry point to the distribution system could use the monitoring data from the compliance monitoring period between January 1, 2020, and December 31, 2022, for CWSs serving greater than 10,000 persons and between January 1, 2023, and December 31, 2025, for NTNCWs and for CWSs serving 10,000 or fewer persons.

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IX. Safe Drinking Water Act Right to Know Requirements

A. What are the Consumer Confidence Report Requirements?

A community water system must prepare and deliver to its customers an annual Consumer Confidence Report (CCR) in accordance with requirements in 40 CFR 141 Subpart O. A CCR provides customers with information about their local drinking water quality as well as information regarding the water system compliance with drinking water regulations. Under this proposal CWSs would be required to report perchlorate information in their CCR.

B. What are the Public Notification Requirements?

All public water systems must give the public notice for all violations of NPDWRs and for other situations. Under this proposal, violations of the perchlorate MCL would be designated as Tier 1 and as such, public water systems would be required to comply with 40 CFR 141.202. As described in Section III of this proposal, fetuses of first trimester pregnant women with low iodine are the most sensitive subpopulation, therefore, per 40 CFR 141.202(b)(1), notification of an MCL violation should be provided as soon as practicable but no later than 24 hours after the system learns of the violation under this proposal.

X. Treatment Technologies

Systems that exceed the perchlorate MCL will need to adopt new treatment or another strategy to reduce perchlorate to a level that meets the MCL. When the EPA establishes an MCL for a drinking water contaminant, Section 1412(b)(4)(E) of the SDWA requires that the Agency "list the technology, treatment techniques, and other means which the Administrator finds to be

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feasible for purposes of meeting [the MCL]," which are referred to as best available technologies (BAT). These BATs are used by states to establish conditions for source water variances under Section 1415(a). Furthermore, Section 1412(b)(4)(E)(ii) requires that the Agency identify small system compliance technologies (SSCT), which are affordable treatment technologies, or other means that can achieve compliance with the MCL (or treatment technique, where applicable). The lack of an affordable SSCT for a contaminant triggers certain additional procedures which can result in states issuing small system variances under Section 1412(e) of the SDWA.

The Agency solicits public comment on the choice of available treatment technologies discussed in this section.

A. What are the Best Available Technologies?

The Agency identifies the best available technologies (BAT) as those meeting the following criteria: (1) the capability of a high removal efficiency; (2) a history of full-scale operation; (3) general geographic applicability; (4) reasonable cost based on large and metropolitan water systems; (5) reasonable service life; (6) compatibility with other water treatment processes; and (7) the ability to bring all of the water in a system into compliance. The Agency is proposing the following technologies as BAT for removal of perchlorate from drinking water based its review of the treatment and cost literature (USEPA, 2018a):

- ion exchange;
- biological treatment; and
- centralized reverse osmosis.

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There are also non-treatment options that might be used for compliance in lieu of installing and operating treatment technologies. These include blending existing water sources, replacing a perchlorate-contaminated source of drinking water with a new source (e.g., a new well), and purchasing compliant water from another system. Below are brief descriptions of each proposed BAT.

Ion Exchange.

Ion exchange is a physical and chemical separation process that can achieve high perchlorate removal rates. Feed water passes through a vessel containing a bed of resin made of synthetic beads or gel. As feed water moves through the resin, an ionic contaminant such as perchlorate exchanges for an ion (typically chloride) on the resin. Demonstrated removal efficiencies for perchlorate are typically in the high 90 percent range and can achieve concentrations less than 4 µg/L in treated water [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"s9dVZckb","properties":{"formattedCitation":"(Drago & Leserman, 2011; Membrane Technology, 2006; Siemens Water Technologies, 2009; The Interstate Technology & Regulatory Council (ITRC) Team, 2008)","plainCitation":"(Drago & Leserman, 2011; Membrane Technology, 2006; Siemens Water Technologies, 2009; The Interstate Technology & Regulatory Council (ITRC) Team, 2008)","noteIndex":0},"citationItems":[{"id":1048,"uris":["http://zotero.org/groups/945096/items/KIPNEQUM"],"uri":["http://zotero.org/groups/945096/items/KIPNEQUM"],"itemData":{"id":1048,"type":"paper-conference","title":"Castaic Lake Water Agency Operating Experience with

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Lead-Lag Anion Exchange for Perchlorate Removal","container-title":"Proceedings of the American Water Works Association Water Quality Technology Conference","event":"Water Quality Technology Conference","author":[{"family":"Drago","given":"J.A."},{"family":"Leserman","given":"J.R."}],"issued":{"date-parts":[["2011",11]]}},{"id":1154,"uris":["http://zotero.org/groups/945096/items/2DBS6UYD"],"uri":["http://zotero.org/groups/945096/items/2DBS6UYD"],"itemData":{"id":1154,"type":"article","title":"News: Ion=Exchange System Removes Perchlorate","publisher":"Membrane Technology","author":[{"literal":"Membrane Technology"}],"issued":{"date-parts":[["2006",4]]}}},{"id":1125,"uris":["http://zotero.org/groups/945096/items/6WYYWFY2"],"uri":["http://zotero.org/groups/945096/items/6WYYWFY2"],"itemData":{"id":1125,"type":"report","title":"Case Study: Municipality in the State of Massachusetts","author":[{"literal":"Siemens Water Technologies"}],"issued":{"date-parts":[["2009"]]}}},{"id":1118,"uris":["http://zotero.org/groups/945096/items/5PV8GPIA"],"uri":["http://zotero.org/groups/945096/items/5PV8GPIA"],"itemData":{"id":1118,"type":"article","title":"Technical/Regulatory Guidance: Remediation Technologies for Perchlorate Contamination in Water and Soil","URL":"http://www.eosremediation.com/download/Perchlorate/ITRC%20PERC-2.pdf","author":[{"literal":"The Interstate Technology & Regulatory Council (ITRC) Team"}],"issued":{"date-parts":[["2008",3]]},"accessed":{"date-

parts":[["2018",10,13]]}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. The operation continues until enough of the resin's available ion exchange sites have ions from the feed water and the resin no longer effectively removes the target contaminant, i.e., the contaminant "breaks through" the treatment process. At this point, the resin must be disposed and replaced or regenerated. The length of time until resin must be replaced or regenerated is known as bed life and is a critical factor in the cost effectiveness of ion exchange as a treatment technology. One measurement of bed life is the volume of water that can be treated before breakthrough – called bed volumes – the number of times the resin bed can be filled before breakthrough. Several factors affect bed life, including the presence of competing ions such as nitrate and the type of resin used. Resin types tested for perchlorate removal include strong-base polyacrylic, strong-base polystyrenic (including nitrate-selective), weak-base polyacrylic, weak-base polystyrenic, and perchlorate-selective. Based on studies of the effect of competing ions on performance, perchlorate-selective resins can achieve bed lives ranging from 105,000 to 170,000 bed volumes [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"cxQjBTo8","properties":{"formattedCitation":"(Blute, Seidel, McGuire, Qin, & Byerrum, 2006; Russell, Qin, Blute, McGuire, & Williams, 2008; Wu & Blute, 2010)","plainCitation":"(Blute, Seidel, McGuire, Qin, & Byerrum, 2006; Russell, Qin, Blute, McGuire, & Williams, 2008; Wu & Blute, 2010)","noteIndex":0},"citationItems":[{"id":1076,"uris":["http://zotero.org/groups/945096/items/8Z7K9ZUJ"],"uri":["http://zotero.org/groups/945096/items/8Z7K9ZUJ"],"itemData":{"id":107

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e-parts":[["2010",3,31]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}].

Perchlorate-selective resin cannot be easily regenerated for reuse; the exhausted resin must be disposed (i.e., operated on a 'throw-away' basis). This mode of operation, however, avoids the production of liquid residuals in the form of spent regenerant. Therefore, in combination with the long bed life, single-use perchlorate-selective ion exchange can be a cost-effective treatment option in spite of the need to dispose of the perchlorate-contaminated resin. Build-up of arsenic or uranium on the resin may affect waste disposal options, although studies of perchlorate-selective resins show that arsenic concentrations remain below regulatory limits for hazardous waste disposal and uranium concentrations generally remain below those that require special handling as radioactive waste [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"I0SaZZiL","properties":{"formattedCitation":"(Blute et al., 2006; Russell et al., 2008; Wu & Blute, 2010)","plainCitation":"(Blute et al., 2006; Russell et al., 2008; Wu & Blute, 2010)","noteIndex":0},"citationItems":[{"id":1076,"uris":["http://zotero.org/groups/945096/items/8Z7K9ZUJ"],"uri":["http://zotero.org/groups/945096/items/8Z7K9ZUJ"],"itemData":{"id":1076,"type":"speech","title":"Bench and Pilot Testing of High Capacity, Single-Pass Ion Exchange Resins for Perchlorate Removal","publisher-place":"San Antonio, TX","event":"2006 AWWA Annual Conference & Exposition","event-place":"San Antonio, TX","author":[{"family":"Blute","given":"N.K."},{"family":"Seidel","given":"C.J."},{"family":"McGuire","given":"M.J."},{"family":"Qin","given":"D."},{"family":"Byerrum","given":"J."}],"i

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CA","author":[{"family":"Wu","given":"X."},{"family":"Blute","given":"N.K."}],"issued":{"dat
e-parts":[["2010",3,31]]}}],"schema":"https://github.com/citation-style-
language/schema/raw/master/csl-citation.json"}]. Ion exchange can increase the corrosivity of
treated water [ADDIN ZOTERO_ITEM CSL_CITATION
{"citationID":"dcLyBjzj","properties":{"formattedCitation":"(Berlien, 2003; Betts, 1998;
USEPA, 2005b)","plainCitation":"(Berlien, 2003; Betts, 1998; USEPA,

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Biological Treatment.

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Biological treatment uses bacteria to reduce perchlorate to chlorate, chlorite, chloride, and oxygen. Biological treatment can destroy the perchlorate ion, eliminating the need for management of perchlorate-bearing waste streams. Removal effectiveness exceeds 90 percent for bench-scale tests and full-scale treatment plant studies [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"CnYkqct9","properties":{"formattedCitation":"(Kotlarz, Upadhyaya, Togna, & Raskin, 2016; Upadhyaya, Kotlarz, Togna, & Raskin, 2015; U.S. Department of Defense (U.S. DoD), 2008, 2009; T. D. Webster & Crowley, 2010, 2016; T. D. Webster & Litchfield, 2017)","plainCitation":"(Kotlarz, Upadhyaya, Togna, & Raskin, 2016; Upadhyaya, Kotlarz, Togna, & Raskin, 2015; U.S. Department of Defense (U.S. DoD), 2008, 2009; T. D. Webster & Crowley, 2010, 2016; T. D. Webster & Litchfield, 2017)","noteIndex":0},"citationItems":[{"id":1019,"uris":["http://zotero.org/groups/945096/items/E5WRR4HD"],"uri":["http://zotero.org/groups/945096/items/E5WRR4HD"],"itemData":{"id":1019,"type":"article-journal","title":"Evaluation of electron donors for biological perchlorate removal highlights the importance of diverse perchlorate-reducing populations","container-title":"Environmental Science: Water Research & Technology","page":"1049-1063","volume":"2","author":[{"family":"Kotlarz","given":"N."},{"family":"Upadhyaya","given":"G."},{"family":"Togna","given":"P."},{"family":"Raskin","given":"L."}],"issued":{"date-parts":[["2016"]]}}},{"id":1106,"uris":["http://zotero.org/groups/945096/items/KLWCLIE4"],"uri":["http://zotero.org/groups/945096/items/KLWCLIE4"],"itemData":{"id":1106,"type":"article-journal","title":"Carbohydrate-Based Electron Donor for Biological Nitrate and Perchlorate

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Removal From Drinking Water","container-title":"Journal - American Water Works Association","page":"E674-E684","volume":"107","issue":"12","source":"Wiley Online Library","abstract":"This study evaluated the feasibility of replacing acetic acid with a commercial carbohydrate-based electron donor (CBED) for removal of nitrate and perchlorate (ClO4–) from drinking water. Bench-scale biologically active carbon fixed-bed and fluidized-bed reactors (FXBR and FLBR, respectively), with an initial empty bed contact time (EBCT) of 42.8 min, were fed simulated groundwater containing 15 mg/L nitrate as nitrogen and 200 µg/L ClO4–. EBCT in the FLBR after final expansion was 80.5 min. During the first 100 days using acetic acid at 125 mg/L chemical oxygen demand (COD), complete nitrate removal was achieved in both systems, whereas perchlorate in the FXBR and FLBR effluents remained below 3 and 6 µg/L ClO4–, respectively. For comparable removals, influent COD requirement was higher with the CBED. Biomass yields with acetic acid and the CBED were 0.54–0.58 and 0.59–0.74 mg CODbiomass/mg CODsubstrate, respectively. The higher yield with the CBED resulted in more frequent maintenance requirements.","DOI":"10.5942/jawwa.2015.107.0143","ISSN":"1551-8833","language":"en","author":[{"family":"Upadhyaya","given":"Giridhar"},{"family":"Kotlarz","given":"Nadine"},{"family":"Togna","given":"Paul"},{"family":"Raskin","given":"Lutgarde"}],"issued":{"date-parts":[["2015",12,1]]}}},{"id":1110,"uris":["http://zotero.org/groups/945096/items/VE5JI4GQ"],"uri":["http://zotero.org/groups/945096/items/VE5JI4GQ"],"itemData":{"id":1110,"type":"report","title":"Perchlorate Removal, Destruction, and Field Monitoring Demonstration (Drinking

Water - Pilot Scale)","collection-title":"ESTCP Cost and Performance Report (ER-0312)","author":[{"literal":"U.S. Department of Defense (U.S. DoD)"}],"issued":{"date-parts":[["2008"]]}},{"id":1116,"uris":["http://zotero.org/groups/945096/items/9FHLVTXY"],"uri":["http://zotero.org/groups/945096/items/9FHLVTXY"],"itemData":{"id":1116,"type":"report","title":"Demonstration of a Full-Scale Fluidized Bed Bioreactor for the Treatment of Perchlorate at Low Concentrations in Groundwater","genre":"Environmental Security Technology Certification Program (ESTCP) Final Report (ER-0543)","author":[{"family":"U.S. Department of Defense (U.S. DoD)","given":""}],"issued":{"date-parts":[["2009"]]}},{"id":1093,"uris":["http://zotero.org/groups/945096/items/BI7SF8HW"],"uri":["http://zotero.org/groups/945096/items/BI7SF8HW"],"itemData":{"id":1093,"type":"speech","title":"Full-Scale Implementation of a Biological Fluidized Bed Drinking Water Treatment Plant for Nitrate and Perchlorate Treatment","publisher-place":"Ontario, CA","event":"2010 Water Education Foundation Water Quality and Regulatory Conference","event-place":"Ontario, CA","author":[{"family":"Webster","given":"T.D."},{"family":"Crowley","given":"T.J."}],"issued":{"date-parts":[["2010",11,3]]}}},{"id":989,"uris":["http://zotero.org/groups/945096/items/BI5LYMZP"],"uri":["http://zotero.org/groups/945096/items/BI5LYMZP"],"itemData":{"id":989,"type":"speech","title":"Biological treatment of perchlorate in groundwater.","event":"AWWA Annual Conference and Exposition","author":[{"family":"Webster","given":"T.D."},{"family":"Crowley","given":"T.J."

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cle-journal","title":"Full-scale biological treatment of nitrate and perchlorate for potable water
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40","volume":"109","issue":"5","author":[{"family":"Webster","given":"T.D."},{"family":"Litch
field","given":"M.H."}],"issued":{"date-
parts":[["2017"]]}}}],"schema":"https://github.com/citation-style-
language/schema/raw/master/csl-citation.json"}] Although biological treatment is a relatively new technology for treatment of drinking water in the United States, the State of California has identified biological treatment (along with ion exchange) as one of two best available technologies for achieving compliance with its standard for perchlorate in drinking water (California Code of Regulations, Title 22, Chapter 15, Section 64447.2). The California BAT specifies a fluidized bed, although studies suggest that a fixed bed is also effective. The first full-scale fluidized bed facility using biological treatment of perchlorate to supply municipal drinking water began operation in 2016 [ADDIN ZOTERO_ITEM CSL_CITATION
{"citationID":"nKwIqjde","properties":{"formattedCitation":"(T. D. Webster & Crowley, 2016;
T. D. Webster & Litchfield, 2017)","plainCitation":"(T. D. Webster & Crowley, 2016; T. D.
Webster & Litchfield,
2017)","noteIndex":0},"citationItems":[{"id":989,"uris":["http://zotero.org/groups/945096/items/

BI5LYMZP"],"uri":["http://zotero.org/groups/945096/items/BI5LYMZP"],"itemData":{"id":989
,"type":"speech","title":"Biological treatment of perchlorate in groundwater.","event":"AWWA
Annual Conference and
Exposition","author":[{"family":"Webster","given":"T.D."},{"family":"Crowley","given":"T.J."
}],"issued":{"date-
parts":[["2016",6,21]]}},{"id":990,"uris":["http://zotero.org/groups/945096/items/64HZKA2M"
],"uri":["http://zotero.org/groups/945096/items/64HZKA2M"],"itemData":{"id":990,"type":"arti
cle-journal","title":"Full-scale biological treatment of nitrate and perchlorate for potable water
production","container-title":"Journal AWWA","page":"30-
40","volume":"109","issue":"5","author":[{"family":"Webster","given":"T.D."},{"family":"Litch
field","given":"M.H."}],"issued":{"date-
parts":[["2017"]]}}],"schema":"https://github.com/citation-style-
language/schema/raw/master/csl-citation.json"}]. Raw water quality will affect process design,
in particular, temperature affects the rate of biomass growth; at temperatures below 10 degrees
Celsius, growth is inhibited and bioremediation becomes infeasible [ADDIN ZOTERO_ITEM
CSL_CITATION {"citationID":"ISPg08cl","properties":{"formattedCitation":"(Dugan, 2010b,
2010a; Dugan et al., 2009)","plainCitation":"(Dugan, 2010b, 2010a; Dugan et al.,
2009)","noteIndex":0},"citationItems":[{"id":1047,"uris":["http://zotero.org/groups/945096/item
s/X3WWHCXS"],"uri":["http://zotero.org/groups/945096/items/X3WWHCXS"],"itemData":{"i
d":1047,"type":"speech","title":"The Impact of Temperature on Biological Perchlorate Removal

and Downstream Effluent Polishing","publisher-place":"U.S. Environmental Protection Agency, Office of Research and Development, National Risk Management Research Laboratory","event-place":"U.S. Environmental Protection Agency, Office of Research and Development, National Risk Management Research Laboratory","author":[{"family":"Dugan","given":"N.R."}],"issued":{"date-parts":[["2010",12,8]]}},{"id":1046,"uris":["http://zotero.org/groups/945096/items/IIXUW45F"],"uri":["http://zotero.org/groups/945096/items/IIXUW45F"],"itemData":{"id":1046,"type":"article","title":"Supporting data for presentation: The Impact of Temperature on Biological Perchlorate Removal and Downstream Effluent Polishing","publisher":"U.S. Environmental Protection Agency, Office of Research and Development, National Risk Management Research Laboratory","author":[{"family":"Dugan","given":"N.R."}],"issued":{"date-parts":[["2010",12,8]]}},{"id":1045,"uris":["http://zotero.org/groups/945096/items/FLVLSXCS"],"uri":["http://zotero.org/groups/945096/items/FLVLSXCS"],"itemData":{"id":1045,"type":"speech","title":"The Impact of Temperature on Anaerobic Biological Perchlorate Treatment","publisher-place":"Seattle, WA","event":"2009 AWWA Water Quality Technology Conference & Exposition","event-place":"Seattle, WA","author":[{"family":"Dugan","given":"N.R."},{"family":"Williams","given":"D.J."},{"family":"Meyer","given":"M."},{"family":"Schneider","given":"R.R."},{"family":"Speth","given":"T.F."},{"family":"Metz","given":"D.H."}],"issued":{"date-parts":[["2009"]]}}}],"schema":"https://github.com/citation-style-

language/schema/raw/master/csl-citation.json"}]. This factor limits the feasibility of biological treatment in areas that experience low water temperatures during winter. In addition, bacteria in bioreactors require nutrients to grow and effectively reduce perchlorate. Therefore, some source waters may require supplemental addition of nutrients such as nitrogen or phosphorus [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"NDoHjLOr","properties":{"formattedCitation":"(Harding Engineering and Environmental Services (ESE), 2001; U.S. Department of Defense (U.S. DoD), 2008a, 2009)","plainCitation":"(Harding Engineering and Environmental Services (ESE), 2001; U.S. Department of Defense (U.S. DoD), 2008a, 2009)","noteIndex":0},"citationItems":[{"id":1139,"uris":["http://zotero.org/groups/945096/items/ZPGXUZPL"],"uri":["http://zotero.org/groups/945096/items/ZPGXUZPL"],"itemData":{"id":1139,"type":"report","title":"Final: Phase 2 Treatibility Study Report, Aerojet GET E/F Treatment Facility, Sacramento, California","collection-title":"Prepared for U.S. Environmental Protection Agency Region IX and Baldwin Park Operable Unit Cooperating Respondents, San Gabriel Basin,California","author":[{"family":"Harding Engineering and Environmental Services (ESE)","given":""}],"issued":{"date-parts":[["2001"]]}}},{"id":1074,"uris":["http://zotero.org/groups/945096/items/2ZCNIFHT"],"uri":["http://zotero.org/groups/945096/items/2ZCNIFHT"],"itemData":{"id":1074,"type":"report","title":"Direct Fixed-bed Biological Perchlorate Destruction Demonstration","genre":"ESTCP Final Report (ER-0544)","author":[{"literal":"U.S. Department of Defense (U.S.

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DoD)"}],"issued":{"date-parts":[["2008",9,25]]}}},{"id":1081,"uris":["http://zotero.org/groups/945096/items/9FHLVTXY"],"uri":["http://zotero.org/groups/945096/items/9FHLVTXY"],"itemData":{"id":1081,"type":"report","title":"Demonstration of a Full-Scale Fluidized Bed Bioreactor for the Treatment of Perchlorate at Low Concentrations in Groundwater","genre":"Environmental Security Technology Certification Program (ESTCP) Final Report (ER-0543)","author":[{"family":"U.S. Department of Defense (U.S. DoD)","given":""}],"issued":{"date-parts":[["2009"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}].

Although the process does not produce perchlorate-contaminated wastes, periodic removal of excess biomass, e.g., through backwash, will be required. The backwash water is non-toxic and can be discharged to a sanitary sewer [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"f4qlOob5","properties":{"formattedCitation":"(U.S. Department of Defense (U.S. DoD), 2008, 2009)","plainCitation":"(U.S. Department of Defense (U.S. DoD), 2008, 2009)","noteIndex":0},"citationItems":[{"id":1110,"uris":["http://zotero.org/groups/945096/items/VE5JI4GQ"],"uri":["http://zotero.org/groups/945096/items/VE5JI4GQ"],"itemData":{"id":1110,"type":"report","title":"Perchlorate Removal, Destruction, and Field Monitoring Demonstration (Drinking Water - Pilot Scale)","collection-title":"ESTCP Cost and Performance Report (ER-0312)","author":[{"literal":"U.S. Department of Defense (U.S. DoD)"}],"issued":{"date-

parts":[["2008"]]}}},{"id":1116,"uris":["http://zotero.org/groups/945096/items/9FHLVTXY"],"u
ri":["http://zotero.org/groups/945096/items/9FHLVTXY"],"itemData":{"id":1116,"type":"report
","title":"Demonstration of a Full-Scale Fluidized Bed Bioreactor for the Treatment of
Perchlorate at Low Concentrations in Groundwater","genre":"Environmental Security
Technology Certification Program (ESTCP) Final Report (ER-0543)","author":[{"family":"U.S.
Department of Defense (U.S. DoD)","given":""}],"issued":{"date-
parts":[["2009"]]}}],"schema":"https://github.com/citation-style-
language/schema/raw/master/csl-citation.json"}] or recycled following clarification. Typically,
post-treatment of treated water also will be required because biological treatment increases
soluble microbial organic products, depletes oxygen, and can add turbidity and sulfides [ADDIN
ZOTERO_ITEM CSL_CITATION
{"citationID":"ySKwU3Em","properties":{"formattedCitation":"(Dordelmann, 2009; Harding
Engineering and Environmental Services (ESE), 2001; U.S. Department of Defense (U.S. DoD),
2008; T. D. Webster & Crowley, 2016; T. D. Webster & Litchfield,
2017)","plainCitation":"(Dordelmann, 2009; Harding Engineering and Environmental Services
(ESE), 2001; U.S. Department of Defense (U.S. DoD), 2008; T. D. Webster & Crowley, 2016;
T. D. Webster & Litchfield,
2017)","noteIndex":0},"citationItems":[{"id":1051,"uris":["http://zotero.org/groups/945096/item
s/Z7PC3BME"],"uri":["http://zotero.org/groups/945096/items/Z7PC3BME"],"itemData":{"id":1
051,"type":"speech","title":"Full-Scale Biological Denitrification Plants in Germany, Austria and

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Poland","publisher-place":"Seattle, WA","event":"2009 AWWA Water Quality Technology Conference & Exposition","event-place":"Seattle, WA","author":[{"family":"Dordelmann","given":"O."}],"issued":{"date-parts":[["2009",11]]}},{"id":1026,"uris":["http://zotero.org/groups/945096/items/ZPGXUZPL"],"uri":["http://zotero.org/groups/945096/items/ZPGXUZPL"],"itemData":{"id":1026,"type":"report","title":"Final: Phase 2 Treatibility Study Report, Aerojet GET E/F Treatment Facility, Sacramento, California","collection-title":"Prepared for U.S. Environmental Protection Agency Region IX and Baldwin Park Operable Unit Cooperating Respondents, San Gabriel Basin,California","author":[{"family":"Harding Engineering and Environmental Services (ESE)","given":""}],"issued":{"date-parts":[["2001"]]}},{"id":1110,"uris":["http://zotero.org/groups/945096/items/VE5JI4GQ"],"uri":["http://zotero.org/groups/945096/items/VE5JI4GQ"],"itemData":{"id":1110,"type":"report","title":"Perchlorate Removal, Destruction, and Field Monitoring Demonstration (Drinking Water - Pilot Scale)","collection-title":"ESTCP Cost and Performance Report (ER-0312)","author":[{"literal":"U.S. Department of Defense (U.S. DoD)"}],"issued":{"date-parts":[["2008"]]}},{"id":989,"uris":["http://zotero.org/groups/945096/items/BI5LYMZP"],"uri":["http://zotero.org/groups/945096/items/BI5LYMZP"],"itemData":{"id":989,"type":"speech","title":"Biological treatment of perchlorate in groundwater.","event":"AWWA Annual Conference and Exposition","author":[{"family":"Webster","given":"T.D."},{"family":"Crowley","given":"T.J."

}],"issued":{"date-parts":[["2016",6,21]]}}},{"id":990,"uris":["http://zotero.org/groups/945096/items/64HZKA2M"],"uri":["http://zotero.org/groups/945096/items/64HZKA2M"],"itemData":{"id":990,"type":"article-journal","title":"Full-scale biological treatment of nitrate and perchlorate for potable water production","container-title":"Journal AWWA","page":"30-40","volume":"109","issue":"5","author":[{"family":"Webster","given":"T.D."},{"family":"Litchfield","given":"M.H."}],"issued":{"date-parts":[["2017"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. The treatment process, however, can result in removal of co-occurring contaminants such as nitrate (Upadhyaya et al., 2015; Webster and Crowley, 2010; Webster and Lichfield, 2017).

Reverse Osmosis.

Reverse osmosis is a membrane filtration process that physically removes perchlorate ions from drinking water. This process separates a solute such as perchlorate ions from a solution by forcing the solvent to flow through a membrane at a pressure greater than the normal osmotic pressure. The membrane is semi-permeable, transporting different molecular species at different rates. Water and low-molecular weight solutes pass through the membrane and are removed as permeate, or filtrate. Dissolved and suspended solids are rejected by the membrane and are removed as concentrate or reject. This technique does not destroy the perchlorate ion and,

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therefore, creates a subsequent need for disposal or treatment of perchlorate-contaminated waste (the concentrate).

Membranes may remove ions from feed water by a sieving action (called steric exclusion), or by electrostatic repulsion of ions from the charged membrane surface. Across multiple bench- and pilot-scale studies, reverse osmosis membranes consistently achieve perchlorate removal greater than 80 percent and up to 98 percent [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"edXX3GgQ","properties":{"formattedCitation":"(Liang, Scott, Palencia, & Bruno, 1998; Nam et al., 2005; Yoon, Amy, & Yoon, 2005; Yoon, Yoon, Amy, & Her, 2005)","plainCitation":"(Liang, Scott, Palencia, & Bruno, 1998; Nam et al., 2005; Yoon, Amy, & Yoon, 2005; Yoon, Yoon, Amy, & Her, 2005)","noteIndex":0},"citationItems":[{"id":985,"uris":["http://zotero.org/groups/945096/items/IQVVPD73"],"uri":["http://zotero.org/groups/945096/items/IQVVPD73"],"itemData":{"id":985,"type":"paper-conference","title":"Investigation of Treatment Options for Perchlorate Removal.","publisher":"La Verne, CA: Metropolitan Water District of Southern California","publisher-place":"San Diego, CA","event":"AWWA Water Quality Technology Conference","event-place":"San Diego, CA","author":[{"family":"Liang","given":"S."},{"family":"Scott","given":"K.N."},{"family":"Palencia","given":"L.S."},{"family":"Bruno","given":"J."}],"issued":{"date-parts":[["1998"]]}}},{"id":986,"uris":["http://zotero.org/groups/945096/items/YHEV76YW"],"uri":["http://zotero.org/groups/945096/items/YHEV76YW"],"itemData":{"id":986,"type":"paper-

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conference","title":"Perchlorate Rejection by High-Pressure Membranes and Brine Stream Treatment by Chemical and Biological Processes.","publisher-place":"Phoenix, AZ","event":"American Water Works Association Membrane Technology Conference","event-place":"Phoenix, AZ","author":[{"family":"Nam","given":"S."},{"family":"Kim","given":"S."},{"family":"Choi","given":"H."},{"family":"Yoon","given":""},{"family":"Silverstein","given":"J."},{"family":"Amy","given":"G."}],"issued":{"date-parts":[["2005"]]}}},{"id":992,"uris":["http://zotero.org/groups/945096/items/HPHVBSWB"],"uri":["http://zotero.org/groups/945096/items/HPHVBSWB"],"itemData":{"id":992,"type":"article-journal","title":"Transport of target anions, chromate (Cr (VI)), arsenate (As (V)), and perchlorate (ClO4), through RO, NF, and UF membranes.","container-title":"Water Science and Technology","page":"327-334","volume":"51","issue":"6-7","author":[{"family":"Yoon","given":"J."},{"family":"Amy","given":"G."},{"family":"Yoon","given":"Y."}],"issued":{"date-parts":[["2005"]]}}},{"id":991,"uris":["http://zotero.org/groups/945096/items/IIJW6E8Q"],"uri":["http://zotero.org/groups/945096/items/IIJW6E8Q"],"itemData":{"id":991,"type":"article-journal","title":"Determination of perchlorate rejection and associated inorganic fouling (scaling) for reverse osmosis and nanofiltration membranes under various operating conditions","container-title":"Journal of Environmental Engineering","page":"726-733","author":[{"family":"Yoon","given":"J."},{"family":"Yoon","given":"Y."},{"family":"Am

y","given":"G."},{"family":"Her","given":"N."}],"issued":{"date-parts":[["2005",5]]}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. While water quality affects process design (e.g., recovery rate, cleaning frequency, and antiscalant selection), it has relatively little effect on perchlorate removal effectiveness of reverse osmosis membranes. Reverse osmosis generates a relatively large concentrate stream, which will contain perchlorate as well as other rejected dissolved solids, which will require disposal. The large concentrate stream also means less treated water is available for distribution (e.g., 70 to 85 percent of source water), which is a disadvantage for systems with limited water supply. Because reverse osmosis can increase the corrosivity of the treated water, it may require post-treatment or blending with bypass water. Reverse osmosis can, however, remove co-occurring contaminants including arsenic and chromium-VI (Amy, Yoon, and Amy, 2005).

B. What are the Small System Compliance Technologies?

The EPA is proposing the SSCT shown in Table X-1. The table shows which of the BAT listed above are also affordable for each small system size category listed in Section 1412(b)(4)(E)(ii) of the SDWA. The Agency identified these technologies based on an analysis of treatment effectiveness and affordability [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"J9AlL73G","properties":{"formattedCitation":"(USEPA, 2018a)","plainCitation":"(USEPA, 2018a)","noteIndex":0},"citationItems":[{"id":1210,"uris":["http://zotero.org/groups/945096/ite

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ms/QBLZF9AR"],"uri":["http://zotero.org/groups/945096/items/QBLZF9AR"],"itemData":{"id"
:1210,"type":"article","title":"Best Available Technologies and Small System Compliance
Technologies for Perchlorate in Drinking Water.","publisher":"EPA ***-*-*-
****","author":[{"literal":"USEPA"}],"issued":{"date-
parts":[["2018"]]}}],"schema":"https://github.com/citation-style-
language/schema/raw/master/csl-citation.json"}].

Table X-1: Proposed SSCT for Perchlorate Removal

System Size (Population Served)	Ion Exchange	Biological Treatment	Reverse Osmosis	Point-of-Use Reverse Osmosis
25-500	Yes	No	No	Yes
501-3,300	Yes	Yes	Yes	Yes
3,301-10,000	Yes	Yes	Yes	Not applicable[a]

a. For perchlorate, the EPA has determined that implementing and maintaining this option for systems larger than 3,300 people (greater than 1 MGD design flow) is likely to be impractical.

The SSCT listed in Table X-1 include a point-of-use (POU) version of reverse osmosis in addition to the ion exchange, biological treatment and reverse osmosis technologies described in the previous section. This technology can be used by small systems to comply with the proposed MCL and, therefore, meets the effectiveness requirement for an SSCT. For perchlorate removal, NSF/ANSI Standard 58: Reverse Osmosis Drinking Water Treatment Systems includes a protocol that requires a reverse osmosis unit to be able to reduce perchlorate from a challenge level of 130 µg/L to a target level of 4 µg/L (NSF, 2004). Organizations (e.g., NSF International, Underwriters Laboratories, Water Quality Association) provide third-party testing and

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certification that POU devices meet drinking water treatment standards. There are no perchlorate certification standards for other types of POU devices such as those using ion exchange media.

The operating principle for POU reverse osmosis devices is the same as centralized reverse osmosis: steric exclusion and electrostatic repulsion of ions from the charged membrane surface. In addition to a reverse osmosis membrane for dissolved ion removal, POU reverse osmosis devices often have a sediment pre-filter and a carbon filter in front of the reverse osmosis membrane, a 3- to 5-gallon treated water storage tank, and a carbon filter between the tank and the tap.

The EPA identified the SSCT using the affordability criteria methodology it developed for drinking water rules [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"LHgBHn5b","properties":{"formattedCitation":"(USEPA, 1998)","plainCitation":"(USEPA, 1998)","noteIndex":0},"citationItems":[{"id":1215,"uris":["http://zotero.org/groups/945096/items/399QNBY4"],"uri":["http://zotero.org/groups/945096/items/399QNBY4"],"itemData":{"id":1215,"type":"article","title":"Variance Technology Findings for Contaminants Regulated Before 1996","publisher":"EPA 815–R– 98–003. September","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["1998"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. The analysis method is a comparison of estimated incremental household costs for perchlorate treatment to an expenditure margin, which

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is the difference between baseline household water costs and a threshold equal to 2.5% of median household income. Table X-2 shows the expenditure margins derived for the analysis. These margins show the cap on affordable incremental annual expenditures.

Table X-2: Expenditure Margins for SSCT Affordability Analysis

System Size (Population Served)	Median Household Income[a] (a)	Affordability Threshold[b] (b) = 2.5% x a	Baseline Water Cost[c] (c)	Expenditure Margin (d) = b - c
25-500	$52,791	$1,320	$341	$979
501-3,300	$51,093	$1,277	$395	$883
3,301-10,000	$55,975	$1,399	$412	$987

Source: *Best Available Technologies and Small System Compliance Technologies for Perchlorate in Drinking Water* [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"2scXqyv0","properties":{"formattedCitation":"(USEPA, 2018a)","plainCitation":"(USEPA, 2018a)","noteIndex":0},"citationItems":[{"id":1210,"uris":["http://zotero.org/groups/945096/items/QBLZF9AR"],"uri":["http://zotero.org/groups/945096/items/QBLZF9AR"],"itemData":{"id":1210,"type":"article","title":"Best Available Technologies and Small System Compliance Technologies for Perchlorate in Drinking Water.","publisher":"EPA ***-*-*-****","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]

a. MHI based on U.S. Census 2010 American Community Survey (ACS) 5-year estimates [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"x096Tc8Y","properties":{"formattedCitation":"(U.S. Census Bureau, 2010)","plainCitation":"(U.S. Census Bureau, 2010)","noteIndex":0},"citationItems":[{"id":1225,"uris":["http://zotero.org/groups/945096/items/WJ35QNBT"],"uri":["http://zotero.org/groups/945096/items/WJ35QNBT"],"itemData":{"id":1225,"type":"article","title":"American Community Survey, 5-year Estimates (2006-2010)","author":[{"family":"U.S. Census Bureau","given":""}],"issued":{"date-parts":[["2010"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}] stated in 2010 dollars, adjusted to 2017 dollars using the CPI (for all items) for areas under 50,000 persons [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"7Rg9m81J","properties":{"formattedCitation":"(Bureau of Labor Statistics (BLS), 2018b)","plainCitation":"(Bureau of Labor Statistics (BLS), 2018b)","noteIndex":0},"citationItems":[{"id":1226,"uris":["http://zotero.org/groups/945096/items/GTI7H6YK"],"uri":["http://zotero.org/groups/945096/items/GTI7H6YK"],"itemData":{"id":1226,"type":"article","title":"CPI--All Urban Consumers (all items), for areas under 50,000 persons","author":[{"family":"Bureau of Labor Statistics (BLS)","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}].

b. Affordability threshold equals 2.5 percent of MHI.

c. Household water costs derived from 2006 Community Water System Survey [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"fS2Ibu6t","properties":{"formattedCitation":"(USEPA, 2009c)","plainCitation":"(USEPA, 2009c)","noteIndex":0},"citationItems":[{"id":163,"uris":["http://zotero.org/groups/945096/items/DZNAAV6M"],"uri":["http://zotero.org/groups/945096/items/DZNAAV6M"],"itemData":{"id":163,"type":"article","title":"2006 Community Water System Survey - Volume II: Detailed Tables and Survey Methodology","URL":"https://www.epa.gov/dwstandardsregulations/community-water-system-survey","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2009",5]]},"accessed":{"date-parts":[["2018",8,17]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}], based on residential revenue per connection within each size category, adjusted to 2017 dollars based on the CPI (for all items) for areas under 50,000 persons.

Table X-3 shows the estimates of per-household costs by treatment technology and size category generated using the treatment cost method described in section XII.B as well as *Best*

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Available Technologies and Small System Compliance Technologies for Perchlorate in Drinking Water [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"z6GYvRh1","properties":{"formattedCitation":"(USEPA, 2018a)","plainCitation":"(USEPA, 2018a)","noteIndex":0},"citationItems":[{"id":1210,"uris":["http://zotero.org/groups/945096/items/QBLZF9AR"],"uri":["http://zotero.org/groups/945096/items/QBLZF9AR"],"itemData":{"id":1210,"type":"article","title":"Best Available Technologies and Small System Compliance Technologies for Perchlorate in Drinking Water.","publisher":"EPA ***-*-*-****","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}] and *Technologies and Costs for Treating Perchlorate-Contaminated Waters* [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"18aKvRLD","properties":{"formattedCitation":"(USEPA, 2018f)","plainCitation":"(USEPA, 2018f)","noteIndex":0},"citationItems":[{"id":147,"uris":["http://zotero.org/groups/945096/items/VUJUPN7L"],"uri":["http://zotero.org/groups/945096/items/VUJUPN7L"],"itemData":{"id":147,"type":"article","title":"Technologies and Costs for Treating Perchlorate-Contaminated Waters","publisher":"EPA ***-*-*-****","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-

ED_005043_00078941-00127

language/schema/raw/master/csl-citation.json"}]. Costs in bold font do not exceed the corresponding expenditure margin and, therefore, meet the SSCT affordability criterion. Therefore, the EPA has determined that there are affordable small system compliance technologies available and the Agency is not proposing any variance technologies.

Table X-3: Annual Incremental Cost Estimates for SSCT Affordability Analysis

System Size (Population Served)	Ion Exchange	Biological Treatment	Reverse Osmosis	Point-of-Use Reverse Osmosis
25-500	**$378 to $610**	$2,146 to $3,709	$2,272 to $2,671	**$265 to $271**
501-3,300	**$98 to $148**	**$324 to $566**	**$561 to $688**	**$250 to $251**
3,301-10,000	**$104 to $153**	**$211 to $315**	**$431 to $493**	Not applicable[a]

Source: *Best Available Technologies and Small System Compliance Technologies for Perchlorate in Drinking Water* [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"8y1WSJT4","properties":{"formattedCitation":"(USEPA, 2018a)","plainCitation":"(USEPA, 2018a)","noteIndex":0},"citationItems":[{"id":1210,"uris":["http://zotero.org/groups/945096/items/QBLZF9AR"],"uri":["http://zotero.org/groups/945096/items/QBLZF9AR"],"itemData":{"id":1210,"type":"article","title":"Best Available Technologies and Small System Compliance Technologies for Perchlorate in Drinking Water.","publisher":"EPA ***-*-*-****","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}], which describes the different WBS model input assumptions that result in ranges of per-household costs shown; bold font indicates cost estimates that do not exceed the corresponding expenditure margin.

a. For perchlorate, the EPA has determined that implementing and maintaining a POU program for systems larger than 3,300 people (greater than 1 MGD design flow) is likely to be impractical.

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XI. Rule Implementation and Enforcement

A. What are the Requirements for Primacy?

This section describes the regulations and other procedures and policies primacy entities must adopt, or have in place, to implement the proposed perchlorate rule. States must continue to meet all other conditions of primacy in 40 CFR part 142. Section 1413 of the SDWA establishes requirements that primacy entities (States or Indian Tribes) must meet to maintain primary enforcement responsibility (primacy) for its public water systems. These include: (1) Adopting drinking water regulations that are no less stringent than federal NPDWRs in effect under sections 1412(a) and 1412(b) of the Act, (2) Adopting and implementing adequate procedures for enforcement, (3) Keeping records and making reports available on activities that the EPA requires by regulation, (4) Issuing variances and exemptions (if allowed by the State) under conditions no less stringent than allowed by SDWA Sections 1415 and 1416, and (5) Adopting and being capable of implementing an adequate plan for the provision of safe drinking water under emergency situations.

40 CFR part 142 sets out the specific program implementation requirements for States to obtain primacy for the Public Water Supply Supervision Program, as authorized under section 1413 of the Act.

To implement the perchlorate rule, States would be required to adopt revisions at least as stringent as the proposed provisions in 40 CFR 141.6 (Effective Dates); 40 CFR 141.23

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(Inorganic chemical sampling and analytical requirements); 40 CFR 141.51 (Maximum contaminant level goals for inorganic contaminants); 40 CFR 141.60 (Effective Dates); 40 CFR 141.62 (Maximum contaminant levels for inorganic contaminants); Appendix A to Subpart O ([Consumer Confidence Report] Regulated contaminants); Appendix A to Subpart Q (NPDWR violations and other situations requiring public notice); Appendix B to Subpart Q (Standard health effects language for public notification); and 40 CFR 142.62 (Variances and exemptions from the maximum contaminant levels for organic and inorganic contaminants). Under 40 CFR 142.12(b), all primacy States/territories/tribes would be required to submit a revised program to the EPA for approval within two years of promulgation of any final perchlorate NPDWR or could request an extension of up to two years in certain circumstances.

B. What are the State Record Keeping Requirements?

The current regulations in 40 CFR 142.14 require States with primary enforcement responsibility (i.e., primacy) to keep records of analytical results to determine compliance, system inventories, sanitary surveys, State approvals, vulnerability and waiver determinations, monitoring requirements, monitoring frequency decisions, enforcement actions, and the issuance of variances and exemptions. The State record keeping requirements remain unchanged and would apply to perchlorate as with any other regulated contaminant.

C. What are the State Reporting Requirements?

Currently, States must report to the EPA information under 40 CFR 142.15 regarding violations, variances and exemptions, enforcement actions and general operations of State public

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water supply programs. The State reporting requirements remain unchanged and would apply to perchlorate as with any other regulated contaminant. However, the perchlorate MCL could result in a greater frequency of reporting by certain states. See discussion of Paperwork Reduction Act compliance in Section XVI for more information.

XII. Health Risk Reduction Cost Analysis

Section 1412(b)(3)(C) of the 1996 Amendments to the SDWA requires the EPA to prepare a Health Risk Reduction and Cost Analysis (HRRCA) in support of any NPDWR that includes an MCL. This section addresses the HRRCA requirements as indicated:

- Quantifiable and non-quantifiable health risk reduction benefits for which there is a factual basis in the rulemaking record to conclude that such benefits are likely to occur as the result of treatment to comply with each level (Sections XII.C and XII.D);
- Quantifiable and non-quantifiable health risk reduction benefits for which there is a factual basis in the rulemaking record to conclude that such benefits are likely to occur from reductions in co-occurring contaminants that may be attributed solely to compliance with the MCL, excluding benefits resulting from compliance with other proposed or promulgated regulations (Section XII.C);
- Quantifiable and non-quantifiable costs for which there is a factual basis in the rulemaking record to conclude that such costs are likely to occur solely as a result of compliance with the MCL, including monitoring, treatment, and other costs, and

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excluding costs resulting from compliance with other proposed or promulgated regulations (Section XII.B and XII.D);

- The incremental costs and benefits associated with each alternative MCL considered (Section XII.D);
- The effects of the contaminant on the general population and on groups within the general population, such as infants, children, pregnant women, the elderly, individuals with a history of serious illness, or other sensitive populations that are identified as likely to be at greater risk of adverse health effects due to exposure to contaminants in drinking water than the general population (Section XII.C and Section III);
- Any increased health risk that may occur as the result of compliance, including risks associated with co-occurring contaminants (Section XII.C); and
- Other relevant factors, including the quality and extent of the information, the uncertainties in the analysis, and factors with respect to the degree and nature of the risk (Section XII.E).

A. Identifying Affected Entities

If the EPA issues a final NPDWR for perchlorate, it would affect the following entities: CWSs and NTNCWSs that must meet the proposed MCL and monitoring and reporting requirements; and primacy agencies that must adopt and enforce the MCL as well as the monitoring and reporting requirements. All of these entities would incur costs, including administrative costs, monitoring and reporting costs, and – in a limited number of cases – costs

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to reduce perchlorate levels in drinking water to meet the proposed MCL using treatment or nontreatment options. Section B below summarizes the method the EPA used to estimate these costs.

The systems that reduce perchlorate concentrations will reduce associated health risks. The EPA developed a method to estimate the potential benefits of reduced perchlorate exposure among the service populations of systems with elevated baseline perchlorate levels. Section C below summarizes this method used to estimate these benefits.

Section D below provides the cost and benefit estimates. The EPA prepared the Health Risk Reduction Cost Analysis of the Proposed Perchlorate Rule (USEPA, 2019a), which is available in the docket for the proposed rule. Section XIII summarizes and discusses key uncertainties in the cost and benefit analyses.

B. Method for Estimating Costs

Some costs associated with an NPDWR are incurred by all CWS and NTNCWS (e.g. monitoring and reporting) while others are only incurred by systems with perchlorate levels exceeding the MCL. The EPA estimated costs for CWS and NTNCWS to monitor and report perchlorate levels and also estimated the costs for a subset of public water systems with perchlorate levels greater than the proposed MCL to install and operate treatment. The EPA assumed that affected water systems would adopt ion exchange treatment because it is the most cost-effective treatment option and easy to operate on a 'throw-away' basis. If site-specific nontreatment options are available and lower cost, then this assumption might overstate costs.

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The EPA also estimated the costs for States and other primacy agencies to assure systems implement the rule and to report information to the EPA.

The EPA estimated initial costs for all CWS and NTNCWS operators to read and understand the rule and provide training to their staff to implement the proposed rule. The EPA also estimated the recurring costs for all CWS and NTNCWS operators to conduct monitoring, report results, and apply for waivers. For the purpose of these estimates, the EPA assumed that both small and large systems would require the same amount of time to read the rule, apply for a waiver, and collect a water sample but that it would take large systems twice as long to provide initial training to their staff. Table XII-1 summarizes the frequency and labor hour assumptions for this analysis.

Table XII-1: Labor Hours for Drinking Water Systems Administrative and Monitoring Requirements

Activity	Frequency	Small System Hours	Large System Hours
Read the rule	one time per system	4	4
Provide initial training	one time per system	16	32
Apply to State for monitoring waiver	once every 9 years per eligible system	16	16
Collect a single finished water sample[1]	per monitoring event	1	1

Source (USEPA, 2000a). The EPA's cost analysis reflects full MCL compliance and therefore the EPA did not estimate Tier 1 notification costs.
1. The estimate is per sample. Therefore, a system conducting a year of quarterly monitoring at three entry points incurs a total of 12 hours of labor to complete the task (3 entry points x 4 samples x 1 hour per sample).

Systems will incur monitoring costs over the analysis period. The EPA estimated monitoring frequency based on the proposed initial monitoring requirements, the standard

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monitoring framework requirements for inorganic contaminants, and the proposed implementation schedule. The estimated number of monitoring samples over the analysis period shown in Table XII-2 reflect the following phases:

1. Initial monitoring; four quarterly samples at every CWS and NTNCWS entry point.

2. Preliminary regular monitoring before waiver application: three regular monitoring samples for every CWS and NTNCWS entry point (collected annually at surface water system entry points and triennially at ground water system entry points).

3. Long-term monitoring at either (a) regular monitoring frequency for entry points at systems not granted waivers (60% of surface water system and 10% of ground water systems), or (b) reduced monitoring frequency for entry points at systems receiving waivers from primacy agencies (40% of surface water systems and 90% of ground water systems), which is one sample during every nine-year compliance monitoring cycle.

Table XII-2: Estimates of Compliance Monitoring Samples by Phase and System Type, Size, and Source Water

Monitoring Phase (sampling frequency)	System Type, Size, and Source Water	Number of Entry Points[1]	Aggregate Samples[2]
1. Initial monitoring (4 quarterly samples in one year)	All CWS and NTNCWS	92,656	370,624
2. Preliminary regular monitoring (3 annual entry point samples for surface water systems and 3 triennial entry point samples for ground water systems)	All CWS and NTNCWS	92,654	277,962
3a. Long-term monitoring, no waiver (annual entry point	60% of large surface water CWS	3,324	86,424

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Monitoring Phase (sampling frequency)	System Type, Size, and Source Water	Number of Entry Points[1]	Aggregate Samples[2]
samples)	60% of small surface water CWS and all surface water NTNCWS	6,064	139,472
3a. Long-term monitoring, no waiver (triennial entry point samples)	10% of large ground water CWS	680	4,080
	10% of small ground water CWS and all ground water NTNCWS	7,021	35,105
3b. Long-term monitoring, waiver (1 sample every 9 years)	40% of large surface water CWS	2,216	4,432
	40% of small surface water CWS and all surface water NTNCWS	4,043	8,086
3b. Long-term monitoring, waiver (1 sample every 9 years)	90% of large ground water CWS	6,117	12,234
	90% of small ground water CWS and all ground water NTNCWS	63,189	63,189

Source: Perchlorate Benefit-Cost Analysis Spreadsheet available in the proposed rule docket (EPA-HQ-OW-2018-0780).

1. The EPA estimated a total of 92,656 entry points based on the total number of potentially affected systems in SDWIS/FED and the average number of entry points per system in the UCMR 1 data by size category and source water. The initial monitoring phase includes all entry points. The EPA assumed that the two entry points with MCL exceedances at the proposed MCL of 56 µg/L would continue to take quarterly samples for the duration of the analysis period, for a total of 232 samples. Thus, they are excluded from the estimates for the subsequent phases of regular and long-term monitoring. Primacy agencies may, however, allow monitoring to return to a regular schedule if treatment process operation can reliably and consistently reduce perchlorate below the MCL.

2. For Phase 3, the estimate of aggregate samples is the product of the number of entry points and the frequency of sampling during the remaining years of the analysis period. For example, large surface water CWS without a waiver conduct long-term annual monitoring for 26 years because they complete preliminary regular monitoring in year 9. In contrast, large ground water CWS without a waiver begin long-term triennial monitoring in year 16 because their preliminary regular monitoring phase lasts for 9 years (3 triennial samples) instead of 3 years (3 annual samples). The estimates also reflect schedule differences by size because large CWS begin monitoring schedules three years earlier than small CWS and all NTNCWS.

To estimate costs to CWSs and NTNCWSs associated with time spent on compliance monitoring and other administrative costs, the EPA generally uses the labor rate[13] for full-time treatment plant operators in CWSs from USEPA [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"5g8IJ6Eh","properties":{"formattedCitation":"(2011)","plainCitation":"(2011)","noteIndex":0},"citationItems":[{"id":992,"uris":["http://zotero.org/groups/945096/items/FHCVSMRC"],"uri":["http://zotero.org/groups/945096/items/FHCVSMRC"],"itemData":{"id":992,"type":"article","title":"Labor Cost for National Drinking Water Rules","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2011"]]}},"suppress-author":true}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}], which vary based on the size of the system. The EPA calculated a weighted average fully loaded hourly wage rate for water systems of $34.71.

[13] Updated to 2017$ using the BLS Employment Cost Index for Total Compensation for Private industry workers in Utilities.

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Additionally, the EPA assumed that systems will incur an average analytical cost of $64 per sample, which is the average cost per sample obtained from multiple laboratories for perchlorate quantitation using Method 314.0.

To estimate treatment cost, the EPA utilized the occurrence data described in Section VI to estimate the number of system entry points that exceed the proposed and alternative MCLs. The EPA estimated costs that those water systems would incur to install and maintain treatment using its work breakdown structure (WBS) cost estimating models. The WBS models are spreadsheet-based engineering models for individual treatment technologies, linked to a central database of component unit costs. The WBS approach involves breaking a process down into discrete components for the purpose of estimating costs and produce a comprehensive assessment of the capital and operating requirements for a treatment system[14]. The EPA used the WBS models to generate total capital and O&M cost estimates for each technology and nontreatment option for up to 49 different system flow rates. The EPA generated separate estimates that correspond to different water sources (groundwater or surface water), three different cost levels (low, mid, and high), and different technology-specific scenarios (e.g., 105,000 or 170,000 bed volumes for ion exchange). The EPA used the mid-cost estimates for ion exchange to generate expected costs for all entry points requiring perchlorate removal. This technology cost-effectively removes perchlorate, but its ability to remove co-occurring

[14] The document *Technologies and Costs for Treating Perchlorate-Contaminated Waters* (USEPA, 2018c) contains more complete discussion of the WBS models and the cost estimating approach.

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contaminants depends on influent characteristics and process design. Therefore, the EPA did not assume that treatment might result in ancillary quantifiable or non-quantifiable benefits of removing co-occurring ions such as nitrate. Treatment costs include waste disposal for spent resin, but do not include post-treatment costs for corrosion control because blending rates at most entry points should not result in much chloride addition or changes in corrosivity.

For purposes of estimating the costs and benefits, the EPA assumed that CWSs and NTNCWSs in California and Massachusetts would not incur additional cost or realize benefits because these States currently regulate perchlorate at a more stringent level than the proposed MCL and alternative MCL. For each entry point in the UCMR 1 dataset outside of these two States, the EPA compared the maximum observed perchlorate concentration to the MCL to identify those that have an exceedance of the proposed MCL. The EPA assumed that these entry points would incur costs for an additional confirmation sample and would need to implement treatment to meet the MCL. For each entry point, the EPA estimated the design flow and the average flow by service populations based on the Agency's prior analysis of the relationships between these values (USEPA, 2000b). The Agency assumed blending of treated water and untreated water would be used to meet an average treatment target equal to 80 percent of the MCL (for an MCL of 56 µg/L the blending target would be 45 µg/L) given a 95 percent removal effectiveness until perchlorate breakthrough. The Agency applied the capital cost and O&M cost curves from the WBS models to the design and average flows adjusted for blending. When small systems in the UCMR 1 sample incurred treatment costs, the EPA extrapolated the costs on a per

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capita basis to the estimate of national population exposure derived using the small system population sampling weights.

For the primacy agencies that will implement and enforce the rule (including 49 States, one tribal nation and 5 territories), the EPA estimated upfront costs incurred during the three years between rule promulgation and the effective date to read and understand the rule, adopt regulatory changes, and provide training to CWSs and NTNCWSs and Agency staff. Primacy agencies will also have recurring costs to review waiver applications and monitoring reports. Table XII-3 summarizes the labor hour assumptions for these activities. The EPA requests comments on these assumptions.

Table XII-3: Labor Hours for Primacy Agency Administrative Requirements

Activity	Frequency	Hours
Read and understand the rule, adopt regulatory changes[1]	one time per Agency	416
Provide initial training and assistance to water systems[2]	total per Agency	2,080
Provide initial training to staff[2]	total per Agency	250
Review waiver applications	once every 9 years per eligible system	8
Review monitoring reports	per monitoring event	1

Source (USEPA, 2000a)
1. The EPA assumed that two States that already regulate perchlorate in drinking water would not incur the incremental burdens in this table to regulate perchlorate under the proposed rule because they already incur baseline costs for perchlorate regulation including monitoring costs. The Agency assumed, however, that the two States would incur an average of 40 hours to confirm that their existing requirements are at least as protective as the proposed rule.
2. The EPA assumed that all training hours occur in a single year, although the hours may actually occur over time. The total hour estimates are average values across States.

State labor rates are based on the mean hourly wage rate from Bureau of Labor Statistics (BLS) Standard Occupational Classification code 19-2041 (State Government –Environmental

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Scientists and Specialists, Including Health). Wages are loaded using a factor calculated from the BLS Employer Costs for Employee Compensation report [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"C1A8zUkj","properties":{"formattedCitation":"(Bureau of Labor Statistics (BLS), 2016 Table 3)","plainCitation":"(Bureau of Labor Statistics (BLS), 2016 Table 3)","noteIndex":0},"citationItems":[{"id":984,"uris":["http://zotero.org/groups/945096/items/L8X3BDZ9"],"uri":["http://zotero.org/groups/945096/items/L8X3BDZ9"],"itemData":{"id":984,"type":"webpage","title":"Employer Cost for Employee Compensation -- September 2016","author":[{"literal":"Bureau of Labor Statistics (BLS)"}],"issued":{"date-parts":[["2016"]]}},"label":"book","suffix":"Table 3"}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}], for a fully loaded hourly wage rate for States of $50.67. The EPA requests comments on these labor rate assumptions.

The proposed rule provides three years between the effective dates and compliance dates for systems. For the purpose of estimating costs, the EPA assumed that large CWSs would phase in administrative costs, including initial monitoring, and upfront administrative costs uniformly over the 3 years following the effective date (i.e., years 4 to 6 of the analysis period). Similarly, the EPA assumed that small CWSs and NTNCSs will phase in these costs over the subsequent three-year period (i.e., years 7 to 9 of the analysis period). The EPA assumed that, within these periods, all systems would conduct initial monitoring – one year of quarterly monitoring to determine whether perchlorate concentrations are consistently and reliably below the proposed

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MCL. Thereafter, systems with MCL exceedances would continue to monitor quarterly, while systems below the MCL that obtain waivers will monitor annually for three years (surface water systems) or triennially for 9 years (ground water systems), then incur costs for a waiver application. Thereafter, these systems will continue reduced monitoring - once every nine years - under subsequent waivers. Systems that are below the MCL without waivers will monitor once per year (surface water systems) or once every three years (groundwater). Consistent with [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"mnzEXxZK","properties":{"formattedCitation":"(USEPA, 2008b)","plainCitation":"(USEPA, 2008b)","dontUpdate":true,"noteIndex":0},"citationItems":[{"id":998,"uris":["http://zotero.org/groups/945096/items/QSXYHBID"],"uri":["http://zotero.org/groups/945096/items/QSXYHBID"],"itemData":{"id":998,"type":"article","title":"Draft Information Collection Request for the Disinfectants/Disinfection Byproducts, Chemical, and Radionuclides Rule","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2008",6]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}], the EPA assumed that 90% of groundwater and 40% of surface water systems that have all entry points below the MCL would obtain waivers.

The EPA estimated the costs over a 35-year analysis period, which includes a 3-year period prior to the effective date to allow for State rule adoption activities, a 3-year period after

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the effective date to allow initial monitoring among large CWSs, and a 3-year period after that to allow initial monitoring for small CWSs and NTNCWSs. Evaluating costs over 35 years covers a full life cycle of the capital investments that large systems make in the 6th year; the WBS estimates of composite useful life of the equipment and infrastructure investment is approximately 30 years. The EPA assumed that treatment modifications will be completed in the final year of the initial monitoring period (i.e., year 6 of the analysis for large CWSs and year 9 for small CWSs and NTNCWSs). The EPA calculated the present value of total costs in each year of the analysis period and discounted to year 1 using both a 3% and 7% discount rate and annualized total present value of costs at the same rates over 35 years to obtain a constant total annual cost estimate to compare to total annual benefits.

Water systems typically recover costs through increased household rates, resulting in increased costs at the household level[15]. To calculate the magnitude of the cost increase for systems that exceed the proposed MCL or alternative MCL, the EPA first estimated the number of households that may incur costs as a result of the rule based on the population served by affected CWSs and NTNCWSs and the average household size [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"Q6RKolIZ","properties":{"formattedCitation":"(U.S. Census Bureau, 2017b)","plainCitation":"(U.S. Census Bureau, 2017b)","noteIndex":0},"citationItems":[{"id":1000,"uris":["http://zotero.org/groups/945096/ite

[15] For systems with monitoring costs only, household-level costs will be negligible.

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ms/CGU3LT9N"],"uri":["http://zotero.org/groups/945096/items/CGU3LT9N"],"itemData":{"id":1000,"type":"article","title":"Average Household Size of Occupied Housing Units by Tenure. American Community Survey 1-Year Estimates: Table B25010","author":[{"family":"U.S. Census Bureau","given":""}],"issued":{"date-parts":[["2017"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. The EPA divided the total annual system-level costs by the number of households served by the system.

C. Method for Estimating Benefits

The EPA has taken an approach in evaluating the benefits for perchlorate that is consistent with the SAB's recommendations for the methodology to inform the MCLG for perchlorate. This approach involves a) using a BBDR model to estimate the impact of perchlorate on maternal thyroid hormone levels during the first trimester of pregnancy, and b) using a dose-response function from the epidemiological literature to model the relationship between altered maternal thyroid hormone levels and offspring IQ. Currently available science has limited this quantitative benefits assessment to the relationship between perchlorate and IQ. Given that alterations in thyroid hormones have been associated with other adverse outcomes, including reproductive outcomes (Alexander et al., 2017; Hou et al., 2016; Maraka et al., 2016) and effects on cardiovascular systems (Asvold et al., 2012; Sun et al., 2017) there are likely non-quantified benefits of risk reductions for other endpoints or reduced exposure to co-occurring

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contaminants, which are addressed below. Uncertainties regarding the quantifiable benefits are also addressed below.

The population impacted by the rule for which benefits can be quantified is specific to live births from mothers who were served by a CWS or NTNCWS with perchlorate concentrations above the potential MCLs. To determine the nationwide population of children that will experience a quantifiable benefit of avoided IQ decrements from reducing maternal perchlorate exposure during pregnancy, the EPA first estimated the total population being served by systems above the MCL based on data from UCMR 1. The EPA then multiplied the total population served for each affected CWS and NTNCWS by the proportion of women of childbearing age (aged 15-44) in the US, which is 19.7 percent [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"rCNbGglo","properties":{"formattedCitation":"(U.S. Census Bureau, 2017a)","plainCitation":"(U.S. Census Bureau, 2017a)","noteIndex":0},"citationItems":[{"id":189,"uris":["http://zotero.org/groups/945096/items/ZM7S6H44"],"uri":["http://zotero.org/groups/945096/items/ZM7S6H44"],"itemData":{"id":189,"type":"article","title":"Annual estimates of the resident population by single year of age and sex for the United States: April 1, 2010 to July 1, 2016.","URL":"https://www.census.gov/data/datasets/2016/demo/popest/nation-detail.html#ds","author":[{"literal":"U.S. Census Bureau"}],"issued":{"date-parts":[["2017"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. The number of women of child-bearing age

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for each entry point was then multiplied by the annual number of live births in the US, or 62 births per 1,000 women (6.2 percent) [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"7XfZyKhY","properties":{"formattedCitation":"(Martin, Hamilton, & Osterman, 2017)","plainCitation":"(Martin, Hamilton, & Osterman, 2017)","noteIndex":0},"citationItems":[{"id":186,"uris":["http://zotero.org/groups/945096/items/MY6LPDKD"],"uri":["http://zotero.org/groups/945096/items/MY6LPDKD"],"itemData":{"id":186,"type":"article","title":"Births in the United States, 2016. NCHS Data Brief No. 287","URL":"https://www.cdc.gov/nchs/data/databriefs/db287.pdf","author":[{"family":"Martin","given":"J.A."},{"family":"Hamilton","given":"B.E."},{"family":"Osterman","given":"M.J.K"}],"issued":{"date-parts":[["2017"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}].

The EPA used a two-step dose-response model to estimate health benefits of a reduction in perchlorate exposure as a result of regulating perchlorate in drinking water not to exceed the proposed MCL of 56 µg/L and alternative MCLs of 18 µg/L and 90 µg/L. The first step relates changes in perchlorate to changes in maternal free-thyroxine (fT4) during the first trimester of pregnancy using the EPA's BBDR model. Because the dose-response relationship between perchlorate exposure and maternal fT4 is dependent on maternal iodine intake status, this first-step analysis is repeated for several categories of iodine intake. For the BBDR simulations, the EPA used the 90th percentile ingestion rate to be consistent with the MCLG modeling approach, which may overstate the exposure in the simulation.

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The second step of the dose-response model subsequently relates the predicted changes in maternal fT4 from the BBDR model to changes in child IQ using the function estimated in the EPA independent analysis of the [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"iqyVRL6z","properties":{"formattedCitation":"(Korevaar et al., 2016)","plainCitation":"(Korevaar et al., 2016)","dontUpdate":true,"noteIndex":0},"citationItems":[{"id":43,"uris":["http://zotero.org/groups/945096/items/B968J6XI"],"uri":["http://zotero.org/groups/945096/items/B968J6XI"],"itemData":{"id":43,"type":"article-journal","title":"Association of maternal thyroid function during early pregnancy with offspring IQ and brain morphology in childhood: a population-based prospective cohort study","container-title":"The Lancet Diabetes & Endocrinology","page":"35-43","volume":"4","issue":"1","source":"ScienceDirect","abstract":"SummaryBackground\nThyroid hormone is involved in the regulation of early brain development. Since the fetal thyroid gland is not fully functional until week 18–20 of pregnancy, neuronal migration and other crucial early stages of intrauterine brain development largely depend on the supply of maternal thyroid hormone. Current clinical practice mostly focuses on preventing the negative consequences of low thyroid hormone concentrations, but data from animal studies have shown that both low and high concentrations of thyroid hormone have negative effects on offspring brain development. We aimed to investigate the association of maternal thyroid function with child intelligence quotient (IQ) and brain morphology.\nMethods\nIn this population-based prospective cohort study, embedded within the Generation R Study (Rotterdam, Netherlands), we investigated the

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association of maternal thyroid function with child IQ (assessed by non-verbal intelligence tests) and brain morphology (assessed on brain MRI scans). Eligible women were those living in the study area at their delivery date, which had to be between April 1, 2002, and Jan 1, 2006. For this study, women with available serum samples who presented in early pregnancy (<18 weeks) were included. Data for maternal thyroid-stimulating hormone, free thyroxine, thyroid peroxidase antibodies (at weeks 9–18 of pregnancy), and child IQ (assessed at a median of 6·0 years of age [95% range 5·6–7·9 years]) or brain MRI scans (done at a median of 8·0 years of age [6·2–10·0]) were obtained. Analyses were adjusted for potential confounders including concentrations of human chorionic gonadotropin and child thyroid-stimulating hormone and free thyroxine.\nFindings\nData for child IQ were available for 3839 mother–child pairs, and MRI scans were available from 646 children. Maternal free thyroxine concentrations showed an inverted U-shaped association with child IQ (p=0·0044), child grey matter volume (p=0·0062), and cortex volume (p=0·0011). For both low and high maternal free thyroxine concentrations, this association corresponded to a 1·4–3·8 points reduction in mean child IQ. Maternal thyroid-stimulating hormone was not associated with child IQ or brain morphology. All associations remained similar after the exclusion of women with overt hypothyroidism and overt hyperthyroidism, and after adjustment for concentrations of human chorionic gonadotropin, child thyroid-stimulating hormone and free thyroxine or thyroid peroxidase antibodies (continuous or positivity).\nInterpretation\nBoth low and high maternal free thyroxine concentrations during pregnancy were associated with lower child IQ and lower grey matter and cortex volume. The

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association between high maternal free thyroxine and low child IQ suggests that levothyroxine therapy during pregnancy, which is often initiated in women with subclinical hypothyroidism during pregnancy, might carry the potential risk of adverse child neurodevelopment outcomes when the aim of treatment is to achieve high-normal thyroid function test results.\nFunding\nThe Netherlands Organisation for Health Research and Development (ZonMw) and the European Community's Seventh Framework Programme.","DOI":"10.1016/S2213-8587(15)00327-7","ISSN":"2213-8587","shortTitle":"Association of maternal thyroid function during early pregnancy with offspring IQ and brain morphology in childhood","journalAbbreviation":"The Lancet Diabetes & Endocrinology","author":[{"family":"Korevaar","given":"Tim I M"},{"family":"Muetzel","given":"Ryan"},{"family":"Medici","given":"Marco"},{"family":"Chaker","given":"Layal"},{"family":"Jaddoe","given":"Vincent W V"},{"family":"Rijke","given":"Yolanda B","non-dropping-particle":"de"},{"family":"Steegers","given":"Eric A P"},{"family":"Visser","given":"Theo J"},{"family":"White","given":"Tonya"},{"family":"Tiemeier","given":"Henning"},{"family":"Peeters","given":"Robin P"}],"issued":{"date-parts":[["2016",1]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}] study data. Ultimately, the changes in IQ are estimated for each impacted iodine intake group, and all of the impacted iodine intake groups' IQ decrements are averaged together based on the proportion of individuals in each iodine intake

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category. Table XII-4 shows the specific iodine intake groups and the proportion of non-pregnant women of childbearing age that fall into each group.

Table XII-4: Proportion of Population based on Maternal Iodine Intake Status

Iodine Intake Range (µg/ day) used for Benefits Analysis	Proportion of the population
0 to <55	7.14%
55 to <60	2.15%
60 to <65	1.06%
65 to < 70	1.86%
70 to <75	1.31%
75 to <80	3.10%
80 to <85	2.62%
85 to <90	1.20%
90 to <95	1.83%
95 to <100	2.94%
100 to <125	13.56%
125 to <150	9.08%
150 to <170	10.31%
170 to <300	24.47%
≥300	17.36%

Source: U.S. EPA (2019a).

These changes in child IQ are then monetized using the EPA's estimate of the value of an IQ point. This estimate reflects the discounted present value of lifetime income reductions attributable to a 1-point reduction in IQ at birth. Therefore, the present value depends on the discount rate. At a 3 percent discount rate, the estimate is $18,686 per IQ point; at a 7 percent discount rate the estimate is $3,631.

Other potential benefits not quantified or monetized include additional avoided health effects which cannot currently be monetized, improved public perception of water quality, as well as a possible reduction of other co-occurring contaminants that target the thyroid, such as

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nitrate, as a result of water treatment for removal of perchlorate. For example, all of the treatment technologies evaluated for this rule (ion exchange, biological treatment, and reverse osmosis) can also remove co-occurring nitrate from drinking water. Section XIII provides additional discussion of uncertainties in this analysis.

D. Comparison of Costs and Benefits

This section provides the estimates of costs and benefits that the EPA derived using the methods described above. It includes estimates for the proposed and alternative MCLs.

For the proposed MCL of 56 µg/L, Table XII-5 summarizes the total estimated cost of the proposed rule to water systems and primacy agencies, and Table XII-6 summarizes the estimated per-household cost for the system incurring treatment costs[16]. Table XII-7 summarizes the estimated benefits. In both instances, the estimates based on the UCMR 1 sample are also national estimates because treatment costs occur only at large systems; there are no small system treatment costs or related benefits to extrapolate.

[16] For all households served by all of the systems subject to the monitoring costs as well as MCL compliance, the average annual cost is less than $0.20.

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Table XII-5: Summary of Total Annualized Costs at MCL of 56 µg/L (Millions; 2017$)

Cost Component	3% Discount	7% Discount
Drinking Water Systems Treatment Costs	$0.65	$0.70
Drinking Water Systems Monitoring and Administration Costs[1]	$5.93	$6.38
Drinking Water Systems Costs Subtotal	$6.58	$7.07
State Administration Costs	$3.09	$3.20
Total Costs	$9.67	$10.28

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"00m0B8b8","properties":{"formattedCitation":"(USEPA, 2018b)","plainCitation":"(USEPA, 2018b)","noteIndex":0},"citationItems":[{"id":1217,"uris":["http://zotero.org/groups/945096/items/P9YD2GRH"],"uri":["http://zotero.org/groups/945096/items/P9YD2GRH"],"itemData":{"id":1217,"type":"article","title":"Health Risk Reduction and Cost Analysis of the Proposed Perchlorate National Primary Drinking Water Regulation","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. Detail may not sum to total because of independent rounding.

1. Costs include monitoring for all CWS and NTNCWS. Some consecutive systems that purchase 100% of their water from wholesale systems may not be required to monitor for perchlorate provided States allow integrated system agreements to include perchlorate among the monitoring requirements that the wholesale system fulfills for the consecutive system. The potential number of consecutive systems excluded from perchlorate monitoring depends on system and State decisions and, therefore, is unknown. Excluding monitoring costs for approximately 8,400 consecutive systems that do not report a water source facility (e.g., well or intake) in SDWIS/FED from the monitoring cost analysis reduces annualized monitoring costs by $0.8 million.

Table XII-6: Summary of Household-Level Annual Costs for Systems Treating to Comply with MCL at 56 µg/L (2017$)

Cost Range	3% Discount	7% Discount
Minimum	$11	$14
Average	$40	$47
Maximum	$69	$80

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Source: [ADDIN ZOTERO_ITEM CSL_CITATION

{"citationID":"xTqTuaNv","properties":{"formattedCitation":"(USEPA,

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ms/P9YD2GRH"],"uri":["http://zotero.org/groups/945096/items/P9YD2GRH"],"itemData":{"id"

:1217,"type":"article","title":"Health Risk Reduction and Cost Analysis of the Proposed

Perchlorate National Primary Drinking Water

Regulation","author":[{"family":"USEPA","given":""}],"issued":{"date-

parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-

language/schema/raw/master/csl-citation.json"}].

Table XII-7: Summary of Total Annualized Benefits of Avoided Lost IQ Decrements at MCL of 56 µg/L (Millions; 2017$)

Korevaar β distribution	Annual Delta IQ	3% Discount	7% Discount
Upper	243	$3.57	$0.60
Central	136	$2.00	$0.34
Lower	30	$0.44	$0.07

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"T7LDdiyn","properties":{"formattedCitation":"(USEPA, 2018b)","plainCitation":"(USEPA, 2018b)","noteIndex":0},"citationItems":[{"id":1217,"uris":["http://zotero.org/groups/945096/items/P9YD2GRH"],"uri":["http://zotero.org/groups/945096/items/P9YD2GRH"],"itemData":{"id":1217,"type":"article","title":"Health Risk Reduction and Cost Analysis of the Proposed Perchlorate National Primary Drinking Water Regulation","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]

For the alternative MCL of 18 µg/L, Table XII-8 summarizes the total cost of the proposed rule to water systems and primacy agencies, and Table XII-9 summarizes the per-household cost for systems requiring treatment, which vary across the systems. Table XII-10 summarizes the quantified benefits. At this threshold, one entry point for one small system in the UCMR 1 data had an exceedance. Therefore, the EPA extrapolated the treatment costs and benefits from the UCMR 1 estimates to national estimates based on sampling weights.

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Table XII-8: Summary of Total Annualized Costs at MCL of 18 µg/L (Millions; 2017$)

Cost Component	3% Discount (UCMR 1)[1]	7% Discount (UCMR 1)[1]	3% Discount (National)[1]	7% Discount (National)[1]
Drinking Water Systems Treatment Costs	$6.92	$7.29	$7.92	$8.37
Drinking Water Systems Monitoring and Administration Costs	$5.94	$6.38	$5.94	$6.38
Drinking Water Systems Costs Subtotal	$12.85	$13.67	$13.86	$14.75
State Administration Costs	$3.09	$3.21	$3.09	$3.21
Total Costs	$15.95	$16.88	$16.95	$17.96

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"H6Rcd4Hf","properties":{"formattedCitation":"(USEPA, 2018b)","plainCitation":"(USEPA, 2018b)","noteIndex":0},"citationItems":[{"id":1217,"uris":["http://zotero.org/groups/945096/items/P9YD2GRH"],"uri":["http://zotero.org/groups/945096/items/P9YD2GRH"],"itemData":{"id":1217,"type":"article","title":"Health Risk Reduction and Cost Analysis of the Proposed Perchlorate National Primary Drinking Water Regulation","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. Detail may not sum to total because of independent rounding.

1. The EPA applied statistical sampling weights to the results to extrapolate small system results to national results. The entry point at which a measurement exceeds 18 µg/L is one of 20 in its sample stratum; no other sample in the stratum had a measurement of perchlorate greater than the minimum reporting level. The entry point population of 2,155 represents 5.31% of the total population served by the six UCMR 1 systems in the stratum (40,574). Currently, the stratum population of 775,000 accounts for 1.32% of the 58.7 million national population served by small systems. Thus, the UCMR 1 results indicate that 0.07% (5.31% x 1.32%) of small system customers (approximately 41,100) may be exposed to perchlorate greater than 18 µg/L. The EPA calculated per-capita costs for the system and extrapolated to national level based on this population estimate.

2. Costs include monitoring for all CWS and NTNCWS. Under 40 CFR 141.29 some consecutive systems that purchase 100% of their water from wholesale systems may not be required to monitor for perchlorate provided primacy agencies, with EPA concurrence, allow integrated system agreements to include perchlorate among the monitoring requirements that the wholesale system fulfills for the consecutive system. The potential number of consecutive systems excluded from perchlorate monitoring depends on system and primacy agency decisions and, therefore, is unknown. Excluding monitoring costs for approximately 8,400 consecutive systems that do not report a water source facility (e.g., well or intake) in SDWIS/FED from the monitoring cost analysis reduces annualized monitoring costs by $0.8 million.

Table XII-9: Summary of Household-Level Annual Costs for Systems Treating to Comply with the MCL at 18 µg/L (2017$)

Cost Range	3% Discount (UCMR 1)[1]	7% Discount (UCMR 1)[1]	3% Discount (National)[1]	7% Discount (National)[1]
Minimum	$18	$24	$18	$24
Average	$38	$46	$38	$46
Max	$72	$84	$72	$84

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"uu13kmuC","properties":{"formattedCitation":"(USEPA, 2018b)","plainCitation":"(USEPA, 2018b)","noteIndex":0},"citationItems":[{"id":1217,"uris":["http://zotero.org/groups/945096/items/P9YD2GRH"],"uri":["http://zotero.org/groups/945096/items/P9YD2GRH"],"itemData":{"id":1217,"type":"article","title":"Health Risk Reduction and Cost Analysis of the Proposed Perchlorate National Primary Drinking Water Regulation","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]

1. National cost estimates include extrapolation for one small system entry point to national estimates based on sampling weights. The per-household costs are the same for the sample and national extrapolations because the small system cost extrapolation occurs on a per-capita basis.

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Table XII-10: Total and Annualized Benefits of Avoided Lost IQ Decrements at 18 µg/L (Millions; 2017$)

Korevaar β distribution	Annual Delta IQ		UCMR 1		National[1]	
	UCMR 1	National[1]	3% Discount	7% Discount	3% Discount	7% Discount
Upper	442	447	$6.50	$1.10	$6.56	$1.11
Central	248	251	$3.65	$0.62	$3.68	$0.62
Lower	54	55	$0.80	$0.13	$0.80	$0.14

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"EN9pibZj","properties":{"formattedCitation":"(USEPA, 2018b)","plainCitation":"(USEPA, 2018b)","noteIndex":0},"citationItems":[{"id":1217,"uris":["http://zotero.org/groups/945096/items/P9YD2GRH"],"uri":["http://zotero.org/groups/945096/items/P9YD2GRH"],"itemData":{"id":1217,"type":"article","title":"Health Risk Reduction and Cost Analysis of the Proposed Perchlorate National Primary Drinking Water Regulation","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]

1. The EPA applied statistical sampling weights to the results to extrapolate small system results to national results. The entry point at which a measurement exceeds 18 µg/L is one of 20 in its sample stratum; no other sample in the stratum had a measurement of perchlorate greater than the minimum reporting level. The entry point population of 2,155 represents 5.31% of the total population served by the six UCMR 1 systems in the stratum (40,574). Currently, the stratum population of 774,780 accounts for 1.32% of the 58.7 million national population served by small systems. Thus, the UCMR 1 results indicate that 0.07% (5.31% x 1.32%) of small system customers (approximately 41,100) may be exposed to perchlorate greater than 18 µg/L. The EPA assumed that this population would incur benefits equivalent to the sampled entry point's population.

For the alternative MCL of 90 µg/L, Table XII-11 summarizes the total cost of the proposed rule to water systems and primacy agencies, and Table XII-12 summarizes the per-household cost for systems requiring treatment, which vary across the systems. Table XII-13 summarizes the quantified benefits. At this threshold, no small systems in the UCMR 1 data had

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an exceedance. Therefore, treatment costs and benefits for the UCMR 1 data are the national estimates.

Table XII-11: Summary of Total Annualized Costs at MCL of 90 µg/L (Millions; 2017$)

Cost Component	3% Discount	7% Discount
Drinking Water Systems Treatment Costs	$0.49	$0.52
Drinking Water Systems Monitoring and Administration Costs[1]	$5.93	$6.37
Drinking Water Systems Costs Subtotal	$6.42	$6.89
State Administration Costs	$3.09	$3.20
Total Costs	$9.51	$10.10

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"00m0B8b8","properties":{"formattedCitation":"(USEPA, 2018b)","plainCitation":"(USEPA, 2018b)","noteIndex":0},"citationItems":[{"id":1217,"uris":["http://zotero.org/groups/945096/items/P9YD2GRH"],"uri":["http://zotero.org/groups/945096/items/P9YD2GRH"],"itemData":{"id":1217,"type":"article","title":"Health Risk Reduction and Cost Analysis of the Proposed Perchlorate National Primary Drinking Water Regulation","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. Detail may not sum to total because of independent rounding.

1. Costs include monitoring for all CWS and NTNCWS. Some consecutive systems that purchase 100% of their water from wholesale systems may not be required to monitor for perchlorate provided States allow integrated system agreements to include perchlorate among the monitoring requirements that the wholesale system fulfills for the consecutive system. The potential number of consecutive systems excluded from perchlorate monitoring depends on system and State decisions and, therefore, is unknown. Excluding monitoring costs for approximately 8,400 consecutive systems that do not report a water source facility (e.g., well or intake) in SDWIS/FED from the monitoring cost analysis reduces annualized monitoring costs by $0.8 million.

Table XII-12: Summary of Household-Level Annual Costs for Systems Treating to Comply with MCL at 90 µg/L (2017$)

Cost Range	3% Discount	7% Discount
Minimum	$65	$76
Average	$65	$76

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Cost Range	3% Discount	7% Discount
Maximum	$65	$76

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"xTqTuaNv","properties":{"formattedCitation":"(USEPA, 2018b)","plainCitation":"(USEPA, 2018b)","noteIndex":0},"citationItems":[{"id":1217,"uris":["http://zotero.org/groups/945096/items/P9YD2GRH"],"uri":["http://zotero.org/groups/945096/items/P9YD2GRH"],"itemData":{"id":1217,"type":"article","title":"Health Risk Reduction and Cost Analysis of the Proposed Perchlorate National Primary Drinking Water Regulation","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. There is no variation in costs because treatment costs occur at one entry point. The household costs are slight lower compared to the maximum cost at 56 µg/L because treatment costs to meet an MCL of 90 µg/L are lower than the costs to meet an MCL of 56 µg/L.

Table XII-13: Summary of Total Annualized Benefits of Avoided Lost IQ Decrements at MCL of 90 µg/L (Millions; 2017$)

Korevaar β distribution	Annual Delta IQ	3% Discount	7% Discount
Upper	222	$3.26	$0.55
Central	124	$1.83	$0.31
Lower	27	$0.40	$0.07

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"T7LDdiyn","properties":{"formattedCitation":"(USEPA, 2018b)","plainCitation":"(USEPA, 2018b)","noteIndex":0},"citationItems":[{"id":1217,"uris":["http://zotero.org/groups/945096/items/P9YD2GRH"],"uri":["http://zotero.org/groups/945096/items/P9YD2GRH"],"itemData":{"id":1217,"type":"article","title":"Health Risk Reduction and Cost Analysis of the Proposed Perchlorate National Primary Drinking Water Regulation","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]

Table XII-14 provides a comparison of benefits and costs for three MCL values. First, the table shows the total annual costs and total annual benefits for each MCL. In all cases, the total

costs are substantially higher than the potential range of quantifiable benefits. The table also shows the incremental impact on costs and benefits between an MCL of 56 µg/L and an MCL of 18 µg/L and between an MCL of 90 µg/L and 56 µg/L.

Section 1412(b)(4)(C) of the SDWA requires that when proposing a national primary drinking water regulation, "the Administrator shall publish a determination as to whether the benefits of the maximum contaminant level justify, or do not justify, the costs." The infrequent occurrence of perchlorate at levels of health concern imposes high monitoring and administrative cost burdens on public water systems and the States. Based on a comparison of costs and benefits estimated at the proposed MCL of 56 µg/L using the best available science and data, the EPA Administrator has determined based upon the available information that the benefits of establishing an NPDWR for perchlorate do not justify the associated costs.

Under these circumstances, Section 1412(b)(6)(A) of the SDWA provides, with exceptions not relevant here, that "the Administrator *may*, after notice and opportunity for public comment promulgate a maximum contaminant level for the contaminant that maximizes health risk reduction benefits at a cost that is justified by the benefits." The EPA has evaluated the benefits and costs of alternative MCL values of 18 µg/L and 90 µg/L. However, based upon the available information the Administrator also finds that the benefits of an NPDWR at the alternative MCL values would not justify the resulting rule costs. The alternative MCLs would not increase net benefits, while compliance costs associated mainly with nationwide CWS monitoring requirements would remain relatively similar. Consistent with the discretion afforded

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the Agency by SDWA Section 1412(b)(6)(A) to decide whether or not to adjust an MCL to a level where the benefits justify the costs, the EPA is however proposing, and may finalize, the MCL of 56 µg/L notwithstanding the Agency's determination that benefits would not justify the costs.

Table XII-14: Comparison of Annual Costs and Benefits by MCL (Millions; 2017$)

MCL Value	Cost 3% Discount	Benefit 3% Discount	Cost 7% Discount	Benefit 7% Discount
UCMR 1				
90 µg/L	$9.51	$0.40 - $3.26	$10.10	$0.07 - $0.55
56 µg/L	$9.67	$0.44 - $3.57	$10.28	$0.07 - $0.60
18 µg/L	$15.95	$0.80 - $6.50	$16.88	$0.13 - $1.10
Incremental (from 90 µg/L to 56 µg/L)	$0.16	$0.04 - $0.31	$0.18	$0.0 – 0.05
Incremental (from 56 µg/L to 18 µg/L)	$6.28	$0.36 - $2.93	$6.60	$0.06 - $0.50
National				
90 µg/L	$9.51	$0.40 - $3.26	$10.10	$0.07 - $0.55
56 µg/L[1]	$9.67	$0.44 - $3.57	$10.28	$0.07 - $0.60
18 µg/L	$16.95	$0.80 - $6.56	$17.96	$0.14 - $1.11
Incremental (from 90 µg/L to 56 µg/L)	$0.16	$0.04 - $0.31	$0.18	$0.0 – 0.05
Incremental (from 56 µg/L to 18 µg/L)	$7.28	$0.36 - $2.99	$7.69	$0.07 - $0.51

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"E0mmmXDK","properties":{"formattedCitation":"(USEPA, 2018b)","plainCitation":"(USEPA, 2018b)","noteIndex":0},"citationItems":[{"id":1217,"uris":["http://zotero.org/groups/945096/items/P9YD2GRH"],"uri":["http://zotero.org/groups/945096/items/P9YD2GRH"],"itemData":{"id":1217,"type":"article","title":"Health Risk Reduction and Cost Analysis of the Proposed Perchlorate National Primary Drinking Water Regulation","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. Detail may not sum to total because of independent rounding.

1. For the proposed MCL of 56 µg/L and the alternative MCL of 90 µg/L, the national estimates are the same as the estimates based on UCMR 1 data because there were no small system sample

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results to extrapolate to national small system estimates. At an MCL of 18 µg/L, national estimates include extrapolation for one small system entry point to national estimates based on sampling weights described above.

XIII. Uncertainty Analysis

The EPA has presented an extensive discussion of the uncertainties in the key analyses informing this proposal in the uncertainty section of the MCLG Approaches Report and the uncertainties section of the Economic Analysis document (*USEPA, 2018b; USEPA, 2019a).* A summarized description of these uncertainties are presented below.

A. Uncertainty in the MCLG Derivation

Each input into the analysis to inform the MCLG is a decision point associated with uncertainty. There is uncertainty in different aspects of the BBDR model, ranging from structural and functional relationships to specific parameter values for early pregnancy. There are very few data available to calibrate the pharmacokinetic aspects of the model, particularly at the life stage of interest. Also, the BBDR model does not explicitly consider the effect of the presence of other goitrogens (e.g. thiocyanate, nitrate) or effects of thyroid disease states. Toxicodynamic aspects such as competitive inhibition at the NIS, depletion of iodide stores under different iodine intake levels and physiological states, and the ability of the TSH feedback loop to compensate for perturbations in thyroid function each have their own uncertain features. Additional uncertainty is introduced by linking the BBDR model estimates of maternal fT4 to altered neurodevelopment in offspring. None of the studies used to evaluate potential adverse neurodevelopmental outcomes in offspring born to hypothyroxinemic mothers was performed in the U.S. None of the

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studies measured perchlorate exposure. Not all the studies measured iodide levels in the study populations. The state of the science on the relationship between maternal fT4 levels and offspring neurodevelopment is constantly evolving. There are numerous indices used to assess neurodevelopmental impacts and there is some uncertainty regarding the selection of IQ as the critical endpoint for setting the MCLG.

A recently published paper evaluating the EPA's BBDR model and MCLG Approaches, reiterated the uncertainties the Agency identified in its analyses and questions the use of these quantitative tools for perchlorate in a regulatory context (Clewell et al., 2019).

B. Uncertainty in the Economic Analysis

The EPA provides discussions regarding several sources of uncertainty in the benefit and cost estimates in the Health Risk Reduction and Cost Analysis (USEPA, 2019a). Table XIII-1 provides a summary of sources of uncertainty and their potential effects on estimated costs and benefits. The following discussion addresses uncertainties specific to the benefits analysis.

Table XIII-1. Sources of Uncertainty in Economic Analysis

Description	Potential effect[1]
Baseline Occurrence	
UCMR 1 data are more than one decade old; actual occurrence could be lower (e.g., because of contaminant cleanup) or higher (e.g., because new systems use perchlorate-contaminated source water).	± (benefits and costs will change in the same direction)
UCMR 1 data include a sample of small systems; the Stage 1 results (entry point maximums) indicate that no small systems would exceed 56 µg/L or 90 µg/L and that one small system would exceed 18 µg/L; it is possible that there are additional small systems where the baseline perchlorate is greater than the MCLs that are not captured in the national extrapolation results.	− (benefits and costs will change in the same direction)

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Description	Potential effect[1]
The EPA assumed a uniform distribution of system population served across the entry points; the actual entry point service population could be greater than or less than the estimates.	± (benefits and costs will change in the same direction)
Benefits Analysis	
The health risks and risk reductions are based on maximum recorded concentration estimates and thus do not account for exposures to concentrations greater than or less than this recorded maximum.	± (benefits only)
The EPA assumed that baseline fT4 is equal to the median, which likely underestimates disease benefits as the logarithmic relationship between maternal fT4 and child IQ leads to larger relative changes in fT4, with increasing levels of perchlorate and lower levels of baseline fT4.	− (benefits only)
The EPA assumed a median TSH feedback loop strength for the exposed population does not incorporate the variability in the feedback mechanism of the body's creation of TSH in response to decreasing fT4.	± (benefits only)
The EPA used a 90th percentile water intake rate to derive the MCLG and the dose-response equations for the benefits analysis. This approach results in a protective MCLG value, but may overstate intake for the benefits analysis[2].	+ (benefits only)
The IQ valuation uses estimates that the EPA derived using the same approach as Salkever (1995). Results from other IQ valuation studies might result in higher or lower benefit estimates.	± (benefits only)
The benefits analysis is based on a single health endpoint and the value of the endpoint is based solely on lost earnings.	− (benefits only)
Cost Analysis	
The EPA assumed that systems requiring treatment would incorporate a safety factor – treating to 80% of the proposed MCL or alternative MCL, which increases costs and benefits.	+ (benefits and costs will change in the same direction)
The EPA assumed that all entry points requiring treatment would implement ion exchange, which may overestimate costs if non-treatment is an option for one or more entry points or underestimate costs if site-specific conditions result in higher costs at one or more entry points.	± (costs only)

Description	Potential effect[1]
The EPA developed a monitoring schedule that assumed a uniform distribution of initial monitoring costs over three years; actual costs will vary.	± (costs only)
The EPA assumed that long-term monitoring costs would occur in the last year of the applicable three-year monitoring period or nine-year monitoring cycle; systems may conduct monitoring in an earlier year of the period or cycle.	− (costs only)
The EPA assumed that 90% of ground water systems and 40% of surface water systems obtain perchlorate monitoring waivers; the actual percentages may vary.	± (costs only)

1. A "–" symbol indicates that benefits and/or costs will tend to be underestimated. A "+" symbol indicates that benefits and/or costs will tend to be overestimated. A "±" symbol indicates an unknown direction of uncertainty, i.e., benefits and/or costs could be underestimated or overestimated.
2. The EPA did not include a perchlorate dietary dose in the benefits analysis, which would be unchanged between baseline and proposed MCL scenarios if many areas do not irrigate with drinking water. For people who obtain a significant portion of their fruit, vegetables, and milk from areas irrigated with the water from the same sources as the drinking water, we would expect their exposure may drop with the reduction of perchlorate in food products used locally. Because of this and the natural log form of the IQ response function, this approach may slightly understate the avoided IQ decrement estimates.

The EPA acknowledges the uncertainty regarding the quantitative health risk reduction. In particular, the Agency assumed it could estimate risk reductions based on evidence of a quantifiable relationship between thyroid hormone changes and neurodevelopmental outcomes.

There are a number of potential benefits of reducing perchlorate in drinking water that were not quantified as part of this analysis, which may result in an underestimate of actual benefits. As described by the SAB "children exposed gestationally to maternal hypothyroxinemia (without hypothyroidism) show reduced levels of global and specific cognitive abilities, as well as increased rates of behavior problems including greater dysregulation in early infancy and

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attentional disorders in childhood (Man et al., 1991; Pop et al., 1999; Pop et al., 2003; Kooistra et al., 2006)" (p. 10, SAB for the U.S. EPA, 2013). The EPA's literature review identified potential relationships between maternal thyroid hormone alterations and the risk of schizophrenia, ADHD, expressive language delay, reduced school performance and increased odds of autism, among others, none of which are being currently quantified in this assessment. Other potentially omitted benefits include risks associated with effects of thyroid disorders in adults, including cardiovascular disease risk; changes in thyroid hormone levels and their relationship with total cholesterol, LDL cholesterol, and triglycerides; as well as a possible relationship between increases in TSH and risk of fatal coronary heart disease. Treating for perchlorate in drinking water could also potentially remove nitrate, which is a co-occurring contaminant and a goitrogen. These additional potential health endpoints are not monetized in this benefits analysis. The assumptions used to account for the previously mentioned variability of the BBDR model inputs and uncertainty surrounding the relationship between maternal fT4 and child IQ discussed above may result in an overestimate of the monetized benefits. Because IQ is a surrogate for broad range of potential neurodevelopmental risks, it is unclear whether the analysis as a whole over- or under-estimates the monetized benefits of a reduction of perchlorate in drinking water.

XIV. Request for Comment on Proposed Rule

While all comments relevant to the national primary drinking water regulation for perchlorate proposed today will be considered by the EPA, comments on the following issues

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will be especially helpful to the EPA in developing a final rule. The EPA specifically requests comment on the following topics.

- The adequacy and uncertainties of the BBDR model developed by the EPA to predict thyroid hormone level changes caused by perchlorate exposure to pregnant women with low iodide intake, including the model and model parameters and assumptions (Section III and Approaches Report).
- The adequacy and uncertainties of the EPA's review and application of the epidemiologic literature to quantify the relationship between thyroid hormone changes in pregnant women and neurodevelopmental effects including the assumptions, the selection of the approach used, and the study used (Section III and Approaches Report).
- The adequacy and uncertainties of the methodology to derive the MCLG including points of departure, assumptions, uncertainty factor, and relative source contribution (Section III and Technical Support Document: Deriving a Maximum Contaminant Level Goal for Perchlorate in Drinking Water).
- The proposed MCLG and MCL of 56 µg/L as well as the alternative MCLG and MCL values of 18 µg/L and of 90 µg/L.
- The feasibility of the proposed MCL of 56 µg/L as well as the feasibility of the alternative MCLs of 18 µg/L and 90 µg/L.
- The adequacy of the underlying assumptions and analysis of occurrence (Section VI).
- The costs and availability of Treatment Technologies (Section X).

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- The adequacy of the underlying estimates, assumptions and analysis used to estimate costs and describe unquantified costs including the estimates of monitoring frequency, likelihood of systems receiving a monitoring waiver, the administrative labor rate and the operator labor rate. (Section XII and the Health Risk Reduction Cost Analysis).
- The adequacy of the underlying estimates, assumptions and analysis used to estimate benefits and describe unquantified benefits (Section XII and the Health Risk Reduction Cost Analysis).
- Potential implementation challenges associated with the proposed perchlorate regulation that the EPA should consider, specifically for small systems.
- The Administrator's finding in accordance with Section 1412(b)(4)(C) of the SDWA that the benefits of the proposed 56 µg/L MCL for perchlorate do not justify the costs, and the information that supports that determination as described in Section XII of this notice.
- The Administrator's proposal to, consistent with the discretion afforded him by SDWA Section 1412(b)(6)(A), adopt an MCL of 56 µg/L notwithstanding the Agency's SDWA Section 1412(b)(4)(C) determination that the benefits of the MCL would not justify its costs.
- The Agency's conclusion that no alternative MCL, including the alternative MCL values of 18 µg/L and 90 µg/L discussed above, would "maximize health risk reduction benefits at a cost that is justified by the benefits" and the information and analytical approaches used to arrive at that conclusion. The EPA is especially interested in comments suggesting other approaches to deriving an MCL for which the benefits justify the costs.

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XV. Request for Comment on Potential Regulatory Determination Withdrawal

The EPA is soliciting comments on withdrawing the 2011 Regulatory Determination (see Section II-C, Regulatory History) based on several factors. First, the findings, described in the occurrence section (section VI) and in the updated health effects assessment (Section III), suggest that perchlorate does not occur in public water systems with a frequency and at levels of public health concern[17] and suggest that the regulation of perchlorate does not present a meaningful opportunity for health risk reduction for persons served by public water systems. The proposed regulation would require over sixty thousand public water systems to monitor for perchlorate, but the available data indicates that very few would find it at levels of public health concern. Specifically, perchlorate occurrence information suggests that at an MCL of 56 µg/L only 2 systems (0.004% of all water systems in the U.S.) would exceed the regulatory threshold. Even at an MCL of 18 µg/L, there would only be 15 systems (0.03% of all water systems in the U.S.) that would exceed the regulatory threshold. Only one system would exceed the alternative MCL of 90 µg/L.

The EPA notes that in 2008, the EPA stated in its preliminary regulatory determination that perchlorate did not occur with a frequency and at levels of public health concern in public water systems based upon the health effects and occurrence information available at that time, which indicated that 0.8% of public water system had perchlorate at levels exceeding the HRL of

[17] As shown in Section VI of this notice there is infrequent occurrence of perchlorate at either 56 µg/L, 18 µg/L or 90 µg/L, which are the possible levels expected to cause adverse human health effects.

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15 µg/L. The EPA also stated that there was not a meaningful opportunity for a NPDWR to reduce health risks based upon the estimates at that time that 0.9 million people had perchlorate levels above the HRL.

The EPA further notes that the Agency has previously determined CCL1 and CCL2 contaminants did not occur with frequency at levels of public health concern when the percentage of water systems exceeding the HRL were greater than the frequency of perchlorate occurrence level at the proposed MCL (0.004% of all water systems in the U.S.). For example, in 2003 the EPA determined that aldrin did not occur with a frequency and at levels of public health concern based upon data that showed 0.2% of water systems had aldrin at levels greater than the HRL. The EPA also concluded that there was not a meaningful opportunity for health risk reduction for persons served through a drinking water regulation based on this occurrence data and the estimate that these systems above the HRL served approximately 1 million people (USEPA, 2003). In 2008 the EPA determined that DCPA Mono- and Di-Acid degradates did not occur with a frequency and at levels of public health concern based on data that showed 0.03% of water systems exceeded the HRL. The EPA also included that there was not a meaningful opportunity for health risk reduction through a drinking water regulation based on this occurrence data and the estimate that these systems above the HRL served approximately 100,000 people (USEPA, 2008e).

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SDWA Section 1412(b)(1)(A)(iii) states that the determination regarding the meaningful opportunity is "in the sole judgement of the Administrator" and therefore there may be other factors that contribute to this determination for any given contaminant.

If, after consideration of public comment, the EPA withdraws the perchlorate regulatory determination, there will be no NPDWR for perchlorate, although the EPA can re-list perchlorate on the CCL and proceed to regulation in the future if the occurrence or risk information changes. As with other unregulated contaminants, the EPA could address the limited instances of elevated levels of perchlorate by working with the states or using its SDWA Section 1431 imminent and substantial endangerment or Section 1412(b)(1)(f) health assessment authorities, as appropriate. The EPA also requests comments on what guidance it could provide the public if the regulatory determination for perchlorate is withdrawn.

XVI. Statutory and Executive Order Reviews

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review

This action is a significant regulatory action since it raises novel legal or policy issues. It was submitted to the Office of Management and Budget (OMB) for review. Any changes made in response to OMB recommendations have been documented in the docket.

The EPA evaluated the potential costs to States and utilities and the potential benefits of the proposed rule. This analysis, *Health Risk Reduction Cost Analysis of the Proposed Perchlorate Rule (USEPA, 2019a)* is available in the docket and is summarized in section XI.

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B. Executive Order 13771: Reducing Regulations and Controlling Regulatory Costs

This action is expected to be an Executive Order 13771 regulatory action. Details on the estimated costs of this proposed rule can be found in the EPA's analysis of the potential costs and benefits associated with this action.

C. Paperwork Reduction Act

The information collection requirements in this proposed rule have been submitted for approval to the Office of Management and Budget (OMB) under the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq*. The information collection requirements are not enforceable until OMB approves them.

The monitoring information collected as a result of this rule will allow the States and the EPA to evaluate compliance with the rule. For the first 3-year period following rule promulgation, the major information requirements concern primacy agency activities to implement the rule including adopting the NPDWR into state regulations, providing training to state and PWS employees, updating their monitoring data systems, and reviewing system monitoring data and waiver requests. Compliance actions for drinking water systems (including monitoring, administration, and treatment costs) would not begin until after Year 3 due to the proposed effective date of this rule.

The estimate of annual average burden hours for the proposed rule during the first three years following promulgation is 48,539 hours. The annual average cost estimate is $7.4 million for labor. The burden hours per response is 2,648 hours and the cost per response is $134,159.

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The frequency of response (average responses per respondent) is 1 for primacy agencies, annually (for upfront administrative activities to implement the rule). The estimated number of likely respondents is 55 over the three-year period (for an average of 18.3 each year).

Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for the EPA's regulations are listed in 40 CFR part 9.

Submit your comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including the use of automated collection techniques, to the EPA at the public docket established for this rule, which includes the ICR, Docket ID No. **EPA-HQ-OW-2018-0780**. You may also send your ICR-related comments to OMB's Office of Information and Regulatory Affairs via email to OIRA_submission@omb.eop.gov, Attention: Desk Officer for the EPA. Since OMB is

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required to make a decision concerning the ICR between 30 and 60 days after receipt, OMB must receive comments no later than **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]**. The EPA will respond to any ICR-related comments in the final rule.

D. Regulatory Flexibility Act (RFA)

I certify that this action will not have a significant economic impact on a substantial number of small entities under the RFA. The Agency has determined that the proposed MCL of 56 µg/L will not result in annual costs that exceed one percent of revenue for small systems affected by the proposed rule.

The small entities subject to the requirements of this action are public water systems serving 10,000 or fewer persons. This is the threshold specified by Congress in the 1996 Amendments to the Safe Drinking Water Act for small system flexibility provisions. In accordance with the RFA requirements, the EPA proposed using this alternative definition in the Federal Register, (63 FR 7620, February 13, 1998), requested public comment, consulted with the Small Business Administration (SBA), and expressed its intention to use the alternative definition for all future drinking water regulations in the Consumer Confidence Reports regulation (63 FR 44511, August 19, 1998). As stated in that final rule, the alternative definition is applied to this proposed regulation.

The proposed rule contains provisions that would affect 58,325 CWS and NTNCWS serving 10,000 or fewer people. In order to meet the proposed rule requirements, all of these

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systems will need to conduct perchlorate monitoring. At the proposed MCL of 56 µg/L, the UCMR 1 monitoring data indicate that no small systems would be required to incur costs to reduce the levels of perchlorate in drinking water, therefore, all small PWSs will incur monitoring costs only. Impacts on small entities are described in more detail in Chapter 7 of the Health Risk Reduction Cost Analysis of the Proposed Perchlorate Rule (USEPA, 2019a). Table XII-1 and Table XII-2 show the annual compliance costs of the proposed rule on the small entities by system size for public and private systems, respectively. Based on a comparison of annual costs with annual revenue estimates, the EPA has determined that no small systems will experience an impact of one percent or greater of average annual revenues (USEPA 2019a).

Table XII-1: Annualized Monitoring and Administrative Costs as a Percentage of Average Annual Revenue for Small Public CWSs by Size Category

Size Category	Average Annual Revenues[a]	3% Discount[b]	7% Discount[b]
Population served <100	$224,248	$88 (0.04%)	$94 (0.04%)
Population served 101-500	$197,315	$88 (0.04%)	$94 (0.05%)
Population served 501-3,300	$202,382	$88 (0.04%)	$94 (0.05%)
Population served 3,301-10,000	$1,092,187	$88 (0.01%)	$94 (0.01%)

Source: Perchlorate Benefit-Cost Analysis Spreadsheet available in the proposed rule docket (EPA-HQ-OW-2018-0780)

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a. Based on the CWSS [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"ZkgC4dzL","properties":{"formattedCitation":"(USEPA, 2009c Table 65)","plainCitation":"(USEPA, 2009c Table 65)","noteIndex":0},"citationItems":[{"id":924,"uris":["http://zotero.org/groups/945096/items/DZNAAV6M"],"uri":["http://zotero.org/groups/945096/items/DZNAAV6M"],"itemData":{"id":924,"type":"article","title":"2006 Community Water System Survey - Volume II: Detailed Tables and Survey Methodology","URL":"https://www.epa.gov/dwstandardsregulations/community-water-system-survey","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2009",5]]},"accessed":{"date-parts":[["2018",8,16]]}},"suffix":"Table 65"}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}] and updated to 2017$ based on the chained consumer price index for fuels and utilities in U.S. city average, all urban consumers [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"rkwEpGYT","properties":{"formattedCitation":"(Bureau of Labor Statistics (BLS), 2018a)","plainCitation":"(Bureau of Labor Statistics (BLS), 2018a)","noteIndex":0},"citationItems":[{"id":984,"uris":["http://zotero.org/groups/945096/items/E3I7HRK8"],"uri":["http://zotero.org/groups/945096/items/E3I7HRK8"],"itemData":{"id":984,"type":"article","title":"Chained consumer price index for fuels and utilities in U.S. city average, all urban consumers, 2000 to 2018","author":[{"literal":"Bureau of Labor Statistics (BLS)"}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. Revenues include all sources of revenue including water revenue, non-water revenue, and municipal transfers to water systems.
b. Total annual monitoring and administrative costs for PWSs are approximately $6.6 million to $7.1 million annually (Exhibit 5 5), with $5.1 million to $5.5 million accruing to small PWSs. Based on 58,325 small systems, this yields an average annual per-system cost of $88 (3% discount rate) to $94 (7% discount rate).

Table XII-2: Annualized Monitoring and Administrative Costs as a Percentage of Average Annual Revenue for Small Private CWSs by Size Category

Size Category	Average Annual Revenues[a]	3% Discount[b]	7% Discount[b]
Population served <100	$139,911	$88 (0.06%)	$94 (0.07%)
Population served 101-500	$351,974	$88 (0.03%)	$94 (0.03%)
Population served 501-3,300	$254,706	$88 (0.03%)	$94 (0.03%)
Population served 3,301-10,000	$951,692	$88 (0.01%)	$94 (0.01%)

Source: Perchlorate Benefit-Cost Analysis Spreadsheet available in the proposed rule docket (EPA-HQ-OW-2018-0780)

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a. Based on the CWSS [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"ZkgC4dzL","properties":{"formattedCitation":"(USEPA, 2009c Table 65)","plainCitation":"(USEPA, 2009c Table 65)","noteIndex":0},"citationItems":[{"id":924,"uris":["http://zotero.org/groups/945096/items/DZNAAV6M"],"uri":["http://zotero.org/groups/945096/items/DZNAAV6M"],"itemData":{"id":924,"type":"article","title":"2006 Community Water System Survey - Volume II: Detailed Tables and Survey Methodology","URL":"https://www.epa.gov/dwstandardsregulations/community-water-system-survey","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2009",5]]},"accessed":{"date-parts":[["2018",8,16]]}},"suffix":"Table 65"}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}] and updated to 2017$ based on the chained consumer price index for fuels and utilities in U.S. city average, all urban consumers [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"rkwEpGYT","properties":{"formattedCitation":"(Bureau of Labor Statistics (BLS), 2018a)","plainCitation":"(Bureau of Labor Statistics (BLS), 2018a)","noteIndex":0},"citationItems":[{"id":984,"uris":["http://zotero.org/groups/945096/items/E3I7HRK8"],"uri":["http://zotero.org/groups/945096/items/E3I7HRK8"],"itemData":{"id":984,"type":"article","title":"Chained consumer price index for fuels and utilities in U.S. city average, all urban consumers, 2000 to 2018","author":[{"literal":"Bureau of Labor Statistics (BLS)"}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. Revenues include all sources of revenue including water revenue and non-water revenue.
b. Total annual monitoring and administrative costs for PWSs are approximately $6.6 million to $7.1 million annually (Exhibit 5 5), with $5.1 million to $5.5 million accruing to small PWSs. Based on 58,325 small systems, this yields an average annual per-system cost of $88 (3% discount rate) to $94 (7% discount rate).

E. Unfunded Mandates Reform Act

This action does not contain an unfunded mandate of $100 million or more as described in UMRA, 2 U.S.C. 1531–1538. The action imposes minimal enforceable duty on any state, local or tribal governments or the private sector

Based on the cost estimates detailed in Section XI, the EPA determined that compliance costs in any given year would be below the threshold set in UMRA, with maximum single-year

costs of approximately $10.2 million. The EPA has determined that this rule contains a federal mandate that would not result in expenditures of $100 million or more for State, local, and Tribal governments, in the aggregate, or the private sector in any one year.

F. Executive Order 13132: Federalism

This action does not have federalism implications. It will not have substantial direct effects of greater than $25 million on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government. Annual costs are estimated to range from $9.6 million at a 3 percent discount rate to $10.2 million using a 7 percent, with $6.5 million to $7.0 million annually accruing to public entities. The EPA has concluded that this proposed rule may be of interest because it may impose direct compliance costs on State or local governments, and the federal government will not provide the funds necessary to pay those costs.

G. Executive Order 13175: Consultation and Coordination with Indian Tribal Governments

The EPA has concluded that this proposed rule may have Tribal implications, because it may impose direct compliance costs on Tribal governments, and the federal government would not provide the funds necessary to pay those costs. The EPA has identified 768 water systems with 1,167 entry points under Native American ownership that may be subject to the proposed rule. They would bear an estimated total annualized cost of $74,100 at a 3 percent discount rate ($79,625 at 7 percent) to implement this rule as proposed, with all costs attributable to

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monitoring and administrative costs. Estimated average annualized cost per system ranges from $96 at a 3 percent discount rate to $104 at a 7 percent discount rate.

Accordingly, the EPA provides the following Tribal summary impact statement as required by section 5(b) of Executive Order 13175. The EPA consulted with representatives of Tribal officials early in the process of developing this proposed regulation to permit them to have meaningful and timely input into its development. The EPA conducted consultation with Indian Tribes which included a webinar with interested tribes on February 28, 2012, to request input and provide rulemaking information to interested parties. A meeting summary report is available on the docket for public inspection (USEPA 2012a). The EPA notes that 751 of the 768 Tribal systems identified by the Agency as subject to the proposed rule are small systems that are expected to incur only monitoring costs. Due to the health risks associated with perchlorate, capital expenditures needed for compliance with the rule would be eligible for federal funding sources, specifically the Drinking Water State Revolving Fund. In the spirit of Executive Order 13175, and consistent with the EPA policy to promote communications between the EPA and Tribal governments, the EPA specifically solicits additional comment on this proposed rule from Tribal officials.

H. Executive Order 13045: Protection of Children from Environmental Health and Safety Risks

This action is not subject to Executive Order 13045 because it is not economically significant as defined in Executive Order 12866; however, the environmental health risk addressed by this action may have a disproportionate effect on children. Accordingly, the EPA

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evaluated the environmental health or safety effects of perchlorate on children. The results of this evaluation are contained in the Health Effects Technical Support Document (USEPA 2018a) and described in section III of this preamble. The EPA has evaluated the risk associated with perchlorate in drinking water for the sensitive subpopulation – offspring of pregnant women exposed to perchlorate during the first trimester – and established a proposed MCLG that is protective of this subpopulation as well as other children. The EPA also estimated the health risk reduction of the proposed and alternative MCLs. This analysis is described in the Health Risk Reduction and Cost Analysis for the proposed rule (USEPA 2019a) and is summarized in section XI of this preamble. Copies of the Health Effects Technical Support Document and Economic Analysis and supporting information are available in the public docket for today's proposal.

I. Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution, or Use

This rule is not a ''significant energy action'' as defined in Executive Order 13211, ''Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use'' (66 FR 28355 (May 22, 2001)) because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy. This determination is based on the following analysis.

The first consideration is whether the proposed rule would adversely affect the supply of energy. The proposed rule does not regulate power generation, either directly or indirectly. The public and private water systems that the proposed rule regulates do not generate power. Further, the cost increases borne by customers of water utilities as a result of the proposed rule are a low

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percentage of the total cost of water, except for a few water systems that might install treatment technologies and would likely spread that cost over their customer base. In sum, the proposed rule does not regulate the supply of energy, does not generally regulate the utilities that supply energy, and is unlikely to affect significantly the customer base of energy suppliers. Thus, the proposed rule would not translate into adverse effects on the supply of energy.

The second consideration is whether the proposed rule would adversely affect the distribution of energy. The proposed rule does not regulate any aspect of energy distribution. The water systems that are regulated by the proposed rule already have electrical service. At the proposed MCL, one entry point at one system may require incremental power to operate new treatment processes. The increase in peak electricity demand at water utilities is negligible. Therefore, the EPA estimates that the existing connections are adequate and that the proposed rule has no discernable adverse effect on energy distribution.

The third consideration is whether the proposed rule would adversely affect the use of energy. Because only one system is expected to add treatment technologies that use electrical power, this potential impact on sector demand or overall national demand for power is negligible.

Based on its analysis of these considerations, the EPA has concluded that proposed rule is not likely to have a significant adverse effect on the supply, distribution, or use of energy.

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J. National Technology Transfer and Advancement Act of 1995 and 1 CFR part 51

The proposed rule could involve voluntary consensus standards in that it would require monitoring for Perchlorate. The EPA proposed five analytical methods for the identification and quantification of perchlorate in drinking water. The EPA methods 314.0, 314.1, 314.2, 331.0, and 332.0 incorporate quality control criteria which allow accurate quantitation of perchlorate. Additional information about the analytical methods is available in section VII of this notice. The EPA has made, and will continue to make, these documents generally available through [HYPERLINK "http://www.regulations.gov"] and at the U.S. Environmental Protection Agency Drinking Water Docket, William Jefferson Clinton West Building, 1301 Constitution Ave NW, Room 3334, Washington, DC 20460, call (202) 566-2426

The EPA's monitoring and sampling protocols generally include voluntary consensus standards developed by agencies such as ASTM International, Standard Methods and other such bodies wherever the EPA deems these methodologies appropriate for compliance monitoring. The EPA welcomes comments on this aspect of the proposed rulemaking and, specifically, invites the public to identify potentially-applicable voluntary consensus standards and to explain why such standards should be used in this regulation. The Director of the Federal Register approved the voluntary consensus standards incorporated by referenced in § 141.123 of the proposed regulatory text as of April 11, 2007.

K. Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

The EPA has determined that this proposed rule would not have disproportionately high and adverse human health or environmental effects on minority or low-income populations because it would increase the level of environmental protection for all affected populations without having any disproportionately high and adverse human health or environmental effects on any population, including any minority or low-income population.

The public is invited to comment on this aspect of the proposed rulemaking and, specifically, to recommend additional methods to address Environmental Justice concerns from establishing a drinking water rule for perchlorate in drinking water.

XVII. Consultations with the Science Advisory Board, National Drinking Water Advisory Council, and the Secretary of Health and Human Services

In accordance with sections 1412(d) and 1412(e) of the Safe Drinking Water Act (SDWA), the Agency consulted with the National Drinking Water Advisory Council (NDWAC or the Council); the Secretary of Health and Human Services; and with the EPA Science Advisory Board. The Agency consulted with NDWAC during the Council's October 4-5, 2012 meeting. A summary of the NDWAC recommendations is available in the National Drinking Water Advisory Council, Fall 2012 Meeting Summary Report (NDWAC, 2012b) and the docket for this proposed rule. The EPA carefully considered NDWAC recommendations during the development of a proposed drinking water rule for perchlorate.

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On May 29, 2012, the EPA sought guidance from the EPA Science Advisory Board (SAB) on how best to consider and interpret life stage information, epidemiological and biomonitoring data since the publication of the National Research Council 2005 report, the Agency's physiologically-based pharmacokinetic (PBPK) analyses, and the totality of perchlorate health information to derive a Maximum Contaminant Level Goal (MCLG) for perchlorate (USEPA, 2012; NRC, 2005). On May 29, 2013, the EPA received significant input from SAB, summarized in the report, SAB Advice on Approaches to Derive a Maximum Contaminant Level Goal for Perchlorate (USEPA, 2013a).

On July 15, 2013, the EPA responded by stating that the Agency would consider all the recommendations from the SAB, as it continued working on the development of the rulemaking process for perchlorate (USEPA 2013b). To address SAB recommendations, the EPA collaborated with Food and Drug Administration (FDA) scientists to develop PBPK/pharmacodynamic (PD), or biologically based dose-response (BBDR), models that incorporate all available health related information on perchlorate to predict changes in thyroid hormones in sensitive life stages exposed to different dietary iodide and perchlorate levels (USEPA 2017). As recommended by SAB, the EPA developed these models based upon perchlorate's mode of action (i.e., iodide uptake inhibition by the thyroid) (USEPA 2013a). Additional details are in section III.C. of this notice and in the Health Effects of Perchlorate support document located in the docket for this proposed rule.

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In accordance with SAB recommendations, the EPA developed a two-stage approach to integrate BBDR model results with data on neurodevelopmental outcomes from epidemiological studies, this approach allowed the Agency to link maternal thyroid hormones levels as a result of low iodine intake and perchlorate exposure, to derive an MCLG that directly addresses the most sensitive life stage (USEPA 2013a).

On March 25, 2019, the EPA consulted with the Department of Health and Human Services (HHS). The EPA provided information to HHS officials on the draft proposed perchlorate regulation and considered HHS input as part of the interagency review described in section XVII.A.

XVIII. References

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List of Subjects

40 CFR Part 141

Chemicals, Incorporation by reference, Indians-lands, Intergovernmental relations, Radiation protection, Reporting and recordkeeping requirements, Water supply.

40 CFR Part 142

Administrative practice and procedure, Chemicals, Indians-lands, Radiation protection, Reporting and recordkeeping requirements, Water supply.

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Dated: May 23, 2019.

_____

Andrew R. Wheeler,

Administrator.

ED_005043_00078941-00207

For the reasons stated in the preamble, the Environmental Protection Agency proposes to amend 40 CFR parts 141 and 142 as follows:

PART 141—NATIONAL PRIMARY DRINKING WATER REGULATIONS

1. The authority citation for part 141 continues to read as follows:

   Authority: 42 U.S.C. 300f, 300g-1, 300g-2, 300g-3, 300g-4, 300g-5, 300g-6, 300j-4, 300j-9, and 300j-11.

2. Amend § 141.6 by revising paragraph (a) and adding paragraph (l) to read as follows:

Subpart A—General

§ 141.6 Effective dates.

(a) Except as provided in paragraphs (b) through (l) of this section the regulations set forth in this part shall take effect on June 24, 1977.

*****

(l) The regulations contained in the revisions to §§ 141.23(a)(4)(i), 141.23(a)(5), 141.23(c),141.23(f)(1), 141.23(i)(1)-(2), 141.23(k)(1)-(3), 141.23(k)(3)(ii), 141.51(b), 141.60(b)(5), 141.62(b), 141.62(c), 141.62(e), Appendix A to Subpart O and Appendix A and B to Subpart Q are effective for the purposes of compliance on [**DATE OF PUBLICATION OF FINAL RULE IN THE FEDERAL REGISTER**].

3. Amend § 141.23 by:

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a. In paragraph (a)(4)(i) table:

i. Revising the table heading; and

ii. Adding an entry for "Perchlorate" in alphabetical order;

b. In paragraph (a)(5), after the text "nickel," adding the text "perchlorate,";

c. In paragraph (c), after the text "nickel," adding the text "perchlorate,";

d. Adding paragraph (c)(10);

e. In paragraph (f)(1), after the text "nickel," adding the text "perchlorate,";

f. In paragraphs (i)(1) and (2), after the text "nickel," adding the text "perchlorate,";

g. Revising paragraph (i)(3);

h. In paragraph (k)(1):

i. Revising the introductory text; and

ii. In the table, adding the table designation, redesignating entries 21 through 26 as 22 through 27, and adding a new entry 21 ~~adding in alphabetical order, an entry for "Perchlorate"~~;

i. In paragraph (k)(2):

i. In the introductory paragraph, after the text "nitrite," adding the text "perchlorate,"; and

ii. In the table, adding the table designation and adding, in alphabetical order, an entry for "Perchlorate";

j. In paragraph (k)(3):

i. In the introductory paragraph, after the text "nitrite" adding the text ", perchlorate,";

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and

ii. In paragraph (ii) table, adding in alphabetical order, an entry for "Perchlorate";

The revisions and additions read as follows:

Subpart C—Monitoring and Analytical Requirements

§141.23 Inorganic chemical sampling and analytical requirements.

*****

(a)***

(4)***

(i)***

TABLE 1 TO PARAGRAPH (a)(4)(i) -- DETECTION LIMITS FOR INORGANIC CONTAMINANTS (COMPOSITED SAMPLES)

Contaminant	MCL (mg/l)	Methodology	Detection limit (mg/l)
**	**	**	*

Perchlorate	0.056	Ion Chromatography	0.00053
		Inline Column Concentration/Matrix Elimination Ion Chromatography with Suppressed Conductivity Detection	0.00003
		Two-Dimensional Ion Chromatography with Suppressed Conductivity Detection	0.000012-0.000018
		Liquid Chromatography Electrospray Ionization Mass Spectrometry	0.000005 (Tandem Mass Spectrometry [MS/MS]) 0.000008 (Selected Ion Monitoring [SIM])
		Ion Chromatography with Suppressed Conductivity and Electrospray Ionization Mass Spectrometry	0.00002
**	**	**	*

*****

(c)***

(10) Community water systems and non-transient non-community water systems must conduct initial monitoring for perchlorate as follows:

(i) Community water systems serving greater than 10,000 persons without acceptable historic data, as defined below, must collect four consecutive quarterly samples at all sampling points between January 1, 2023 and December 31, 2025.

(ii) Community water systems serving 10,000 or fewer persons and non-transient non-community water systems without acceptable historic data, as defined below,

must collect four consecutive quarterly samples at all sampling points between January 1, 2026 and December 31, 2028.

(iii) Grandfathering of data: States may allow historical monitoring data collected at a sampling point to satisfy the initial monitoring requirements for that sampling point, for the following situations.

(A) To satisfy initial monitoring requirements, community water systems serving greater than 10,000 persons having only one entry point to the distribution system may use the monitoring data from the compliance monitoring period between January 1, 2020 and December 31, 2022. Community water systems serving 10,000 or fewer persons and non-transient non-community water systems having only one entry point to the distribution system may use the monitoring data from the compliance monitoring period between January 1, 2023 and December 31, 2025.

(B) To satisfy initial monitoring requirements, a system with multiple entry points and having appropriate historical monitoring data for each entry point to the distribution system may use the monitoring data from the compliance monitoring period that began between January 1, 2020 and December 31, 2022, for community water systems serving greater than 10,000 persons and between January 1, 2023 and December 31, 2025, for community water systems serving 10,000 or fewer persons and for non-transient non-community water systems.

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(C) To satisfy initial monitoring requirements, a system with appropriate historical data for a representative point in the distribution system may use the monitoring data from the compliance monitoring period between January 1, 2020 and December 31, 2022, for community water systems serving greater than 10,000 persons and between January 1, 2023 and December 31, 2025, for community water systems serving 10,000 or fewer persons and for non-transient non-community water systems, provided that the State finds that the historical data satisfactorily demonstrate that each entry point to the distribution system is expected to be in compliance based upon the historical data and reasonable assumptions about the variability of contaminant levels between entry points. The State must make a written finding indicating how the data conforms to these requirements.

(iv) The State may waive the final two quarters of initial monitoring for perchlorate for a sampling point if the results of the samples from the previous two quarters are below the detection limit.

*****

(i)***

(3) Compliance with the maximum contaminant level for nitrate, nitrite and perchlorate is determined based on one sample if the levels of these contaminants are below the MCLs. If the level of perchlorate exceeds the MCL in the initial sample, a confirmation sample is required in accordance with paragraph (f)(1) of this section

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and compliance shall be based on the average of the initial and confirmation sample. If the levels of nitrate and/or nitrite exceed the MCLs in the initial sample, a confirmation sample is required in accordance with paragraph (f)(2) of this section and compliance shall be based on the average of the initial and confirmation sample.

*****

(k)***

(1) Analysis for the following contaminants shall be conducted in accordance with the methods in the following table, or the alternative methods listed in Appendix A to Subpart C of this part, or their equivalent as determined by the EPA. Criteria for analyzing arsenic, barium, beryllium, cadmium, calcium, chromium, copper, lead, nickel, selenium, sodium, and thallium with digestion or directly without digestion, and other analytical test procedures are contained in Technical Notes on Drinking Water Methods, EPA-600/R-94-173, October 1994. This document is available from the National Service Center for Environmental Publications (NSCEP), P.O. Box 42419, Cincinnati, OH 45242-0419 or http://www.epa.gov/nscep/.

Table 2 to paragraph (k)(1)

Contaminant	Methodology[13]	EPA	ASTM[3]	SM[4] (18th, 19th ed.)	SM[4] (20th ed.)	SM Online[22]	Other
*	*	*	*	*	*	*	
21. Perchlorate	Ion Chromatography	314.0[23]					

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	Inline Column Concentration/Matrix Elimination Ion Chromatography with Suppressed Conductivity Detection	314.1[24]					
	Two-Dimensional Ion Chromatography with Suppressed Conductivity Detection	314.2[25]					
	Liquid Chromatography Electrospray Ionization Mass Spectrometry	331.0[26]					
	Ion Chromatography with Suppressed Conductivity and Electrospray Ionization Mass Spectrometry	332.0[27]					
*	*	*	*	*	*	*	

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The approved compliance methods for determining perchlorate in drinking water listed in table 1 to paragraph (k) of this section, are incorporated by reference. The Director of the Federal Register approves this incorporation by reference in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies of the material incorporated by reference in this paragraph (k) may be inspected at the U.S. Environmental Protection Agency, EPA Headquarters Library, in the Water Docket, at the EPA Docket Center (EPA/DC), EPA WJC West, Room 3334, 1301 Constitution Ave., NW, Washington, DC 20460. If you wish to obtain this material

from the EPA Docket Center, call (202) 566-2426. Copies of this material also may be inspected at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call (202) 741-6030, or go to [HYPERLINK "http://www.archives.gov/federal-register/cfr/ibr-locations.html"].

*****

[3]Annual Book of ASTM Standards, ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428, http://www.astm.org.; Annual Book of ASTM Standards 1994, Vols. 11.01 and 11.02; Annual Book of ASTM Standards 1996, Vols. 11.01 and 11.02; Annual Book of ASTM Standards 1999, Vols. 11.01 and 11.02; Annual Book of ASTM Standards 2003, Vols. 11.01 and 11.02.

*****

[4]Standard Methods for the Examination of Water and Wastewater, American Public Health Association, 800 I Street NW., Washington, DC 20001-3710; Standard Methods for the Examination of Water and Wastewater, 18th edition (1992); Standard Methods for the Examination of Water and Wastewater, 19th edition (1995); Standard Methods for the Examination of Water and Wastewater, 20th edition (1998).The following methods from this edition cannot be used: 3111 B, 3111 D, 3113 B, and 3114 B.

*****

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[13]Because MDLs reported in EPA Methods 200.7 and 200.9 were determined using a 2x preconcentration step during sample digestion, MDLs determined when samples are analyzed by direct analysis (i.e., no sample digestion) will be higher. For direct analysis of cadmium and arsenic by Method 200.7, and arsenic by Method 3120 B, sample preconcentration using pneumatic nebulization may be required to achieve lower detection limits. Preconcentration may also be required for direct analysis of antimony, lead, and thallium by Method 200.9; antimony and lead by Method 3113 B; and lead by Method D3559-90D, unless multiple in-furnace depositions are made.

*****

[22]Standard Methods Online, American Public Health Association, 800 I Street NW., Washington, DC 20001, available at http://www.standardmethods.org. The year in which each method was approved by the Standard Methods Committee is designated by the last two digits in the method number. The methods listed are the only online versions that may be used.

[23] Determination of Perchlorate in Drinking Water Using Ion Chromatography (Revision 1.0, USEPA, 1999a).

[24] Determination of Perchlorate in Drinking Water Using Inline Column Concentration/Matrix Elimination Ion Chromatography with Suppressed Conductivity Detection (Revision 1.0, USEPA, 2005b).

[25] Determination of Perchlorate in Drinking Water Using Two-Dimensional Ion Chromatography with Suppressed Conductivity Detection (USEPA, 2008c).

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[26] Determination of Perchlorate in Drinking Water by Liquid Chromatography Electrospray Ionization Mass Spectrometry" (Revision 1.0, USEPA, 2005c).

[27] Determination of Perchlorate in Drinking Water by Ion Chromatography with Suppressed Conductivity and Electrospray Ionization Mass Spectrometry" (USEPA, Revision 1.0, 2005d).

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*****

(2)***

Table 3 to paragraph (k)(2)

Contaminant	Preservative[1]	Container[2]	Time[3]
**	**	**	*
Perchlorate[7]	4 °C	P or G	28 days
**	**	**	*

[1]For cyanide determinations samples must be adjusted with sodium hydroxide to pH 12 at the time off collection. When chilling is indicated the sample must be shipped and stored at 4 °C or less. Acidification of nitrate or metals samples may be with a concentrated acid or a dilute (50% by volume) solution of the applicable concentrated acid. Acidification of samples for metals analysis is encouraged and allowed at the laboratory rather than at the time of sampling provided the shipping time and other instructions in Section 8.3 of EPA Methods 200.7 or 200.8 or 200.9 are followed.

[2]P = plastic, hard or soft; G = glass, hard or soft.

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[3]In all cases samples should be analyzed as soon after collection as possible. Follow additional (if any) information on preservation, containers or holding times that is specified in method.

*****

[7] Sample collection for perchlorate shall be conducted following the requirements specified in the approved methods in 141.23(k)(1) or the alternative methods listed in appendix A of subpart C of this part, or their equivalent as determined by the EPA.

*****

(3)***

(ii)***

Contaminant	Acceptance limit
*******	*******
Perchlorate	± 20% at ≥0.004 mg/L
*******	*******

*****

4. Amend § 141.51, paragraph (b) in the table, by adding in alphabetical order, an entry for "Perchlorate" to read as follows:

Subpart F—Maximum Contaminant Level Goals and Maximum Residual Disinfectant Level Goals

§141.51 Maximum contaminant level goals for inorganic contaminants.

*****

(b)***

Contaminant	MCLG (mg/l)
****	***
Perchlorate	0.056
****	***

*****

5. Amend § 141.60 by adding paragraph (b)(5) to read as follows:

Subpart G—National Primary Drinking Water Regulations: Maximum Contaminant Levels and Maximum Residual Disinfectant Levels

§141.60 Effective dates.

(b)***

(5) The effective date for § 141.62(b)(17) is [**DATE OF PUBLICATION OF FINAL RULE IN THE FEDERAL REGISTER**].

6. Amend § 141.62 by:

a. In the table in paragraph (b), adding an entry for "(17) Perchlorate" at the end of the table;;

b. In the table in paragraph (c), adding an entry for "Perchlorate" in alphabetical order;

c. In paragraph (c) under the undesignated heading entitled "Key to BATs", adding an entry "14 = Biological Treatment"; and

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d. Adding paragraph (e).

The revisions and additions read as follows:

§141.62 Maximum contaminant levels for inorganic contaminants.

*****

(b)***

Contaminant	MCL (mg/l)
****	***
(17) Perchlorate	0.056

(c)***

BAT FOR INORGANIC COMPOUNDS LISTED IN SECTION 141.62(B)

Chemical Name	BAT(s)
****	***
Perchlorate	5, 7, 14
****	***

*****

Key to BATs in Table

*****

14 = Biological Treatment

*****

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(e) The Administrator, pursuant to section 1412 of the Act, hereby identified in the following table the affordable technology, treatment technique, or other means available to systems serving 10,000 persons or fewer for achieving compliance with the maximum contaminant level for perchlorate:

Table 1 to Paragraph(e) -- **SMALL SYSTEM COMPLIANCE TECHNOLOGIES (SSCTS) FOR PERCHLORATE**

Small system compliance technology	Affordability for listed small system categories
Ion exchange	All size categories.
Reverse osmosis (point of use)	All size categories

7. Amend Appendix A to Subpart O of Part 141 table, under "Inorganic contaminants", by adding an entry for "Perchlorate" in alphabetical order to read as follows:

Subpart O—Consumer Confidence Reports

APPENDIX A TO SUBPART O OF PART 141—REGUATED CONTAMINANTS

Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects language
*	*	*	*	*	*	*
Inorganic contaminants						
*	*	*	*	*	*	*

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Perchlorate	0.056	1000	56	56	Perchlorate is commonly used in solid rocket propellants, munitions, fireworks, airbag initiators for vehicles, matches and signal flares. Perchlorate may occur naturally, particularly in arid regions such as the southwestern United States and is found as a natural impurity in nitrate salts used to produce nitrate fertilizers, explosives and other products.	Offspring of pregnant women and infants who drink water containing perchlorate in excess of the MCL could experience delays in their physical or mental development.
*	*	*	*	*	*	*

8. Amend Appendix A to Subpart Q of Part 141 table, under "B. Inorganic contaminants", by adding an entry for "Perchlorate" in alphabetical order to read as follows:

Subpart Q Public Notification of Drinking Water Violations

*****

APPENDIX A TO SUBPART Q OF PART 141—NPDWR VIOLATIONS AND OTHER SITUATIONS REQUIRING PUBLIC NOTICE[1]

Contaminant	MCL/MRDL/TT violations[2]		Monitoring & testing procedure violations	
	Tier of public	Citation	Tier of public	Citation

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	notice required		notice required	
*******				
B. Inorganic Chemicals (IOCs)				
*******				
14. Perchlorate	1	141.62(b)	3	141.23(a), (c), 141.23(f)(1)
*******				

[1] Violations and other situations not listed in this table (e.g., failure to prepare Consumer Confidence Reports), do not require notice, unless otherwise determined by the primacy agency. Primacy agencies may, at their option, also require a more stringent public notice tier (e.g., Tier 1 instead of Tier or Tier 2 instead of Tier 3) for specific violations and situations listed in this Appendix, as authorized under 141.202(a) and 141.203(a).

[2] MCL-Maximum contaminant level, MDRL-Maximum residual disinfectant level, TT-treatment technique

*****

9. Amend Appendix B to Subpart Q of Part 141 table, under "C. Inorganic contaminants", by adding an entry for "Perchlorate" in alphabetical order to read as follows :

APPENDIX B TO SUBPART Q~~O~~ OF PART 141—STANDARD HEALTH EFFECTS LANGUAGE FOR PUBLIC NOTIFICATION

Contaminant	MCLG[1] mg/L	MCL[2] mg/L	Standard health effects language for public notification
*******			
C. Inorganic Chemicals (IOCs)			
*******	*******	*******	*******

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21. Perchlorate	0.056	0.056	Offspring of pregnant women and infants who drink water containing perchlorate in excess of the MCL could experience delays in their physical or mental development.
*******	*******	*******	*******

[1] MCLG – Maximum contaminant level goal

[2] MCL – Maximum contaminant level

PART 142—NATIONAL PRIMARY DRINKING WATER REGULATIONS IMPLEMENTATION

10. The authority citation for part 142 continues to read as follows:

Authority: 42 U.S.C. 300f, 300g-1, 300g-2, 300g-3, 300g-4, 300g-5, 300g-6, 300j-4, 300j-9, and 300j-11.

11. In § 142.62 paragraph (b):

a. In the table, by adding an entry for "Perchlorate" in alphabetical order; and

b. Under the undesignated heading entitled "Key to BATs", adding an entry "13 = Biological Treatment".

Subpart G—Identification of Best Technology, Treatment Techniques or Other Means Generally Available.

*****

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§142.62 Variances and exemptions from the maximum contaminant levels for organic and inorganic chemicals.

*****

(b)***

BAT FOR INORGANIC COMPOUNDS LISTED IN §141.62(b)

Chemical Name	BAT(s)
****	****
Perchlorate	5, 7, 14
****	***

*****

Key to BATs in Table

*****

13 = Biological Treatment

*****

ED_005043_00078941-00226

Message

From: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
Sent: 5/15/2019 4:50:05 PM
To: Christ, Lisa [Christ.Lisa@epa.gov]
Subject: FRN V1 with updated Paragraph Spacing
Attachments: CLEAN for Review V1 - EO12866_SDWA NPDWR 2040-AF28 FRN Perchlorate Rule 20190515.docx

Attached.

Thanks
Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

Message

From: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
Sent: 4/11/2019 4:42:16 PM
To: Christ, Lisa [Christ.Lisa@epa.gov]
CC: Khera, Rajiv [Khera.Rajiv@epa.gov]; Huff, Lisa [Huff.Lisa@epa.gov]
Subject: RE: perchlorate proposal
Attachments: EO12866_SDWA NPDWR 2040-AF28 FRN Perchlorate Rule 20190411 Redline.docx

Hi Lisa,

Revised document is attached.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Christ, Lisa
Sent: Thursday, April 11, 2019 12:15 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Khera, Rajiv <Khera.Rajiv@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: perchlorate proposal

Sam & Rajiv --

Good news! If you've made the revisions requested yesterday, we have been cleared to send this to OP. Eric would like to see the revisions first. Please send the track change and clean versions to Eric and me as soon as possible. We'll do a quick review and transmit to OP.

THANKS! This has been a huge effort and I really appreciate all the hard work

Lisa Christ
Chief, Targeting and Analysis Branch
Office of Ground Water and Drinking Water
202-564-8354

Message

From: Corr, Elizabeth [Corr.Elizabeth@epa.gov]
Sent: 4/12/2019 3:45:33 PM
To: Christ, Lisa [Christ.Lisa@epa.gov]
Subject: FW: Perchlorate
Attachments: EO12866_SDWA NPDWR 2040-AF28 FRN Perchlorate Rule 20190412 Redlinev5.docx

Here is the doc I got from JM. Same as you sent, yes?

From: Mclain, Jennifer
Sent: Friday, April 12, 2019 9:32 AM
To: Corr, Elizabeth <Corr.Elizabeth@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>
Cc: Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>
Subject: FW: Perchlorate

Elizabeth,

In the next hour or so we should receive the full perchlorate package from SRMD to transmit to the OW-IO. Would you please work with Stephanie to process the package as soon as we receive it. I have reviewed the rule and the memos are the same as previously submitted in March (with the exception of the new alternative MCLG). The goal is to get this through OW to OP today.

In the meantime, would you please check two things:

1. Compare the table of contents to the sections in the document to make sure the changes did not impact the ToC inadvertently
2. Please confirm that "Indians" is correct in the below (from last page of preamble). I did not change it in the document because sometimes these subjects are a little odd.
   List of Subjects in 40 CFR Parts 141, and 142
   Administrative practice and procedure, Chemicals, Indians-lands, Intergovernmental relations, Radiation protection, Reporting and recordkeeping requirements, Water supply.

Thanks!
Jennifer

From: Mclain, Jennifer
Sent: Friday, April 12, 2019 9:25 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Cc: Burneson, Eric <burneson.eric@epa.gov>; Rodgers-Jenkins, Crystal <Rodgers-Jenkins.Crystal@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>
Subject: Perchlorate

Lisa,

I have completed my review of the draft perchlorate rule and approve submission to OP for OMB review. The attached document contains my minor edits. Fantastic effort by you and your team to complete the requested revisions so quickly.

Thanks so much!
Jennifer

Message

From: Burneson, Eric [Burneson.Eric@epa.gov]
Sent: 4/4/2019 10:17:16 PM
To: Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Guilaran, Yu-Ting [Guilaran.Yu-Ting@epa.gov]
CC: Tiago, Joseph [Tiago.Joseph@epa.gov]; Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]; Khera, Rajiv [Khera.Rajiv@epa.gov]; Christ, Lisa [Christ.Lisa@epa.gov]; Messier, Dawn [Messier.Dawn@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]
Subject: Revised Perchlorate FRN
Attachments: EO12866_SDWA NPDWR 2040-AF28 FRN Perchlorate Rule 20190404.docx; Perchlorate Proposed NPDWR Redline 4-4-19.docx

Jennifer:
Attached for transmission to the OW IO are revised draft notices for a Proposed National Primary Drinking Water Regulation. The first attachment is a clean version of the revised document and the second is a redline document that shows the changes made since the last OW-IO review.

Ex. 5 Deliberative Process (DP)

The attached materials incorporate the comments that we received from you and from OGC. OGC has concluded that the drafts they reviewed "meets the consent decree obligations." Please let us know if you have any questions or concerns with the attached documents.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

Message

From: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
Sent: 3/5/2019 8:46:56 PM
To: Tiago, Joseph [Tiago.Joseph@epa.gov]
CC: Christ, Lisa [Christ.Lisa@epa.gov]
Subject: RE: e-files for the perchlorate pkg
Attachments: Clean EO12866_SDWA NPDWR 2040-AF28 FRN Perchlorate Rule 20190305.docx; EO12866_SDWA NPDWR 2040-AF28 FRN Perchlorate HRRCA 20190301.docx; Perchlorate Draft Action Memo 3-5-19.docx; Transmittal Memo AA to OPEI 3-5-19.docx; Transmittal Memo EB to JM 3-5-19.docx; Transmittal Memo JM to DR 3-5-19.docx

Hi Joe,

Attached are the electronic copies of the Perchlorate Package.

Thanks
Sam

==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Christ, Lisa
Sent: Tuesday, March 05, 2019 3:44 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: e-files for the perchlorate pkg
Importance: High

Hi Sam,
Please send the e-files for the FRN, memos and HRRCA to Joe Tiago.

Thanks!
Lisa

Lisa Christ
Chief, Targeting and Analysis Branch
Office of Ground Water and Drinking Water
202-564-8354

MEMORANDUM - Draft

SUBJECT: **Proposed Rule: National Primary Drinking Water Regulations for Perchlorate** (Tier 1 Action; RIN 2040-AF28) – **ACTION MEMORANDUM**

FROM: **David P. Ross**
Assistant Administrator

THRU: Office of Policy (1803A)
Office of Executive Secretariat (1105A)

TO: **Andrew Wheeler**
Administrator (1101A)

PURPOSE

Attached for your review and signature is a proposed rule, titled "National Primary Drinking Water Regulations: Proposed Perchlorate Rule". We are recommending signature and publication of this notice to solicit public comment on the EPA's proposal to establish a National Primary Drinking Water Regulation (NPDWR) and a non-enforceable Maximum Contaminant Level Goal (MCLG) for perchlorate under the Safe Drinking Water Act (SDWA). The proposed NPDWR includes an enforceable Maximum Contaminant Level Goal (MCL) of 0.056 mg/L (56 µg/L), which is proposed to be set at a level equal to the proposed MCLG. The EPA is also seeking comment in the attached notice on whether the EPA should set the MCLG and MCL for perchlorate at 0.018 mg/L (18 µg/L) or whether to the Agency should withdraw the 2011 determination to regulate perchlorate in drinking water.

TIMELINE

In February 2011, the EPA published a final determination to regulate perchlorate in drinking water. Section 1412(b)(1)(A) of SDWA requires that the EPA issue a proposed NPDWR within 24 months and a final NPDWR within 18 months after the proposal. However, when the EPA consulted with the Science Advisory Board (SAB), the Agency received recommendations that the EPA prepares a pharmacokinetic model (i.e., a biologically based dose-response model (BBDR)) to predict the effects of perchlorate exposure on the thyroid function in pregnant women and their children to develop the MCLG for perchlorate. The EPA collaborated with Food and Drug Administration scientists to perform the modeling recommended by the SAB and completed the analysis and peer reviews in March 2018.

In February 2016, the Natural Resources Defense Council (NRDC) filed a lawsuit for failure of the EPA to perform its mandatory duties of proposing and finalizing a regulation for perchlorate in accordance with timelines provided in SDWA. The court approved consent decree establishing deadlines for the EPA to complete the peer review process for the BBDR by October 18, 2017 and issue a proposed rule by October 31, 2018, and a final rule by December 19, 2019.

The EPA was granted an extension on the consent decree for the proposed rule until April 30, 2019. However, due to a partial government shutdown in early 2019, an additional extension

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was given for the proposed rule until May 28, 2019. The EPA is addressing the consent decree requirements to propose a NPDWR and a MCLG for perchlorate in this proposed rule by May 28, 2019. The final rule deadline is December 30, 2019.

OVERVIEW

Perchlorate is an inorganic anion which occurs naturally. It is also manufactured as an oxidizer for rockets, missiles and fireworks and can be an impurity in hypochlorite disinfectants. The public may be exposed to perchlorate through food and drinking water. When exposed, perchlorate interferes with the thyroid gland by inhibiting iodide uptake, impacting the production of thyroid hormones which are crucial for normal growth and development. Poor iodide uptake in pregnant and lactating women is linked to delayed development and decreased learning capabilities in their infants.

The EPA is proposing to establish a NPDWR and a MCLG (and MCL) of 0.056 mg/L (56 ug/L) for perchlorate based upon avoiding IQ decrements of 2 points or greater. The EPA is also proposing requirements for water systems to conduct monitoring and reporting on perchlorate and provide information on perchlorate to consumers and requirements for primacy agencies that implement the public water system supervision program under SDWA. In addition, the proposal includes a list of treatment technologies to enable water systems to comply with the MCL including affordable technologies for small systems.

The EPA is also presenting the results of its economic analysis of the proposed perchlorate regulation and the Agency's conclusion that benefits of the proposed regulation do not justify the costs. The EPA is also seeking comment on whether the Agency should set the MCLG and MCL for perchlorate at 0.018 mg/L (18 µg/L) based upon avoiding IQ decrements of 1 point or greater. Finally, the EPA is seeking comment on whether the Agency should withdraw the 2011 determination to regulate perchlorate in drinking water. This would result in no NPDWR being issued for perchlorate

ANTICIPATED PUBLIC STAKEHOLDER RESPONSE

The EPA expects a variety of reactions and responses from stakeholders. Some stakeholders may be critical of the scientific analysis used to inform the derivation of the perchlorate MCLG and the estimate of benefits from the proposed regulation. Industry groups including the American Water Works Association, Perchlorate Study Group and American Chemistry Council, and the U.S. Chamber of Commerce may state that the modeling has too much uncertainty and variability. Public Health and Environmental groups may state that proposed regulation is not sufficiently protective and that the Agency does not have the authority to withdraw a determination to regulate a contaminant under the Safe Drinking Water Act.

INTERNAL DEVELOPMENT AND REVIEW PROCESS

The EPA workgroup consists of representatives from the Office of Water, the Office of Children's Health Protection, the Office of General Counsel, the Office of Policy, the Office of Research and Development, the Office of Land and Emergency Management (OLEM), and the Office of Chemical Safety and Pollution Prevention (OCSPP). The Office of Water sought review and input of the draft Federal Register Notice from this work group prior to submission for interagency review.

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INTERAGENCY REVIEW
The Office of Management and Budget will initiate review of the *Federal Register* notice: "National Primary Drinking Water Regulations: Proposed Perchlorate Rule" on March 11, 2019.

IMPACTS
This action is estimated to impose an annual cost burden between 9.7 and 10.3 million dollars. Approximately 3.1 to 3.2 million dollars of that annual cost will be borne by states (including the Navajo tribe) with primacy to oversee implementation of the requirements. Between 6.6 and 7.1 million dollars of the annual cost will be borne by the public water systems. The majority of that annual cost is to meet the monitoring and administration requirements. The EPA estimates that very few systems will have to install or operate treatment to comply with the regulation.

The EPA has determined that the proposed regulation will not result in annual costs that exceed one percent of revenue for small public water systems affected by this proposed rule. The average annual costs will range from $88 to $94 for these systems. The EPA determined that the compliance costs for this action in any given year will not meet the threshold set in the Unfunded Mandates Reform Act ($100 million in expenditures to state, local and tribal governments in aggregate or to the private sector).

PEER REVIEW
The Office of Water followed the Agency's peer review policy with respect to the underlying scientific BBDR model used to derive a MCLG for perchlorate in this regulatory action.

To assure that the Agency had implemented the SAB recommendations for modeling thyroid hormone changes, the EPA convened an independent peer review panel to evaluate the BBDR models in 2017. The EPA considered all of the recommendations from the 2017 peer review and implemented those needed to increase the scientific rigor of the model and modeling results.

The EPA convened a second independent peer review panel in 2018 to evaluate the updates to the BBDR model. The EPA also presented several approaches to link the thyroid hormone changes in a pregnant mother predicted by the BBDR model to neurodevelopmental effects, using evidence from the epidemiological literature. The January 2018 peer review was largely supportive of the efforts described in the EPA documents.

RECOMMENDATION
I recommend that you sign the attached rulemaking, "National Primary Drinking Water regulations: Proposed Perchlorate Rule.

Attachments (2)
1. Federal Register Notice
2. Health Risk Reduction and Cost Analysis of the Proposed Perchlorate National Primary Drinking Water Regulation

ED_005043_00079120-00003

Message

From: Messier, Dawn [Messier.Dawn@epa.gov]
Sent: 3/5/2019 4:25:24 PM
To: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]; Christ, Lisa [Christ.Lisa@epa.gov]
Subject: FW: Request for Concurrence to send to OMB -- SDWA perchlorate proposed rule
Attachments: Clean EO12866_SDWA NPDWR 2040-AF28 FRN Perchlorate Rule 20190301ogcdmm.docx

As sent to my front office. Let me know if you have any questions. Thanks!

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

From: Messier, Dawn
Sent: Tuesday, March 05, 2019 11:09 AM
To: Fotouhi, David <fotouhi.david@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: Request for Concurrence to send to OMB -- SDWA perchlorate proposed rule

Attached. It includes a few last comments on recently added language from me. The program sent this to us Friday asking for concurrence ASAP, given their goal to send this to OMB by 3/11. Carrie and I have reviewed several drafts and have identified no serious legal issues.

David – it'd be good if we could get your comments/concurrence at the weekly. Let us know if you have any questions.

Thanks! Dawn

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

Message

From: Wadlington, Christina [Wadlington.Christina@epa.gov]
Sent: 3/4/2019 12:40:37 PM
To: Christ, Lisa [Christ.Lisa@epa.gov]; Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
Subject: FW: Revised Perchlorate FRN
Attachments: Clean EO12866_SDWA NPDWR 2040-AF28 FRN Perchlorate Rule 20190303.docx; Redline EO12866_SDWA NPDWR 2040-AF28 FRN Perchlorate Rule 20190303.docx

What's the planned signature date?

From: Burneson, Eric
Sent: Sunday, March 03, 2019 9:24 AM
To: Lousberg, Macara <Lousberg.Macara@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>
Cc: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>
Subject: FW: Revised Perchlorate FRN

Macara and Sandy:
Attached please find the draft FRN for the proposed perchlorate regulation that we have transmitted to Dave and Lee. As noted below we intend to submit a formal "blue folder" to you on Monday for transmission to OP and subsequent to submission to OMB for review. Thanks in advance for your assistance in reviewing and transmitting these materials to OP.
Please contact Lisa Christ or Sam Hernandez if you have any questions about the attached materials.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Burneson, Eric
Sent: Sunday, March 03, 2019 9:14 AM
To: Ross, David P <ross.davidp@epa.gov>; Forsgren, Lee <Forsgren.Lee@epa.gov>
Cc: Kramer, Jessica L. <kramer.jessical@epa.gov>; Wildeman, Anna <wildeman.anna@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>
Subject: Revised Perchlorate FRN

Dave and Lee:
Attached please find files containing the revised Federal Register Notice for the Proposed Perchlorate Drinking Water Regulation. One is a clean and the other a redline strikeout version showing the changes to the document since your last review. We made changes to the document in response to comments from intra agency reviewers. The following are changes that may be of particular interest.

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Please let me know if you have any questions or concerns with the attached materials.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

Message

From: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
Sent: 2/20/2019 8:45:53 PM
To: Christ, Lisa [Christ.Lisa@epa.gov]
CC: Khera, Rajiv [Khera.Rajiv@epa.gov]
Subject: RE: Perchlorate proposal comments
Attachments: Consolidated Comments FRN.docx; Version-Control Perchlorate Rule FRN 2-4-19.cw comments.docx

Hi Lisa,

Attached is the consolidated list of comments from the review group. I also have a significant number of suggested text edits that are not included here but that I will incorporate/accept in the revised FRN file as needed.

This document lists the main areas of questions raised by the reviewers. I am currently working with Abt to develop draft responses for those issues that we decide need to be addressed. As you see some of the common themes raised by the reviewers have to do with the selection of the End Point and the associated uncertainties to derive the MCLG. I am also attaching OGC comments since Carrie has suggested that we do a number of interesting edits in the request for comment section which I think greatly improve our end product.

We should also get comments from ORD by COB today, as soon as I receive anything I will update the attached document.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

-----Original Message-----
From: Christ, Lisa
Sent: Wednesday, February 20, 2019 9:24 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: Re: Perchlorate proposal comments

Great. Sounds good.

Sent from my iPhone

> On Feb 20, 2019, at 9:13 AM, Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov> wrote:
>
> Hi Lisa,
>
> Last night I received the comments from OGC, and Lynn indicated that there was an issue that still needed to be resolved but that she will send her comments to us today.
>
> I am consolidating the comments and will share with you today. There are a few issues that were raised that will need your input as it relates to policy rather than technical issues.
>
> Sam
> ==========
> Samuel Hernández Quiñones, P.E.
> Environmental Engineer
> Office of Water
> Environmental Protection Agency
> 1200 Pennsylvania Ave. NW
> Washington, DC 20460
> 202-564-1735
>
> "USEPA Protecting Human Health and the Environment"
>
> -----Original Message-----
> From: Christ, Lisa

> Sent: Wednesday, February 20, 2019 8:32 AM
> To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
> Subject: Perchlorate proposal comments
>
> Hi Sam
> Did we receive comments from Dawn and Lynn yesterday? I've seen comments from OP, OCHP, OST and OLEM.
> The AAs never made it to the briefing Friday. We did meet with Nancy and Charlotte from OPP. They asked that we better describe the IQ selection. And emphasize this approach is for perchlorate only and is protective not predictive. I think Wynn sent comments.
> How would you like to tackle the comments? How can I help?
> Lisa
>
> Sent from my iPhone

Message

From: Miller, Gregory [Miller.Gregory@epa.gov]
Sent: 2/14/2019 1:20:58 PM
To: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
CC: Christ, Lisa [Christ.Lisa@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]
Subject: RE: Request for review - Draft Perchlorate Rule Proposal
Attachments: Version-Control Perchlorate Rule FRN 2-4-19 gMiller.docx

Hi Sam,
I looked over the revised FRN and see that you took the majority of our comments. Thanks. Attached you will find mostly minor edits that I still think are valid. And the one comment about seeking public comment on the RSC methodology. I know that is a bigger issue. I still think it would be good to pursue this in the interest of ensuring the rule is supported by the best analysis possible.

On the other documents, it looks like you haven't yet had a chance to work through the 12/6/18 OST comments on the TSD draft. Please let me know if you have any questions.

I haven't yet found the time to review the Economic Assessment. I hope to get you any remaining comments (if any) by next week some time.

I know this has been a difficult slog. Thanks for keeping at it!

Greg Miller, Senior Environmental Health Scientist
Team Lead, Human Health Risk Assessment Branch
Office of Science and Technology, Health and Ecological Criteria Division
US Environmental Protection Agency, Office of Water
1200 Pennsylvania Ave, NW (MC 4304T)
Washington, DC 20460

phone: (202) 566-2310

From: Hernandez-Quinones, Samuel
Sent: Monday, February 4, 2019 10:32 AM
To: Johnson, Ann <Johnson.Ann@epa.gov>; Dockins, Chris <Dockins.Chris@epa.gov>; Shao, Nicole <Shao.Nicole@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>; Foster, Stiven <Foster.Stiven@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>
Subject: Request for review - Draft Perchlorate Rule Proposal

Preliminary draft for internal EPA review

Hi,

Attached for your review is the Draft Perchlorate Rule Proposal (Preamble and Regulatory Text). As discussed previously we are asking that you provide your questions and or comments on the draft document to me by COB 2/15/2019. In order to keep with the consent decree deadline, we need to complete this step of the process within two weeks, if there are any issues that require technical discussions please let me know so that we can arrange any necessary working meeting.

I will follow-up with another email later today that contains the draft version of the technical support documents that were used as the basis for the Perchlorate proposal. Since those are very lengthy documents we are not requesting that you submit input and/or comments on those within the two- week time frame.

Please let me know if you have any questions.

Thanks
Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

Message

From: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
Sent: 2/6/2019 2:51:53 PM
To: Louie, Nica [Louie.Nica@epa.gov]
CC: Firestone, Michael [Firestone.Michael@epa.gov]; Foos, Brenda [Foos.Brenda@epa.gov]; Christ, Lisa [Christ.Lisa@epa.gov]
Subject: RE: ADP workgroup review - perchlorate DW reg
Attachments: Version-Control Perchlorate Rule FRN 2-4-19.docx; 181129_DRAFT MCLG TSD.DOCX; Draft Perchlorate HRRCA 2019-02-03.docx; PerchlorateOccMonitoringReport_Updated 2-1-19.docx; Perchlorate T&C November 2018.docx; Perchlorate BAT and SSCT November 2018.docx; WA459_T4_Vol1 Main Report_181113.docx

Preliminary draft for internal EPA review

Hi Nica,

Attached for your review is the Draft Perchlorate Rule Proposal (Preamble and Regulatory Text). I am requesting that you provide your questions and or comments on the draft document to me by COB 2/15/2019. In order to keep with the consent decree deadline, we need to complete this step of the process within two weeks, if there are any issues that require technical discussions please let me know so that we can arrange any necessary working meeting.

Also attached you will find the draft version of the technical support documents that were used as the basis for the Perchlorate proposal. Since these are very lengthy documents we are not requesting that you submit input and/or comments on those within the two- week time frame.

- Economic Analysis
- MCLG Derivation Document
- Treatment Technologies & Costs Document
- Occurrence & Monitoring Report
- MCLG Approaches Document
- Best Available Technologies Document

Please know that that we expect a close hold on these documents, so I would appreciate if these are not circulated around. Let me know if you have any questions.

Thanks

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Louie, Nica
Sent: Tuesday, February 05, 2019 8:18 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Firestone, Michael <Firestone.Michael@epa.gov>; Foos, Brenda <Foos.Brenda@epa.gov>
Subject: ADP workgroup review - perchlorate DW reg

Hi Sam –

Could you please let me know regarding the status of the review and when OCHP can expect to receive copies of the proposed rule and supporting documents for review/comment?

Thank you – and I was thinking of you during the shutdown and how it would impact you.

- nica

Nica Louie
Program Officer
EPA/NIEHS Children's Environmental Health and Disease Prevention Research Centers
National Center for Environmental Research
U.S. Environmental Protection Agency

On Detail at
Regulatory Support and Science Policy Division
U.S. EPA Office of Children's Health Protection
1300 Pennsylvania Ave., NW,
Washington, D.C. 20004
202-564-7633

Message

From: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
Sent: 2/1/2019 8:26:57 PM
To: Christ, Lisa [Christ.Lisa@epa.gov]
Subject: Revised Version FRN
Attachments: Version-Control Perchlorate Rule FRN 2-1-19 SHQ.docx

Hi Lisa,

Attached is the revised "Draft FRN" file.

Thanks
Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

Message

From: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
Sent: 1/31/2019 1:25:27 PM
To: Christ, Lisa [Christ.Lisa@epa.gov]
Subject: RE: OGC staff comments on draft perchlorate proposed rule
Attachments: Perchlorate Rule FRN 12-12-18-cleanDMMcom1-29-19 SHQ Responses.docx

Hi Lisa,

Here is my attempt at responding to OGCs comments. I will also get today some input from Rajiv on the HRRCA question. I am ok with most of the suggested edits from OGC.

We will need to discuss Dawns recommendation on the request for comment section, let me know when it is a good time to call you about this.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Christ, Lisa
Sent: Thursday, January 31, 2019 7:49 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: RE: OGC staff comments on draft perchlorate proposed rule

Hi Sam,
Let me know if you'd like to discuss the comments.

Lisa

From: Hernandez-Quinones, Samuel
Sent: Wednesday, January 30, 2019 10:13 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: OGC staff comments on draft perchlorate proposed rule

I am working on addressing Dawn's comments and questions today.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water

Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Burneson, Eric
Sent: Wednesday, January 30, 2019 7:58 AM
To: Messier, Dawn <Messier.Dawn@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: Re: OGC staff comments on draft perchlorate proposed rule

Thanks for your comments Dawn. Lisa is out today on leave but I am hoping Sam can work to address your comments today. We don't have a separate OGC Management review scheduled so I suggest that it be concurrent with the intra Agency review.
Eric

Sent from my iPhone

On Jan 29, 2019, at 5:50 PM, Messier, Dawn <Messier.Dawn@epa.gov> wrote:

> Attached. Please let me know if you have any questions. As discussed, I am planning to look at this again while it is with the workgroup. Also, I'd like to discuss the anticipated schedule for OGC management review when you get a chance.
>
> As always… a well-written product that was easy to comment on. Thanks!!!!! Dawn
>
> Dawn Messier
> U.S.E.P.A.
> Office of General Counsel
> Water Law Office
> 202-564-5517
>
> <Perchlorate Rule FRN 12-12-18-cleanDMMcom1-29-19.docx>

Message

From: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
Sent: 12/7/2018 8:10:23 PM
To: Christ, Lisa [Christ.Lisa@epa.gov]
Subject: Revised Version - Perchlorate FRN
Attachments: Version-Control Perchlorate Rule FRN 12-7-18.docx

Hi Lisa,

Attached is the revised FRN for Perchlorate.

Thanks

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

Message

From: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
Sent: 11/19/2018 8:29:53 PM
To: Christ, Lisa [Christ.Lisa@epa.gov]
CC: Khera, Rajiv [Khera.Rajiv@epa.gov]
Subject: Revised Version 2 - Preamble
Attachments: Version-Control Preamble 11-19-18v2 SHQ.docx

Hi Lisa,

The attached version incorporates the revisions from the Economic technical analysis into the pending sections of the preamble. There are very few open items left, mainly references and cross/labels that I will update once we receive the final version of the Augmented MCLG Report Document.

I labeled this as Version 2 (v2). Let me know if you have any comments or edits so I can transfer them to the master file.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

Neither Lazarus et al. (2012) nor Casey et al. (2017) is specifically evaluating if there is a connection between hypothyroxinemia and adverse cognitive outcomes. They are instead evaluating if treatment of abnormal thyroid function results in a better outcome on cognitive tests compared to non-treatment. Both studies are comparing two groups of individuals that begin with abnormal thyroid function, one group is treated and one group is not. This is not the same as comparing one group with hypothyroxinemia to one with optimal thyroid function to determine if individuals with hypothyroxinemia have different cognitive outcomes compared to those without hypothyroxinemia. The main takeaway from these 2 studies is that treatment of abnormal thyroid function, at approximately 13 or 18 weeks gestation, does not significantly change the cognitive performance of offspring.

More detail as to why these studies are not in the report:

Lazarus: This study was not included as it did not specifically look at hypothyroxinemic individuals compared to non-hypothyroxinemic individuals. Lazarus et al. (2012) had two groups of individuals with abnormal thyroid function, one of which was treated with levothyroxine and one of which was not. Both the treated and untreated groups included people with hypothyroxinemia (low fT4, normal TSH), subclinical hypothyroidism (high TSH, normal fT4) and clinical hypothyroidism (low ft4, high TSH).The treated and untreated groups were compared based on cognitive outcomes. Therefore, no conclusion can be drawn from this study specific to hypothyroxinemia.

Casey: This study was not located in our literature review as it was published after January 2017, when finalized our searches. This study also does not specifically evaluate the question of "is there a connection between hypothyroxinemia and adverse health outcome". The aim of this study was to evaluate if *treatment* of abnormal thyroid function, starting around 18 weeks, resulted in different cognitive outcomes compared to non-treated groups. The null finding from this study does not imply there is no relationship between hypothyroxinemia and adverse cognitive outcomes. The authors concluded that the treatment approach used in this randomized control trial does not significantly impact cognitive outcomes for hypothyroxinemic individuals.

van Wassenaer: This study, like the Casey and the Lazarus studies, is an intervention or treatment study. This study evaluated the treatment of prematurely born children (less than 30 weeks gestation) and not pregnant women. The authors found no significant difference with respect to Bayley's scores between the treated and non-treated prematurely born children at 24 months of age.

JK: Basically, the explanation is that the log distribution results in the larger unit changes at the higher fT4 levels? Does this highlight an insensitivity of the BBDR model?

The smaller delta in fT4 is because the distribution of fT4 is decreased by a consistent ratio as the mean value of fT4 is decreased by perchlorate. Thus changes at *lower* percentiles require a *smaller* unit change to result in the consistent ratio and changes at *higher* percentiles results in *greater* unit changes.

The BBDR model prediction used is the central tendency (i.e., 50th percentile). Because the BBDR model can be calibrated to any given percentile, but does not predict the distribution of fT4 levels, it was necessary to derive a fT4 distribution to identify a hypothyroxinemic threshold. EPA assumed a lognormal distribution with a Geometric Standard Deviation based on 2 to 3 studies depending on the gestational week.

KB: My reaction, as noted in my earlier email, is this result COULD also be attributed to an inaccuracy of the derived regression equations. If we make reference to ADDITIONAL uncertainties in 6.5.6 – we should call out some specifics, I would suggest, rather then imply by omission that it is solely the function of distribution approaches.

Most of the regression analysis equations are simply: Change in neuro outcome = slope X the change in fT4. The regression equations play no part in the size of the change in fT4 from the distribution.

The derivation of the distribution is critical to understanding ~~the entire approach~~how the BBDR model output was used to identify a hypothyroxinemic threshold, and we ~~I think~~believe the uncertainties are better highlighted in question 13 that discusses the derived fT4 distribution and not question 11 which focuses on the regression analyses. So as to not confound the two separate steps of the process, ~~O~~our suggested edits to question #13 (highlighted below) incorporate language identifying the size differences in unit changes based on percentile examined and the uncertainties associated with fT4 levels at certain percentiles.

"Hypothyroxinemia is the condition of having an abnormally low level of T4 in the blood and TSH is in the normal range, and in diagnosing this condition the threshold for "abnormally low" is often selected to be the 2.5th, 5th or 10th percentile of the population fT4 distribution. Because the BBDR model can be calibrated to any given percentile, but does not predict the distribution of fT4 levels, it was necessary to derive a fT4 distribution to identify a hypothyroxinemic threshold. EPA assumed a lognormal distribution with a Geometric Standard Deviation based on 2 to 3 studies depending on the gestational week. There is uncertainty regarding the true fT4 levels at various percentiles in the distribution around the median output from the BBDR model. This is exemplified by the fact that for some of the analyses larger unit changes are being seen with increasing percentiles of fT4 in most analyses (See tables 24, 30, 31, 32 and 33 of the MCLG Approaches Report). Specifically, as the mean value of fT4 is decreased due to perchlorate, the distribution of fT4 is decreased by a consistent ratio. Subsequently, for the functions based on the change in fT4, changes at lower percentiles require smaller unit changes to result in the consistent ratio where changes at higher percentiles require greater unit changes to result in the consistent ratio. Please comment on the assumptions, strengths and limitations of the derived fT4 distribution for the purposes of this analysis."

To get to the concern regarding accuracy of the regression equations, ~~I'd~~ we would suggest ~~we add~~ adding to question 11a~~.~~ the following:

-"Please also comment on the various functional forms of the regression equations (e.g. linear, log-linear, quadratic) in each of the relationships."

Regarding the Studies …[placeholder for Abt]

Message

From: Huff, Lisa [Huff.Lisa@epa.gov]
Sent: 8/7/2017 5:12:17 PM
To: Christ, Lisa [Christ.Lisa@epa.gov]
Subject: RE: FDA/CFSAN review of EPA charge questions

Yes I believe Greg considered these comments when he worked on the revised charge questions.

Lisa Foersom Huff

Associate Branch Chief
Targeting and Analysis Branch
Standards and Risk Management Division
Office of Groundwater and Drinking Water
U.S. EPA
EPA East Bldg. Rm. 2357 H
202-566-0787

From: Christ, Lisa
Sent: Monday, August 07, 2017 1:11 PM
To: Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: FDA/CFSAN review of EPA charge questions

Thanks – are these incorporated into Eric's August 2 version of the charge?

From: Huff, Lisa
Sent: Monday, August 07, 2017 1:08 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Subject: FW: FDA/CFSAN review of EPA charge questions

I didn't know if you had these comments on the charge from FDA/CFSAN?

Lisa Foersom Huff

Associate Branch Chief
Targeting and Analysis Branch
Standards and Risk Management Division
Office of Groundwater and Drinking Water
U.S. EPA
EPA East Bldg. Rm. 2357 H
202-566-0787

From: Burneson, Eric
Sent: Monday, July 24, 2017 2:00 PM
To: Huff, Lisa <Huff.Lisa@epa.gov>
Cc: Olson, Daniel <Olson.Daniel@epa.gov>; Hafez, Ahmed <Hafez.Ahmed@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: FW: FDA/CFSAN review of EPA charge questions

See attached.

From: Kluever, April [mailto:April.Kluever@fda.hhs.gov]
Sent: Friday, July 21, 2017 3:06 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>; James_H_Kim(Ex. 6 Personal Privacy (PP)
Cc: Abt, Eileen <Eileen.Abt@fda.hhs.gov>; Kabadi, Shruti <Shruti.Kabadi@fda.hhs.gov>; Dinovi, Michael J <Michael.Dinovi@fda.hhs.gov>; Suzanne_Fitzpatrick <Suzanne.Fitzpatrick@fda.hhs.gov>
Subject: FDA/CFSAN review of EPA charge questions

Hi Eric and Jim,

Please find the combined comments from FDA/CFSAN on the EPA charge questions for the 2nd perchlorate peer review. Thank you for the opportunity to comment on the charge and questions.

Thank you,

April

April Neal Kluever, Ph.D., D.A.B.T.
Toxicologist

Center for Food Safety and Applied Nutrition (CFSAN)
Office of Food Additive Safety (OFAS)
Division of Food Contact Notifications (DFCN)
U.S. Food and Drug Administration
5001 Campus Drive, HFS 275
College Park, MD 20740
Tel: 240-402-1225
April.kluever@fda.hhs.gov

Message

From: Huff, Lisa [Huff.Lisa@epa.gov]
Sent: 8/7/2017 5:08:16 PM
To: Christ, Lisa [Christ.Lisa@epa.gov]
Subject: FW: FDA/CFSAN review of EPA charge questions
Attachments: DRAFT MCLG Approach Charge 06-01-17 Combined CFSAN comments.docx

I didn't know if you had these comments on the charge from FDA/CFSAN?

Lisa Foersom Huff

Associate Branch Chief
Targeting and Analysis Branch
Standards and Risk Management Division
Office of Groundwater and Drinking Water
U.S. EPA
EPA East Bldg. Rm. 2357 H
202-566-0787

From: Burneson, Eric
Sent: Monday, July 24, 2017 2:00 PM
To: Huff, Lisa <Huff.Lisa@epa.gov>
Cc: Olson, Daniel <Olson.Daniel@epa.gov>; Hafez, Ahmed <Hafez.Ahmed@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: FW: FDA/CFSAN review of EPA charge questions

See attached.

From: Kluever, April [mailto:April.Kluever@fda.hhs.gov]
Sent: Friday, July 21, 2017 3:06 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>; James_H_Kim@ Ex. 6 Personal Privacy (PP)
Cc: Abt, Eileen <Eileen.Abt@fda.hhs.gov>; Kabadi, Shruti <Shruti.Kabadi@fda.hhs.gov>; Dinovi, Michael J <Michael.Dinovi@fda.hhs.gov>; Suzanne_Fitzpatrick <Suzanne.Fitzpatrick@fda.hhs.gov>
Subject: FDA/CFSAN review of EPA charge questions

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April

April Neal Kluever, Ph.D., D.A.B.T.
Toxicologist

Center for Food Safety and Applied Nutrition (CFSAN)
Office of Food Additive Safety (OFAS)
Division of Food Contact Notifications (DFCN)
U.S. Food and Drug Administration

5001 Campus Drive, HFS 275
College Park, MD 20740
Tel: 240-402-1225
April.kluever@fda.hhs.gov

Message

From: Christ, Lisa [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=10DBD8E424704E43B5A50F74A4DAC626-LCHRIST]
Sent: 5/23/2019 8:30:48 PM
To: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]; Khera, Rajiv [khera.rajiv@epa.gov]
Subject: FW: SIGNED: National Primary Drinking Water Regulations: Proposed Perchlorate Rule (SAN 5555)
Attachments: Perchlorate Rule OW-19-000-5459.pdf; ATT00001.htm

FYI only

From: Tiago, Joseph
Sent: Thursday, May 23, 2019 4:00 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Subject: Fwd: SIGNED: National Primary Drinking Water Regulations: Proposed Perchlorate Rule (SAN 5555)

Joe.
(202) 564-0340

Begin forwarded message:

> **From:** "Nurse, Leanne" <Nurse.Leanne@epa.gov>
> **To:** "Evalenko, Sandy" <Evalenko.Sandy@epa.gov>, "Flaharty, Stephanie" <Flaharty.Stephanie@epa.gov>, "Tiago, Joseph" <Tiago.Joseph@epa.gov>
> **Subject: FW: SIGNED: National Primary Drinking Water Regulations: Proposed Perchlorate Rule (SAN 5555)**
>
> fyi
>
> **From:** Pritchard, Eileen
> **Sent:** Thursday, May 23, 2019 3:54 PM
> **To:** Wheeler, Andrew <wheeler.andrew@epa.gov>; Jackson, Ryan <jackson.ryan@epa.gov>; Lyons, Troy <lyons.troy@epa.gov>; Bennett, Tate <Bennett.Tate@epa.gov>; White, Elizabeth <white.elizabeth@epa.gov>; Leopold, Matt (OGC) <Leopold.Matt@epa.gov>; Molina, Michael <molina.michael@epa.gov>; Best-Wong, Benita <Best-Wong.Benita@epa.gov>; Forsgren, Lee <Forsgren.Lee@epa.gov>; Ross, David P <ross.davidp@epa.gov>; Konkus, John <konkus.john@epa.gov>; Darwin, Henry <darwin.henry@epa.gov>; Bolen, Brittany <bolen.brittany@epa.gov>; McIntosh, Chad <mcintosh.chad@epa.gov>; Schiermeyer, Corry <schiermeyer.corry@epa.gov>
> **Cc:** Wooden-Aguilar, Helena <Wooden-Aguilar.Helena@epa.gov>; Grantham, Nancy <Grantham.Nancy@epa.gov>; Richardson, RobinH <Richardson.RobinH@epa.gov>; Hope, Brian <Hope.Brian@epa.gov>; Campbell, Ann <Campbell.Ann@epa.gov>; Lousberg, Macara <Lousberg.Macara@epa.gov>; Ruf, Christine <Ruf.Christine@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Drinkard, Andrea <Drinkard.Andrea@epa.gov>; Sauerhage, Maggie <Sauerhage.Maggie@epa.gov>; Dennis, Allison <Dennis.Allison@epa.gov>; Wildeman, Anna <wildeman.anna@epa.gov>; McDonough, Owen <mcdonough.owen@epa.gov>; Pritchard, Eileen <Pritchard.Eileen@epa.gov>; Kime, Robin <Kime.Robin@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>; DeBell, Kevin <debell.kevin@epa.gov>; Lovell, Will (William) <lovell.william@epa.gov>; Aguirre, Janita <Aguirre.Janita@epa.gov>; Bowles, Jack <Bowles.Jack@epa.gov>; Benevento, Douglas <benevento.douglas@epa.gov>; Gaines, Cynthia <Gaines.Cynthia@epa.gov>; Manibusan, Mary <Manibusan.Mary@epa.gov>; Sawyers, Andrew

<Sawyers.Andrew@epa.gov>; Shimkin, Martha <Shimkin.Martha@epa.gov>; Kasat, Rakhi <Kasat.Rakhi@epa.gov>; Hackel, Angela <Hackel.Angela@epa.gov>; Nurse, Leanne <Nurse.Leanne@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>
Subject: SIGNED: National Primary Drinking Water Regulations: Proposed Perchlorate Rule (SAN 5555)

Good Afternoon.

Today, the Administrator signed the proposed rule entitled, **"National Primary Drinking Water Regulations: Proposed Perchlorate Rule. (SAN 5555)."**

This rule proposes to solicit public comment on the EPA' s proposal to establish a national primary drinking water regulation (NPDWR) and a non-enforceable maximum contaminant level goal (MCLG) for perchlorate under the Safe Drinking Water Act (SDWA). The proposed NPDWR includes an enforceable maximum contaminant level (MCL) of 0.056 mg/L (56 µg/L), which is proposed to be set at a level equal to the proposed MCLG. The EPA is seeking comment in the attached notice on whether the Agency should consider setting the perchlorate MCLG and MCL at alternative values of0.018 mg/L (18 µg/L) and 0.090 mg/L (90 µg/L). The EPA is also seeking comment on whether it should withdraw the Agency's 2011 determination to regulate perchlorate in drinking water.

An additional extension was given for signature of the proposed rule until May 28, 2019. The EPA is addressing the consent decree requirements to sign a NPDWR and issue a MCLG for perchlorate in this proposed rule by May 28, 2019.

Attached is the signed and dated proposed rule. For your convenience, please go to **p. 146** for the Administrator's signature.

Please contact me if you have any questions regarding this email.

Eileen Pritchard
Special Assistant: Office of the Administrator
(202) 564-6578 (d)
pritchard.eileen@epa.gov

Message

From: Christ, Lisa [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=10DBD8E424704E43B5A50F74A4DAC626-LCHRIST]
Sent: 6/18/2019 11:49:27 AM
To: Flaharty, Stephanie [Flaharty.Stephanie@epa.gov]
Subject: RE: Update on Perchlorate IBR
Attachments: FR 2019-12773_2087259 (1)-lc.docx

From: Christ, Lisa
Sent: Tuesday, June 18, 2019 7:46 AM
To: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>
Cc: Smith, Glynda <Smith.Glynda@epa.gov>
Subject: RE: Update on Perchlorate IBR

Revised with CFR citation flagged on p-age 138

From: Flaharty, Stephanie
Sent: Tuesday, June 18, 2019 7:29 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Cc: Smith, Glynda <Smith.Glynda@epa.gov>
Subject: Update on Perchlorate IBR

Lisa,

We received OFR feedback, some edits, and an IBR approval for the proposed rule, as follows:

"Some of the last paragraph added just before section VIII (about page 80) isn't appropriate for this document. (It's boilerplate language developed for EPA programs that IBR state statutes and regulations.) The rest of that paragraph I've moved to the NTTAA/1 CFR part 51 discussion at the end of SUPP INFO because that's where the availability discussion belongs."

Given the comment about moving the added IBR language, I feel comfortable with the edits I made, so I'm going to save time and forward the document back to Chipp in Scheduling.

The added language for availability and in the footnotes won't completely sufficient for the final rule, but it's a good start and it's enough for approval at this proposed rule stage.

Phew...
Steph

6560-50-P Commented [CL1]:

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 141, and 142

[EPA-HQ-OW-2018-0780; FRL-9994-68-OW]

RIN 2040-AF28

National Primary Drinking Water Regulations: Proposed Perchlorate Rule

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule, request for public comment.

SUMMARY: The Environmental Protection Agency (EPA) is proposing a drinking water regulation for perchlorate and a health-based Maximum Contaminant Level Goal (MCLG) in accordance with the Safe Drinking Water Act (SDWA). The EPA is proposing to set both the enforceable Maximum Contaminant Level (MCL) for the perchlorate regulation and the perchlorate MCLG at 0.056 mg/L (56 µg/L). The EPA is proposing requirements for water systems to conduct monitoring and reporting for perchlorate and to provide information about perchlorate to their consumers through public notification and consumer confidence reports. This proposal includes requirements for primacy agencies that implement the public water system supervision program under the SDWA. This proposal also includes a list of treatment technologies that would enable water systems to comply with the MCL, including affordable compliance technologies for small systems serving 10,000 persons or less.

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~~In addition to the proposed regulation, the EPA is requesting comment on three alternatives: 1) whether the MCL and MCLG for perchlorate should be set at 0.018 mg/L (18 µg/L), 2) whether the MCL and MCLG for perchlorate should be set at 0.090 mg/L (90 µg/L), or 3) whether instead of issuing a national primary drinking water regulation, the EPA should withdraw the Agency's February 11, 2011, determination to regulate perchlorate in drinking water based on new information that indicates that perchlorate does not occur in public water systems with a frequency and at levels of public health concern and there may not be a meaningful opportunity for health risk reduction through a drinking water regulation. Under this last alternative, the final action would be a withdrawal of the determination to regulate and there would be no MCLG or national primary drinking water regulation for perchlorate.~~

DATES: Comments must be received on or before **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].** Under the Paperwork Reduction Act (PRA), comments on the information collection provisions are best assured of consideration if the Office of Management and Budget (OMB) receives a copy of your comments on or before **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].**

ADDRESSES: Submit your comments, identified by Docket ID No. **EPA-HQ-OW-2018-0780**, at https://www.regulations.gov. Follow the online instructions for submitting comments. Once submitted, comments cannot be edited or removed from Regulations.gov. The EPA may publish any comment received to its public docket. Do not submit electronically any information you

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consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (i.e. on the web, cloud, or other file sharing system). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit http://www2.epa.gov/dockets/commenting-epa-dockets.

FOR FURTHER INFORMATION CONTACT: Samuel Hernandez, Office of Ground Water and Drinking Water, Standards and Risk Management Division (Mail Code 4607M), Environmental Protection Agency, 1200 Pennsylvania Avenue, NW, Washington, DC 20460; telephone number: (202) 564-1735; email address: hernandez.samuel@epa.gov.

SUPPLEMENTARY INFORMATION: In addition to the proposed regulation, the EPA is requesting comment on three alternatives: 1) whether the MCL and MCLG for perchlorate should be set at 0.018 mg/L (18 µg/L), 2) whether the MCL and MCLG for perchlorate should be set at 0.090 mg/L (90 µg/L), or 3) whether instead of issuing a national primary drinking water regulation, the EPA should withdraw the Agency's February 11, 2011, determination to regulate perchlorate in drinking water based on new information that indicates that perchlorate does not occur in public water systems with a frequency and at levels of public health concern and there may not be a meaningful opportunity for health risk reduction through a drinking water regulation. Under

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this last alternative, the final action would be a withdrawal of the determination to regulate and there would be no MCLG or national primary drinking water regulation for perchlorate.

This proposed rule is organized as follows:

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I. General Information

A. What is the EPA Proposing?

B. Does This Action Apply to Me?

II. Background

A. What is Perchlorate?

B. Statutory Authority

C. Statutory Framework and Regulatory History

III. Assessment and Modeling of the Health Effects of Perchlorate

A. 2008 Preliminary Regulatory Determinations

B. 2009 Supplemental Request for Comment and 2011 Final Regulatory Determination

C. Science Advisory Board Recommendations

D. Perchlorate Model Development and Peer Reviews

E. Sensitive Population for Deriving MCLG

F. BBDR Model Specification for the Sensitive Population

G. Epidemiological Literature

H. Identifying a Point of Departure for Developing the MCLG

I. Translate PODs to RfDs

J. Translate RfD into an MCLG

IV. Maximum Contaminant Level Goal and Alternatives

V. Maximum Contaminant Level and Alternatives

VI. Occurrence

VII. Analytical Methods

VIII. Monitoring and Compliance Requirements

A. What are the Proposed Monitoring Requirements?

B. Can States Grant Monitoring Waivers?

C. How are System MCL Violations Determined?

D. When Must Systems Complete Initial Monitoring?

E. Can Systems Use Grandfathered Data to Satisfy the Initial Monitoring Requirements?

IX. Safe Drinking Water Act Right to Know Requirements

A. What are the Consumer Confidence Report Requirements?

B. What are the Public Notification Requirements?

X. Treatment Technologies

A. What are the Best Available Technologies?

B. What are the Small System Compliance Technologies?

XI. Rule Implementation and Enforcement

A. What are the Requirements for Primacy?

B. What are the State Record Keeping Requirements?

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C. *What are the State Reporting Requirements?*

XII. Health Risk Reduction Cost Analysis

A. *Identifying Affected Entities*

B. *Method for Estimating Costs*

C. *Method for Estimating Benefits*

D. *Comparison of Costs and Benefits*

XIII. Uncertainty Analysis

A. *Uncertainty in the MCLG Derivation*

B. *Uncertainty in the Economic Analysis*

XIV. Request for Comment on Proposed Rule

XV. Request for Comment on Potential Regulatory Determination Withdrawal

XVI. Statutory and Executive Order Reviews

A. *Executive Order 12866: Regulatory Planning and Review and Executive Order 13563 Improving Regulation and Regulatory Review*

B. *Executive Order 13771: Reducing Regulations and Controlling Regulatory Costs*

C. *Paperwork Reduction Act*

D. *Regulatory Flexibility Act (RFA)*

E. *Unfunded Mandates Reform Act*

F. *Executive Order 13132: Federalism*

G. *Executive Order 13175: Consultation and Coordination with Indian Tribal Governments*

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H. Executive Order 13045: Protection of Children from Environmental Health and Safety Risks

I. Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution, or Use

J. National Technology Transfer and Advancement Act of 1995

K. Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

XVII. Consultations with the Science Advisory Board, National Drinking Water Advisory Council, and the Secretary of Health and Human Services

XVIII. References

I. General Information

A. What is the EPA Proposing?

This action contains a proposal and three alternatives for public comment. First, the EPA proposes to establish a Maximum Contaminant Level Goal (MCLG) and National Primary Drinking Water Regulation (NPDWR) for perchlorate in public water supplies. The EPA proposes an MCLG of 56 µg/L, and to regulate perchlorate in drinking water at an enforceable maximum contaminant level (MCL) of 56 µg/L.

The EPA is proposing an NPDWR for perchlorate in accordance with its February 11, 2011, (76 FR 7762) determination to regulate perchlorate under the SDWA. Based on the best available peer reviewed science at that time, the EPA found that perchlorate met the SDWA's

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three criteria for regulating a contaminant: 1) the contaminant may have an adverse effect on the health of persons, 2) the contaminant is known to occur or there is a substantial likelihood that the contaminant will occur in public water systems (PWSs) with a frequency and at levels of public health concern, and 3) in the sole judgment of the Administrator, regulation of such contaminant presents a meaningful opportunity for health risk reduction for persons served by PWSs.

Second, as explained in more detail below, the EPA is soliciting comment on two alternative MCLG/MCL values of 18 µg/L and 90 µg/L respectively. Third, in light of new considerations that have come to the EPA's attention since it issued its positive regulatory determination in 2011, including information on lower levels of occurrence of perchlorate than the EPA had previously believed to exist and new analysis of the concentration that represents a level of health concern, this action also discusses and requests comment on an alternative action under which the EPA would withdraw its 2011 determination to regulate perchlorate. Under this alternative, there would be no MCLG or NPDWR for perchlorate.

B. Does This Action Apply to Me?

Entities that could potentially be affected include the following:

Category	**Examples of potentially affected entities**
Public water systems	Community water systems Non-transient, non-community water systems
State and tribal agencies	Agencies responsible for drinking water regulatory development and enforcement

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This table is not intended to be exhaustive, but rather provides a guide for readers regarding entities that could be affected by this action. To determine whether your facility or activities could be affected by this action, you should carefully examine this proposed rule. If you have questions regarding the applicability of this action to a particular entity, consult the person listed in the FOR FURTHER INFORMATION CONTACT section.

II. Background

A. What is Perchlorate?

Perchlorate is a negatively charged inorganic ion that is comprised of one chlorine atom bound to four oxygen atoms (ClO_4-), which is highly stable and mobile in the aqueous environment. Perchlorate comes from both natural and manmade sources. It is formed naturally via atmospheric processes and can be found within mineral deposits in certain geographical areas. It is also produced in the United States, and the most common compounds include ammonium perchlorate and potassium perchlorate used primarily as oxidizers in solid fuels to power rockets, missiles, and fireworks. For the general population, most perchlorate exposure is through the ingestion of contaminated food or drinking water.

B. Statutory Authority

Section 1412(b)(1)(A) of the SDWA requires the EPA to establish NPDWRs for contaminants that may have an adverse effect on the health of persons; that are known to occur or there is a substantial likelihood that the contaminant will occur in public water systems with a frequency and at levels of public health concern; and where in the sole judgment of the

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Administrator, regulation of such contaminant presents a meaningful opportunity for health risk reduction for persons served by public water systems.

C. Statutory Framework and Regulatory History

Section 1412(b)(1)(B)(i) of the SDWA requires the EPA to publish every five years a Contaminant Candidate List (CCL). The CCL is a list of drinking water contaminants that are known or anticipated to occur in public water systems and are not currently subject to the EPA drinking water regulations. The EPA uses the CCL to identify priority contaminants for regulatory decision-making and information collection. Contaminants listed on the CCL may require future regulation under the SDWA. The EPA included perchlorate on the first, second, and third CCLs published in 1998, 2005, and 2009.

Once listed on the CCL, the Agency continues to collect data on CCL contaminants to better understand their potential health effects and to determine the levels at which they occur in drinking water. Section 1412(b)(1)(B)(ii) requires that, every five years, the EPA, after public comment, issue a determination whether or not to regulate at least five contaminants on the CCL. For any contaminant that the EPA determines meets the criteria for regulation, under Section 1412(b)(1)(E), the EPA must issue a proposed national primary drinking water regulation within two years and issue a final regulation 18 months after the proposal (which may be extended by 9 months).

As part of its responsibilities under the SDWA, the EPA implements section 1445(a)(2), "Monitoring Program for Unregulated Contaminants." This section requires that once every five

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years, the EPA issue a list of no more than 30 unregulated contaminants to be monitored by public water system. This monitoring is implemented through the Unregulated Contaminant Monitoring Rule (UCMR), which collects data from community water systems (CWS) and non-transient, non-community water systems (NTNCWS). The UCMR collects data from a census of large water systems (serving more than 10,000 people) and from a statistically representative sample of small water systems. On September 17, 1999, the EPA published its first UCMR (64 FR 50556) which required all large systems and a representative sample of small systems to monitor for perchlorate and 25 other contaminants (USEPA, 1999, 2000b).

The EPA and other federal agencies asked the National Research Council (NRC) to evaluate the health implications of perchlorate ingestion. The NRC concluded that perchlorate exposure inhibits the transport of iodide[1] into the thyroid by a protein molecule knows as the sodium/iodide symporter (NIS), which may lead to decreases in two hormones, thyroxine (T3) and triiodothyronine (T4) and increases in thyroid-stimulating hormone (TSH) [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"a1mn5hjprkt","properties":{"formattedCitation":"(National Research Council (NRC), 2005b)","plainCitation":"(National Research Council (NRC), 2005b)","noteIndex":0},"citationItems":[{"id":350,"uris":["http://zotero.org/groups/945096/item

[1] For the purposes of this FRN, "iodine" will be used to refer to dietary intake before entering the body. Once in the body, "iodide" will be used to refer to the ionic form.

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s/TN6HMC9D"],"uri":["http://zotero.org/groups/945096/items/TN6HMC9D"],"itemData":{"id":350,"type":"book","title":"Health Implications of Perchlorate Ingestion","publisher":"National Academies Press","publisher-place":"Washington, DC","event-place":"Washington, DC","author":[{"literal":"National Research Council (NRC)"}],"issued":{"date-parts":[["2005"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. Additionally, the NRC concluded that the most sensitive population to perchlorate exposure are "the fetuses of pregnant women who might have hypothyroidism or iodide deficiency" (p. 178). The EPA established a reference dose (RfD) consistent with the recommended National Research Council RfD of 0.7 µg/kg/day for perchlorate. The reference dose is an estimate of a daily exposure to humans that is likely to be without an appreciable risk of adverse effects. This RfD was based on a study [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"a3u94lt6me","properties":{"formattedCitation":"(Greer, Goodman, Pleus, & Greer, 2002)","plainCitation":"(Greer, Goodman, Pleus, & Greer, 2002)","noteIndex":0},"citationItems":[{"id":387,"uris":["http://zotero.org/groups/945096/items/6AKUNIX6"],"uri":["http://zotero.org/groups/945096/items/6AKUNIX6"],"itemData":{"id":387,"type":"article-journal","title":"Health effects assessment for environmental perchlorate contamination: the dose response for inhibition of thyroidal radioiodine uptake in humans","container-title":"Environmental Health Perspectives","page":"927","volume":"110","issue":"9","author":[{"family":"Greer","given":"M

onte A."},{"family":"Goodman","given":"Gay"},{"family":"Pleus","given":"Richard C."},{"family":"Greer","given":"Susan E."}],"issued":{"date-parts":[["2002"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}] of perchlorate's inhibition of radioactive iodine uptake in healthy adults and the application of an uncertainty factor of 10 for intraspecies variability [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"0oHz805e","properties":{"formattedCitation":"(USEPA, 2005b)","plainCitation":"(USEPA, 2005b)","noteIndex":0},"citationItems":[{"id":980,"uris":["http://zotero.org/groups/945096/items/LHANJBR6"],"uri":["http://zotero.org/groups/945096/items/LHANJBR6"],"itemData":{"id":980,"type":"article","title":"Integrated Risk Information System (IRIS) Chemical Assessment Summary: Perchlorate (ClO4-) and Perchlorate Salts","publisher":"USEPA National Center for Environmental Assessment","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2005"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}].

In October 2008, the EPA published a preliminary regulatory determination not to regulate perchlorate in drinking water and requested public comment (73 FR 60262). In that preliminary determination, the EPA tentatively concluded that perchlorate did not occur with a frequency and at levels of public health concern and that development of a regulation did not present a meaningful opportunity for health risk reduction for persons served by public water

systems. The EPA derived and used a Health Reference Level (HRL) of 15 µg/L based on the RfD of 0.7 µg/kg/day in making this conclusion [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"FZ6WMtAv","properties":{"formattedCitation":"(USEPA, 2008a)","plainCitation":"(USEPA, 2008a)","noteIndex":0},"citationItems":[{"id":934,"uris":["http://zotero.org/groups/945096/items/HBX88QM9"],"uri":["http://zotero.org/groups/945096/items/HBX88QM9"],"itemData":{"id":934,"type":"article-journal","title":"Drinking water: Preliminary regulatory determination on perchlorate","container-title":"Federal Register","volume":"73","issue":"198","abstract":"SUMMARY: This action presents EPA's preliminary regulatory determination for perchlorate in accordance with the Safe Drinking Water Act (SDWA). The Agency has determined that a national primary drinking water regulation (NPDWR) for perchlorate would not present \"a meaningful opportunity for health risk reduction for persons served by public water systems." The SDWA requires EPA to make determinations every five years of whether to regulate at least five contaminants on the Contaminant Candidate List (CCL). EPA included perchlorate on the first and second CCLs that were published in the Federal Register on March 2, 1998 and February 24, 2005. Most recently, EPA presented final regulatory determinations regarding 11 contaminants on the second CCL in a notice published in the Federal Register on July 30, 2008. In today's action, EPA presents supporting rationale and requests public comment on its preliminary regulatory determination for perchlorate. EPA will make a final regulatory determination for perchlorate after considering comments and

information provided in the 30-day comment period following this notice. EPA plans to publish a health advisory for perchlorate at the time the Agency publishes its final regulatory determination to provide State and local public health officials with technical information that they may use in addressing local contamination.","ISSN":"ISSN 0097-6326 EISSN 2167-2520","shortTitle":"Federal Register","journalAbbreviation":"Fed. Reg.","language":"English","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2008"]]}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. Based primarily on the UCMR 1 occurrence data, the EPA estimated that less than 1% of drinking water systems (serving approximately 1 million people) had perchlorate levels above the HRL of 15 µg/L. Based on this information the Agency determined that perchlorate did not occur frequently at levels of health concern. The EPA also determined that there was not a meaningful opportunity for a NPDWR to reduce health risks.

In January 2009 the EPA published an interim health advisory for perchlorate of 15 µg/L, consistent with the HRL derivation for perchlorate of 15 µg/L described above. Health Advisories are non-enforceable and non-regulatory and provide technical information to state agencies and other public health officials on health effects, analytical methodologies, and treatment technologies associated with drinking water contamination. Health Advisories provide the public, including the most sensitive populations, with a margin of protection from a lifetime

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of exposure. For perchlorate, the health advisory was developed for subchronic exposure (USEPA 2008d).

In August 2009, the EPA published a supplemental request for comment with a new analysis that derived potential alternative HRLs for 14 life stages, including infants and children. The analysis used the RfD of 0.7 μg/kg/day and life stage-specific bodyweight and exposure information (74 FR 41883; USEPA, 2009a). After careful consideration of public comments on the October 2008 and August 2009 notices, on February 11, 2011, the EPA published its determination to regulate perchlorate (76 FR 7762; USEPA, 2011a). The Agency stated then that when considering the alternative HRL benchmarks described in the 2009 notice, the likelihood of perchlorate to occur at levels of concern had significantly increased in comparison to the levels described on the 2008 preliminary negative determination. The EPA concluded that as many as 16 million people could potentially be exposed to perchlorate at levels of concern, up from 1 million people originally described in the 2008 notice.

In its 2011 determination, the Agency found that perchlorate may have an adverse effect on the health of persons, that it is known to occur in public drinking water systems with a frequency and at levels that present a public health concern, and in the judgment of the Administrator, regulation of perchlorate presented a meaningful opportunity for health risk reduction for persons served by public water systems. As a result of the determination, and as required by Section 1412(b)(1)(E), the EPA initiated the process to develop an MCLG and NPDWR for perchlorate as described in this notice.

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In September 2012, the U.S. Chamber of Commerce (the Chamber) submitted to the EPA a Request for Correction under the Information Quality Act regarding the EPA's regulatory determination. In the request, the Chamber claimed that the UCMR 1 data did not comply with data quality guidelines and were not representative of current conditions. In response to this request, the EPA reassessed the data and removed certain source water samples that could be paired with appropriate follow-up samples located at the entry point to the distribution system. The EPA also updated the UCMR 1 data for systems in California and Massachusetts using state compliance data to reflect current occurrence conditions after state regulatory limits for perchlorate were implemented.

In response to a lawsuit brought to enforce the deadlines in Section 1412(b)(1)(E), the U.S. District Court for the Southern District of New York entered a consent decree, requiring the EPA to propose an NPDWR with a proposed MCLG for perchlorate in drinking water no later than October 31, 2018, and finalize an NPDWR and MCLG for perchlorate in drinking water no later than December 19, 2019. The deadline for the EPA to propose an NPDWR with a proposed MCLG for perchlorate in drinking water was later extended to May 28, 2019. The consent decree is available in the docket for today's proposed rule.

III. Assessment and Modeling of the Health Effects of Perchlorate

Perchlorate inhibits uptake of iodide into the thyroid gland by competitively binding to the NIS (ATSDR, 2008; Greer et al., 2002; NRC, 2005; SAB 2013; Taylor et al., 2013). Iodide is necessary for the synthesis of thyroid hormones and decreased iodide uptake into the thyroid can

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adversely affect thyroid hormone production (SAB for the U.S. EPA, 2013; Blount et al., 2006; Steinmaus et al., 2007, 2013, 2016, McMullen et al., 2017; Knight et al., 2018). These changes in thyroid hormone levels in a pregnant woman may be linked to changes in the neurodevelopment of her offspring (SAB for the U.S. EPA, 2013; Korevaar et al., 2016; Fan and Wu, 2016; Wang et al., 2016; Alexander et al., 2017; Thompson et al., 2018). In addition, alterations in thyroid homeostasis may impact other body systems including the reproductive (Alexander et al., 2017; Hou et al., 2016; Maraka et al., 2016) and cardiovascular systems (Asvold et al., 2012; Sun et al., 2017).

The mode of action of perchlorate toxicity has been proposed as follows: exposure to perchlorate is known to inhibit the uptake of iodide by the thyroid gland through the NIS (NRC, 2005; SAB for the U.S. EPA, 2013). A sufficient inhibition of iodide uptake results in iodide deficiency within the thyroid. Given that T3 and T4 require iodide for production, a decrease in intra-thyroidal iodide can result in decreased production of these hormones. This could in turn result in increased TSH, the hormone that acts on the thyroid gland to stimulate iodide uptake to increase thyroid hormone production [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"eF6zWm7L","properties":{"formattedCitation":"(ATSDR, 2008; Blount, Pirkle, Osterloh, Valentin-Blasini, & Caldwell, 2006; National Research Council (NRC), 2005; Steinmaus, Miller, Cushing, Blount, & Smith, 2013; Steinmaus et al., 2016)","plainCitation":"(ATSDR, 2008; Blount, Pirkle, Osterloh, Valentin-Blasini, & Caldwell, 2006; National Research Council (NRC), 2005; Steinmaus, Miller, Cushing, Blount, & Smith,

2013; Steinmaus et al.,
2016)","noteIndex":0},"citationItems":[{"id":428,"uris":["http://zotero.org/groups/945096/items/
UIANA947"],"uri":["http://zotero.org/groups/945096/items/UIANA947"],"itemData":{"id":428,
"type":"bill","title":"Toxicological Profile for
Perchlorates","author":[{"family":"ATSDR","given":""}],"issued":{"date-
parts":[["2008"]]}}},{"id":203,"uris":["http://zotero.org/groups/945096/items/UW4TFPNI"],"uri
":["http://zotero.org/groups/945096/items/UW4TFPNI"],"itemData":{"id":203,"type":"article-
journal","title":"Urinary perchlorate and thyroid tormone levels in adolescent and adult men and
women living in the United States","container-title":"Environmental Health
Perspectives","page":"1865-
1871","volume":"114","issue":"12","source":"CrossRef","DOI":"10.1289/ehp.9466","ISSN":"00
91-6765","language":"en","author":[{"family":"Blount","given":"Benjamin
C."},{"family":"Pirkle","given":"James L."},{"family":"Osterloh","given":"John
D."},{"family":"Valentin-Blasini","given":"Liza"},{"family":"Caldwell","given":"Kathleen
L."}],"issued":{"date-
parts":[["2006"]]}}},{"id":349,"uris":["http://zotero.org/groups/945096/items/TN6HMC9D"],"ur
i":["http://zotero.org/groups/945096/items/TN6HMC9D"],"itemData":{"id":349,"type":"book","t
itle":"Health Implications of Perchlorate Ingestion","publisher":"National Academies
Press","publisher-place":"Washington, DC","event-place":"Washington,
DC","author":[{"literal":"National Research Council (NRC)"}],"issued":{"date-

parts":[["2005"]]}}},{"id":39,"uris":["http://zotero.org/groups/945096/items/35VPNIKR"],"uri":["http://zotero.org/groups/945096/items/35VPNIKR"],"itemData":{"id":39,"type":"article-journal","title":"Combined effects of perchlorate, thiocyanate, and iodine on thyroid function in the national health and nutrition examination survey 2007-8","container-title":"Environmental research","volume":"123","source":"www.ncbi.nlm.nih.gov","abstract":"Perchlorate, thiocyanate, and low iodine intake can all decrease iodide intake into the thyroid gland. This can reduce thyroid hormone production since iodide is a key component of thyroid hormone. Previous research has suggested that each of these factors ...","URL":"https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3857960/","DOI":"10.1016/j.envres.2013.01.005","note":"PMID: 23473920","language":"en","author":[{"family":"Steinmaus","given":"Craig"},{"family":"Miller","given":"Mark D."},{"family":"Cushing","given":"Lara"},{"family":"Blount","given":"Benjamin C."},{"family":"Smith","given":"Allan H."}],"issued":{"date-parts":[["2013",5]]},"accessed":{"date-parts":[["2017",5,5]]}}},{"id":211,"uris":["http://zotero.org/groups/945096/items/H4FH49VS"],"uri":["http://zotero.org/groups/945096/items/H4FH49VS"],"itemData":{"id":211,"type":"article-journal","title":"Thyroid hormones and moderate exposure toperchlorate during pregnancy in women in southern California","container-title":"Environmental Health Perspectives","page":"861-

867","volume":"124","issue":"6","source":"PubMed","abstract":"BACKGROUND: Findings from national surveys suggest that everyone in the United States is exposed to perchlorate. At high doses, perchlorate, thiocyanate, and nitrate inhibit iodide uptake into the thyroid and decrease thyroid hormone production. Small changes in thyroid hormones during pregnancy, including changes within normal reference ranges, have been linked to cognitive function declines in the offspring.\nOBJECTIVES: We evaluated the potential effects of low environmental exposures to perchlorate on thyroid function.\nMETHODS: Serum thyroid hormones and anti-thyroid antibodies and urinary perchlorate, thiocyanate, nitrate, and iodide concentrations were measured in 1,880 pregnant women from San Diego County, California, during 2000-2003, a period when much of the area's water supply was contaminated from an industrial plant with perchlorate at levels near the 2007 California regulatory standard of 6 μg/L. Linear regression was used to evaluate associations between urinary perchlorate and serum thyroid hormone concentrations in models adjusted for urinary creatinine and thiocyanate, maternal age and education, ethnicity, and gestational age at serum collection.\nRESULTS: The median urinary perchlorate concentration was 6.5 μg/L, about two times higher than in the general U.S.\nPOPULATION: Adjusted associations were identified between increasing log10 perchlorate and decreasing total thyroxine (T4) [regression coefficient (β) = -0.70; 95% CI: -1.06, -0.34], decreasing free thyroxine (fT4) (β = -0.053; 95% CI: -0.092, -0.013), and increasing log10 thyroid-stimulating hormone (β = 0.071; 95% CI: 0.008, 0.133).\nCONCLUSIONS: These results suggest that environmental perchlorate exposures may affect thyroid hormone production

during pregnancy. This could have implications for public health given widespread perchlorate exposure and the importance of thyroid hormone in fetal neurodevelopment.\nCITATION: Steinmaus C, Pearl M, Kharrazi M, Blount BC, Miller MD, Pearce EN, Valentin-Blasini L, DeLorenze G, Hoofnagle AN, Liaw J. 2016. Thyroid hormones and moderate exposure to perchlorate during pregnancy in women in Southern California. Environ Health Perspect 124:861-867; http://dx.doi.org/10.1289/ehp.1409614.","DOI":"10.1289/ehp.1409614","ISSN":"1552-9924","note":"PMID: 26485730\nPMCID: PMC4892913","journalAbbreviation":"Environ. Health Perspect.","language":"eng","author":[{"family":"Steinmaus","given":"Craig"},{"family":"Pearl","given":"Michelle"},{"family":"Kharrazi","given":"Martin"},{"family":"Blount","given":"Benjamin C."},{"family":"Miller","given":"Mark D."},{"family":"Pearce","given":"Elizabeth N."},{"family":"Valentin-Blasini","given":"Liza"},{"family":"DeLorenze","given":"Gerald"},{"family":"Hoofnagle","given":"Andrew N."},{"family":"Liaw","given":"Jane"}],"issued":{"date-parts":[["2016",6]]}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. For populations with developing brains (e.g., fetuses, neonates, and children), disruptions in homeostatic thyroid hormone function can result in adverse neurodevelopmental effects (Alexander et al., 2017; Glinoer & Delange, 2000; Glinoer & Rovet, 2009; SAB for the U.S. EPA, 2013). Specifically, decreased maternal thyroid

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hormone levels during pregnancy, including in the hypothyroxinemic range[2], have been linked to decrements in neurocognitive function in offspring (Alexander et al., 2017; Thompson et al., 2018; Wang et al., 2016). There is also limited evidence to suggest an association with other adverse neurodevelopmental outcomes including ADHD, expressive language delay, reduced school performance, autism, and delayed cognitive development (Alexander et al., 2017; Ghassabian, Bongers-Schokking, Henrichs, Jaddoe, & Visser, 2011; Gyllenberg et al., 2016; Henrichs et al., 2010; Korevaar et al., 2016, Noten et al., 2015; Pop et al., 2003, 1999; SAB for the U.S. EPA, 2013; van Mil et al., 2012).

The difficulty in estimating the likelihood and magnitude of the potential implications of perchlorate's mode of action on expressed neurodevelopmental health effects in humans exposed to perchlorate during development is the lack of robust epidemiological studies, especially in sensitive populations. Therefore, based on the known mode of action of perchlorate the Agency estimated potential health risks using a novel approach suggested by the EPA's Science Advisory Board (SAB for the U.S. EPA, 2013). The EPA's approach to estimating perchlorate risks has evolved over time with improved research and modeling capabilities. The following sections describe information sources the EPA used in its assessment as well as the regulatory process followed by the Agency in its decision making.

A. 2008 Preliminary Regulatory Determinations

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[2] Maternal hypothyroxinemia is defined as TSH in the reference range and fT4 in the lower percentiles. The SAB notes that hypothyroxinemia has been defined by a "variety of cutoffs…ranging from fT4 below the 10th or 5th percentiles to below the 2.5th percentile" (SAB, 2013, p.10) in the population.

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In 2005, at the request of the EPA and other federal agencies, the NRC evaluated the health implications of perchlorate ingestion. The NRC concluded that perchlorate exposure could inhibit the transport of iodide into the thyroid, leading to thyroid hormone deficiency (NRC, 2005). A significant inhibition of iodide uptake results in intra-thyroid iodide deficiency, decreased synthesis of T3 and T4, and increased TSH. The NRC also concluded that a prolonged decrease of thyroid hormones is potentially more likely to have adverse effects in sensitive populations (e.g., the fetuses of pregnant women who might have hypothyroidism or iodide deficiency). Based on these findings, the NRC recommended a reference dose of 0.7 µg/kg/day.

Based on NRC's analysis, the EPA established a perchlorate reference dose (RfD) of 0.7 µg/kg/day in 2005 (USEPA, 2005). This value was based on a no observed effect level (NOEL) of 7 µg/kg/day identified from a study (Greer, Goodman, Pleus, & Greer, 2002) of perchlorate's inhibition of radioactive iodine uptake in healthy adults and the application of an uncertainty factor of 10 for intraspecies variability.

As discussed above, in 2008, the EPA derived an HRL of 15 µg/L using the RfD of 0.7 µg/kg/day, a default bodyweight of 70 kg, a default drinking water consumption rate of 2 L/day, and a perchlorate-specific relative source contribution (RSC) of 62 percent that was derived for a pregnant woman (USEPA, 2008a) (73 FR 60262). The RSC is the percentage of the RfD remaining for drinking water after other sources of exposure to perchlorate (i.e., food) have been considered. The EPA's HRL was calculated to offer a margin of protection against adverse

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health effects to the subpopulation identified by the NAS as likely the most sensitive to the effects of perchlorate exposure, fetuses.

B. 2009 Supplemental Request for Comment and 2011 Final Regulatory Determination

The EPA received over 33,000 comments in response to its 2008 preliminary determination to not regulate perchlorate (USEPA, 2011a). After reviewing the comments, the EPA developed alternative HRLs for other sensitive populations in addition to fetuses of pregnant women. The EPA developed alternative HRLs for 14 life stages including infants and children. The EPA also evaluated the occurrence of perchlorate at levels above these alternative HRLs using the UCMR 1 occurrence data.

The analysis used the RfD of 0.7 µg/kg/day and life stage-specific bodyweight and exposure information (i.e., drinking water intake, RSC) for each of the 14 life stages evaluated. The resulting HRLs ranged from 1 µg/L to 47 µg/L. In August 2009, the EPA published a supplemental request for comment with the new analysis and HRLs (74 FR 41883; USEPA, 2009a). After careful consideration of public comments, on February 11, 2011, the EPA published its final determination to regulate perchlorate (76 FR 7762; USEPA, 2011a).

C. Science Advisory Board Recommendations

As required by Section 1412(d) of the SDWA, as part of the NPDWR development process, the EPA requested comments from the Science Advisory Board (SAB) in 2012, seeking guidance on how best to consider and interpret the life stage information, the epidemiologic and biomonitoring data since the NRC report, physiologically-based pharmacokinetic (PBPK)

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analyses, and the totality of perchlorate health information to derive an MCLG for perchlorate. The SAB recommended the following:

- derive a perchlorate MCLG that addresses sensitive life stages through physiologically based pharmacokinetic/pharmacodynamic (PBPK/PD) modeling based upon perchlorate's mode of action rather than the default MCLG approach using the RfD and specific chemical exposure parameters;
- expand the modeling approach to account for thyroid hormone perturbations and potential adverse neurodevelopmental outcomes from perchlorate exposure;
- utilize a mode-of-action framework for developing the MCLG that links the steps in the proposed mechanism leading from perchlorate exposure through iodide uptake inhibition – to thyroid hormone changes – and finally to neurodevelopmental impacts; and
- "Extend the [BBDR] model expeditiously to…provide a key tool for linking early events with subsequent events as reported in the scientific and clinical literature on iodide deficiency, changes in thyroid hormone levels, and their relationship to neurodevelopmental outcomes during sensitive early life stages" (SAB for the U.S. EPA, 2013, p. 19).

This SAB-proposed framework would incorporate the previous endpoint of iodide uptake inhibition that was the basis for the RfD as part of a broader and more comprehensive framework that links perchlorate exposure to adverse neurodevelopmental outcomes. It also focuses on the smaller changes in thyroid hormones (specifically free T4 (fT4)) that are associated with

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maternal hypothyroxinemia and subsequent adverse neurodevelopmental health effects rather than the significant changes in thyroid hormones (both fT4 and TSH) that are associated with hypothyroidism.

D. Perchlorate Model Development and Peer Reviews

To address the SAB recommendations, the EPA revised an existing PBPK/PD model that describes the dynamics of perchlorate, iodide, and thyroid hormones in a woman during the third trimester of pregnancy (Lumen, Mattie, & Fisher, 2013; USEPA, 2009b). The EPA also created its own Biologically Based Dose Response (BBDR) models that included the additional sensitive life stages identified by the SAB, i.e., breast- and bottle-fed neonates and infants (SAB for the U.S. EPA, 2013, p. 19).

To determine whether the Agency had implemented the SAB recommendations for modeling thyroid hormone changes, the EPA convened an independent peer review panel to evaluate the BBDR models in January 2017 (External Peer Reviewers for USEPA, 2017). In addition to estimating effects on breast fed infants, several reviewers recommended that the EPA shift the primary focus of its analysis to modeling the exposure implications to the fetus during early pregnancy. This was based on the knowledge that fetuses lack a functioning thyroid gland until approximately 16 gestational weeks and the substantial epidemiological evidence linking early pregnancy low fT4 levels with adverse neurodevelopmental outcomes [ADDIN EN.CITE <EndNote><Cite><Author>Morreale de Escobar</Author><Year>2004</Year><RecNum>49</RecNum><DisplayText>(G Morreale de

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Escobar, Obregón, & Escobar del Rey, 2004)</DisplayText><record><rec-number>49</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1437077734">49</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Morreale de Escobar, G</author><author>Obregón, M J</author><author>Escobar del Rey, F</author></authors></contributors><titles><title>Role of thyroid hormone during early brain development</title><secondary-title>European Journal of Endocrinology</secondary-title></titles><periodical><full-title>European Journal of Endocrinology</full-title></periodical><pages>U25-U37</pages><volume>151</volume><number>Suppl 3</number><dates><year>2004</year><pub-dates><date>November 1, 2004</date></pub-dates></dates><urls><related-urls><url>http://www.eje-online.org/content/151/Suppl_3/U25.abstract</url></related-urls></urls><electronic-resource-num>10.1530/eje.0.151U025</electronic-resource-num></record></Cite></EndNote>]. Specifically, the SAB recommended that the EPA use specific sensitive populations to develop the MCLG for perchlorate: "the fetuses of hypothyroxinemic pregnant women, and infants exposed to perchlorate through either water-based formula preparations or the breast milk of lactating women" (SAB for the U.S. EPA, 2013, p. 19).

The EPA considered all recommendations from the 2017 peer review. The previously developed BBDR model describing perchlorate's effects in the third trimester (Lumen, Mattie, &

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Fisher, 2013; USEPA, 2009b) was calibrated only for that phase of pregnancy, not for the first trimester, and lacked a description of TSH signaling (feedback) that becomes significant as individuals become hypothyroxinemic or hypothyroid. In particular, this signaling was considered necessary to accurately predict responses of women with very low iodine intake, which was also part of the 2017 peer review recommendations. Therefore, the Lumen et al., (2009b) model needed to be revised to address these recommendations and the EPA implemented those changes needed to increase the scientific rigor of the model and modeling results. These modifications include:

- Extending the model to early pregnancy;
- Incorporating biological feedback control of hormone production via TSH signaling, such that the model can describe lower levels of iodide nutrition;
- Calibrating the model and evaluating its behavior for upper and lower percentiles of the population, as well as the population median; and
- Conducting an uncertainty analysis for key parameters.

The EPA convened a second independent peer review panel in January 2018 to evaluate these updates to the BBDR model. The EPA also presented several approaches in the draft *Proposed Approaches to Inform the Derivation of a Maximum Contaminant Level Goal for Perchlorate in Drinking Water* (MCLG Approaches Report) to link the thyroid hormone changes in a pregnant mother predicted by the BBDR model to neurodevelopmental effects using evidence from the epidemiological literature (External Peer Review for U.S. EPA, 2018). The

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2018 peer review identified a variety of strengths and limitations of the modeling (to be discussed in more detail later in this notice). The peer review panel was largely supportive of the efforts described in the MCLG Approaches Report, as evidenced by the following from the peer review final report:

> *Overall, the panel agreed that the EPA and its collaborators have prepared a highly innovative state-of-the-science set of quantitative tools to evaluate neurodevelopmental effects that could arise from drinking water exposure to perchlorate. While there is always room for improvement of the models, with limited additional work to address the committee's comments [in the peer-reviewed report], the current models are fit-for-purpose to determine an MCLG (External Peer Reviewers for U.S. EPA, 2018, p. 2).*

The EPA also presented an alternative, population-based approach evaluating the shift in the proportion of the population that would fall below a hypothyroxinemic cut point, given exposure to perchlorate (Section 7 of the MCLG Approaches Report). This approach does not directly connect the BBDR output to a neurodevelopmental endpoint. However, for pregnant women in early pregnancy, this shift could be related to avoiding an increase in the population of offspring's risk of adverse neurodevelopmental impacts. The 2018 peer review identified strengths associated with this approach, including

> *1) the central premise, that hypothyroxinemia is associated with adverse neurodevelopmental effects is supported by a large number of studies, including*

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categorical studies; 2) this approach encompasses a variety of adverse neurodevelopmental outcomes, as indicated by these studies, rather than focusing on one or a limited number of adverse outcomes, as with the two-stage approach; and 3) this approach avoids all of the uncertainties associated with determining a quantitative relationship between a specific maternal fT4 level and the magnitude an adverse neurodevelopmental effect. (External Peer Reviewers for U.S. EPA, 2018, p. 7)

The peer reviewers expressed concern about hypothyroxinemia being a precursor effect, rather than an adverse health outcome, which they argued may create difficulties in explaining the basis for an MCLG based on this approach to some audiences. However, the EPA has used precursor effects as the basis for setting regulatory and non-regulatory limits previously. The peer-review panel also expressed concern that a standard definition of hypothyroxinemia has not yet been established, as clinicians use varying fT4 thresholds to define their own working definition of the condition. This also could lead to difficulties communicating the population at risk for developing this precursor effect as a result of perchlorate exposure.

Ultimately, the EPA chose to develop the MCLG using dose-response functions from the epidemiological literature to estimate neurodevelopmental impacts in the offspring of pregnant women exposed to perchlorate. The EPA selected this proposed approach because it is consistent with the SDWA's definition of an MCLG to avoid adverse health effects and because it is most consistent with the SAB recommendations. The EPA is requesting public comment in Section

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XIV on the adequacies and uncertainties of the methodology to derive the MCLG including the decision not to pursue this population-based approach for setting the MCLG.

Based on the comments of the peer reviewers, the EPA's final analysis informing the derivation of the MCLG and benefits of avoided perchlorate exposure is based upon a 2-step approach to modeling the neurodevelopmental effects on offspring of pregnant women exposed to perchlorate in drinking water (see Figure 1). In summary, because of the known mode of action, the lack of epidemiological studies particularly in the sensitive populations and the direction of the SAB to use a "data-driven approach [which] represents a more rigorous way to address differences in biology and exposure between adults and sensitive life stages" (p. 2, SAB 2013 for U.S. EPA), the EPA uses a combination of the BBDR model that simulates perchlorate potential impacts on maternal thyroid hormones during pregnancy and the epidemiology literature that relates incremental changes in maternal thyroid hormones to neurodevelopmental outcomes in children. The following sections describe the approach in greater detail, highlighting each step in which decisions and assumptions were made.

Figure 1. Two-Step Modeling Approach to Link Maternal Perchlorate Exposure to Measurable Adverse Neurodevelopmental Impacts in Offspring

[EMBED Visio.Drawing.15]

Note: Process figure does not imply the strength of scientific evidence.

E. Sensitive Population for Deriving MCLG

SDWA 1412(b)(4)(A) requires MCLGs to be set at a concentration in water "at which no known or anticipated adverse effects on the health of persons occur and which allows an

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adequate margin of safety." SDWA 1412(b)(3)(C)(V) further requires that the EPA "consider the effects of the contaminant on the general population and on groups within the general population such as infants, children, pregnant women, the elderly, individuals with a history of serious illness, or other subpopulations that are identified as likely to be at greater risk of adverse health effects due to exposure to contaminants in drinking water than the general population." The EPA has interpreted these requirements to establish MCLGs that avoid adverse effects within the portions of the population that are at greater risk of adverse effects from exposure to the contaminant. The EPA is proposing an MCLG that is developed to protect the fetuses of a first trimester pregnant mother with low-iodine intake levels (i.e., 75 µg/kg/day), low fT4 levels (i.e., 10th percentile of an fT4 distribution for individuals with 75 µg/day iodine intake), and weak TSH feedback strength (i.e., TSH feedback is reduced to be approximately 60 percent less effective than for the median individual). The choice of this population is consistent with discussion by the NRC (2005), and the SAB (2013). The EPA believes that by protecting this population, the other sensitive populations (i.e., breast- and bottle-fed infants) will also be protected. This conclusion is based on the EPA's analysis of predictions of the impact of perchlorate on fT4 levels from the original EPA BBDR model (which was peer reviewed in January of 2017) and an analysis of the literature on the connection between altered thyroid hormones in these life stages, and neurodevelopmental outcomes.

The EPA's original BBDR model demonstrated that perchlorate had minimal impact on the thyroid hormone levels for 30-, 60-, and 90-day formula-fed infants, even at doses as high as

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20 µg/kg/day. Specifically, the model demonstrated that "the range of iodine levels in formula is sufficient to almost entirely offset the effects of perchlorate exposure at 30, 60 and 90 days" [ADDIN EN.CITE <EndNote><Cite><Author>U.S. EPA</Author><Year>2016</Year><RecNum>246</RecNum><Suffix>`; p. 73</Suffix><DisplayText>(U.S. EPA, 2016; p. 73)</DisplayText><record><rec-number>246</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1468339271">246</key></foreign-keys><ref-type name="Generic">13</ref-type><contributors><authors><author>U.S. EPA,</author></authors><secondary-authors><author>Paul Schlosser, Teresa Leavens, and Santhini Ramasamy</author></secondary-authors></contributors><titles><title>Biologically based dose response models for the effect of perchlorate on thyroid hormones in the infant, breast feeding mother, pregnant mother, and fetus: model development, revision, and preliminary dose-response analyses </title><secondary-title>Peer Review Draft</secondary-title></titles><dates><year>2016</year></dates><urls></urls></record></Cite></EndNote>]. As a result of these findings the EPA concluded that any MCLG based on the fetus of the first trimester hypothyroxinemic pregnant mother would also protect the formula-fed infant.

To determine if the same would be true for the breast-fed infant, the EPA compared the predicted percent change in fT4 experienced at given doses of perchlorate for both the breast-fed

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infant and the first trimester pregnant mother at varying doses of iodine intake[3] (50 to 100 µg/day). Assuming 2 or 4 µg/kg/day of perchlorate, the first trimester hypothyroxinemic pregnant mother has a greater percent change in fT4 compared to the 30 and 60 day breast-fed infant at all maternal iodine intake levels evaluated, except for the 30 day breast-fed infant of a mother consuming only 50 µg/day iodine. However, given that the original BBDR model did not have a TSH feedback loop, T4, fT4, T3 and fT3 predictions for lactating mothers with less than 75 µg/day iodine intake were considered highly uncertain because the thyroid hormone levels had fallen into the hypothyroid range.

The Agency found that there are reports in the scientific literature suggesting that minor perturbations in thyroid hormone levels in the first trimester mother may adversely impact her offspring's neurodevelopment. Specifically, some studies show that children exposed gestationally to maternal hypothyroxinemia (without hypothyroidism) have a higher risk of reduced levels of global and specific cognitive abilities, as well as increased rates of behavior problems including greater dysregulation in early infancy and attentional disorders in childhood [ADDIN EN.CITE ADDIN EN.CITE.DATA]. Notably these effects are correlated with both degree [ADDIN EN.CITE ADDIN EN.CITE.DATA] and duration [ADDIN EN.CITE <EndNote><Cite><Author>Pop</Author><Year>2003</Year><RecNum>25</RecNum><DisplayText>(Pop et al., 2003)</DisplayText><record><rec-number>25</rec-number><foreign-

[3]Given that the current version of the BBDR model contains a TSH feedback loop and the infant models previously developed did not contain this feedback loop, this comparison is done with the feedback loop turned off.

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keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1432047641">25</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Pop, V J</author><author>Brouwers, E P</author><author>Vader, H L</author><author>Vulsma, T</author><author>van Baar, A L</author><author>de Vijlder, J J</author></authors></contributors><titles><title>Maternal hypothyroxinemia during early pregnancy and subsequent child development: a 3-year follow-up study</title><secondary-title>Clinical Endocrinology</secondary-title></titles><periodical><full-title>Clinical Endocrinology</full-title></periodical><pages>282-288</pages><volume>59</volume><section>282</section><dates><year>2003</year></dates><urls></urls></record></Cite></EndNote>] of maternal hypothyroxinemia [ADDIN EN.CITE <EndNote><Cite><Author>SAB</Author><Year>2013</Year><RecNum>50</RecNum><Suffix>`; p. 10</Suffix><DisplayText>(SAB, 2013; p. 10)</DisplayText><record><rec-number>50</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1437138201">50</key></foreign-keys><ref-type name="Government Document">46</ref-type><contributors><authors><author>SAB,</author></authors><secondary-authors><author>U.S. Environmental Protection Agency,</author></secondary-authors></contributors><titles><title>Advice on approaches to derive a maximum contaminant level goal for perchlorate. EPA-SAB-13-

004</title></titles><dates><year>2013</year></dates><pub-location>Washington, DC</pub-location><urls></urls></record></Cite></EndNote>].

The EPA did not find analogous evidence linking minor perturbations in thyroid hormones during infancy to adverse neurodevelopmental outcomes in infants. This finding is consistent with conclusions by the California Environmental Protection Agency (CalEPA) in their assessment of a public health goal for perchlorate [ADDIN EN.CITE <EndNote><Cite ExcludeAuth="1"><Author>California Environmental Protection Agency (CalEPA)</Author><Year>2015</Year><RecNum>62</RecNum><Prefix>CalEPA`, </Prefix><Suffix>`; p. 90</Suffix><DisplayText>(CalEPA, 2015; p. 90)</DisplayText><record><rec-number>62</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1437413166">62</key></foreign-keys><ref-type name="Government Document">46</ref-type><contributors><authors><author>California Environmental Protection Agency (CalEPA),</author></authors><secondary-authors><author>Office of Environmental Health Hazard Assessment</author></secondary-authors></contributors><titles><title>Public health goal for perchlorate in drinking water</title></titles><dates><year>2015</year></dates><urls></urls></record></Cite></EndNote>].

Specifically, two studies evaluated both the impact of maternal hypothyroxinemia and infant fT4 levels on subsequent neurodevelopmental outcomes. [ADDIN EN.CITE

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<EndNote><Cite AuthorYear="1"><Author>Costeira</Author><Year>2011</Year><RecNum>7</RecNum><DisplayText>Costeira et al. (2011)</DisplayText><record><rec-number>7</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1432047629">7</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Costeira, M. J.</author><author>Oliveira, P</author><author>Santos, N C</author><author>Ares, S</author><author>Sáenz-Rico, B</author><author>Morreale de Escobar, G</author><author>Palha, J A</author></authors></contributors><titles><title>Psychomotor development of children from an iodine-deficient region</title><secondary-title>The Journal of Pediatrics</secondary-title></titles><periodical><full-title>The Journal of Pediatrics</full-title></periodical><pages>447-453</pages><volume>159</volume><number>3</number><dates><year>2011</year></dates><urls></urls><electronic-resource-num>10.1016/j.jpeds.2011.02.034</electronic-resource-num></record></Cite></EndNote>] found that children born to mothers with low fT4 in the first trimester had increased odds of mild-to-severe delays in psychomotor development compared to children born to mothers with normal fT4 levels. However, the authors found that neonatal thyroid status (measured on day 3 after birth) did not influence development. Additionally, [ADDIN EN.CITE <EndNote><Cite AuthorYear="1"><Author>Henrichs</Author><Year>2010</Year><RecNum>928</RecNum>

<DisplayText>Henrichs et al. (2010)</DisplayText><record><rec-number>928</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1495206433">928</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Henrichs, J.</author><author>Bongers-Schokking, J. J.</author><author>Schenk, J. J.</author><author>Ghassabian, A.</author><author>Schmidt, H. G.</author><author>Visser, T. J.</author><author>Hooijkaas, H.</author><author>de Muinck Keizer-Schrama, S. M.</author><author>Hofman, A.</author><author>Jaddoe, V. V.</author><author>Visser, W.</author><author>Steegers, E. A.</author><author>Verhulst, F. C.</author><author>de Rijke, Y. B.</author><author>Tiemeier, H.</author></authors></contributors><titles><title>Maternal thyroid function during early pregnancy and cognitive functioning in early childhood: The generation R study</title><secondary-title>Journal of Clinical Endocrinology and Metabolism</secondary-title><alt-title>J Clin Endocrinol Metab</alt-title><short-title>Journal of Clinical Endocrinology and Metabolism</short-title></titles><periodical><full-title>Journal of Clinical Endocrinology and Metabolism</full-title></periodical><alt-periodical><full-title>J Clin Endocrinol Metab</full-title></alt-periodical><pages>4227-4234</pages><volume>95</volume><number>9</number><dates><year>2010</year></dates><isbn>ISSN 0021-972X
EISSN 1945-7197</isbn><label>758743</label><urls><related-urls><url>http://dx.doi.org/10.1210/jc.2010-0415</url></related-urls></urls><electronic-

resource-num>10.1210/jc.2010-0415</electronic-resource-num><language>English</language></record></Cite></EndNote>] found in their evaluation that although maternal hypothyroxinemia was associated with language delay and nonverbal cognitive delay, the neonatal thyroid status (thyroid hormones measured in cord blood) did not explain the relationship between maternal hypothyroxinemia, early pregnancy, and children's cognitive impairment.

The SAB pointed to two lines of evidence supporting their suggestion of the infant as a potentially sensitive population to perchlorate: preterm infants that experience transient hypothyroxinemia of prematurity (THOP) and infants that experience congenital hypothyroidism (SAB for the U.S. EPA, 2013). Thus, sufficient thyroid hormone levels in infancy are necessary for the infant brain to develop properly. However, the best evidence linking perturbations in thyroid hormone levels to disrupted neurodevelopment for infants are in individuals with significant thyroid deficiencies manifesting as clinical conditions (e.g., THOP and congenital hypothyroidism). It is unclear and unknown if minor perturbations in thyroid hormones in infants, such as those that could be caused by environmental levels of perchlorate, would result in adverse neurodevelopmental outcomes similar to those seen in the literature for the offspring of first trimester pregnant mothers with hypothyroxinemia. Given the lack of evidence demonstrating minor perturbations in infant fT4 levels as being associated with neurodevelopmental outcomes, the EPA has concluded that it is appropriate to derive the perchlorate MCLG to protect the first trimester fetus of a pregnant mother with low-iodine

intake. The EPA concludes that an MCLG calculated to offer a margin of protection against adverse health effects to these fetuses targets the most sensitive lifestage and will be protective of other potentially sensitive life stages as well.

F. BBDR Model Specification for the Sensitive Population

The BBDR model used to develop the proposed MCLG has two main components:

- A pharmacokinetic model for perchlorate and iodide, which describes chemical absorption, distribution, metabolism, and excretion of perchlorate and iodide; and
- A pharmacodynamic model, which describes the joint effect of varying perchlorate and iodide blood concentrations on thyroidal uptake of iodide and subsequent production of thyroid hormones, including fT4.

The pharmacokinetic model component contains a physiological description of a human mother and fetus during pregnancy (e.g., organ volumes, blood flows) and chemical-specific information (e.g., partition coefficients, volume of distribution, rate constants for transport, metabolism, and elimination) that enable a prediction of perchlorate and iodide internal concentration at the critical target (i.e., thyroidal sodium-iodide symporter of the mother) in association with a particular exposure scenario (route of exposure, age, dose level). This component of the model is similar to many other PBPK models. Because perchlorate does not undergo metabolism in vivo (Clewell et al., 2007), potential uncertainty from this factor of the model is avoided since it does not need to be described.

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The pharmacodynamic component of the model uses this internal concentration to simulate how the chemical will act within a known mechanism of action to perturb host systems and lead to a toxic effect.

Thus, the BBDR model estimates serum thyroid hormone levels in the mother at specific gestational weeks, given specific levels of iodine intake, the TSH feedback loop strength, and perchlorate doses. As noted above, to be health protective the EPA chose to model a sensitive individual (an adult woman with low iodine through the first trimester of pregnancy) to derive an MCLG, thereby protecting both this target sensitive population with an adequate margin of safety and those who are less sensitive with an even larger margin of safety.

The BBDR model simulates perchlorate's impact on thyroid hormones at each gestational week from conception to week 16. To derive the MCLG, the EPA selected outputs for gestational week 13 to correspond with the thyroid hormone data reported in Korevaar et al., (2016), which is the basis for the Agency's quantitative relationship between maternal thyroid hormone levels and neurodevelopmental impacts.

Individuals with low iodine intake have increased sensitivity to perchlorate's impact on thyroid hormone levels because the functional iodide reserve of the hypothalamic-pituitary-thyroid (HPT) system is limited [ADDIN EN.CITE <EndNote><Cite><Author>Leung</Author><Year>2010</Year><RecNum>1160</RecNum><DisplayText>(Leung, Pearce, & Braverman, 2010)</DisplayText><record><rec-number>1160</rec-number><foreign-keys><key app="EN" db-

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Article">17</ref-type><contributors><authors><author>Leung, A.
M.</author><author>Pearce,</author><author>Braverman</author></authors></contributors><
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Research: Clinical Endocrinology and Metabolism</secondary-title><alt-title>Best Pract Res
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Endocrinology and Metabolism</short-title></titles><alt-periodical><full-title>Best Pract Res
Clin Endocrinol Metab</full-title></alt-periodical><pages>133-
141</pages><volume>24</volume><number>1</number><dates><year>2010</year></dates>
<isbn>ISSN 1521-690X
EISSN 1532-1908</isbn><label>755955</label><work-
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resource-num>10.1016/j.beem.2009.08.009</electronic-resource-
num><language>English</language></record></Cite></EndNote>]. The EPA selected an
iodine intake level of 75 µg/day to simulate an individual with low-iodine intake. This value
represents an intake between the 15th and 20th percentile of the women of child bearing age
population distribution of estimated iodine intake from the National Health and Nutrition
Examination Survey (NHANES). The EPA considered using a lower iodine intake level of 50
µg/day, which represents approximately the 5th percentile of the NHANES distribution. At

50 µg/day of iodine intake, however, the BBDR model predicts TSH levels that would be elevated to within the clinically hypothyroid range before exposure to any perchlorate[4] (TSH

[4] For the purposes of this analysis, the EPA evaluated the American Thyroid Association's (ATA's) 2017 recommendations for defining hypothyroidism [ADDIN EN.CITE <EndNote><Cite><Author>Alexander</Author><Year>2017</Year><RecNum>1895</RecNum><DisplayText>(Alexander et al., 2017)</DisplayText><record><rec-number>1895</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1497970921">1895</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Alexander, E. K.</author><author>Pearce, E. N.</author><author>Brent, G. A.</author><author>Brown, R. S.</author><author>Chen, H.</author><author>Dosiou, C., </author><author>Sullivan, S.</author></authors></contributors><titles><title>2017 Guidelines of the American Thyroid Association for the diagnosis and management of thyroid disease during pregnancy and the postpartum</title><secondary-title>Thyroid</secondary-title></titles><periodical><full-title>Thyroid</full-title></periodical><pages>315-389</pages><volume>27</volume><number>3</number><dates><year>2017</year></dates><urls></urls></record></Cite></EndNote>]. Specifically the ATA recommends "in the pregnancy setting, maternal hypothyroidism is defined as a TSH concentration elevated beyond the upper limit of the pregnancy-specific reference range" [ADDIN EN.CITE <EndNote><Cite><Author>Alexander</Author><Year>2017</Year><RecNum>1895</RecNum><Pages>332</Pages><DisplayText>(Alexander et al., 2017, p. 332)</DisplayText><record><rec-number>1895</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1497970921">1895</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Alexander, E. K.</author><author>Pearce, E. N.</author><author>Brent, G. A.</author><author>Brown, R. S.</author><author>Chen, H.</author><author>Dosiou, C., </author><author>Sullivan, S.</author></authors></contributors><titles><title>2017 Guidelines of the American Thyroid Association for the diagnosis and management of thyroid disease during pregnancy and the postpartum</title><secondary-title>Thyroid</secondary-title></titles><periodical><full-title>Thyroid</full-title></periodical><pages>315-389</pages><volume>27</volume><number>3</number><dates><year>2017</year></dates><urls></urls></record></Cite></EndNote>]. ATA goes on to state, in the absence of population- and trimester-specific reference ranges defined by a provider's institute or laboratory, that the TSH reference ranges should be obtained from similar patient populations. From their recommended studies with trimester-specific data on a U.S. population, Lambert-Meserlian et al. [ADDIN EN.CITE <EndNote><Cite ExcludeAuth="1"><Author>Lambert-Messerlian</Author><Year>2008</Year><RecNum>100</RecNum><DisplayText>(2008)</DisplayText><record><rec-number>100</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1443808320">100</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Lambert-Messerlian, Geralyn</author><author>McClain, Monica</author><author>Haddow, James E</author><author>Palomaki, Glenn E</author><author>Canick, Jacob A</author><author>Cleary-Goldman, Jane</author><author>Malone, Fergal D</author><author>Porter, T Flint</author><author>Nyberg, David A</author><author>Bernstein, Peter</author></authors></contributors><titles><title>First-and second-trimester thyroid hormone reference data in pregnant women: a FaSTER (First-and Second-Trimester Evaluation of Risk for aneuploidy) Research Consortium

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ranges between 4.51 and 5.41 milli-international units per liter (mIU/L) at zero dose of perchlorate when evaluating gestational weeks 12 or 13). In contrast, at 75 µg/day iodine, the BBDR modeled concentrations of serum fT4 and TSH are significantly reduced from the population median but are still within the euthyroid range. Thus, the intake of 75 µg/day is a better approximation of the sensitive population – the offspring of pregnant women who have low fT4.

TSH increases in response to decreases in T4 have been captured in numerous studies that document the relationship between these hormones[ADDIN EN.CITE ADDIN EN.CITE.DATA]. The EPA designed the BBDR model to depict this feedback regulation by adjusting a set of three parameters: the number of sodium-iodide symporter sites, the T4 synthesis rate, and the T3 synthesis rate. The BBDR model allows for variability in the strength of the TSH feedback by varying these parameters with a variable called "pTSH." For the MCLG analysis, the EPA used a pTSH value of 0.398, which is the ratio of a median value for TSH from NHANES (non-pregnant women) to the 97.5 percentile value from NHANES (non-pregnant women). This value represents an assumption that sensitive individuals with high TSH and average fT4 levels exist, and this is because the stimulus strength of TSH is proportionally

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study</title><secondary-title>American journal of obstetrics and gynecology</secondary-title></titles><periodical><full-title>American journal of obstetrics and gynecology</full-title></periodical><pages>62-e1</pages><volume>199</volume><number>1</number><dates><year>2008</year></dates><publisher>Elsevier</publisher><isbn>0002-9378</isbn><urls></urls></record></Cite></EndNote>] is the largest U.S.-based population with a reference range upper bound of 3.37 mIU/L for the first trimester (and 3.35 mIU/L for the second trimester). Therefore, these values were used to compare to BBDR output TSH values in the first trimester (or second trimester in cases of gestational weeks 15 and 16) to determine the presence of hypothyroidism.

weaker. The EPA chose to use a low TSH feedback coefficient to ensure the MCLG is protective of the sensitive population.

Example output from the BBDR model for gestational week 13 and a low TSH feedback coefficient is presented in Table III-1.

Table III-1. Summary of BBDR Model Results for fT4 Levels: Pregnant Women at Gestational Week 13, Assuming Low (75 µg/day) Iodine Intake and with Muted TSH feedback strength[a][]

Perchlorate Dose (µg/kg/day)	Percentile fT4 (pmol/L)[b] (% decrease from 0 dose)			
	2.5th	5th	10th	50th
0	5.57	6.09	6.70	8.84
1	5.50 (-1.26%)	6.02 (-1.15%)	6.63 (-1.04%)	8.77 (-0.79%)
2	5.43 (-2.45%)	5.96 (-2.24%)	6.56 (-2.04%)	8.71 (-1.54%)
3	5.37 (-3.59%)	5.96 (-3.28%)	6.50 (-2.98%)	8.64 (-2.26%)
4	5.31 (-4.68%)	5.83 (-4.28%)	6.44 (-3.89%)	8.58 (-2.95%)
5	5.25 (-5.73%)	5.77 (-5.23%)	6.38 (-4.76%)	8.52 (-3.60%)
6	5.19 (-6.73%)	5.72 (-6.14%)	6.33 (-5.59%)	8.47 (-4.23%)
7	5.14 (-7.69%)	5.66 (-7.02%)	6.27 (-6.39%)	8.41 (-4.84%)

[a] pTSH = 0.398; see USEPA, (2018b) for additional information on pTSH.

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[b] The 50th percentile is direct output from the BBDR model, and additional percentiles are estimated by assuming a normal distribution with a SD of 1.67. All of the examined study data demonstrated a positive skew, and overall the lognormal function demonstrated a better fit than a normal distribution. Despite this, the available study data only accounted for variation due to gestation week and did not account for variation in perchlorate and iodine intake in the measured populations. Because perchlorate and iodine can affect fT4 levels, and this relationship produced the estimated median BBDR values, the distribution around values estimated by the model from perchlorate and iodine intake should account for a small reduction in variation due to the effect of perchlorate and iodine intake. Additionally, as iodine has a demonstrated lognormal distribution with strong right skew (e.g. Blount et al., 2007) and is predicted to have a stronger effect on fT4 than perchlorate (see Section 3). The EPA assumed the error around predicted fT4 would likely be closer to normal than lognormal after accounting for perchlorate and iodine intake.

When modeling changes in fT4, the baseline level of fT4 affects the magnitude of changes seen as a result of perchlorate exposure. Therefore, to predict the impact of perchlorate exposure on the population distribution of fT4 for the identified sensitive population, the EPA estimated a distribution for fT4 plasma concentrations around the median modeled values based on fT4 data from studies that were used to calibrate the BBDR model (C. Li et al., 2014; Männistö et al., 2011; Zhang et al., 2016). The EPA assumed the variation around predicted fT4 concentrations for women with low fT4 of childbearing age would likely be close to normal after accounting for perchlorate and iodine intake, and thus estimated a combined standard deviation (SD) using the distributional information from each of the studies (C. Li et al., 2014; Männistö et al., 2011; Zhang et al., 2016). The EPA then used the estimated combined SD to predict a distribution of fT4 around the median fT4 estimated by the BBDR model. To protect the most sensitive population from adverse effects, the EPA chose to use the 10th percentile from this

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distribution of baseline fT4 to conduct its analyses to account for variability in thyroid hormones in the population[5].

G. Epidemiological Literature

The SAB recommended that the EPA integrate BBDR model results with data on neurodevelopmental outcomes from epidemiological studies. There is substantial epidemiological evidence that early pregnancy hypothyroxinemia is a risk factor for a variety of adverse neurodevelopmental outcomes, including those related to both cognition and behavior (Costeira et al., 2011; Finken, van Eijsden, Loomans, Vrijkotte, & Rotteveel, 2013; Ghassabian et al., 2014; Gyllenberg et al., 2016; Henrichs et al., 2010; Júlvez et al., 2013; Kooistra, Crawford, van Baar, Brouwers, & Pop, 2006; Korevaar et al., 2016; Y. Li et al., 2010; Oostenbroek et al., 2017; Päkkilä et al., 2015; Pop et al., 2003, 1999; Roman et al., 2013; van Mil et al., 2012). These individual studies showing that maternal hypothyroxinemia is associated with offspring neurodevelopment are also supported by three meta-analyses (including one full systematic review), all of which conclude maternal hypothyroxinemia is associated with increased risk of cognitive delay, intellectual impairment, or lower scores on performance tests when considering the entire body of evidence on this topic [ADDIN EN.CITE ADDIN EN.CITE.DATA]. Additionally, the American Thyroid Association concludes that "overall,

[5] For a discussion on the details of the BBDR model, including uncertainties associated with the model the reader is directed to section 3.5 of the MCLG Approaches Report.

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available evidence appears to show an association between hypothyroxinemia and cognitive development of the offspring" (Alexander et al., 2017, p. 337).

The EPA did not conduct a full systematic review and weight of evidence evaluation between maternal thyroid hormones and neurodevelopmental outcomes given: 1) the body of scientific literature regarding this association, and 2) the SAB recommendation that the EPA "consider available data on potential adverse health effects (neurodevelopmental outcomes) due to thyroid hormone level perturbations regardless of the cause of those perturbations" (p. 25). Instead, the EPA conducted a "methodologic approach to reviewing the literature" to evaluate the body of literature on this topic. This approach assisted in extrapolating the relationship modeled by the BBDR model to neurodevelopmental outcomes by concentrating on studies that allowed for evaluation of incremental changes in fT4 as they relate to incremental changes in neurodevelopmental outcomes. More specifically, the EPA only used studies that had sufficient data to show a quantitative relationship between maternal fT4 and a neurodevelopmental outcome. The EPA acknowledges that by not giving any weight to the studies that did not show a quantitative relationship between fT4 and neurodevelopmental outcomes, the Agency may be overestimating the dose of perchlorate that may be associated with adverse neurodevelopmental outcomes. This is a health protective decision that adds to the margin of safety.

Ultimately, the EPA developed a dose-response function that estimates incremental changes in a neurodevelopmental endpoint based on a given change in thyroid hormone

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concentration (fT4), which could be linked to a given dose of perchlorate using the BBDR model.

The specifics of this "methodologic approach to reviewing the literature" follow. First, the EPA identified and screened the available 71 epidemiological studies, which potentially pertained to altered maternal thyroid hormone levels and offspring neurodevelopment to identify candidates based on the following criteria:

- ~~compatible~~ Compatible with the sensitive life stages identified by the NRC and SAB;
- ~~continuous~~ Continuous measure of thyroid hormone values (versus categorical values);
- ~~low~~ Low risk of bias based on analysis using the National Toxicology Program's Office of Health Assessment and Translation (OHAT) Risk of Bias (ROB) tool score; and
- ~~access~~ Access to underlying data.

Second, using these screening steps, the EPA categorized all 71 studies into three groups. One group consisted of studies that were not compatible[6] with extending the BBDR model (40 studies). Another group consisted of papers that were relevant to the pertinent life stages but did

[6] For example, if the study evaluated the impact of only neonatal thyroid hormones (i.e., at a potentially sensitive life stage), it cannot be used because the BBDR model is specific to early pregnancy. Further, if the study evaluates a population with an existing disease (i.e., hypothyroidism) that may have a different response to perchlorate compared to the euthyroid population, it was not considered compatible with BBDR model results. Additionally, if the study does not include information on T4 or fT4, it does not assist in understanding the implications of the BBDR modeling results. Another reason for exclusion at this stage include that the study does not have a population with an exposure window (i.e., when the thyroid hormone measurements are taken) that overlaps with the outputs for the BBDR model. Specifically, the study should evaluate thyroid hormone levels in pregnant mothers between conception and gestational week 16. The neurodevelopmental outcomes could be measured at any life stage.

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not have data from which a dose-response analysis could be conducted (15 studies). This includes studies that compared differences between groups, for example studies of offspring of mothers with hypothyroxinemia versus offspring of mothers without hypothyroxinemia. Consequently, these studies may have provided insight into the maternal thyroid hormone and offspring neurodevelopment relationship but did not have enough information to develop a continuous dose-response function. The last group of papers had data that may inform a dose-response function (16 studies). This last group of papers included publications that may have had categorical analyses but also presented data that assessed fT4 as a continuous variable and the outcome of interest. In most instances, the continuous fT4 variable encompassed the full range for fT4 and not just the hypothyroxinemic range. After excluding one paper due to a high risk of bias (Kastakina et al., 2006) 15 papers remained that potentially had dose-response data between a continuous measure of fT4 and various neurodevelopmental outcomes describing cognition, behavior and other outcomes. The EPA notes that by selecting the papers that potentially had dose response data the Agency is deviating from the systematic weight of evidence review approach to identify those studies that the SAB recommended we examine to derive the MCLG.

Third, from these 15 papers five were selected for dose response assessment - four related to cognition[ADDIN EN.CITE ADDIN EN.CITE.DATA] and one related to behavior [ADDIN EN.CITE

<EndNote><Cite><Author>Endendijk</Author><Year>2017</Year><RecNum>1915</RecNum><DisplayText>(Endendijk, Wijnen, Pop, & van Baar,

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2017)</DisplayText><record><rec-number>1915</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1503500102">1915</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Endendijk, J.J.</author><author>Wijnen, H.A.</author><author>Pop, V.J.</author><author>van Baar, A.L.</author></authors></contributors><titles><title>Maternal thyroid hormone trajectories during pregnancy and child behavioral problems</title><secondary-title>Horm Behav</secondary-title></titles><periodical><full-title>Horm Behav</full-title></periodical><pages>84-92</pages><volume>94</volume><dates><year>2017</year></dates><urls></urls></record></Cite></EndNote>]. The other ten papers were excluded for a variety of reasons including updated analyses being presented in a different paper for which dose-response analysis was being conducted, lack of all the data needed to complete a dose-response assessment (e.g., dose-response results were presented as "per standard deviation of fT4" but the standard deviation needed to fully interpret the results for a continuous function was not presented in the paper, statistical methods presented in the paper were insufficient to allow for the derivation of a concentration response function), or a lack of a relationship between maternal fT4 as a continuous variable and the outcome of interest evaluated in the paper. For example, Noten et al., (2015) found a relationship between maternal hypothyroxinemia and offspring arithmetic test performance. However, maternal fT4 as a continuous variable across the entire fT4 range was

not associated with arithmetic test performance. Given this null finding, as well as the lack of published literature evaluating maternal fT4 as a continuous variable and arithmetic test performance, it would be difficult for the Agency to justify setting an MCLG based on changes in this endpoint.

As laid out for the peer reviewers, for each study that met the criteria identified above for dose-response modeling, a relationship between maternal thyroid hormone levels (specifically fT4) and offspring neurodevelopment was derived (see USEPA, 2018b). These relationships were either presented in the original published paper or derived by the EPA through either the digitization of figures or through re-analysis of data provided by the study authors. The EPA used the upper effect estimate (the upper bound of the 95th percent confidence interval) from each study to assure consideration of the populations likely to be at greater risk from the dose of perchlorate associated with a given change in fT4.

Table III-2 provides a summary of the changes in fT4 predicted to produce a 1, 2, and 3 percent decrease in any given neurodevelopmental effect and corresponding perchlorate doses. The choice of 1, 2, and 3% is based on the analyses for IQ, Mental Development Index (MDI), and Psychomotor Development Index (PDI). Specifically, a 1%, 2%, or 3% change from the standardized mean for each test (i.e., 100 points) equates to a 1, 2, or 3 point change, respectively. The analyses for anxiety/depression score and SD of reaction time are based on a 1%, 2%, or 3% change from the study mean of each measure, which for anxiety/depression is 0.01, 0.02, or 0.03 points, respectively, and for reaction time is 2.7, 5.4, and 8.1 milliseconds

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(study mean SD of reaction time = 270 ms), respectively (Endendijk et al., 2017; Finken et al., 2013).

These results provide the potential impacts of perchlorate on maternal fT4 (as predicted by the BBDR model) and subsequent neurodevelopmental impacts (derived from the epidemiologic literature[7]).

Table III-2. Estimated Dose of Perchlorate per 1, 2, and 3 Percent Decrease[a] in Neurodevelopment for the Population of Low-Iodine Intake Women of Reproductive Age Based on Upper Effect Estimates at the 10th Percentile fT4 Level[b]

Study	Endpoint	Dose-Response Function	β (95% CI)	ΔfT4 in pmol/L Associated with a 1% to 3% Decrease in Endpoint (% ΔfT4 from 0 dose perchlorate, iodine intake = 75 µg/day)[a,b,c]			Dose of Perchlorate per 1% to 3% Decrease in Endpoint (µg/kg/day)[a,b,c]		
				1%	2%	3%	1%	2%	3%
Korevaar et al., (2016) Quadratic	IQ	$\Delta IQ = (\beta_1 \times lnfT4_2 + \beta_2 \times ln(fT4_2)^2) - (\beta_1 \times lnfT4_1 + \beta_2 \times ln(fT4_1)^2)$	β1 = 33.8 (9.8, 57.8) β2 = -6.2 (-10.6, -1.9)	-0.13 (1.9%)	-0.25 (3.8%)	-0.38 (5.7%)	1.9	3.9	6.1
Korevaar et al., (2016) EPA	IQ	$\Delta IQ = (\beta_1 \times \ln(fT4_2)) - (\beta_1 \times \ln(fT4_1))$	17.26 (3.77, 30.75)	-0.21 (3.1%)	-0.41 (6.2%)	-0.61 (9.2%)	3.1	6.7	10.8

[7] For a more complete description of all the studies evaluated the reader is directed to Sections 5 and 6 of the MCLG Approaches Report. For a discussion on the uncertainties related to the approach the reader is directed specifically to section 6.5.

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Study	Endpoint	Dose-Response Function	β (95% CI)	ΔfT4 in pmol/L Associated with a 1% to 3% Decrease in Endpoint (% ΔfT4 from 0 dose perchlorate, iodine intake = 75 µg/day)[a,b,c]			Dose of Perchlorate per 1% to 3% Decrease in Endpoint (µg/kg/day)[a,b,c]		
				1%	2%	3%	1%	2%	3%
independent analysis									
Pop et al., (2003)	MDI	$\Delta MDI = \beta \times \Delta fT4$	6.3 (1.92, 10.6)	-0.09 (1.0%)	-0.19 (2.8%)	-0.28 (4.2%)	1.3	2.8	4.3
Pop et al., (2003)	PDI	$\Delta PDI = \beta \times \Delta fT4$	8.4 (4.0, 12.8)	-0.08 (0.9%)	-0.16 (2.4%)	-0.23 (3.5%)	1.1	2.3	3.5
Pop et al., (1999)	PDI	$\Delta PDI = \beta \times \Delta fT4$	8.5 (0.01, 17.0)	-0.06 (0.6%)	-0.12 (1.8%)	-0.18 (2.6%)	0.8	1.7	2.6
Endendijk et al., (2017)	Anxiety/ depression score	$\Delta AD = \left(\frac{1}{\beta * fT4_2}\right) - \left(\frac{1}{\beta * fT4_1}\right)$	0.12 (0.11, 0.13)	-0.03 (0.45 %)	-0.08 (1.2%)	-0.12 (1.9%)	0.4	1.1	1.8
Finken et al., (2013)	SD of reaction time	ΔSD Reaction Time (ms) = β × Δ fT4	-4.9 (-9.5, -0.2)	-0.28 (4.2%)	-0.57 (8.5%)	-0.85[d] (12.7 %)	4.4	9.8	16.5[d]

Study	Endpoint	Dose-Response Function	β (95% CI)	ΔfT4 in pmol/L Associated with a 1% to 3% Decrease in Endpoint (% ΔfT4 from 0 dose perchlorate, iodine intake = 75 µg/day)[a,b,c]			Dose of Perchlorate per 1% to 3% Decrease in Endpoint (µg/kg/day)[a,b,c]		
				1%	2%	3%	1%	2%	3%

[a]. The analyses for IQ, Mental Development Index (MDI), and Psychomotor Development Index (PDI) are based on a 1%, 2%, or 3% change from the standardized mean for each test (i.e., 100 points), which equates to a 1, 2, or 3 point change, respectively. The analyses for anxiety/depression score and SD of reaction time are based on a 1%, 2%, or 3% change from the study mean of each measure, which for anxiety/depression is 0.01, 0.02, or 0.03 points, respectively, and for reaction time is 2.7, 5.4, and 8.1 milliseconds (study mean SD of reaction time = 270 ms), respectively.
[b]. This is based on the regression analysis for the range of fT4 data within each study using the upper beta estimates from the 95% CI. These results are for the low-iodide intake population of 75 µg/day. In all functions, fT4 is in units of pmol/L.
[c]. The BBDR model with a pTSH of 0.398 was used for these analyses.
[d]. The value which results in a 3% change in the standard deviation of reaction time falls between 16 and 17 µg/kg/day. Because data was not available on the changes of fT4 at doses between 16 and 17 µg/kg/day perchlorate, the EPA took the midpoint of the range of values for the change in fT4 at 16 and 17 µg/kg//day and assumed the dose of perchlorate associated with this change was the midpoint between 16 and 17 µg/kg/day.

H. Identifying a Point of Departure for Developing the MCLG

From the seven analyses presented in Table III-2 above, the EPA chose to use its independent analysis of the Korevaar et al., (2016) data (comprising of 3,600 useable mother/child data pairs) as the basis for calculating the point of departure (POD) for the MCLG. There are three reasons for this selection: 1) there is sufficient quantitative data to derive a health impact function for the sensitive population of interest; 2) the analysis adjusts for an appropriate set of confounders, and 3) the neurodevelopmental endpoint – intelligence quotient (IQ) – is

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more straightforward to interpret because there is more national and cross-national data available (more on the selection of this endpoint below). The other studies presented in Table III-2 do not provide one or more of these features (USEPA, 2018b).

The five identified papers evaluated a variety of endpoints with Korevaar et al., (2016) evaluating IQ, Pop, Kuijpens, et al., (1999) and Pop, Brouwers, et al., (2003) using the Bayley Scale to evaluate PDI and MDI, Finken, van Eijsden, Loomans, Vrijkotte, and Rotteveel (2013) evaluating the SD of reaction time, and Endendijk, Wijnen, Pop, and van Baar (2017) evaluating anxiety/depression scores using the Child Behavioral Check List (CBCL). The SD of reaction time from Finken et al., (2013) was not well-received by the peer reviewers (External Peer Review for U.S. EPA, 2018) because it is difficult to ascertain the true implications of a change in the SD of reaction time. The Endendijk et al., (2017) study was identified after the peer review so no feedback was given on the appropriateness of the endpoint; however, the anxiety/depression raw score is not an intuitively interpretable endpoint. Further, neither the Endendijk et al., (2017) nor the Finken et al., (2013) analyses had functions for the sensitive life stage (i.e., their analyses were based on the full range of fT4 levels and did not concentrate on the impacts of low-end fT4 levels). For these reasons, the Endendijk et al., (2017) and Finken et al., (2013) papers were not selected for further evaluation.

The Korevaar et al., (2016) original and independent analyses are preferable compared to the Pop, Kuijpens, et al., (1999) and Pop, Brouwers, et al., (2003) studies because neither function derived from the Pop et al., studies was adjusted for confounders. Additionally, both

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Pop et al., papers have an N < 50 compared to the Korevaar et al., analyses, which have an N of greater than 3,600.[8]

Although the original Korevaar et al., (2016) analysis was the most rigorous analysis available in the literature to date, the Korevaar et al., (2016) EPA reanalysis was chosen over the original analysis because it included modifications to the analysis at the suggestion of the peer review panel. The revised analysis controls for a more parsimonious set of confounders (e.g., previously included variables such as infant gender, maternal parity, birthweight, mother's body mass index (BMI), and gestational age at blood draw that are not related to both the exposure and the outcome were excluded), thus decreasing the chances of overfitting the estimation of the association between maternal fT4 and child IQ. The EPA was prompted to revisit the original Korevaar et al., (2016) model because of the feedback received during the peer review of the MCLG Approaches Report. Specifically, a member of the peer-review panel expressed the following suggestion:

> *Korevaar et al., [2016] controlled for instrumental variables (e.g. gestational week at fT4 measurement) as well as variables that are consequences of altered fT4 (e.g. maternal BMI), which may have biased estimates. This study also assumed a log-linear relation between fT4 and the outcome but it is unclear whether the data fit this functional form better than a linear form. Reanalysis of*

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[8] The original Korevaar et al. (2016) analysis included 3,839 mother/child pairs. The EPA reanalysis of the Korevaar et al. (2016) data had a slightly lower N of 3,609 due to the exclusion of subjects with imputed values for maternal fT4.

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the data performed by EPA should not include the variables noted above, which may have driven measures of association towards the null, and should investigate the most appropriate functional form to inform decisions about transformation of fT4 values (External Peer Reviewers for U.S. EPA, 2018, pp. 61–62).

The EPA responded to this suggestion by developing a causal model for the effect of maternal fT4 on child IQ to identify the minimum set of confounding variables, testing the proper functional form of the relationship between maternal fT4 and child IQ in the Korevaar et al., (2016) data, and making decisions about data quality and influential data points in the analysis. That is, the EPA determined that there were values of the independent variable of interest, fT4, in the original analysis that were imputed using multiple imputations. This could have impacted the effect estimate of the independent variable of interest with data that were not directly measured. The EPA reanalysis excludes these non-measured values. Subsequently, the EPA selected the Korevaar et al., (2016) reanalysis as the most appropriate function from which to assess the relationship between fT4 and IQ[9].

As indicated above, the EPA has utilized a health protective approach to this analysis consistent with the SDWA definition of the MCLG. The peer reviewers commented that this approach was fit-for-purpose. In particular, the Agency assumed it could estimate risk reductions based on evidence of a quantifiable relationship between thyroid hormone changes and

[9] A more complete description of the EPA independent analysis of the Korevaar et al. (2016) data can be found in Section 6.3.2 of the MCLG Approaches Report.

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neurodevelopmental outcomes. The existence of a quantifiable relationship between thyroid hormone changes and neurodevelopmental outcomes has strong support from the literature on the subject; however, not every study identified an association between maternal fT4 and the specified outcome of interest, and the state of the science on this relationship is constantly evolving. As explained earlier, the results of the EPA's dose-response literature review identified 31 studies that evaluated the association between maternal thyroid hormone levels and offspring neurodevelopment, with neurodevelopment defined using a variety of endpoints related to cognition, behavior, and other outcomes such as autism. Among these studies, only 16 were deemed to potentially possess information that could inform a dose-response relationship. The other 15 only presented data on categorical analyses assessing the impact of maternal hypothyroxinemia on the neurodevelopmental outcomes of interest. Therefore, because the data presented was only a comparison of two groups, there was not information that could be used to inform a dose-response function.

Of the 16 studies that potentially had data to inform a dose-response function, 10 evaluated cognition using a variety of tests including various IQ tests (three papers; Ghassabian et al., 2014; Korevaar et al., 2016; Moleti et al., 2016), Bayley Scales of Infant Development (two papers; Pop et al., 1999; Pop et al., 2003), and other validated tests associated with child cognition such as expressive language delay or test performance (five papers; Finken et al., 2013; Henrichs et al., 2010; Kastakina et al., 2006; Noten et al., 2015; Oken et al., 2009). Six of these papers found a statistically significant relationship between maternal fT4, as a continuous

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variable, and offspring cognitive outcome (Korevaar et al., 2016; Pop et al., 1999; Pop et al., 2003; Finken et al., 2013; Henrichs et al., 2010, Kastakina et al., 2006). However, there were studies where maternal fT4 as a continuous variable was not significantly associated with the outcome of interest. For example, in Ghassabian et al., (2014) the authors found maternal hypothyroxinemia to be associated with an average of a 4.3-point reduction in IQ in their offspring compared to offspring of non-hypothyroxinemic mothers. Nevertheless, when assessing the relationship between the continuous measure of maternal fT4 as a continuous variable (across the entire range of fT4 levels) and child IQ, the authors did not find a significant relationship. Additionally, Moleti et al., (2016) found the relationship between maternal fT4 and child IQ to be consistently inversely associated with IQ scores, but their assessment failed to reach statistical significance. This study included fewer than 60 study participants and was considered by the authors to be a pilot assessment.

In addition to the cognitive effects assessed and modeled, the EPA identified four papers that assessed maternal fT4 status and behavioral outcomes (Endendijk et al., 2017; Ghassabian et al., 2011; Modesto et al., 2015; Oostenbroek et al., 2017), one paper that assessed maternal fT4 status and autism (Roman et al., 2013) and one paper that evaluated odds of a schizophrenia diagnosis as associated with maternal thyroid hormone status (Gyllenberg et al., 2016). From this group of papers, the majority of papers found an association either between maternal hypothyroxinemia or maternal fT4 as a continuous variable and the outcome of interest (Endendijk et al., 2017; Modesto et al., 2015; Oostenbroek et al., 2017; Roman et al., 2013;

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Gyllenberg et al., 2016). However, this was not always the case as exemplified by Ghassabian et al., (2011) and Gyllenberg et al., (2016). Although Endendijk et al., (2017) found maternal fT4 to have a significant adverse impact on anxiety/depression using the Child Behavioral Check List (CBCL), Ghassabian et al., (2011) did not find any association between maternal thyroid hormone status and offspring score on various components of the CBCL. Additionally, Gyllenberg et al., (2016) found maternal hypothyroxinemia during early to mid-gestation was associated with 70% increased odds of schizophrenia diagnosis in offspring of hypothyroxinemic mothers compared to the offspring of non-hypothyroxinemic mothers. Gyllenberg et al., (2016) also found an association with odds of schizophrenia diagnosis using conditional logistic regression when assessing fT4 as a continuous variable across the entire fT4 range (i.e., not just the hypothyroxinemic range); however, this relationship was attenuated after controlling for smoking.

Not every paper the EPA located in its literature review found a statistically significant association between maternal fT4 as a continuous variable (i.e., the initially identified 16 studies identified as potentially useful to inform a dose-response function) and the neurodevelopmental outcome of interest. However, many studies located in the EPA literature review, several meta-analyses (Fan & Wu, 2016; Thompson et al., 2018 and Wang et al., 2016), the American Thyroid Association (Alexander et al., 2017) and the U.S. EPA's SAB (2013) have concluded there is a relationship between maternal hypothyroxinemia and various neurodevelopmental outcomes. The relationship between maternal fT4 levels and neurodevelopmental outcomes appears

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strongest in the hypothyroxinemic range, and when looking at the entire range of fT4 as a continuous variable (as opposed to a categorical cut off), the significant relationship between the two variables may dissipate. Therefore, the EPA has concentrated on the neurodevelopmental impacts of changes in fT4 in the lower range of fT4 from the Korevaar et al., (2016) data. In an attempt to minimize uncertainty, the EPA reanalyzed the data collected by Korevaar et al., (2016) using a spline function that estimates a coefficient specifically for the low range of the fT4 data.

There are a variety of neurodevelopmental endpoints used to examine behavior and cognition in children (e.g., intelligence quotient (IQ), motor skills, vocabulary and language development, stimulus responsiveness, etc.). The EPA selected IQ decrements because this was the endpoint evaluated in the Korevaar et al., (2016) study. The EPA determined that the Korevaar study was the most rigorous analysis that examined the relationship between decreased thyroid hormones and neurodevelopmental effects. As such, in the derivation of the MCLG, IQ is a surrogate for a suite of potential neurodevelopmental effects that might occur to the offspring of hypothyroxinemic and iodine deficient mothers.

There are several different tests that are widely used to measure IQ in children, including the Stanford-Binet and the Wechsler Intelligence Scale for Children (WISC) (Sternberg et al., 2001). Each of these tests is intended to assess a child's global functioning and uses a numerical IQ point scale (Beres et al., 2000). IQ scores are standardized by age and sex group with a mean score of 100 points and a standard deviation of 15 (Beres et al., 2000). Although the specific

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tasks differ by test, all IQ tests contain a number of tasks to assess diverse skills (Sternberg et al., 2001). For example, the WISC test evaluates full-scale IQ using a combination of verbal and performance scales (verbal IQ and performance IQ may also be assessed separately) (Beres et al., 2000). The verbal scale includes tasks such as arithmetic, vocabulary, and comprehension, while the performance scale includes tasks such as picture completion, block design, and object assembly (Beres et al., 2000). The WISC was standardized using a sample of 2200 U.S. children aged 6 to 16 years old (Seashore et al., 1950). It has been well validated and has demonstrated high reliability, with a reliability coefficient of 0.96 observed across age groups (Beres et al., 2000).

Associations have been found between IQ scores and both educational achievement and attainment, though observed correlations vary widely. In a review of the literature, Sternberg et al., (2001) suggest that IQ scores explain approximately 25% of the variance in academic achievement. Evidence also suggests that IQ is linked to career outcomes and job performance, with observed correlations ranging from approximately 0.2 to 0.6 (Sternberg et al., 2001). Research suggests that children's rearing environment, including parental education, while growing up may increase IQ scores in adolescence by several points (e.g., Kendler et al., 2015).

IQ scores have been used to help diagnose disorders such as intellectual disability and to identify children for placement into specialized learning programs (Beres et al., 2000). For example, in the Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-V) IQ scores are used in an individual's comprehensive assessment to determine intellectual disability,

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which pairs standardized testing of intelligence with a clinical assessment of adaptive functioning. Intellectual disability is considered for individuals with an IQ score of about 70 or below (American Psychiatric Association, 2013).

The EPA uses a variety of science policy approaches to select points of departure for developing regulatory values. For instance, in noncancer risk assessment the EPA often uses a percentage change in value. When assessing toxicological data, a 10 percent extra risk (for discrete data), or a 1 standard deviation (i.e., 15 IQ points) change from the mean (for continuous data) is often used (USEPA, 2012). A smaller response to inform a POD has been applied when using epidemiological literature because there is an inherently more direct relationship between the study results and the exposure context and health endpoint. Given the difficulty in identifying a response below which no adverse impact occurs when considering a continuous outcome in the human population, the EPA looked to its Benchmark Dose Guidance (2012) for insight regarding a starting point. Specifically, "[a] BMR of 1% has typically been used for quantal human data from epidemiology studies" (p. 21, USEPA, 2012).

For the specific context of setting an MCLG for perchlorate, the EPA made a policy decision to evaluate the level of perchlorate in water associated with a 1 percent decrease, a 2 percent decrease, and a 3 percent decrease in the mean population IQ (i.e., 1, 2 and 3 IQ points). The EPA selected IQ as a surrogate for neurodevelopmental effects based upon its evaluation of the epidemiologic literature describe above. The need to utilize the best available peer reviewed data to inform scientific assumptions and policy choices to meet the statutory

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requirements associated with developing an MCLG under the SDWA highlights the challenges associated with regulating chemicals for which potential effects are indirect, and scientific data do not address all uncertainties. The Agency must make a policy decision informed by science, consistent with statutory requirements even in situations where the data do not provide clear choices. To develop the proposed MCLG for perchlorate, the EPA made a policy decision to use a 2 IQ point decrement in the population-distribution of IQ for the sensitive population. By selecting this approach, the EPA is not establishing a precedent for future Agency actions on other contaminants for which there is concern about potential thyroid effects, either under the SDWA or other statutory frameworks.

Applying these response rates to the results from the reanalysis of Korevaar et al., (2016), results in a POD dose of 3.1 µg/kg/day for a 1 point decrease in the sensitive population's IQ, a POD dose of 6.7 µg/kg/day for a 2 point decrease in the sensitive population's IQ, and a POD dose of 10.8 µg/kg/day for a 3 point decrease in the sensitive population's IQ. These PODs associated with a 1, 2, or 3 point decrease from the standardized mean IQ are calculated for the most sensitive population. Specifically, the POD is designed to provide an adequate margin of safety for the fetuses of mothers with fT4 at the 10th percentile of a population with iodine intake of 75 µg/day and a TSH feedback loop that is less than 60% as effective as individuals with median TSH feedback loop efficacy. That is, the analysis is designed to protect the population of fetuses of mothers with suboptimal thyroid functioning. For these reasons, and for the methodological reasons described previously, the EPA believes that the selection of these

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parameters and this point of departure assures no known or anticipated adverse effects on the health of the most sensitive population and allows for an adequate margin of safety.

I. Translate PODs to RfDs

When deriving an RfD the EPA evaluates whether to apply uncertainty/variability factors to account for heterogeneity of effect in the target population and data gaps (USEPA, 2002). As presented in *A Review of the RfD & RfC Processes* (USEPA, 2002) the EPA considers the following uncertainty factors: inter-individual variability, interspecies uncertainty, extrapolating from subchronic to chronic exposure, extrapolating from a lowest-observed adverse effect level (LOAEL) rather than from a no-observed-adverse-effect-level (NOAEL), and an incomplete database. The factors are intended to account for: 1) variation in susceptibility among the members of the human population (i.e., inter-individual or intraspecies variability); 2) uncertainty in extrapolating animal data to humans (i.e., interspecies uncertainty); 3) uncertainty in extrapolating from data obtained in a study with less-than-lifetime exposure (i.e., extrapolating from subchronic to chronic exposure); 4) uncertainty in extrapolating from a LOAEL rather than from a NOAEL; and 5) uncertainty associated with extrapolation when the database is incomplete. (U.S. EPA, 2011b) The EPA has considered each of these factors in deriving an RfD to inform an MCLG for perchlorate.

The EPA considered variation and uncertainty in the relationship between exposure and response among the members of the human population (i.e., uncertainty factor (UF) for within-human variability/ inter-individual variability, UF_H). For this analysis a UF of 3 is used. The

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approach taken to derive the RfD attempts to address variability between the general population and the sensitive population. Specifically, the EPA was able to modify the strength of the TSH feedback loop and iodine intake levels in the BBDR model and concentrate on the dose-response relationship between lower level (as opposed to median level) fT4 and neurodevelopmental outcomes. However, there is still uncertainty in the relationship between perchlorate exposure and subsequent neurodevelopmental outcomes[10]. There are very few toxicokinetic calibration data available for the perchlorate to thyroid hormone relationship described in the BBDR model. On the toxicodynamic side of the BBDR model, aspects such as competitive inhibition at the NIS, depletion of iodide stores under different iodine intake levels and physiological states, and the ability of the TSH feedback loop to compensate for perturbations in thyroid function each have their own uncertain features. There are also uncertainties linking maternal fT4 levels to offspring IQ. These uncertainties include the population for which dose-response information is available (i.e., no study is U.S. based), a lack of study information on the iodine intake status for the population for which the dose-response information is available, uncertainties around the methods used to assess maternal fT4 measurement during pregnancy, and uncertainties related to the true distribution of fT4 for a given iodine intake.

Further, as discussed in section III.C. of this preamble the EPA believes that protecting the fetus of a hypothyroxinemic woman will protect other identified sensitive life stages.

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[10] For a more complete discussion on the uncertainties in the analysis the reader is directed to Sections 3.5 and 6.5 of the MCLG Approaches Report.

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However, there is some uncertainty due to the lack of information linking incremental changes in infant thyroid hormone levels to adverse neuorodevelopmental outcomes. In addition, this analysis is assuming that protecting a first trimester fetus from alterations in maternal fT4 will protect the fetus throughout pregnancy. This is based on epidemiologic evidence that shows the relationship between first trimester maternal fT4 and neurodevelopmental outcomes. This is potentially because before mid-gestation, the mother is the only source of thyroid hormone for the fetus (Morreale de Escobar et al., 2004). Therefore, when evaluating maternal fT4 as associated with neurodevelopmental outcomes it is critical to understand the first-trimester levels. Later in gestation, when the fetal thyroid begins secreting thyroid hormones, maternal fT4 may no longer be a good surrogate for the thyroid hormone levels available to the fetus. Given that the fetal thyroid has had little time to develop, its iodine storage is much less than that of an adult, hence there may be more sensitivity to short-term fluctuations in iodine availability and uptake that may have little impact on maternal levels. Therefore, there is some uncertainty about the impact perchlorate may have on the fetal thyroid gland, and subsequent neurodevelopmental impacts, in later trimesters of pregnancy. The immature fetal HPT axis has very limited capacity to increase output of thyroid hormones (Savin, Cvejić, Nedić, & Radosavljević, 2003; van Den Hove, Beckers, Devlieger, De Zegher, & De Nayer, 1999), so the fetal HPT may not be able to adjust output in the face of reduced maternal fT4 supply and perchlorate exposure. Therefore, as described above, the EPA selected an intraspecies UF of 3 to account for the uncertainties in modeling the impacts of perchlorate ingestion on the thyroid hormone levels for pregnant

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mothers with low iodide intake, and the uncertainties in predicting the neurodevelopmental effects of these thyroid hormone changes on their children.

The EPA considered but did not derive a Data-Dependent Extrapolation Factor (DDEF) for this analysis. As described above, the UFs are applied based on the uncertainties in the perchlorate to thyroid hormone and thyroid hormone to neurodevelopment relationship[11]. As noted above, the Agency has opted to apply a UF of 3 to the POD, which adds an adequate margin of safety to the MCLG derivation. Section 4.4.5.3 (p 4-42) of *A Review of the RfD & RfC Processes* recommends reducing the intraspecies UF from a default of 10 "only if data are sufficiently representative of the exposure/dose-response data for the most susceptible subpopulation(s)" (p. xviii, USEPA, 2002).The EPA selected a UF of 3 instead of the full 10 because the modeled groups within the population that are identified as likely to be at greater risk to perchlorate in drinking water (i.e., the fetus of the iodide deficient pregnant mother) and has selected model parameters to account for the most sensitive individuals in that group (i.e., muted TSH feedback, low fT4 values, low-iodine intake).

Below we list the other uncertainty factors added and the justification.

- Uncertainty in extrapolating animal data to humans (i.e., interspecies uncertainty) (uncertainty factor, animal-to-human, UF_A). For this analysis an UF of 1 is used because this

[11]As explained in U.S. EPA, 2014 "UFs incorporate both extrapolation components that address variability (heterogeneity between species or within a population) and components that address uncertainty (i.e., lack of knowledge)…whereas DDEFs focus on variability" (p. 7, US EPA, 2014).

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factor is not applicable since animal studies were not used to develop the BBDR model nor were they used to relate alterations in maternal fT4 to IQ.

- Uncertainty in extrapolating data obtained in a study with less-than-lifetime exposure to lifetime exposure (i.e., extrapolating from subchronic to chronic exposure, UF_S). An uncertainty factor of 1 is used. Extrapolating from subchronic to chronic exposures did not occur as the BBDR model was designed to assess long-term steady-state conditions in the non-pregnant woman and week-to-week variation in pregnancy, rather than short-term (hour-to-hour or day-to-day) fluctuations.
- Uncertainty in extrapolating from a LOAEL rather than from a NOAEL (uncertainty factor, LOAEL-to-NOAEL, UF_L). A more sophisticated BBDR modeling approach, coupled with extrapolation to changes in IQ using linear regression, was used to determine a POD that would not be expected to represent an adverse effect. Subsequently an uncertainty factor of 1 is used. LOAELs and NOAELs were not identified or used in this approach.
- Uncertainty factor for database deficiency to address the potential for deriving an inadequately protective RfD in the instance where the available database provides an incomplete characterization of the chemical's toxicity (database deficiency, UF_D; USEPA, 2002). An uncertainty factor of 1 is used as "[t]he mode of action of perchlorate toxicity is well understood" (SAB for the U.S. EPA, 2013, p. 2).
- The product of all the uncertainty factors (UF_H) is 3 (3 x 1 x 1 x 1 x 1).

Below we generate RfD's for each of the points of departure.

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Using the POD of 6.7 µg/kg/day based on a 2 percent decrease in the population standardized mean IQ from the EPA's independent analysis of the Korevaar et al., (2016) data, the EPA can derive a RfD by incorporating the UF_H, which results in the following:

$$RfD = \frac{POD}{UF_H} = \frac{6.7}{3} = 2.2\ \frac{\mu g/kg}{day}$$

Using an alternative POD of 3.1 µg/kg/day based on a 1 percent decrease in the population standardized mean IQ from the EPA's independent analysis of the Korevaar et al., (2016) data, the EPA can derive an RfD by incorporating the UF_H. This results in the following:

$$RfD = \frac{POD}{UF_H} = \frac{3.1}{3} = 1.0\ \frac{\mu g/kg}{day}$$

Using an alternative POD of 10.8 µg/kg/day based on a 3 percent decrease in the population standardized mean IQ from the EPA's independent analysis of the Korevaar et al., (2016) data, the EPA can derive an RfD by incorporating the UF_H. This results in the following:

$$RfD = \frac{POD}{UF_H} = \frac{10.8}{3} = 3.6\ \frac{\mu g/kg}{day}$$

J. Translate RfD into an MCLG

To translate the RfD (µg/kg/day) to a concentration in drinking water (µg/L), the EPA used the following equation:

$$W\ \left(\frac{\mu g}{L}\right) = \frac{RfD}{DWI} \times RSC_w$$

where:

W = drinking water concentration of perchlorate in micrograms per liter (µg/L);

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RfD = reference dose (1.03 µg/kg/day for a 1 percent decrease in IQ, 2.23 µg/kg/day for a 2 percent decrease in IQ, or 3.6 µg/kg/day for a 3 percent decrease in IQ);

DWI = bodyweight-adjusted drinking water ingestion rate (L/kg/day); and

RSC_w = relative source contribution of drinking water to overall perchlorate exposure.

To calculate the MCLGs, the EPA selected the 90th percentile body-weight adjusted drinking water ingestion rate specific to women of childbearing age (i.e., non-pregnant, non-lactating, 15–44 years of age (0.032 L/kg/day). This decision is consistent with the analysis used in deriving an RSC, which was performed using food consumption information for a population of women of childbearing age from NHANES. The 90th percentile is chosen to account for variability in drinking water ingestion rates, but also adds another layer of health protection for 90% of women (Table III-3).

The EPA did not use water intake data for pregnant women because the sample sizes were too small to be statistically stable. The use of the drinking water intake for 15-44 year old women is consistent with the analysis used in deriving an RSC_w (described below), which was performed using food consumption information for a population of women of childbearing age from NHANES. The EPA acknowledges there is a difference in the age range defining women of childbearing age used to develop the drinking water ingestion rate and that used to develop the RSC (20 – 44 years of age). The age range used to develop the RSC was based on the range of ages used to define women of childbearing age in developing the BBDR model. However, the

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EPA's Exposure Factors Handbook (USEPA, 2011c) identifies drinking water ingestion rates for women 15-44 years of age as corresponding to women of childbearing age.

The age range used for women of childbearing age in the BBDR model fits within the age range used to develop the ingestion rates provided in the Exposure Factors Handbook. Thus, the Agency believes the difference in the age ranges will have minimal impact on the resulting MCLG analysis.

Table III-3. Consumers-Only Estimated Direct and Indirect Community Water Ingestion Rates from Kahn and Stralka (2008) (L/kg/day)

Female Population Categories	Sample Size	Mean	90th Percentile	95th Percentile
Pregnant	65	0.014[a]	0.033[a]	0.043[a]
Lactating	33	0.026[a]	0.054[a]	0.055[a]
Non-pregnant, non-lactating, 15 to 44 years of age	2,028	0.015	0.032	0.038

[a] The sample size does not meet minimum reporting requirements to make statistically reliable estimates as described in the *Third Report on Nutrition Monitoring in the United States*, 1994-1996 (FASEB/LSRO, 1995).

Individuals are exposed to perchlorate through ingestion of both food and drinking water (ATSDR 2008, Huber et al., 2011). In calculating the MCLGs, the EPA applies a relative source contribution (RSC) to the RfD to account for the percentage of the RfD remaining for drinking water after other sources of exposure to perchlorate have been considered. Thus, the RSC for drinking water is based on the following equation where "Food" is the perchlorate dose from food ingestion:

$$RSC = \frac{RfD - Food}{RfD} \times 100\%$$

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To estimate the dose of perchlorate for women of childbearing age coming from food, the EPA implemented a data integration methodology that combined demographic variables, food consumption estimates, and perchlorate contamination estimates in food from multiple sources (USEPA, 2019c). These sources include:

- The NHANES data available from the Centers for Disease Control and Prevention's (CDC) National Center for Health Statistics (NCHS) including the What We Eat in America (WWEIA) 24-hour food diary data (CDC & NCHS, 2007, 2009, 2011); and
- The Food and Drug Administration's (FDA's) Total Diet Study (TDS) (U.S. Food and Drug Administration (FDA), 2015), which analyzes contaminants in about 280 kinds of food and beverages commonly consumed by the U.S. population.

The NHANES data provided individual food consumption profiles for female participants age 20-44 (the women of childbearing age range used for the BBDR model). The EPA matched TDS perchlorate concentrations with each food consumed by a participant and calculated each participant's daily perchlorate dose (µg/kg/day) from food using the participant's body weight. The EPA estimated each participant's perchlorate dose using both mean and 95th percentile perchlorate concentrations in food. The details of these assumptions are explained on page 5-5 of the Technical Support Document: Deriving a Maximum Contaminant Level Goal for Perchlorate in Drinking Water (USEPA 2019c). Specifically, the EPA calculated both the mean and the 95th percentile of the perchlorate levels in each food based on the 20 samples included in the TDS data. In order to estimate the 95th percentile from the 20 samples, the EPA used the second-

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highest test result for each food to represent the 95th percentile concentration. While simple, this method avoids the need to assume a distributional shape for the samples, and has been used in recent publications of TDS data for iodine [ADDIN EN.CITE <EndNote><Cite><Author>Carriquiry</Author><Year>2016</Year><RecNum>2008</RecNum><DisplayText>(Carriquiry et al., 2016)</DisplayText><record><rec-number>2008</rec-number><foreign-keys><key app="EN" db-id="z9t0avxvzdfermedxe5vxfpkax2vzp0ftv29" timestamp="1530039524">2008</key></foreign-keys><ref-type name="Journal Article">17</ref-type><contributors><authors><author>Carriquiry, A. L. </author><author>Spungen, J. H.</author><author>Murphy, S. P.</author><author>Pehrsson, P. R.</author><author>Dwyer, J. T.</author><author>Juan, W.</author><author>Wirtz, M. S. </author></authors></contributors><titles><title>Variation in the iodine concentrations of foods: considerations for dietary assessment</title><secondary-title>The American Journal of Clinical Nutrition</secondary-title></titles><periodical><full-title>The American Journal of Clinical Nutrition</full-title></periodical><pages>877S–887S</pages><volume>104</volume><number>Suppl 3</number><dates><year>2016</year></dates><urls></urls></record></Cite></EndNote>]. The aforementioned method for identifying the 95th percentile concentration of perchlorate from food was selected over other, more "statistically based" methods for estimating percentiles as it avoids the need to assume a distributional shape for the samples. The EPA determined that it was more reliable to assume the empirically derived distribution as the basis for selecting the 95th

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percentile (i.e., assuming the distribution was equal to the distribution of samples collected in the TDS), as opposed to forcing a distributional shape, such as normal or log-normal, onto the data that may not necessarily be appropriate. With the chosen method, we can at least be sure that the distributional shape is appropriate for the data at hand, whereas by choosing the alternative that assumes a distributional shape, in many instances we would not even be certain of that. The EPA used these individual bodyweight-adjusted perchlorate doses from food to calculate distributions of perchlorate dose from food for the population of women age 20-44.

Table III-4 presents the mean and selected percentiles of the distribution of perchlorate dose from food for women ages 20-44, for both mean and 95th percentile perchlorate concentrations in food based on the TDS. To calculate the RSC, the EPA selected the 90th percentile dose of perchlorate from food, assuming a scenario where the food contained the 95th percentile perchlorate concentration. This corresponds to a perchlorate dose for food of 0.45 µg/kg/day. The EPA chose to use the 90th percentile bodyweight-adjusted perchlorate consumption from food using the 95th percentile TDS results to estimate the perchlorate RSC from drinking water. The EPA believes this is the most appropriate value for perchlorate consumption from food to ensure the protection of potentially highly exposed individuals. Given the range of perchlorate concentrations in food, and that food is the only other exposure source being considered in the RSC analysis, the EPA believes it is sufficiently protective to estimate the MCLG for drinking water using the 90th percentile bodyweight-adjusted perchlorate consumption based on the 95th percentile perchlorate food concentrations in TDS. This assures

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that highly exposed individuals from this most sensitive population are considered in the evaluation of whether perchlorate is found at levels of health concern.

Table III-4. Perchlorate Dose from Food (µg/kg/day) in U.S. Women Ages 20-44 using the mean and 95th Percentile TDS Results[1]

Level of Bodyweight Adjusted Perchlorate Consumption from Population Distribution	Perchlorate Dose from Food (µg/kg/day)	
	Based on Mean Concentrations of Perchlorate in Food	Based on 95th Percentile Concentrations of Perchlorate in Food
Mean	0.09 – 0.12	0.23 – 0.24
50th Percentile	0.08 – 0.10	0.17 – 0.19
90th Percentile	0.18 – 0.21	**0.45**
99th Percentile	0.33 – 0.38	1.16 – 1.17

[1] Ranges are due to various approaches for handling values <level of detection. If no range is presented all approaches resulted in the same value.
Bolded value represents the selected value

The EPA used the drinking water intake and perchlorate dose from food to calculate MCLGs for the three RfD values. Table III-5 shows the RSC values for the three RfD values and the corresponding MCLGs calculated using the EPA's standard equation.

Table III-5. Estimates for RSC and MCLG by RfD

RfD[a] (µg/kg/day)	RSC_w[b] (percent)	DWI (L/kg/day)	MCLG[c] (µg/L)
1.0	56%	0.032	18
2.2	80%	0.032	56
3.6	80%[d]	0.032	90

a. The RfD values corresponding to protecting the fetus of a first trimester pregnant mother with low-iodine intake levels (i.e., 75 µg/kg/day), low fT4 levels (i.e., 10th percentile of a fT4 distribution for individuals with 75 µg/day iodine intake), and weak TSH feedback

strength (i.e., TSH feedback is reduced to be approximately 60 percent less effective than for the median individual) from either a 1-point IQ loss, 2-point IQ loss, or a 3-point IQ loss, respectively.

b. The EPA calculated RSC values based on the following equation given a Food intake of 0.45 µg/kg/day:

$$RSC = \frac{RfD - Food}{RfD} \times 100\%$$

c. The EPA calculated the MCLG values based on the following equation given the respective RfD and RSC values and the DWI:

$$W\left(\frac{\mu g}{L}\right) = \frac{RfD}{DWI} \times RSC_w$$

d. The calculated RSC value using the equation in footnote b is 88 percent. However, the EPA has opted to follow previously established recommendations which employs a ceiling of 80 percent for the RSC value (USEPA 2000d).

IV. Maximum Contaminant Level Goal and Alternatives

Section 1412(a)(3) of the SDWA requires the EPA to propose a maximum contaminant level goal (MCLG) simultaneously with the NPDWR. The MCLG is defined in Section 1412(b)(4)(A) as "the level at which no known or anticipated adverse effects on the health of persons occurs and which allows an adequate margin of safety." The EPA is proposing an MCLG of 56 µg/L based on the rationale and methodology described in Section III above. The derivation of the proposed MCLG uses a point of departure based upon a two percent decrease in IQ for offspring of hypothyroxinemic women of child bearing age have with low iodine intake. The EPA selected a 2 percent decrease in IQ for the proposed perchlorate MCLG because this represents a small change in IQ, well below one standard deviation for the subpopulation of interest.

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As described in Section III, the EPA has selected model parameters and other factors for the derivation of the MCLG that are health protective, including the focus on the most sensitive life stage. The EPA believes that the selection of the combination of protective parameters and this point of departure assures no known or anticipated adverse effects on the health of the most sensitive subpopulation and allows for an adequate margin of safety. The EPA also acknowledges the uncertainties in the derivation of the proposed (and alternative) MCLGs. The EPA acknowledges in particular the challenge associated with selecting the decrement of IQ that represents an adverse effect at the population level and the uncertainties in predicting the dose of perchlorate that may result in a particular IQ decrement given the absence of robust human epidemiological data directly linking perchlorate exposure to IQ decrements. The Agency seeks comment on the alternative MCLG values of 18 µg/L and 90 µg/L, which the EPA derived using the methodology described in Section III based on a one percent and three percent decrease in IQ, respectively.

V. Maximum Contaminant Level and Alternatives

Under section 1412(b)(4)(B) of the SDWA, the EPA must establish a maximum contaminant level (MCL) as close to the MCLG as is feasible. The EPA evaluated available analytical methods to determine the lowest concentration at which perchlorate can be measured and evaluated the treatment technologies for perchlorate that have been examined under field conditions (USEPA 2018a, 2019b). The EPA determined that setting an MCL equal to the proposed MCLG of 56 µg/L is feasible given that the approved analytical method for perchlorate

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for UCMR 1 has a minimum reporting level (MRL) of 4 µg/L (USEPA 1999, 2000c) and that available treatment technologies can treat to concentrations well below 56 µg/L (USEPA, 2018c). Therefore, the EPA is proposing to set the MCL for perchlorate at 56 µg/L.

Because the EPA is taking comment on alternative MCLG values of 18 µg/L and 90 µg/L the Agency evaluated the feasibility of setting an MCL at these levels. The EPA determined that the proposed MCL of 56 µg/L is feasible, therefore a higher MCL alternative such as 90 µg/L is also feasible. The EPA has concluded that analytical methods are capable of measuring perchlorate at 18 µg/L and that treatment technologies have been demonstrated to achieve this level under field conditions (USEPA 2018a, 2019b). Therefore, the EPA is requesting comment on the feasibility of the proposed MCL of 56 µg/L as well as the feasibility of the alternative MCLs of 18 µg/L and 90 µg/L.

As the occurrence analysis in section VI demonstrates, there is infrequent occurrence of perchlorate at 18 µg/L, 56 µg/L, or 90 µg/L. Therefore, the EPA did not evaluate alternative MCL values greater than the corresponding MCLG values. The purpose for evaluating alternative MCL values is to determine whether there is an MCL at which benefits justify the costs of setting an MCL. Given infrequent occurrence, the majority of the costs associated with establishing an NPDWR for perchlorate are for administrative and initial monitoring activities (see section XI.B), which will not be significantly affected by MCL values greater than corresponding MCLG values.

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When proposing an MCL, the EPA must publish, and seek public comment on, the health risk reduction and cost analyses (HRRCA) of each alternative MCL considered (SDWA Section 1412(b)(3)(C)(i)), including: the quantifiable and nonquantifiable health risk reduction benefits attributable to MCL compliance; the quantifiable and nonquantifiable health risk reduction benefits of reduced exposure to co-occurring contaminants attributable to MCL compliance; the quantifiable and nonquantifiable costs of MCL compliance; the incremental costs and benefits of each alternative MCL; the effects of the contaminant on the general population and sensitive subpopulations likely to be at greater risk of exposure; any adverse health risks posed by compliance; and other factors such as data quality and uncertainty. The EPA provides this information in section XII in this preamble. The EPA must base its action on the best available, peer-reviewed science and supporting studies, taking into consideration the quality of the information and the uncertainties in the benefit-cost analysis (SDWA Section 1412(b)(3)). The following sections, as well as the health effects discussion in section III document the science and studies that the EPA relied upon to develop estimates of benefits and costs and understand the impact of uncertainty on the Agency's analysis.

VI. Occurrence

The UCMR 1 is the primary source of occurrence data the EPA relied on to estimate the number of water systems (and associated population) expected to be exposed at levels of perchlorate which could potentially exceed the proposed and alternative MCL levels. Since UCMR 1 data was first used to inform the Agency actions on the 2008 preliminary regulatory

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determination and the 2011 final regulatory determination, the Agency has modified its analysis of the UCMR 1 data set in response to concerns raised by stakeholders regarding the data quality and to represent current conditions at some States that have enacted perchlorate regulations since the UCMR 1 data was collected. Despite these updates, the EPA continues to rely on the UCMR 1 data because they are the best available data collected in accordance with accepted methods from a census of the large water systems (serving more than 10,000 people) and a statistically representative sample of small water systems that provides the best available, national assessment of perchlorate occurrence in drinking water.

In 1999, the EPA developed the first round of the UCMR program in accordance with SDWA requirements to provide national occurrence information on unregulated contaminants (USEPA, 1999, 2000b). The UCMR 1 required sampling from systems in all 50 States, the District of Columbia, four U.S. territories, and tribal lands in five EPA Regions including:

- all 3,097 large (serving more than 10,000 people) CWSs and NTNCWSs, which analyzed either four quarterly samples collected at 3-month intervals (surface water sources), or two samples collected 5 to 7 months apart (ground water sources); and
- a statistically representative selection of 800 small CWSs and NTNCWSs, which analyzed either four quarterly samples collected at 3-month intervals (surface water sources) or two samples collected 5 to 7 months apart (ground water sources).

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Water systems submitted UCMR 1 sampling results to the EPA from 2001 until 2005. Water systems were required to analyze samples for 26 contaminants including perchlorate. The EPA established a minimum reporting level of 4 µg/L for perchlorate in the UCMR.

The EPA conducted a data quality review of the UCMR 1 data submitted by systems prior to analyzing the occurrence data for the 2011 perchlorate regulatory determination. The UCMR 1 dataset used by the EPA included 34,331 samples with 637 measurements of perchlorate above the minimum reporting level from 3,865 systems.

In September of 2012, the EPA received a "Request for Correction" letter from the United States Chamber of Commerce regarding information and data (i.e., the occurrence of perchlorate in drinking water) used by the EPA in its 2011 determination to regulate perchlorate. The U.S. Chamber of Commerce letter stated that the EPA relied upon: 1) data that did not comply with data quality guidelines and 2) data that was not representative of current conditions.

In response[12] to the U.S. Chamber of Commerce, the EPA conducted a detailed assessment of the source water sample detections and determined that it was most appropriate to exclude the source water sample detections from the UCMR 1 perchlorate data set when those samples had appropriate follow-up entry point samples that were included in the UCMR 1 perchlorate data set. In contrast, any source water sample perchlorate detections for which no follow-up entry point sampling was conducted by PWSs were retained in the UCMR 1

[12] See the EPA response letter at https://www.epa.gov/sites/production/files/2017-08/documents/12004-response_0.pdf

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perchlorate data set. As a result of the assessment, the EPA removed 199 source water samples (97 detections) that could be paired with a second follow-up sample located at the entry point to the distribution system. Following this convention, the resulting UCMR 1 data set contains 34,132 perchlorate samples from 3,865 systems with a total of 540 detections from 149 PWSs.

Table VI-1 shows sample distribution by system size category and measurement status. It also shows the number of entry points and systems where perchlorate measurements were reported. The entry point estimates differ from the system estimates because many water systems have more than one entry point. For example, a ground water system with two wells that has separate connections to the distribution system has two entry points.

In response to the U.S. Chamber of Commerce request, the EPA has also reassessed the UCMR 1 data in light of the adoption of regulatory limits in two states. Massachusetts promulgated a drinking water standard for perchlorate of 2 µg/L in 2006 [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"8DPpSrv3","properties":{"formattedCitation":"(MassDEP, 2006)","plainCitation":"(MassDEP, 2006)","noteIndex":0},"citationItems":[{"id":151,"uris":["http://zotero.org/groups/945096/items/9893MBZH"],"uri":["http://zotero.org/groups/945096/items/9893MBZH"],"itemData":{"id":151,"type":"personal_communication","title":"Letter to Public Water Suppliers concerning new perchlorate regulations","URL":"https://www.mass.gov/lists/perchlorate-background-information-and-standards#perchlorate---final-standards-

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","author":[{"literal":"MassDEP"}],"issued":{"date-parts":[["2006"]]}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}], and California promulgated a drinking water standard of 6 µg/L in 2007 [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"cfr6HNhg","properties":{"formattedCitation":"(California Department of Public Health, 2007)","plainCitation":"(California Department of Public Health, 2007)","noteIndex":0},"citationItems":[{"id":150,"uris":["http://zotero.org/groups/945096/items/RA45NKLQ"],"uri":["http://zotero.org/groups/945096/items/RA45NKLQ"],"itemData":{"id":150,"type":"personal_communication","title":"State Adoption of a Perchlorate Standard","URL":"https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/perchlorate/AdoptionMemotoWaterSystems-10-2007.pdf","author":[{"literal":"California Department of Public Health"}],"issued":{"date-parts":[["2007"]]}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. Systems in these states are now required to keep perchlorate levels in drinking water below their state limits, which are lower than the proposed MCL and alternative MCLs. Therefore, the UCMR 1 sampling results from systems in these states do not reflect the current occurrence and exposure conditions. For the purpose of estimating the costs and benefits of the proposed rule, the EPA assumed that no additional monitoring and treatment costs would be incurred by the systems in the States of California and Massachusetts. Systems in California account for some of the perchlorate measurements reported

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below. The notes in the tables below indicate whether results include or exclude systems in California and Massachusetts.

To update the occurrence data for systems sampled during UCMR 1 from the States of California and Massachusetts, the EPA identified all systems and corresponding entry points which had reported perchlorate detections in UCMR 1. Once the systems and entry points with detections were appropriately identified, the EPA then used a combination of available data from Consumer Confidence Reports (CCRs) and perchlorate compliance monitoring data from California (https://sdwis.waterboards.ca.gov/PDWW/) and Massachusetts (https://www.mass.gov/service-details/public-water-supplier-document-search) to match current compliance monitoring data (where available) to the corresponding water systems and entry points sampled during UCMR 1.

Out of the 540 detections previously described the EPA updated data for 321 detections (320 from California systems and 1 from a Massachusetts system). The convention used by the EPA to accomplish the substitution of data was to match entry points with compliance data for active entry points based on most recently reported compliance monitoring data, if more than one data point was reported for an entry point, the assigned value is an average of the annual monitoring results at the entry point. In cases were the EPA could not find updated entry point data, then the original data from UCMR 1 for such entry point was kept.

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Table VI-1. UCMR 1 Data Summary Statistics

Item	Small System Sample	Large System Census	Sum
Total samples	3,295	30,837	34,132
Sample measurements ≥ 4 µg/L	15	525	540
Sample measurements > 18 µg/L	1	16	17
Sample measurements > 56 µg/L	0	2	2
Sample measurements > 90 µg/L	0	1	1
Total entry points	1,454	13,482	14,936
Entry points at which measurements ≥ 4 µg/L	8	328	336
Entry points at which measurements > 18 µg/L	1	16	17
Entry points at which measurements > 56 µg/L	0	2	2
Entry points at which measurements > 90 µg/L	0	1	1
Total systems	797	3,068	3,865
Systems at which measurements ≥ 4 µg/L	8	141	149
Systems at which measurements > 18 µg/L	1	14	15
Systems at which measurements > 56 µg/L	0	2	2
Systems at which measurements > 90 µg/L	0	1	1

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"UAoGFPZv","properties":{"formattedCitation":"(USEPA, 2018)","plainCitation":"(USEPA, 2018)","noteIndex":0},"citationItems":[{"id":969,"uris":["http://zotero.org/groups/945096/items/YERQWPRZ"],"uri":["http://zotero.org/groups/945096/items/YERQWPRZ"],"itemData":{"id":969,"type":"article","title":"Perchlorate Occurrence and Monitoring Report","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. The total row counts and counts of measurements ≥ 4 µg/L identify all instances where perchlorate was detected at or above the minimum reporting level, including water systems in California and Massachusetts, which account for 537 systems in total and 51 systems at which measurements ≥4 µg/L. The instances where perchlorate measurements equal or exceed either 18 µg/L, 56µg/L, or 90 µg/L exclude results from California and Massachusetts because water systems in these States must meet limits below 18 µg/L. The small system counts reflect sample results that have not been extrapolated to small systems nationwide.

Table VI-2 shows the service populations that correspond with the occurrence summary in Table VI-1. The entry point population estimates reflect the assumption that system population is uniformly distributed across entry points; e.g., the entry point population for a system with two entry points is one-half the total system population.

Table VI-2. UCMR1 Data Service Population Summary Statistics

Item	Small System Sample	Large System Census	Sum
Total entry point population	2,760,570	222,853,101	225,613,671
Population served by entry points at which measurements ≥ 4 µg/L	9,484	4,281,937	4,291,420
Population served by entry points at which measurements > 18 µg/L	2,155	618,406	620,560
Population served by entry points at which measurements > 56 µg/L	0	32,432	32,432
Population served by entry points at which measurements > 90 µg/L	0	25,972	25,972
Total system population	2,760,570	222,853,101	225,613,671
Population served by systems at which measurements ≥ 4 µg/L	13,483	16,159,082	16,172,565
Population served by systems at which measurements >18 µg/L	4,309	696,871	701,180
Population served by systems at which measurements > 56 µg/L	0	64,733	64,733
Population served by systems at which measurements > 90 µg/L	0	25,972	25,972

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Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"ChxDKgDr","properties":{"formattedCitation":"(USEPA, 2018)","plainCitation":"(USEPA, 2018)","noteIndex":0},"citationItems":[{"id":969,"uris":["http://zotero.org/groups/945096/items/YERQWPRZ"],"uri":["http://zotero.org/groups/945096/items/YERQWPRZ"],"itemData":{"id":969,"type":"article","title":"Perchlorate Occurrence and Monitoring Report","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. The populations for entry points/systems with measurements ≥ 4 µg/L identify all instances where perchlorate was detected at or above the minimum reporting level, including water systems in California and Massachusetts, which account for 39.6 million of the 225.6 million total population in UCMR 1, and 1.9 million of the 4.3 million population served by entry points at which measurements ≥4 µg/L. The instances where perchlorate measurements equal or exceed either 18 µg/L, 56µg/L, or 90 µg/L exclude results from California and Massachusetts because water systems in these States must meet limits below 18 µg/L. The small system counts reflect sample results that have not been extrapolated to small systems nationwide.

As shown in the tables, 149 systems serving 16.2 million people had measured levels of perchlorate greater than the minimum reporting level. However, many of these systems have several entry points with no measured levels of perchlorate greater than the minimum reporting level; at the entry point level, the exposed population is approximately 4.3 million people served by 336 entry points. Because the uniform population distribution assumption may over or underestimate the service population of any particular entry point, the entry point estimates are uncertain. The system population estimates serve as upper bounds on exposure.

The EPA used entry point maximum measurements to estimate potential baseline occurrence and exposure at levels that exceed the proposed MCL and alternative MCLs. The maximum measurements indicate perchlorate levels that occurred in at least one quarterly sample among surface water systems and at least one semi-annual sample among ground water systems.

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Table VI-3 through Table VI-5 show the occurrence and exposure estimates based on the 56 µg/L, 18 µg/L MCL, and 90 µg/L values, respectively. Each table provides estimates of the entry points at which the maximum perchlorate concentrations exceed the MCL value. The tables also report the system-level information for these entry points.

Table VI-3: Estimated Perchlorate Occurrence and Exposure: Entry Point Max Exceeds 56 µg/L

Affected Entity	Small Systems	Large Systems	Total Systems
Entry points	0	2	2
Population served	0	32,432	32,432
Water systems	0	2	2
Population served	0	64,733	64,733

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"adhRbcXq","properties":{"formattedCitation":"(USEPA, 2018c)","plainCitation":"(USEPA, 2018c)","noteIndex":0},"citationItems":[{"id":155,"uris":["http://zotero.org/groups/945096/items/YERQWPRZ"],"uri":["http://zotero.org/groups/945096/items/YERQWPRZ"],"itemData":{"id":155,"type":"article","title":"Perchlorate Occurrence and Monitoring Report","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}].

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Table VI-4: Estimated Perchlorate Occurrence and Exposure: Entry Point Max Exceeds 18 µg/L

Affected Entity	Small Systems[1]	Large Systems	Total Systems
Entry points	1	16	17
Population served	2,155	618,406	620,560
Water systems	1	14	15
Population served	4,309	696,871	701,180

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"z4saRTHP","properties":{"formattedCitation":"(USEPA, 2018c)","plainCitation":"(USEPA, 2018c)","noteIndex":0},"citationItems":[{"id":155,"uris":["http://zotero.org/groups/945096/items/YERQWPRZ"],"uri":["http://zotero.org/groups/945096/items/YERQWPRZ"],"itemData":{"id":155,"type":"article","title":"Perchlorate Occurrence and Monitoring Report","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}].

1. The values shown in the table are estimates based on the UCMR 1 data. The EPA also applied the statistical sampling weights to the results to extrapolate results to national results. The entry point at which a measurement exceeds 18 µg/L is one of 20 in its sample stratum; no other sample in the stratum had a measurement of perchlorate greater than the minimum reporting level. The entry point population of 2,155 represents 5.31% of the total population served by the six UCMR 1 systems in the stratum (40,574). Currently, the stratum population of 774,780 accounts for 1.32% of the 58.7 million national population served by small systems. Thus, the UCMR 1 results indicate that 0.07% (5.31% x 1.32%) of small system customers (approximately 41,100) may be exposed to perchlorate greater than 18 µg/L.

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Table VI-5: Estimated Perchlorate Occurrence and Exposure: Entry Point Max Exceeds 90 µg/L

Affected Entity	Small Systems[1]	Large Systems	Total Systems
Entry points	0	1	1
Population served	0	25,972	25,972
Water systems	0	1	1
Population served	0	25,972	25,972

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"z4saRTHP","properties":{"formattedCitation":"(USEPA, 2018c)","plainCitation":"(USEPA, 2018c)","noteIndex":0},"citationItems":[{"id":155,"uris":["http://zotero.org/groups/945096/items/YERQWPRZ"],"uri":["http://zotero.org/groups/945096/items/YERQWPRZ"],"itemData":{"id":155,"type":"article","title":"Perchlorate Occurrence and Monitoring Report","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}].

In summary, the perchlorate occurrence information suggests that at an MCL of 56 µg/L, two systems (0.004% of all water systems in the U.S.) would exceed the regulatory threshold. One of these two systems would exceed the alternative MCL of 90 µg/L. In addition, at an MCL of 18 µg/L, there would be 15 systems (0.03% of all water systems in the U.S.) that would exceed the regulatory threshold.

VII. Analytical Methods

The SDWA directs the EPA to set a contaminant's MCL as close to its MCLG as is ''feasible'', the definition of which includes an evaluation of the feasibility of performing

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chemical analysis of the contaminant at standard drinking water laboratories. Specifically, the SDWA directs the EPA to determine that it is economically and technologically feasible to ascertain the level of the contaminant being regulated in water in public water systems (Section 1401(1)(C)(i)). NPDWRs are also to contain ''criteria and procedures to assure a supply of drinking water which dependably complies with such [MCLs]; including accepted methods for quality control and testing procedures to insure compliance with such levels.'' (Section 1401(1)(D)).

To comply with these requirements, the EPA considers method performance under relevant laboratory conditions, their likely prevalence in certified drinking water laboratories, and the associated analytical costs. The EPA has developed five analytical methods for the identification and quantification of perchlorate in drinking water that meet these criteria. The proposed EPA methods for perchlorate are: 314.0, 314.1, 314.2, 331.0, and 332.0. A detailed description of these methods is presented in the Perchlorate Occurrence and Monitoring Report (USEPA, 2019b).

The EPA Methods 314.0, 314.1, 314.2, 331.0, and 332.0 underwent the EPA's analytical method development and validation processes. The validation process includes a protocol for modifications to any existing EPA-approved analytical methods and a protocol for new determinative techniques. Both validation protocols are rigorous and consider many technical aspects of analytical method performance, including: detection limits; instrument calibration; precision and analyte recovery; analyte retention times; evaluation of blanks; development of

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Quality Control acceptance criteria; analysis of field samples; and other technical aspects of sample analysis and data reporting. All of the proposed EPA analytical methods provide performance data to demonstrate their capability to reliably and consistently measure perchlorate in drinking water at the proposed and alternate MCLs.

EPA Method 314.0, "Determination of Perchlorate in Drinking Water Using Ion Chromatography" (Revision 1.0, USEPA, 1999a) has a method detection limit (MDL) of 0.53 µg/L. Single-laboratory mean percent recovery in various aqueous matrices range from 86% to 113% with Relative Standard Deviations (RSDs) of 1.0% to 12.8%. A minimum reporting level (MRL) is not specified in the method; however, a range of 3.0 to 5.0 µg/L is cited as a benchmark range for quality assurance/quality control (QA/QC) procedures. The MRL is to be established as either a concentration that is greater than three times the laboratory MDL or at a concentration that yields a response greater than a signal to noise ratio of five. In either case, the MRL must not be below the lowest instrument calibration standard (USEPA, 1999a). Method 314.0 was widely adopted as the standard perchlorate method.

After the EPA published Method 314.0, the Agency adopted additional method development goals for the analysis of perchlorate in drinking water including: 1) reducing MRL to less than 1 µg/L through the application of sample concentration techniques, microbore analytical columns, and advanced detection systems (i.e., mass spectrometry), 2) further increasing the tolerance for high ionic strength matrices, and 3) enhancing measurement selectivity.

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EPA Method 314.1, "Determination of Perchlorate in Drinking Water Using Inline Column Concentration/Matrix Elimination Ion Chromatography with Suppressed Conductivity Detection" (Revision 1.0, USEPA, 2005b) documents the EPA single-laboratory Lowest Concentration Minimum Reporting Levels (LCMRLs) of less than 0.2 µg/L (DL = 0.03 µg/L) using online sample pre-concentration. The method uses matrix diversion to handle high ionic strength matrices (up to 1,000 mg/L TDS) and added confirmation analysis using a second analytical column (USEPA, 2005b).

EPA Method 314.2, "Determination of Perchlorate in Drinking Water Using Two-Dimensional Ion Chromatography with Suppressed Conductivity Detection" (USEPA, 2008c) documents the EPA single-laboratory LCMRLs of less than 0.1 µg/L (DLs < 0.02 µg/L) using large volume injection. The method uses 2-D chromatography to handle high ionic strength matrices (up to 1,000 mg/L total dissolved solids [TDS]) and eliminates the need for separate confirmation analysis (USEPA, 2008c).

EPA Method 331.0, "Determination of Perchlorate in Drinking Water by Liquid Chromatography Electrospray Ionization Mass Spectrometry" (Revision 1.0, USEPA, 2005c) documents the EPA single-laboratory LCMRLs of less than 0.1 µg/L (DLs < 0.01 µg/L), applied multiple analytical advancements to a liquid chromatography (LC) analysis including a perchlorate selective LC column (AS-21), mass spectrometry (MS) or MS/MS detection for selectivity and sensitivity, and a custom labeled internal standard ($Cl^{18}O_3^-$) (USEPA, 2005c).

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EPA Method 332.0, "Determination of Perchlorate in Drinking Water by Ion Chromatography with Suppressed Conductivity and Electrospray Ionization Mass Spectrometry" (USEPA, Revision 1.0, 2005d) documents the EPA single-laboratory LCMRL of 0.1 µg/L (DL = 0.02 µg/L), applied multiple analytical advancements in an IC analysis including suppressed conductivity IC, MS or MS/MS selectivity and sensitivity, and a custom labeled internal standard ($Cl^{18}O_4$) (USEPA, 2005d).

VIII. Monitoring and Compliance Requirements

A. What are the Proposed Monitoring Requirements?

The EPA is proposing to require CWS and NTNCWSs to monitor for perchlorate in accordance with the standardized monitoring framework set out in 40 CFR 141 Subpart C (Standardized Monitoring Framework). Public water systems must sample entry points to the distribution system consistent with requirements in 40 CFR 141.23(a).

Under the Standardized Monitoring Framework, the monitoring frequency for a public water system is dependent on previous monitoring results and whether a monitoring waiver has been granted. The EPA is proposing that consistent with the standardized monitoring framework water systems would be initially required to monitor quarterly for perchlorate. The EPA is also proposing that based upon the monitoring results States would be able to reduce the monitoring frequency to annually, once every three years or once every nine years if the State concludes that the system is reliably and consistently below the MCL. If a water system exceeds the perchlorate

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MCL, the system is in violation and triggered into quarterly monitoring for that sampling point in the next quarter after the violation occurred (40 CFR 141.23(c)(7)). The state may allow the system to return to the reduced monitoring frequency when the state determines that the system is reliably and consistently below the MCL. However, the state cannot make a determination that the system is reliably and consistently below the MCL until a minimum of 2 consecutive ground water or 4 consecutive surface water samples below the MCL have been collected (40 CFR 141.23(c)(8)). All systems must comply with the sampling requirements, unless a waiver has been granted in writing by the state (40 CFR 141.23(c)(6)).

B. Can States Grant Monitoring Waivers?

Under this proposal, water systems may apply to the state, and states may grant, a 9-year monitoring waiver for perchlorate if the conditions described in 40 CFR 141.23(c)(3)-(6) are met. A state may grant a waiver for surface water systems after three rounds of annual monitoring with results less than the MCL and for groundwater systems after conducting three rounds of monitoring with results less than the MCL. One sample must be collected during the nine-year compliance cycle that the waiver is effective, and the waiver must be renewed every nine years.

C. How are System MCL Violations Determined?

Under this proposal, violations of the perchlorate MCL would be determined in a manner consistent with 40 CFR 141.23(i)(3). Compliance with the perchlorate MCL would be determined based on one sample if the level is below the MCL. If the level of perchlorate

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exceeds the MCL at any entry point in the initial sample, a confirmation sample is required within two weeks of the system's receipt of notification of the analytical result of the first sample, in accordance with 141.23(f)(1). Compliance shall be determined based on the average of the initial and confirmation samples.

D. When Must Systems Complete Initial Monitoring?

Pursuant to Section 1412(b)(10), this rule would be effective three years after promulgation. To satisfy initial monitoring requirements, CWS serving populations greater than 10,000 persons must collect 4 quarterly samples for perchlorate during the second compliance period of the fourth compliance cycle (January 1, 2023– December 31, 2025) of the Standardized Monitoring Framework. NTNCWS and CWSs serving 10,000 persons or less must collect 4 quarterly samples during the third compliance period of the fourth compliance cycle (January 1, 2026 – December 31, 2028) of the Standardized Monitoring Framework.

E. Can Systems use Grandfathered Data to Satisfy the Initial Monitoring Requirements?

As proposed today, systems would be allowed to use grandfathered perchlorate data collected after January 1, 2020, to satisfy the initial monitoring requirements. To satisfy initial perchlorate monitoring requirements, a system with appropriate historical monitoring data for each entry point to the distribution system could use the monitoring data from the compliance monitoring period between January 1, 2020, and December 31, 2022, for CWSs serving greater than 10,000 persons and between January 1, 2023, and December 31, 2025, for NTNCWs and for CWSs serving 10,000 or fewer persons.

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IX. Safe Drinking Water Act Right to Know Requirements

A. What are the Consumer Confidence Report Requirements?

A community water system must prepare and deliver to its customers an annual Consumer Confidence Report (CCR) in accordance with requirements in 40 CFR 141 Subpart O. A CCR provides customers with information about their local drinking water quality as well as information regarding the water system compliance with drinking water regulations. Under this proposal CWSs would be required to report perchlorate information in their CCR.

B. What are the Public Notification Requirements?

All public water systems must give the public notice for all violations of NPDWRs and for other situations. Under this proposal, violations of the perchlorate MCL would be designated as Tier 1 and as such, public water systems would be required to comply with 40 CFR 141.202. As described in Section III of this proposal, fetuses of first trimester pregnant women with low iodine are the most sensitive subpopulation, therefore, per 40 CFR 141.202(b)(1), notification of an MCL violation should be provided as soon as practicable but no later than 24 hours after the system learns of the violation under this proposal.

X. Treatment Technologies

Systems that exceed the perchlorate MCL will need to adopt new treatment or another strategy to reduce perchlorate to a level that meets the MCL. When the EPA establishes an MCL for a drinking water contaminant, Section 1412(b)(4)(E) of the SDWA requires that the Agency "list the technology, treatment techniques, and other means which the Administrator finds to be

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feasible for purposes of meeting [the MCL]," which are referred to as best available technologies (BAT). These BATs are used by states to establish conditions for source water variances under Section 1415(a). Furthermore, Section 1412(b)(4)(E)(ii) requires that the Agency identify small system compliance technologies (SSCT), which are affordable treatment technologies, or other means that can achieve compliance with the MCL (or treatment technique, where applicable). The lack of an affordable SSCT for a contaminant triggers certain additional procedures which can result in states issuing small system variances under Section 1412(e) of the SDWA.

The Agency solicits public comment on the choice of available treatment technologies discussed in this section.

A. What are the Best Available Technologies?

The Agency identifies the best available technologies (BAT) as those meeting the following criteria: (1) the capability of a high removal efficiency; (2) a history of full-scale operation; (3) general geographic applicability; (4) reasonable cost based on large and metropolitan water systems; (5) reasonable service life; (6) compatibility with other water treatment processes; and (7) the ability to bring all of the water in a system into compliance. The Agency is proposing the following technologies as BAT for removal of perchlorate from drinking water based its review of the treatment and cost literature (USEPA, 2018a):

- ion exchange;
- biological treatment; and
- centralized reverse osmosis.

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There are also non-treatment options that might be used for compliance in lieu of installing and operating treatment technologies. These include blending existing water sources, replacing a perchlorate-contaminated source of drinking water with a new source (e.g., a new well), and purchasing compliant water from another system. Below are brief descriptions of each proposed BAT.

Ion Exchange.

Ion exchange is a physical and chemical separation process that can achieve high perchlorate removal rates. Feed water passes through a vessel containing a bed of resin made of synthetic beads or gel. As feed water moves through the resin, an ionic contaminant such as perchlorate exchanges for an ion (typically chloride) on the resin. Demonstrated removal efficiencies for perchlorate are typically in the high 90 percent range and can achieve concentrations less than 4 µg/L in treated water [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"s9dVZckb","properties":{"formattedCitation":"(Drago & Leserman, 2011; Membrane Technology, 2006; Siemens Water Technologies, 2009; The Interstate Technology & Regulatory Council (ITRC) Team, 2008)","plainCitation":"(Drago & Leserman, 2011; Membrane Technology, 2006; Siemens Water Technologies, 2009; The Interstate Technology & Regulatory Council (ITRC) Team, 2008)","noteIndex":0},"citationItems":[{"id":1048,"uris":["http://zotero.org/groups/945096/items/KIPNEQUM"],"uri":["http://zotero.org/groups/945096/items/KIPNEQUM"],"itemData":{"id":1048,"type":"paper-conference","title":"Castaic Lake Water Agency Operating Experience with

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Lead-Lag Anion Exchange for Perchlorate Removal","container-title":"Proceedings of the American Water Works Association Water Quality Technology Conference","event":"Water Quality Technology Conference","author":[{"family":"Drago","given":"J.A."},{"family":"Leserman","given":"J.R."}],"issued":{"date-parts":[["2011",11]]}},{"id":1154,"uris":["http://zotero.org/groups/945096/items/2DBS6UYD"],"uri":["http://zotero.org/groups/945096/items/2DBS6UYD"],"itemData":{"id":1154,"type":"article","title":"News: Ion=Exchange System Removes Perchlorate","publisher":"Membrane Technology","author":[{"literal":"Membrane Technology"}],"issued":{"date-parts":[["2006",4]]}}},{"id":1125,"uris":["http://zotero.org/groups/945096/items/6WYYWFY2"],"uri":["http://zotero.org/groups/945096/items/6WYYWFY2"],"itemData":{"id":1125,"type":"report","title":"Case Study: Municipality in the State of Massachusetts","author":[{"literal":"Siemens Water Technologies"}],"issued":{"date-parts":[["2009"]]}}},{"id":1118,"uris":["http://zotero.org/groups/945096/items/5PV8GPIA"],"uri":["http://zotero.org/groups/945096/items/5PV8GPIA"],"itemData":{"id":1118,"type":"article","title":"Technical/Regulatory Guidance: Remediation Technologies for Perchlorate Contamination in Water and Soil","URL":"http://www.eosremediation.com/download/Perchlorate/ITRC%20PERC-2.pdf","author":[{"literal":"The Interstate Technology & Regulatory Council (ITRC) Team"}],"issued":{"date-parts":[["2008",3]]},"accessed":{"date-

parts":[["2018",10,13]]}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. The operation continues until enough of the resin's available ion exchange sites have ions from the feed water and the resin no longer effectively removes the target contaminant, i.e., the contaminant "breaks through" the treatment process. At this point, the resin must be disposed and replaced or regenerated. The length of time until resin must be replaced or regenerated is known as bed life and is a critical factor in the cost effectiveness of ion exchange as a treatment technology. One measurement of bed life is the volume of water that can be treated before breakthrough – called bed volumes – the number of times the resin bed can be filled before breakthrough. Several factors affect bed life, including the presence of competing ions such as nitrate and the type of resin used. Resin types tested for perchlorate removal include strong-base polyacrylic, strong-base polystyrenic (including nitrate-selective), weak-base polyacrylic, weak-base polystyrenic, and perchlorate-selective. Based on studies of the effect of competing ions on performance, perchlorate-selective resins can achieve bed lives ranging from 105,000 to 170,000 bed volumes [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"cxQjBTo8","properties":{"formattedCitation":"(Blute, Seidel, McGuire, Qin, & Byerrum, 2006; Russell, Qin, Blute, McGuire, & Williams, 2008; Wu & Blute, 2010)","plainCitation":"(Blute, Seidel, McGuire, Qin, & Byerrum, 2006; Russell, Qin, Blute, McGuire, & Williams, 2008; Wu & Blute, 2010)","noteIndex":0},"citationItems":[{"id":1076,"uris":["http://zotero.org/groups/945096/items/8Z7K9ZUJ"],"uri":["http://zotero.org/groups/945096/items/8Z7K9ZUJ"],"itemData":{"id":107

6,"type":"speech","title":"Bench and Pilot Testing of High Capacity, Single-Pass Ion Exchange Resins for Perchlorate Removal","publisher-place":"San Antonio, TX","event":"2006 AWWA Annual Conference & Exposition","event-place":"San Antonio, TX","author":[{"family":"Blute","given":"N.K."},{"family":"Seidel","given":"C.J."},{"family":"McGuire","given":"M.J."},{"family":"Qin","given":"D."},{"family":"Byerrum","given":"J."}],"issued":{"date-parts":[["2006",6]]}}},{"id":1132,"uris":["http://zotero.org/groups/945096/items/NLAFHBV2"],"uri":["http://zotero.org/groups/945096/items/NLAFHBV2"],"itemData":{"id":1132,"type":"speech","title":"Pilot Testing of Single Pass Perchlorate-Selective Ion Exchange Resins at Three Utilities in the Main San Gabriel Basin","publisher-place":"Cincinnati, OH","event":"AWWA Water Quality Technology Conference & Exposition","event-place":"Cincinnati, OH","author":[{"family":"Russell","given":"C.G."},{"family":"Qin","given":"G."},{"family":"Blute","given":"N.K."},{"family":"McGuire","given":"M.J."},{"family":"Williams","given":"C."}],"issued":{"date-parts":[["2008",11]]}}},{"id":1094,"uris":["http://zotero.org/groups/945096/items/2QPEXW23"],"uri":["http://zotero.org/groups/945096/items/2QPEXW23"],"itemData":{"id":1094,"type":"speech","title":"Perchlorate Removal Using Single-Pass Ion Exchange Resin - Pilot Testing Purolite A532E at the San Gabriel B6 Plant","publisher-place":"Hollywood, CA","event":"2010 California-Nevada AWWA Spring Conference","event-place":"Hollywood, CA","author":[{"family":"Wu","given":"X."},{"family":"Blute","given":"N.K."}],"issued":{"dat

e-parts":[["2010",3,31]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}].

Perchlorate-selective resin cannot be easily regenerated for reuse; the exhausted resin must be disposed (i.e., operated on a 'throw-away' basis). This mode of operation, however, avoids the production of liquid residuals in the form of spent regenerant. Therefore, in combination with the long bed life, single-use perchlorate-selective ion exchange can be a cost-effective treatment option in spite of the need to dispose of the perchlorate-contaminated resin. Build-up of arsenic or uranium on the resin may affect waste disposal options, although studies of perchlorate-selective resins show that arsenic concentrations remain below regulatory limits for hazardous waste disposal and uranium concentrations generally remain below those that require special handling as radioactive waste [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"I0SaZZiL","properties":{"formattedCitation":"(Blute et al., 2006; Russell et al., 2008; Wu & Blute, 2010)","plainCitation":"(Blute et al., 2006; Russell et al., 2008; Wu & Blute, 2010)","noteIndex":0},"citationItems":[{"id":1076,"uris":["http://zotero.org/groups/945096/items/8Z7K9ZUJ"],"uri":["http://zotero.org/groups/945096/items/8Z7K9ZUJ"],"itemData":{"id":1076,"type":"speech","title":"Bench and Pilot Testing of High Capacity, Single-Pass Ion Exchange Resins for Perchlorate Removal","publisher-place":"San Antonio, TX","event":"2006 AWWA Annual Conference & Exposition","event-place":"San Antonio, TX","author":[{"family":"Blute","given":"N.K."},{"family":"Seidel","given":"C.J."},{"family":"McGuire","given":"M.J."},{"family":"Qin","given":"D."},{"family":"Byerrum","given":"J."}],"i

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ch","title":"Pilot Testing of Single Pass Perchlorate-Selective Ion Exchange Resins at Three

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Water Quality Technology Conference & Exposition","event-place":"Cincinnati,

OH","author":[{"family":"Russell","given":"C.G."},{"family":"Qin","given":"G."},{"family":"B

lute","given":"N.K."},{"family":"McGuire","given":"M.J."},{"family":"Williams","given":"C."}

],"issued":{"date-

parts":[["2008",11]]}},{"id":1094,"uris":["http://zotero.org/groups/945096/items/2QPEXW23"]

,"uri":["http://zotero.org/groups/945096/items/2QPEXW23"],"itemData":{"id":1094,"type":"spe

ech","title":"Perchlorate Removal Using Single-Pass Ion Exchange Resin - Pilot Testing Purolite

A532E at the San Gabriel B6 Plant","publisher-place":"Hollywood, CA","event":"2010

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e-parts":[["2010",3,31]]}}],"schema":"https://github.com/citation-style-

language/schema/raw/master/csl-citation.json"}]. Ion exchange can increase the corrosivity of

treated water [ADDIN ZOTERO_ITEM CSL_CITATION

{"citationID":"dcLyBjzj","properties":{"formattedCitation":"(Berlien, 2003; Betts, 1998;

USEPA, 2005b)","plainCitation":"(Berlien, 2003; Betts, 1998; USEPA,

2005b)","noteIndex":0},"citationItems":[{"id":1079,"uris":["http://zotero.org/groups/945096/items/8PB22K95"],"uri":["http://zotero.org/groups/945096/items/8PB22K95"],"itemData":{"id":1079,"type":"report","title":"La Puente Valley County Water District's Experience with ISEP","collection-title":"Presentation of Carollo Engineers, Inc. and Association of California Water Agencies","author":[{"family":"Berlien","given":"M.J."}],"issued":{"date-parts":[["2003",4]]}}},{"id":1078,"uris":["http://zotero.org/groups/945096/items/BNWD5VQP"],"uri":["http://zotero.org/groups/945096/items/BNWD5VQP"],"itemData":{"id":1078,"type":"article-journal","title":"Rotation ion-exchange system removes perchlorate","page":"454A-455A","volume":"32","journalAbbreviation":"Environ. Sci. Technol.","author":[{"family":"Betts","given":"K.S."}],"issued":{"date-parts":[["1998"]]}}},{"id":1208,"uris":["http://zotero.org/groups/945096/items/EWAQ4GEK"],"uri":["http://zotero.org/groups/945096/items/EWAQ4GEK"],"itemData":{"id":1208,"type":"article","title":"Perchlorate Treatment Technology Update: Federal Facilities Forum Issue Paper","publisher":"Office of Solid Waste and Emergency Response. EPA 542-R-05-015","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2005",5]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}] because of the addition of chloride ions and/or removal of carbonates and bicarbonates. Such instances can be addressed by adding or adjusting corrosion control.

Biological Treatment.

Biological treatment uses bacteria to reduce perchlorate to chlorate, chlorite, chloride, and oxygen. Biological treatment can destroy the perchlorate ion, eliminating the need for management of perchlorate-bearing waste streams. Removal effectiveness exceeds 90 percent for bench-scale tests and full-scale treatment plant studies [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"CnYkqct9","properties":{"formattedCitation":"(Kotlarz, Upadhyaya, Togna, & Raskin, 2016; Upadhyaya, Kotlarz, Togna, & Raskin, 2015; U.S. Department of Defense (U.S. DoD), 2008, 2009; T. D. Webster & Crowley, 2010, 2016; T. D. Webster & Litchfield, 2017)","plainCitation":"(Kotlarz, Upadhyaya, Togna, & Raskin, 2016; Upadhyaya, Kotlarz, Togna, & Raskin, 2015; U.S. Department of Defense (U.S. DoD), 2008, 2009; T. D. Webster & Crowley, 2010, 2016; T. D. Webster & Litchfield, 2017)","noteIndex":0},"citationItems":[{"id":1019,"uris":["http://zotero.org/groups/945096/items/E5WRR4HD"],"uri":["http://zotero.org/groups/945096/items/E5WRR4HD"],"itemData":{"id":1019,"type":"article-journal","title":"Evaluation of electron donors for biological perchlorate removal highlights the importance of diverse perchlorate-reducing populations","container-title":"Environmental Science: Water Research & Technology","page":"1049-1063","volume":"2","author":[{"family":"Kotlarz","given":"N."},{"family":"Upadhyaya","given":"G."},{"family":"Togna","given":"P."},{"family":"Raskin","given":"L."}],"issued":{"date-parts":[["2016"]]}}},{"id":1106,"uris":["http://zotero.org/groups/945096/items/KLWCLIE4"],"uri":["http://zotero.org/groups/945096/items/KLWCLIE4"],"itemData":{"id":1106,"type":"article-journal","title":"Carbohydrate-Based Electron Donor for Biological Nitrate and Perchlorate

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Removal From Drinking Water","container-title":"Journal - American Water Works Association","page":"E674-E684","volume":"107","issue":"12","source":"Wiley Online Library","abstract":"This study evaluated the feasibility of replacing acetic acid with a commercial carbohydrate-based electron donor (CBED) for removal of nitrate and perchlorate (ClO4–) from drinking water. Bench-scale biologically active carbon fixed-bed and fluidized-bed reactors (FXBR and FLBR, respectively), with an initial empty bed contact time (EBCT) of 42.8 min, were fed simulated groundwater containing 15 mg/L nitrate as nitrogen and 200 µg/L ClO4–. EBCT in the FLBR after final expansion was 80.5 min. During the first 100 days using acetic acid at 125 mg/L chemical oxygen demand (COD), complete nitrate removal was achieved in both systems, whereas perchlorate in the FXBR and FLBR effluents remained below 3 and 6 µg/L ClO4–, respectively. For comparable removals, influent COD requirement was higher with the CBED. Biomass yields with acetic acid and the CBED were 0.54–0.58 and 0.59–0.74 mg CODbiomass/mg CODsubstrate, respectively. The higher yield with the CBED resulted in more frequent maintenance requirements.","DOI":"10.5942/jawwa.2015.107.0143","ISSN":"1551-8833","language":"en","author":[{"family":"Upadhyaya","given":"Giridhar"},{"family":"Kotlarz","given":"Nadine"},{"family":"Togna","given":"Paul"},{"family":"Raskin","given":"Lutgarde"}],"issued":{"date-parts":[["2015",12,1]]}}},{"id":1110,"uris":["http://zotero.org/groups/945096/items/VE5JI4GQ"],"uri":["http://zotero.org/groups/945096/items/VE5JI4GQ"],"itemData":{"id":1110,"type":"report","title":"Perchlorate Removal, Destruction, and Field Monitoring Demonstration (Drinking

Water - Pilot Scale)","collection-title":"ESTCP Cost and Performance Report (ER-0312)","author":[{"literal":"U.S. Department of Defense (U.S. DoD)"}],"issued":{"date-parts":[["2008"]]}},{"id":1116,"uris":["http://zotero.org/groups/945096/items/9FHLVTXY"],"uri":["http://zotero.org/groups/945096/items/9FHLVTXY"],"itemData":{"id":1116,"type":"report","title":"Demonstration of a Full-Scale Fluidized Bed Bioreactor for the Treatment of Perchlorate at Low Concentrations in Groundwater","genre":"Environmental Security Technology Certification Program (ESTCP) Final Report (ER-0543)","author":[{"family":"U.S. Department of Defense (U.S. DoD)","given":""}],"issued":{"date-parts":[["2009"]]}},{"id":1093,"uris":["http://zotero.org/groups/945096/items/BI7SF8HW"],"uri":["http://zotero.org/groups/945096/items/BI7SF8HW"],"itemData":{"id":1093,"type":"speech","title":"Full-Scale Implementation of a Biological Fluidized Bed Drinking Water Treatment Plant for Nitrate and Perchlorate Treatment","publisher-place":"Ontario, CA","event":"2010 Water Education Foundation Water Quality and Regulatory Conference","event-place":"Ontario, CA","author":[{"family":"Webster","given":"T.D."},{"family":"Crowley","given":"T.J."}],"issued":{"date-parts":[["2010",11,3]]}},{"id":989,"uris":["http://zotero.org/groups/945096/items/BI5LYMZP"],"uri":["http://zotero.org/groups/945096/items/BI5LYMZP"],"itemData":{"id":989,"type":"speech","title":"Biological treatment of perchlorate in groundwater.","event":"AWWA Annual Conference and Exposition","author":[{"family":"Webster","given":"T.D."},{"family":"Crowley","given":"T.J."

}],"issued":{"date-
parts":[["2016",6,21]]}}},{"id":990,"uris":["http://zotero.org/groups/945096/items/64HZKA2M"
],"uri":["http://zotero.org/groups/945096/items/64HZKA2M"],"itemData":{"id":990,"type":"arti
cle-journal","title":"Full-scale biological treatment of nitrate and perchlorate for potable water
production","container-title":"Journal AWWA","page":"30-
40","volume":"109","issue":"5","author":[{"family":"Webster","given":"T.D."},{"family":"Litch
field","given":"M.H."}],"issued":{"date-
parts":[["2017"]]}}}],"schema":"https://github.com/citation-style-
language/schema/raw/master/csl-citation.json"}]. Although biological treatment is a relatively new technology for treatment of drinking water in the United States, the State of California has identified biological treatment (along with ion exchange) as one of two best available technologies for achieving compliance with its standard for perchlorate in drinking water (California Code of Regulations, Title 22, Chapter 15, Section 64447.2). The California BAT specifies a fluidized bed, although studies suggest that a fixed bed is also effective. The first full-scale fluidized bed facility using biological treatment of perchlorate to supply municipal drinking water began operation in 2016 [ADDIN ZOTERO_ITEM CSL_CITATION
{"citationID":"nKwlqjde","properties":{"formattedCitation":"(T. D. Webster & Crowley, 2016;
T. D. Webster & Litchfield, 2017)","plainCitation":"(T. D. Webster & Crowley, 2016; T. D.
Webster & Litchfield,
2017)","noteIndex":0},"citationItems":[{"id":989,"uris":["http://zotero.org/groups/945096/items/

BI5LYMZP"],"uri":["http://zotero.org/groups/945096/items/BI5LYMZP"],"itemData":{"id":989
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Annual Conference and
Exposition","author":[{"family":"Webster","given":"T.D."},{"family":"Crowley","given":"T.J."
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parts":[["2016",6,21]]}},{"id":990,"uris":["http://zotero.org/groups/945096/items/64HZKA2M"
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cle-journal","title":"Full-scale biological treatment of nitrate and perchlorate for potable water
production","container-title":"Journal AWWA","page":"30-
40","volume":"109","issue":"5","author":[{"family":"Webster","given":"T.D."},{"family":"Litch
field","given":"M.H."}],"issued":{"date-
parts":[["2017"]]}}],"schema":"https://github.com/citation-style-
language/schema/raw/master/csl-citation.json"}]. Raw water quality will affect process design,
in particular, temperature affects the rate of biomass growth; at temperatures below 10 degrees
Celsius, growth is inhibited and bioremediation becomes infeasible [ADDIN ZOTERO_ITEM
CSL_CITATION {"citationID":"ISPg08cl","properties":{"formattedCitation":"(Dugan, 2010b,
2010a; Dugan et al., 2009)","plainCitation":"(Dugan, 2010b, 2010a; Dugan et al.,
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s/X3WWHCXS"],"uri":["http://zotero.org/groups/945096/items/X3WWHCXS"],"itemData":{"i
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and Downstream Effluent Polishing","publisher-place":"U.S. Environmental Protection Agency, Office of Research and Development, National Risk Management Research Laboratory","event-place":"U.S. Environmental Protection Agency, Office of Research and Development, National Risk Management Research Laboratory","author":[{"family":"Dugan","given":"N.R."}],"issued":{"date-parts":[["2010",12,8]]}},{"id":1046,"uris":["http://zotero.org/groups/945096/items/IIXUW45F"],"uri":["http://zotero.org/groups/945096/items/IIXUW45F"],"itemData":{"id":1046,"type":"article","title":"Supporting data for presentation: The Impact of Temperature on Biological Perchlorate Removal and Downstream Effluent Polishing","publisher":"U.S. Environmental Protection Agency, Office of Research and Development, National Risk Management Research Laboratory","author":[{"family":"Dugan","given":"N.R."}],"issued":{"date-parts":[["2010",12,8]]}},{"id":1045,"uris":["http://zotero.org/groups/945096/items/FLVLSXCS"],"uri":["http://zotero.org/groups/945096/items/FLVLSXCS"],"itemData":{"id":1045,"type":"speech","title":"The Impact of Temperature on Anaerobic Biological Perchlorate Treatment","publisher-place":"Seattle, WA","event":"2009 AWWA Water Quality Technology Conference & Exposition","event-place":"Seattle, WA","author":[{"family":"Dugan","given":"N.R."},{"family":"Williams","given":"D.J."},{"family":"Meyer","given":"M."},{"family":"Schneider","given":"R.R."},{"family":"Speth","given":"T.F."},{"family":"Metz","given":"D.H."}],"issued":{"date-parts":[["2009"]]}}}],"schema":"https://github.com/citation-style-

language/schema/raw/master/csl-citation.json"}]. This factor limits the feasibility of biological treatment in areas that experience low water temperatures during winter. In addition, bacteria in bioreactors require nutrients to grow and effectively reduce perchlorate. Therefore, some source waters may require supplemental addition of nutrients such as nitrogen or phosphorus [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"NDoHjLOr","properties":{"formattedCitation":"(Harding Engineering and Environmental Services (ESE), 2001; U.S. Department of Defense (U.S. DoD), 2008a, 2009)","plainCitation":"(Harding Engineering and Environmental Services (ESE), 2001; U.S. Department of Defense (U.S. DoD), 2008a, 2009)","noteIndex":0},"citationItems":[{"id":1139,"uris":["http://zotero.org/groups/945096/items/ZPGXUZPL"],"uri":["http://zotero.org/groups/945096/items/ZPGXUZPL"],"itemData":{"id":1139,"type":"report","title":"Final: Phase 2 Treatibility Study Report, Aerojet GET E/F Treatment Facility, Sacramento, California","collection-title":"Prepared for U.S. Environmental Protection Agency Region IX and Baldwin Park Operable Unit Cooperating Respondents, San Gabriel Basin,California","author":[{"family":"Harding Engineering and Environmental Services (ESE)","given":""}],"issued":{"date-parts":[["2001"]]}}},{"id":1074,"uris":["http://zotero.org/groups/945096/items/2ZCNIFHT"],"uri":["http://zotero.org/groups/945096/items/2ZCNIFHT"],"itemData":{"id":1074,"type":"report","title":"Direct Fixed-bed Biological Perchlorate Destruction Demonstration","genre":"ESTCP Final Report (ER-0544)","author":[{"literal":"U.S. Department of Defense (U.S.

DoD)"}],"issued":{"date-parts":[["2008",9,25]]}}},{"id":1081,"uris":["http://zotero.org/groups/945096/items/9FHLVTXY"],"uri":["http://zotero.org/groups/945096/items/9FHLVTXY"],"itemData":{"id":1081,"type":"report","title":"Demonstration of a Full-Scale Fluidized Bed Bioreactor for the Treatment of Perchlorate at Low Concentrations in Groundwater","genre":"Environmental Security Technology Certification Program (ESTCP) Final Report (ER-0543)","author":[{"family":"U.S. Department of Defense (U.S. DoD)","given":""}],"issued":{"date-parts":[["2009"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}].

Although the process does not produce perchlorate-contaminated wastes, periodic removal of excess biomass, e.g., through backwash, will be required. The backwash water is non-toxic and can be discharged to a sanitary sewer [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"f4qlOob5","properties":{"formattedCitation":"(U.S. Department of Defense (U.S. DoD), 2008, 2009)","plainCitation":"(U.S. Department of Defense (U.S. DoD), 2008, 2009)","noteIndex":0},"citationItems":[{"id":1110,"uris":["http://zotero.org/groups/945096/items/VE5JI4GQ"],"uri":["http://zotero.org/groups/945096/items/VE5JI4GQ"],"itemData":{"id":1110,"type":"report","title":"Perchlorate Removal, Destruction, and Field Monitoring Demonstration (Drinking Water - Pilot Scale)","collection-title":"ESTCP Cost and Performance Report (ER-0312)","author":[{"literal":"U.S. Department of Defense (U.S. DoD)"}],"issued":{"date-

parts":[["2008"]]}}},{"id":1116,"uris":["http://zotero.org/groups/945096/items/9FHLVTXY"],"u
ri":["http://zotero.org/groups/945096/items/9FHLVTXY"],"itemData":{"id":1116,"type":"report
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Technology Certification Program (ESTCP) Final Report (ER-0543)","author":[{"family":"U.S.
Department of Defense (U.S. DoD)","given":""}],"issued":{"date-
parts":[["2009"]]}}],"schema":"https://github.com/citation-style-
language/schema/raw/master/csl-citation.json"}] or recycled following clarification. Typically,
post-treatment of treated water also will be required because biological treatment increases
soluble microbial organic products, depletes oxygen, and can add turbidity and sulfides [ADDIN
ZOTERO_ITEM CSL_CITATION
{"citationID":"ySKwU3Em","properties":{"formattedCitation":"(Dordelmann, 2009; Harding
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2008; T. D. Webster & Crowley, 2016; T. D. Webster & Litchfield,
2017)","plainCitation":"(Dordelmann, 2009; Harding Engineering and Environmental Services
(ESE), 2001; U.S. Department of Defense (U.S. DoD), 2008; T. D. Webster & Crowley, 2016;
T. D. Webster & Litchfield,
2017)","noteIndex":0},"citationItems":[{"id":1051,"uris":["http://zotero.org/groups/945096/item
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Poland","publisher-place":"Seattle, WA","event":"2009 AWWA Water Quality Technology Conference & Exposition","event-place":"Seattle, WA","author":[{"family":"Dordelmann","given":"O."}],"issued":{"date-parts":[["2009",11]]}},{"id":1026,"uris":["http://zotero.org/groups/945096/items/ZPGXUZPL"],"uri":["http://zotero.org/groups/945096/items/ZPGXUZPL"],"itemData":{"id":1026,"type":"report","title":"Final: Phase 2 Treatibility Study Report, Aerojet GET E/F Treatment Facility, Sacramento, California","collection-title":"Prepared for U.S. Environmental Protection Agency Region IX and Baldwin Park Operable Unit Cooperating Respondents, San Gabriel Basin,California","author":[{"family":"Harding Engineering and Environmental Services (ESE)","given":""}],"issued":{"date-parts":[["2001"]]}},{"id":1110,"uris":["http://zotero.org/groups/945096/items/VE5JI4GQ"],"uri":["http://zotero.org/groups/945096/items/VE5JI4GQ"],"itemData":{"id":1110,"type":"report","title":"Perchlorate Removal, Destruction, and Field Monitoring Demonstration (Drinking Water - Pilot Scale)","collection-title":"ESTCP Cost and Performance Report (ER-0312)","author":[{"literal":"U.S. Department of Defense (U.S. DoD)"}],"issued":{"date-parts":[["2008"]]}},{"id":989,"uris":["http://zotero.org/groups/945096/items/BI5LYMZP"],"uri":["http://zotero.org/groups/945096/items/BI5LYMZP"],"itemData":{"id":989,"type":"speech","title":"Biological treatment of perchlorate in groundwater.","event":"AWWA Annual Conference and Exposition","author":[{"family":"Webster","given":"T.D."},{"family":"Crowley","given":"T.J."

}],"issued":{"date-parts":[["2016",6,21]]}}},{"id":990,"uris":["http://zotero.org/groups/945096/items/64HZKA2M"],"uri":["http://zotero.org/groups/945096/items/64HZKA2M"],"itemData":{"id":990,"type":"article-journal","title":"Full-scale biological treatment of nitrate and perchlorate for potable water production","container-title":"Journal AWWA","page":"30-40","volume":"109","issue":"5","author":[{"family":"Webster","given":"T.D."},{"family":"Litchfield","given":"M.H."}],"issued":{"date-parts":[["2017"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. The treatment process, however, can result in removal of co-occurring contaminants such as nitrate (Upadhyaya et al., 2015; Webster and Crowley, 2010; Webster and Lichfield, 2017).

Reverse Osmosis.

Reverse osmosis is a membrane filtration process that physically removes perchlorate ions from drinking water. This process separates a solute such as perchlorate ions from a solution by forcing the solvent to flow through a membrane at a pressure greater than the normal osmotic pressure. The membrane is semi-permeable, transporting different molecular species at different rates. Water and low-molecular weight solutes pass through the membrane and are removed as permeate, or filtrate. Dissolved and suspended solids are rejected by the membrane and are removed as concentrate or reject. This technique does not destroy the perchlorate ion and,

therefore, creates a subsequent need for disposal or treatment of perchlorate-contaminated waste (the concentrate).

Membranes may remove ions from feed water by a sieving action (called steric exclusion), or by electrostatic repulsion of ions from the charged membrane surface. Across multiple bench- and pilot-scale studies, reverse osmosis membranes consistently achieve perchlorate removal greater than 80 percent and up to 98 percent [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"edXX3GgQ","properties":{"formattedCitation":"(Liang, Scott, Palencia, & Bruno, 1998; Nam et al., 2005; Yoon, Amy, & Yoon, 2005; Yoon, Yoon, Amy, & Her, 2005)","plainCitation":"(Liang, Scott, Palencia, & Bruno, 1998; Nam et al., 2005; Yoon, Amy, & Yoon, 2005; Yoon, Yoon, Amy, & Her, 2005)","noteIndex":0},"citationItems":[{"id":985,"uris":["http://zotero.org/groups/945096/items/IQVVPD73"],"uri":["http://zotero.org/groups/945096/items/IQVVPD73"],"itemData":{"id":985,"type":"paper-conference","title":"Investigation of Treatment Options for Perchlorate Removal.","publisher":"La Verne, CA: Metropolitan Water District of Southern California","publisher-place":"San Diego, CA","event":"AWWA Water Quality Technology Conference","event-place":"San Diego, CA","author":[{"family":"Liang","given":"S."},{"family":"Scott","given":"K.N."},{"family":"Palencia","given":"L.S."},{"family":"Bruno","given":"J."}],"issued":{"date-parts":[["1998"]]}}},{"id":986,"uris":["http://zotero.org/groups/945096/items/YHEV76YW"],"uri":["http://zotero.org/groups/945096/items/YHEV76YW"],"itemData":{"id":986,"type":"paper-

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conference","title":"Perchlorate Rejection by High-Pressure Membranes and Brine Stream Treatment by Chemical and Biological Processes.","publisher-place":"Phoenix, AZ","event":"American Water Works Association Membrane Technology Conference","event-place":"Phoenix, AZ","author":[{"family":"Nam","given":"S."},{"family":"Kim","given":"S."},{"family":"Choi","given":"H."},{"family":"Yoon","given":""},{"family":"Silverstein","given":"J."},{"family":"Amy","given":"G."}],"issued":{"date-parts":[["2005"]]}}},{"id":992,"uris":["http://zotero.org/groups/945096/items/HPHVBSWB"],"uri":["http://zotero.org/groups/945096/items/HPHVBSWB"],"itemData":{"id":992,"type":"article-journal","title":"Transport of target anions, chromate (Cr (VI)), arsenate (As (V)), and perchlorate (ClO4), through RO, NF, and UF membranes.","container-title":"Water Science and Technology","page":"327-334","volume":"51","issue":"6-7","author":[{"family":"Yoon","given":"J."},{"family":"Amy","given":"G."},{"family":"Yoon","given":"Y."}],"issued":{"date-parts":[["2005"]]}}},{"id":991,"uris":["http://zotero.org/groups/945096/items/IIJW6E8Q"],"uri":["http://zotero.org/groups/945096/items/IIJW6E8Q"],"itemData":{"id":991,"type":"article-journal","title":"Determination of perchlorate rejection and associated inorganic fouling (scaling) for reverse osmosis and nanofiltration membranes under various operating conditions","container-title":"Journal of Environmental Engineering","page":"726-733","author":[{"family":"Yoon","given":"J."},{"family":"Yoon","given":"Y."},{"family":"Am

y","given":"G."},{"family":"Her","given":"N."}],"issued":{"date-parts":[["2005",5]]}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. While water quality affects process design (e.g., recovery rate, cleaning frequency, and antiscalant selection), it has relatively little effect on perchlorate removal effectiveness of reverse osmosis membranes. Reverse osmosis generates a relatively large concentrate stream, which will contain perchlorate as well as other rejected dissolved solids, which will require disposal. The large concentrate stream also means less treated water is available for distribution (e.g., 70 to 85 percent of source water), which is a disadvantage for systems with limited water supply. Because reverse osmosis can increase the corrosivity of the treated water, it may require post-treatment or blending with bypass water. Reverse osmosis can, however, remove co-occurring contaminants including arsenic and chromium-VI (Amy, Yoon, and Amy, 2005).

B. What are the Small System Compliance Technologies?

The EPA is proposing the SSCT shown in Table X-1. The table shows which of the BAT listed above are also affordable for each small system size category listed in Section 1412(b)(4)(E)(ii) of the SDWA. The Agency identified these technologies based on an analysis of treatment effectiveness and affordability [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"J9AlL73G","properties":{"formattedCitation":"(USEPA, 2018a)","plainCitation":"(USEPA, 2018a)","noteIndex":0},"citationItems":[{"id":1210,"uris":["http://zotero.org/groups/945096/ite

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ms/QBLZF9AR"],"uri":["http://zotero.org/groups/945096/items/QBLZF9AR"],"itemData":{"id"
:1210,"type":"article","title":"Best Available Technologies and Small System Compliance
Technologies for Perchlorate in Drinking Water.","publisher":"EPA ***-*-*-
****","author":[{"literal":"USEPA"}],"issued":{"date-
parts":[["2018"]]}}],"schema":"https://github.com/citation-style-
language/schema/raw/master/csl-citation.json"}].

Table X-1: Proposed SSCT for Perchlorate Removal

System Size (Population Served)	Ion Exchange	Biological Treatment	Reverse Osmosis	Point-of-Use Reverse Osmosis
25-500	Yes	No	No	Yes
501-3,300	Yes	Yes	Yes	Yes
3,301-10,000	Yes	Yes	Yes	Not applicable[a]

a. For perchlorate, the EPA has determined that implementing and maintaining this option for systems larger than 3,300 people (greater than 1 MGD design flow) is likely to be impractical.

The SSCT listed in Table X-1 include a point-of-use (POU) version of reverse osmosis in addition to the ion exchange, biological treatment and reverse osmosis technologies described in the previous section. This technology can be used by small systems to comply with the proposed MCL and, therefore, meets the effectiveness requirement for an SSCT. For perchlorate removal, NSF/ANSI Standard 58: Reverse Osmosis Drinking Water Treatment Systems includes a protocol that requires a reverse osmosis unit to be able to reduce perchlorate from a challenge level of 130 µg/L to a target level of 4 µg/L (NSF, 2004). Organizations (e.g., NSF International, Underwriters Laboratories, Water Quality Association) provide third-party testing and

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certification that POU devices meet drinking water treatment standards. There are no perchlorate certification standards for other types of POU devices such as those using ion exchange media.

The operating principle for POU reverse osmosis devices is the same as centralized reverse osmosis: steric exclusion and electrostatic repulsion of ions from the charged membrane surface. In addition to a reverse osmosis membrane for dissolved ion removal, POU reverse osmosis devices often have a sediment pre-filter and a carbon filter in front of the reverse osmosis membrane, a 3- to 5-gallon treated water storage tank, and a carbon filter between the tank and the tap.

The EPA identified the SSCT using the affordability criteria methodology it developed for drinking water rules [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"LHgBHn5b","properties":{"formattedCitation":"(USEPA, 1998)","plainCitation":"(USEPA, 1998)","noteIndex":0},"citationItems":[{"id":1215,"uris":["http://zotero.org/groups/945096/items/399QNBY4"],"uri":["http://zotero.org/groups/945096/items/399QNBY4"],"itemData":{"id":1215,"type":"article","title":"Variance Technology Findings for Contaminants Regulated Before 1996","publisher":"EPA 815–R– 98–003. September","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["1998"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. The analysis method is a comparison of estimated incremental household costs for perchlorate treatment to an expenditure margin, which

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is the difference between baseline household water costs and a threshold equal to 2.5% of median household income. Table X-2 shows the expenditure margins derived for the analysis. These margins show the cap on affordable incremental annual expenditures.

Table X-2: Expenditure Margins for SSCT Affordability Analysis

System Size (Population Served)	Median Household Income[a] (a)	Affordability Threshold[b] (b) = 2.5% x a	Baseline Water Cost[c] (c)	Expenditure Margin (d) = b - c
25-500	$52,791	$1,320	$341	$979
501-3,300	$51,093	$1,277	$395	$883
3,301-10,000	$55,975	$1,399	$412	$987

Source: *Best Available Technologies and Small System Compliance Technologies for Perchlorate in Drinking Water* [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"2scXqyv0","properties":{"formattedCitation":"(USEPA, 2018a)","plainCitation":"(USEPA, 2018a)","noteIndex":0},"citationItems":[{"id":1210,"uris":["http://zotero.org/groups/945096/items/QBLZF9AR"],"uri":["http://zotero.org/groups/945096/items/QBLZF9AR"],"itemData":{"id":1210,"type":"article","title":"Best Available Technologies and Small System Compliance Technologies for Perchlorate in Drinking Water.","publisher":"EPA ***-*-*-****","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]

a. MHI based on U.S. Census 2010 American Community Survey (ACS) 5-year estimates [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"x096Tc8Y","properties":{"formattedCitation":"(U.S. Census Bureau, 2010)","plainCitation":"(U.S. Census Bureau, 2010)","noteIndex":0},"citationItems":[{"id":1225,"uris":["http://zotero.org/groups/945096/items/WJ35QNBT"],"uri":["http://zotero.org/groups/945096/items/WJ35QNBT"],"itemData":{"id":1225,"type":"article","title":"American Community Survey, 5-year Estimates (2006-2010)","author":[{"family":"U.S. Census Bureau","given":""}],"issued":{"date-parts":[["2010"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}] stated in 2010 dollars, adjusted to 2017 dollars using the CPI (for all items) for areas under 50,000 persons [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"7Rg9m81J","properties":{"formattedCitation":"(Bureau of Labor Statistics (BLS), 2018b)","plainCitation":"(Bureau of Labor Statistics (BLS), 2018b)","noteIndex":0},"citationItems":[{"id":1226,"uris":["http://zotero.org/groups/945096/items/GTI7H6YK"],"uri":["http://zotero.org/groups/945096/items/GTI7H6YK"],"itemData":{"id":1226,"type":"article","title":"CPI--All Urban Consumers (all items), for areas under 50,000 persons","author":[{"family":"Bureau of Labor Statistics (BLS)","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}].

b. Affordability threshold equals 2.5 percent of MHI.

c. Household water costs derived from 2006 Community Water System Survey [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"fS2Ibu6t","properties":{"formattedCitation":"(USEPA, 2009c)","plainCitation":"(USEPA, 2009c)","noteIndex":0},"citationItems":[{"id":163,"uris":["http://zotero.org/groups/945096/items/DZNAAV6M"],"uri":["http://zotero.org/groups/945096/items/DZNAAV6M"],"itemData":{"id":163,"type":"article","title":"2006 Community Water System Survey - Volume II: Detailed Tables and Survey Methodology","URL":"https://www.epa.gov/dwstandardsregulations/community-water-system-survey","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2009",5]]},"accessed":{"date-parts":[["2018",8,17]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}], based on residential revenue per connection within each size category, adjusted to 2017 dollars based on the CPI (for all items) for areas under 50,000 persons.

Table X-3 shows the estimates of per-household costs by treatment technology and size category generated using the treatment cost method described in section XII.B as well as *Best*

Available Technologies and Small System Compliance Technologies for Perchlorate in Drinking Water [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"z6GYvRh1","properties":{"formattedCitation":"(USEPA, 2018a)","plainCitation":"(USEPA, 2018a)","noteIndex":0},"citationItems":[{"id":1210,"uris":["http://zotero.org/groups/945096/items/QBLZF9AR"],"uri":["http://zotero.org/groups/945096/items/QBLZF9AR"],"itemData":{"id":1210,"type":"article","title":"Best Available Technologies and Small System Compliance Technologies for Perchlorate in Drinking Water.","publisher":"EPA ***-*-*-****","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}] and *Technologies and Costs for Treating Perchlorate-Contaminated Waters* [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"18aKvRLD","properties":{"formattedCitation":"(USEPA, 2018f)","plainCitation":"(USEPA, 2018f)","noteIndex":0},"citationItems":[{"id":147,"uris":["http://zotero.org/groups/945096/items/VUJUPN7L"],"uri":["http://zotero.org/groups/945096/items/VUJUPN7L"],"itemData":{"id":147,"type":"article","title":"Technologies and Costs for Treating Perchlorate-Contaminated Waters","publisher":"EPA ***-*-*-****","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-

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language/schema/raw/master/csl-citation.json"}]. Costs in bold font do not exceed the corresponding expenditure margin and, therefore, meet the SSCT affordability criterion. Therefore, the EPA has determined that there are affordable small system compliance technologies available and the Agency is not proposing any variance technologies.

Table X-3: Annual Incremental Cost Estimates for SSCT Affordability Analysis

System Size (Population Served)	Ion Exchange	Biological Treatment	Reverse Osmosis	Point-of-Use Reverse Osmosis
25-500	**$378 to $610**	$2,146 to $3,709	$2,272 to $2,671	**$265 to $271**
501-3,300	**$98 to $148**	**$324 to $566**	**$561 to $688**	**$250 to $251**
3,301-10,000	**$104 to $153**	**$211 to $315**	**$431 to $493**	Not applicable[a]

Source: *Best Available Technologies and Small System Compliance Technologies for Perchlorate in Drinking Water* [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"8y1WSJT4","properties":{"formattedCitation":"(USEPA, 2018a)","plainCitation":"(USEPA, 2018a)","noteIndex":0},"citationItems":[{"id":1210,"uris":["http://zotero.org/groups/945096/items/QBLZF9AR"],"uri":["http://zotero.org/groups/945096/items/QBLZF9AR"],"itemData":{"id":1210,"type":"article","title":"Best Available Technologies and Small System Compliance Technologies for Perchlorate in Drinking Water.","publisher":"EPA ***-*-*-****","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}], which describes the different WBS model input assumptions that result in ranges of per-household costs shown; bold font indicates cost estimates that do not exceed the corresponding expenditure margin.

a. For perchlorate, the EPA has determined that implementing and maintaining a POU program for systems larger than 3,300 people (greater than 1 MGD design flow) is likely to be impractical.

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XI. Rule Implementation and Enforcement

A. What are the Requirements for Primacy?

This section describes the regulations and other procedures and policies primacy entities must adopt, or have in place, to implement the proposed perchlorate rule. States must continue to meet all other conditions of primacy in 40 CFR part 142. Section 1413 of the SDWA establishes requirements that primacy entities (States or Indian Tribes) must meet to maintain primary enforcement responsibility (primacy) for its public water systems. These include: (1) Adopting drinking water regulations that are no less stringent than federal NPDWRs in effect under sections 1412(a) and 1412(b) of the Act, (2) Adopting and implementing adequate procedures for enforcement, (3) Keeping records and making reports available on activities that the EPA requires by regulation, (4) Issuing variances and exemptions (if allowed by the State) under conditions no less stringent than allowed by SDWA Sections 1415 and 1416, and (5) Adopting and being capable of implementing an adequate plan for the provision of safe drinking water under emergency situations.

40 CFR part 142 sets out the specific program implementation requirements for States to obtain primacy for the Public Water Supply Supervision Program, as authorized under section 1413 of the Act.

To implement the perchlorate rule, States would be required to adopt revisions at least as stringent as the proposed provisions in 40 CFR 141.6 (Effective Dates); 40 CFR 141.23

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(Inorganic chemical sampling and analytical requirements); 40 CFR 141.51 (Maximum contaminant level goals for inorganic contaminants); 40 CFR 141.60 (Effective Dates); 40 CFR 141.62 (Maximum contaminant levels for inorganic contaminants); Appendix A to Subpart O ([Consumer Confidence Report] Regulated contaminants); Appendix A to Subpart Q (NPDWR violations and other situations requiring public notice); Appendix B to Subpart Q (Standard health effects language for public notification); and 40 CFR 142.62 (Variances and exemptions from the maximum contaminant levels for organic and inorganic contaminants). Under 40 CFR 142.12(b), all primacy States/territories/tribes would be required to submit a revised program to the EPA for approval within two years of promulgation of any final perchlorate NPDWR or could request an extension of up to two years in certain circumstances.

B. What are the State Record Keeping Requirements?

The current regulations in 40 CFR 142.14 require States with primary enforcement responsibility (i.e., primacy) to keep records of analytical results to determine compliance, system inventories, sanitary surveys, State approvals, vulnerability and waiver determinations, monitoring requirements, monitoring frequency decisions, enforcement actions, and the issuance of variances and exemptions. The State record keeping requirements remain unchanged and would apply to perchlorate as with any other regulated contaminant.

C. What are the State Reporting Requirements?

Currently, States must report to the EPA information under 40 CFR 142.15 regarding violations, variances and exemptions, enforcement actions and general operations of State public

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water supply programs. The State reporting requirements remain unchanged and would apply to perchlorate as with any other regulated contaminant. However, the perchlorate MCL could result in a greater frequency of reporting by certain states. See discussion of Paperwork Reduction Act compliance in Section XVI for more information.

XII. Health Risk Reduction Cost Analysis

Section 1412(b)(3)(C) of the 1996 Amendments to the SDWA requires the EPA to prepare a Health Risk Reduction and Cost Analysis (HRRCA) in support of any NPDWR that includes an MCL. This section addresses the HRRCA requirements as indicated:

- Quantifiable and non-quantifiable health risk reduction benefits for which there is a factual basis in the rulemaking record to conclude that such benefits are likely to occur as the result of treatment to comply with each level (Sections XII.C and XII.D);
- Quantifiable and non-quantifiable health risk reduction benefits for which there is a factual basis in the rulemaking record to conclude that such benefits are likely to occur from reductions in co-occurring contaminants that may be attributed solely to compliance with the MCL, excluding benefits resulting from compliance with other proposed or promulgated regulations (Section XII.C);
- Quantifiable and non-quantifiable costs for which there is a factual basis in the rulemaking record to conclude that such costs are likely to occur solely as a result of compliance with the MCL, including monitoring, treatment, and other costs, and

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excluding costs resulting from compliance with other proposed or promulgated regulations (Section XII.B and XII.D);

- The incremental costs and benefits associated with each alternative MCL considered (Section XII.D);
- The effects of the contaminant on the general population and on groups within the general population, such as infants, children, pregnant women, the elderly, individuals with a history of serious illness, or other sensitive populations that are identified as likely to be at greater risk of adverse health effects due to exposure to contaminants in drinking water than the general population (Section XII.C and Section III);
- Any increased health risk that may occur as the result of compliance, including risks associated with co-occurring contaminants (Section XII.C); and
- Other relevant factors, including the quality and extent of the information, the uncertainties in the analysis, and factors with respect to the degree and nature of the risk (Section XII.E).

A. Identifying Affected Entities

If the EPA issues a final NPDWR for perchlorate, it would affect the following entities: CWSs and NTNCWSs that must meet the proposed MCL and monitoring and reporting requirements; and primacy agencies that must adopt and enforce the MCL as well as the monitoring and reporting requirements. All of these entities would incur costs, including administrative costs, monitoring and reporting costs, and – in a limited number of cases – costs

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to reduce perchlorate levels in drinking water to meet the proposed MCL using treatment or nontreatment options. Section B below summarizes the method the EPA used to estimate these costs.

The systems that reduce perchlorate concentrations will reduce associated health risks. The EPA developed a method to estimate the potential benefits of reduced perchlorate exposure among the service populations of systems with elevated baseline perchlorate levels. Section C below summarizes this method used to estimate these benefits.

Section D below provides the cost and benefit estimates. The EPA prepared the Health Risk Reduction Cost Analysis of the Proposed Perchlorate Rule (USEPA, 2019a), which is available in the docket for the proposed rule. Section XIII summarizes and discusses key uncertainties in the cost and benefit analyses.

B. Method for Estimating Costs

Some costs associated with an NPDWR are incurred by all CWS and NTNCWS (e.g. monitoring and reporting) while others are only incurred by systems with perchlorate levels exceeding the MCL. The EPA estimated costs for CWS and NTNCWS to monitor and report perchlorate levels and also estimated the costs for a subset of public water systems with perchlorate levels greater than the proposed MCL to install and operate treatment. The EPA assumed that affected water systems would adopt ion exchange treatment because it is the most cost-effective treatment option and easy to operate on a 'throw-away' basis. If site-specific nontreatment options are available and lower cost, then this assumption might overstate costs.

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The EPA also estimated the costs for States and other primacy agencies to assure systems implement the rule and to report information to the EPA.

The EPA estimated initial costs for all CWS and NTNCWS operators to read and understand the rule and provide training to their staff to implement the proposed rule. The EPA also estimated the recurring costs for all CWS and NTNCWS operators to conduct monitoring, report results, and apply for waivers. For the purpose of these estimates, the EPA assumed that both small and large systems would require the same amount of time to read the rule, apply for a waiver, and collect a water sample but that it would take large systems twice as long to provide initial training to their staff. Table XII-1 summarizes the frequency and labor hour assumptions for this analysis.

Table XII-1: Labor Hours for Drinking Water Systems Administrative and Monitoring Requirements

Activity	Frequency	Small System Hours	Large System Hours
Read the rule	one time per system	4	4
Provide initial training	one time per system	16	32
Apply to State for monitoring waiver	once every 9 years per eligible system	16	16
Collect a single finished water sample[1]	per monitoring event	1	1

Source (USEPA, 2000a). The EPA's cost analysis reflects full MCL compliance and therefore the EPA did not estimate Tier 1 notification costs.
1. The estimate is per sample. Therefore, a system conducting a year of quarterly monitoring at three entry points incurs a total of 12 hours of labor to complete the task (3 entry points x 4 samples x 1 hour per sample).

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Systems will incur monitoring costs over the analysis period. The EPA estimated monitoring frequency based on the proposed initial monitoring requirements, the standard monitoring framework requirements for inorganic contaminants, and the proposed implementation schedule. The estimated number of monitoring samples over the analysis period shown in Table XII-2 reflect the following phases:

1. Initial monitoring; four quarterly samples at every CWS and NTNCWS entry point.

2. Preliminary regular monitoring before waiver application: three regular monitoring samples for every CWS and NTNCWS entry point (collected annually at surface water system entry points and triennially at ground water system entry points).

3. Long-term monitoring at either (a) regular monitoring frequency for entry points at systems not granted waivers (60% of surface water system and 10% of ground water systems), or (b) reduced monitoring frequency for entry points at systems receiving waivers from primacy agencies (40% of surface water systems and 90% of ground water systems), which is one sample during every nine-year compliance monitoring cycle.

Table XII-2: Estimates of Compliance Monitoring Samples by Phase and System Type, Size, and Source Water

Monitoring Phase (sampling frequency)	System Type, Size, and Source Water	Number of Entry Points[1]	Aggregate Samples[2]
1. Initial monitoring (4 quarterly samples in one year)	All CWS and NTNCWS	92,656	370,624

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Monitoring Phase (sampling frequency)	System Type, Size, and Source Water	Number of Entry Points[1]	Aggregate Samples[2]
2. Preliminary regular monitoring (3 annual entry point samples for surface water systems and 3 triennial entry point samples for ground water systems)	All CWS and NTNCWS	92,654	277,962
3a. Long-term monitoring, no waiver (annual entry point samples)	60% of large surface water CWS	3,324	86,424
	60% of small surface water CWS and all surface water NTNCWS	6,064	139,472
3a. Long-term monitoring, no waiver (triennial entry point samples)	10% of large ground water CWS	680	4,080
	10% of small ground water CWS and all ground water NTNCWS	7,021	35,105
3b. Long-term monitoring, waiver (1 sample every 9 years)	40% of large surface water CWS	2,216	4,432
	40% of small surface water CWS and all surface water NTNCWS	4,043	8,086
3b. Long-term monitoring, waiver (1 sample every 9 years)	90% of large ground water CWS	6,117	12,234
	90% of small ground water CWS and all ground water NTNCWS	63,189	63,189

Source: Perchlorate Benefit-Cost Analysis Spreadsheet available in the proposed rule docket (EPA-HQ-OW-2018-0780).

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1. The EPA estimated a total of 92,656 entry points based on the total number of potentially affected systems in SDWIS/FED and the average number of entry points per system in the UCMR 1 data by size category and source water. The initial monitoring phase includes all entry points. The EPA assumed that the two entry points with MCL exceedances at the proposed MCL of 56 µg/L would continue to take quarterly samples for the duration of the analysis period, for a total of 232 samples. Thus, they are excluded from the estimates for the subsequent phases of regular and long-term monitoring. Primacy agencies may, however, allow monitoring to return to a regular schedule if treatment process operation can reliably and consistently reduce perchlorate below the MCL.
2. For Phase 3, the estimate of aggregate samples is the product of the number of entry points and the frequency of sampling during the remaining years of the analysis period. For example, large surface water CWS without a waiver conduct long-term annual monitoring for 26 years because they complete preliminary regular monitoring in year 9. In contrast, large ground water CWS without a waiver begin long-term triennial monitoring in year 16 because their preliminary regular monitoring phase lasts for 9 years (3 triennial samples) instead of 3 years (3 annual samples). The estimates also reflect schedule differences by size because large CWS begin monitoring schedules three years earlier than small CWS and all NTNCWS.

To estimate costs to CWSs and NTNCWSs associated with time spent on compliance monitoring and other administrative costs, the EPA generally uses the labor rate[13] for full-time treatment plant operators in CWSs from USEPA [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"5g8IJ6Eh","properties":{"formattedCitation":"(2011)","plainCitation":"(2011)","noteIndex":0},"citationItems":[{"id":992,"uris":["http://zotero.org/groups/945096/items/FHCVSMRC"],"uri":["http://zotero.org/groups/945096/items/FHCVSMRC"],"itemData":{"id":992,"type":"article","title":"Labor Cost for National Drinking Water Rules","author":[{"family":"USEPA","given":""}],"issued":{"date-

[13] Updated to 2017$ using the BLS Employment Cost Index for Total Compensation for Private industry workers in Utilities.

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parts":[["2011"]]}},"suppress-author":true}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}], which vary based on the size of the system. The EPA calculated a weighted average fully loaded hourly wage rate for water systems of $34.71.

Additionally, the EPA assumed that systems will incur an average analytical cost of $64 per sample, which is the average cost per sample obtained from multiple laboratories for perchlorate quantitation using Method 314.0.

To estimate treatment cost, the EPA utilized the occurrence data described in Section VI to estimate the number of system entry points that exceed the proposed and alternative MCLs. The EPA estimated costs that those water systems would incur to install and maintain treatment using its work breakdown structure (WBS) cost estimating models. The WBS models are spreadsheet-based engineering models for individual treatment technologies, linked to a central database of component unit costs. The WBS approach involves breaking a process down into discrete components for the purpose of estimating costs and produce a comprehensive assessment of the capital and operating requirements for a treatment system[14]. The EPA used the WBS models to generate total capital and O&M cost estimates for each technology and nontreatment option for up to 49 different system flow rates. The EPA generated separate estimates that correspond to different water sources (groundwater or surface water), three

[14] The document *Technologies and Costs for Treating Perchlorate-Contaminated Waters* (USEPA, 2018c) contains more complete discussion of the WBS models and the cost estimating approach.

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different cost levels (low, mid, and high), and different technology-specific scenarios (e.g., 105,000 or 170,000 bed volumes for ion exchange). The EPA used the mid-cost estimates for ion exchange to generate expected costs for all entry points requiring perchlorate removal. This technology cost-effectively removes perchlorate, but its ability to remove co-occurring contaminants depends on influent characteristics and process design. Therefore, the EPA did not assume that treatment might result in ancillary quantifiable or non-quantifiable benefits of removing co-occurring ions such as nitrate. Treatment costs include waste disposal for spent resin, but do not include post-treatment costs for corrosion control because blending rates at most entry points should not result in much chloride addition or changes in corrosivity.

For purposes of estimating the costs and benefits, the EPA assumed that CWSs and NTNCWSs in California and Massachusetts would not incur additional cost or realize benefits because these States currently regulate perchlorate at a more stringent level than the proposed MCL and alternative MCL. For each entry point in the UCMR 1 dataset outside of these two States, the EPA compared the maximum observed perchlorate concentration to the MCL to identify those that have an exceedance of the proposed MCL. The EPA assumed that these entry points would incur costs for an additional confirmation sample and would need to implement treatment to meet the MCL. For each entry point, the EPA estimated the design flow and the average flow by service populations based on the Agency's prior analysis of the relationships between these values (USEPA, 2000b). The Agency assumed blending of treated water and untreated water would be used to meet an average treatment target equal to 80 percent of the

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MCL (for an MCL of 56 µg/L the blending target would be 45 µg/L) given a 95 percent removal effectiveness until perchlorate breakthrough. The Agency applied the capital cost and O&M cost curves from the WBS models to the design and average flows adjusted for blending. When small systems in the UCMR 1 sample incurred treatment costs, the EPA extrapolated the costs on a per capita basis to the estimate of national population exposure derived using the small system population sampling weights.

For the primacy agencies that will implement and enforce the rule (including 49 States, one tribal nation and 5 territories), the EPA estimated upfront costs incurred during the three years between rule promulgation and the effective date to read and understand the rule, adopt regulatory changes, and provide training to CWSs and NTNCWSs and Agency staff. Primacy agencies will also have recurring costs to review waiver applications and monitoring reports. Table XII-3 summarizes the labor hour assumptions for these activities. The EPA requests comments on these assumptions.

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Table XII-3: Labor Hours for Primacy Agency Administrative Requirements

Activity	Frequency	Hours
Read and understand the rule, adopt regulatory changes[1]	one time per Agency	416
Provide initial training and assistance to water systems[2]	total per Agency	2,080
Provide initial training to staff[2]	total per Agency	250
Review waiver applications	once every 9 years per eligible system	8
Review monitoring reports	per monitoring event	1

Source (USEPA, 2000a)

1. The EPA assumed that two States that already regulate perchlorate in drinking water would not incur the incremental burdens in this table to regulate perchlorate under the proposed rule because they already incur baseline costs for perchlorate regulation including monitoring costs. The Agency assumed, however, that the two States would incur an average of 40 hours to confirm that their existing requirements are at least as protective as the proposed rule.
2. The EPA assumed that all training hours occur in a single year, although the hours may actually occur over time. The total hour estimates are average values across States.

State labor rates are based on the mean hourly wage rate from Bureau of Labor Statistics (BLS) Standard Occupational Classification code 19-2041 (State Government –Environmental Scientists and Specialists, Including Health). Wages are loaded using a factor calculated from the BLS Employer Costs for Employee Compensation report [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"C1A8zUkj","properties":{"formattedCitation":"(Bureau of Labor Statistics (BLS), 2016 Table 3)","plainCitation":"(Bureau of Labor Statistics (BLS), 2016 Table 3)","noteIndex":0},"citationItems":[{"id":984,"uris":["http://zotero.org/groups/945096/items/L8X3BDZ9"],"uri":["http://zotero.org/groups/945096/items/L8X3BDZ9"],"itemData":{"id":984,"type":"webpage","title":"Employer Cost for Employee Compensation -- September 2016","author":[{"literal":"Bureau of Labor Statistics (BLS)"}],"issued":{"date-

parts":[["2016"]]}},"label":"book","suffix":"Table 3"}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}], for a fully loaded hourly wage rate for States of $50.67. The EPA requests comments on these labor rate assumptions.

The proposed rule provides three years between the effective dates and compliance dates for systems. For the purpose of estimating costs, the EPA assumed that large CWSs would phase in administrative costs, including initial monitoring, and upfront administrative costs uniformly over the 3 years following the effective date (i.e., years 4 to 6 of the analysis period). Similarly, the EPA assumed that small CWSs and NTNCSs will phase in these costs over the subsequent three-year period (i.e., years 7 to 9 of the analysis period). The EPA assumed that, within these periods, all systems would conduct initial monitoring – one year of quarterly monitoring to determine whether perchlorate concentrations are consistently and reliably below the proposed MCL. Thereafter, systems with MCL exceedances would continue to monitor quarterly, while systems below the MCL that obtain waivers will monitor annually for three years (surface water systems) or triennially for 9 years (ground water systems), then incur costs for a waiver application. Thereafter, these systems will continue reduced monitoring - once every nine years - under subsequent waivers. Systems that are below the MCL without waivers will monitor once per year (surface water systems) or once every three years (groundwater). Consistent with [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"mnzEXxZK","properties":{"formattedCitation":"(USEPA, 2008b)","plainCitation":"(USEPA,

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2008b)","dontUpdate":true,"noteIndex":0},"citationItems":[{"id":998,"uris":["http://zotero.org/groups/945096/items/QSXYHBID"],"uri":["http://zotero.org/groups/945096/items/QSXYHBID"],"itemData":{"id":998,"type":"article","title":"Draft Information Collection Request for the Disinfectants/Disinfection Byproducts, Chemical, and Radionuclides Rule","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2008",6]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}], the EPA assumed that 90% of groundwater and 40% of surface water systems that have all entry points below the MCL would obtain waivers.

The EPA estimated the costs over a 35-year analysis period, which includes a 3-year period prior to the effective date to allow for State rule adoption activities, a 3-year period after the effective date to allow initial monitoring among large CWSs, and a 3-year period after that to allow initial monitoring for small CWSs and NTNCWSs. Evaluating costs over 35 years covers a full life cycle of the capital investments that large systems make in the 6th year; the WBS estimates of composite useful life of the equipment and infrastructure investment is approximately 30 years. The EPA assumed that treatment modifications will be completed in the final year of the initial monitoring period (i.e., year 6 of the analysis for large CWSs and year 9 for small CWSs and NTNCWSs). The EPA calculated the present value of total costs in each year of the analysis period and discounted to year 1 using both a 3% and 7% discount rate and

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annualized total present value of costs at the same rates over 35 years to obtain a constant total annual cost estimate to compare to total annual benefits.

Water systems typically recover costs through increased household rates, resulting in increased costs at the household level[15]. To calculate the magnitude of the cost increase for systems that exceed the proposed MCL or alternative MCL, the EPA first estimated the number of households that may incur costs as a result of the rule based on the population served by affected CWSs and NTNCWSs and the average household size [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"Q6RKolIZ","properties":{"formattedCitation":"(U.S. Census Bureau, 2017b)","plainCitation":"(U.S. Census Bureau, 2017b)","noteIndex":0},"citationItems":[{"id":1000,"uris":["http://zotero.org/groups/945096/items/CGU3LT9N"],"uri":["http://zotero.org/groups/945096/items/CGU3LT9N"],"itemData":{"id":1000,"type":"article","title":"Average Household Size of Occupied Housing Units by Tenure. American Community Survey 1-Year Estimates: Table B25010","author":[{"family":"U.S. Census Bureau","given":""}],"issued":{"date-parts":[["2017"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. The EPA divided the total annual system-level costs by the number of households served by the system.

[15] For systems with monitoring costs only, household-level costs will be negligible.

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C. Method for Estimating Benefits

The EPA has taken an approach in evaluating the benefits for perchlorate that is consistent with the SAB's recommendations for the methodology to inform the MCLG for perchlorate. This approach involves a) using a BBDR model to estimate the impact of perchlorate on maternal thyroid hormone levels during the first trimester of pregnancy, and b) using a dose-response function from the epidemiological literature to model the relationship between altered maternal thyroid hormone levels and offspring IQ. Currently available science has limited this quantitative benefits assessment to the relationship between perchlorate and IQ. Given that alterations in thyroid hormones have been associated with other adverse outcomes, including reproductive outcomes (Alexander et al., 2017; Hou et al., 2016; Maraka et al., 2016) and effects on cardiovascular systems (Asvold et al., 2012; Sun et al., 2017) there are likely non-quantified benefits of risk reductions for other endpoints or reduced exposure to co-occurring contaminants, which are addressed below. Uncertainties regarding the quantifiable benefits are also addressed below.

The population impacted by the rule for which benefits can be quantified is specific to live births from mothers who were served by a CWS or NTNCWS with perchlorate concentrations above the potential MCLs. To determine the nationwide population of children that will experience a quantifiable benefit of avoided IQ decrements from reducing maternal perchlorate exposure during pregnancy, the EPA first estimated the total population being served by systems above the MCL based on data from UCMR 1. The EPA then multiplied the total

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population served for each affected CWS and NTNCWS by the proportion of women of childbearing age (aged 15-44) in the US, which is 19.7 percent [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"rCNbGglo","properties":{"formattedCitation":"(U.S. Census Bureau, 2017a)","plainCitation":"(U.S. Census Bureau, 2017a)","noteIndex":0},"citationItems":[{"id":189,"uris":["http://zotero.org/groups/945096/items/ZM7S6H44"],"uri":["http://zotero.org/groups/945096/items/ZM7S6H44"],"itemData":{"id":189,"type":"article","title":"Annual estimates of the resident population by single year of age and sex for the United States: April 1, 2010 to July 1, 2016.","URL":"https://www.census.gov/data/datasets/2016/demo/popest/nation-detail.html#ds","author":[{"literal":"U.S. Census Bureau"}],"issued":{"date-parts":[["2017"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. The number of women of child-bearing age for each entry point was then multiplied by the annual number of live births in the US, or 62 births per 1,000 women (6.2 percent) [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"7XfZyKhY","properties":{"formattedCitation":"(Martin, Hamilton, & Osterman, 2017)","plainCitation":"(Martin, Hamilton, & Osterman, 2017)","noteIndex":0},"citationItems":[{"id":186,"uris":["http://zotero.org/groups/945096/items/MY6LPDKD"],"uri":["http://zotero.org/groups/945096/items/MY6LPDKD"],"itemData":{"id":186,"type":"article","title":"Births in the United States, 2016. NCHS Data Brief No. 287","URL":"https://www.cdc.gov/nchs/data/databriefs/db287.pdf","author":[{"family":"Martin"

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,"issued":{"date-parts":[["2017"]]}}],"schema":"https://github.com/citation-style-
language/schema/raw/master/csl-citation.json"}].

The EPA used a two-step dose-response model to estimate health benefits of a reduction in perchlorate exposure as a result of regulating perchlorate in drinking water not to exceed the proposed MCL of 56 µg/L and alternative MCLs of 18 µg/L and 90 µg/L. The first step relates changes in perchlorate to changes in maternal free-thyroxine (fT4) during the first trimester of pregnancy using the EPA's BBDR model. Because the dose-response relationship between perchlorate exposure and maternal fT4 is dependent on maternal iodine intake status, this first-step analysis is repeated for several categories of iodine intake. For the BBDR simulations, the EPA used the 90th percentile ingestion rate to be consistent with the MCLG modeling approach, which may overstate the exposure in the simulation.

The second step of the dose-response model subsequently relates the predicted changes in maternal fT4 from the BBDR model to changes in child IQ using the function estimated in the EPA independent analysis of the [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"iqyVRL6z","properties":{"formattedCitation":"(Korevaar et al.,
2016)","plainCitation":"(Korevaar et al.,
2016)","dontUpdate":true,"noteIndex":0},"citationItems":[{"id":43,"uris":["http://zotero.org/gro
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ata":{"id":43,"type":"article-journal","title":"Association of maternal thyroid function during

early pregnancy with offspring IQ and brain morphology in childhood: a population-based prospective cohort study","container-title":"The Lancet Diabetes & Endocrinology","page":"35-43","volume":"4","issue":"1","source":"ScienceDirect","abstract":"SummaryBackground\nThyroid hormone is involved in the regulation of early brain development. Since the fetal thyroid gland is not fully functional until week 18–20 of pregnancy, neuronal migration and other crucial early stages of intrauterine brain development largely depend on the supply of maternal thyroid hormone. Current clinical practice mostly focuses on preventing the negative consequences of low thyroid hormone concentrations, but data from animal studies have shown that both low and high concentrations of thyroid hormone have negative effects on offspring brain development. We aimed to investigate the association of maternal thyroid function with child intelligence quotient (IQ) and brain morphology.\nMethods\nIn this population-based prospective cohort study, embedded within the Generation R Study (Rotterdam, Netherlands), we investigated the association of maternal thyroid function with child IQ (assessed by non-verbal intelligence tests) and brain morphology (assessed on brain MRI scans). Eligible women were those living in the study area at their delivery date, which had to be between April 1, 2002, and Jan 1, 2006. For this study, women with available serum samples who presented in early pregnancy (<18 weeks) were included. Data for maternal thyroid-stimulating hormone, free thyroxine, thyroid peroxidase antibodies (at weeks 9–18 of pregnancy), and child IQ (assessed at a median of 6·0 years of age [95% range 5·6–7·9 years]) or brain MRI scans (done at a median of 8·0 years of age [6·2–10·0]) were obtained. Analyses were adjusted for potential confounders including

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concentrations of human chorionic gonadotropin and child thyroid-stimulating hormone and free thyroxine.\nFindings\nData for child IQ were available for 3839 mother–child pairs, and MRI scans were available from 646 children. Maternal free thyroxine concentrations showed an inverted U-shaped association with child IQ (p=0·0044), child grey matter volume (p=0·0062), and cortex volume (p=0·0011). For both low and high maternal free thyroxine concentrations, this association corresponded to a 1·4–3·8 points reduction in mean child IQ. Maternal thyroid-stimulating hormone was not associated with child IQ or brain morphology. All associations remained similar after the exclusion of women with overt hypothyroidism and overt hyperthyroidism, and after adjustment for concentrations of human chorionic gonadotropin, child thyroid-stimulating hormone and free thyroxine or thyroid peroxidase antibodies (continuous or positivity).\nInterpretation\nBoth low and high maternal free thyroxine concentrations during pregnancy were associated with lower child IQ and lower grey matter and cortex volume. The association between high maternal free thyroxine and low child IQ suggests that levothyroxine therapy during pregnancy, which is often initiated in women with subclinical hypothyroidism during pregnancy, might carry the potential risk of adverse child neurodevelopment outcomes when the aim of treatment is to achieve high-normal thyroid function test results.\nFunding\nThe Netherlands Organisation for Health Research and Development (ZonMw) and the European Community's Seventh Framework Programme.","DOI":"10.1016/S2213-8587(15)00327-7","ISSN":"2213-8587","shortTitle":"Association of maternal thyroid function during early pregnancy with offspring IQ and brain morphology in childhood","journalAbbreviation":"The

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Lancet Diabetes & Endocrinology","author":[{"family":"Korevaar","given":"Tim I M"},{"family":"Muetzel","given":"Ryan"},{"family":"Medici","given":"Marco"},{"family":"Chaker","given":"Layal"},{"family":"Jaddoe","given":"Vincent W V"},{"family":"Rijke","given":"Yolanda B","non-dropping-particle":"de"},{"family":"Steegers","given":"Eric A P"},{"family":"Visser","given":"Theo J"},{"family":"White","given":"Tonya"},{"family":"Tiemeier","given":"Henning"},{"family":"Peeters","given":"Robin P"}],"issued":{"date-parts":[["2016",1]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}] study data. Ultimately, the changes in IQ are estimated for each impacted iodine intake group, and all of the impacted iodine intake groups' IQ decrements are averaged together based on the proportion of individuals in each iodine intake category. Table XII-4 shows the specific iodine intake groups and the proportion of non-pregnant women of childbearing age that fall into each group.

Table XII-4: Proportion of Population based on Maternal Iodine Intake Status

Iodine Intake Range (µg/ day) used for Benefits Analysis	Proportion of the population
0 to <55	7.14%
55 to <60	2.15%
60 to <65	1.06%
65 to < 70	1.86%
70 to <75	1.31%
75 to <80	3.10%
80 to <85	2.62%
85 to <90	1.20%
90 to <95	1.83%
95 to <100	2.94%
100 to <125	13.56%
125 to <150	9.08%
150 to <170	10.31%
170 to <300	24.47%
≥300	17.36%

Source: U.S. EPA (2019a).

These changes in child IQ are then monetized using the EPA's estimate of the value of an IQ point. This estimate reflects the discounted present value of lifetime income reductions attributable to a 1-point reduction in IQ at birth. Therefore, the present value depends on the discount rate. At a 3 percent discount rate, the estimate is $18,686 per IQ point; at a 7 percent discount rate the estimate is $3,631.

Other potential benefits not quantified or monetized include additional avoided health effects which cannot currently be monetized, improved public perception of water quality, as well as a possible reduction of other co-occurring contaminants that target the thyroid, such as nitrate, as a result of water treatment for removal of perchlorate. For example, all of the treatment technologies evaluated for this rule (ion exchange, biological treatment, and reverse

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osmosis) can also remove co-occurring nitrate from drinking water. Section XIII provides additional discussion of uncertainties in this analysis.

D. Comparison of Costs and Benefits

This section provides the estimates of costs and benefits that the EPA derived using the methods described above. It includes estimates for the proposed and alternative MCLs.

For the proposed MCL of 56 µg/L, Table XII-5 summarizes the total estimated cost of the proposed rule to water systems and primacy agencies, and Table XII-6 summarizes the estimated per-household cost for the system incurring treatment costs[16]. Table XII-7 summarizes the estimated benefits. In both instances, the estimates based on the UCMR 1 sample are also national estimates because treatment costs occur only at large systems; there are no small system treatment costs or related benefits to extrapolate.

[16] For all households served by all of the systems subject to the monitoring costs as well as MCL compliance, the average annual cost is less than $0.20.

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Table XII-5: Summary of Total Annualized Costs at MCL of 56 µg/L (Millions; 2017$)

Cost Component	3% Discount	7% Discount
Drinking Water Systems Treatment Costs	$0.65	$0.70
Drinking Water Systems Monitoring and Administration Costs[1]	$5.93	$6.38
Drinking Water Systems Costs Subtotal	$6.58	$7.07
State Administration Costs	$3.09	$3.20
Total Costs	$9.67	$10.28

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"00m0B8b8","properties":{"formattedCitation":"(USEPA, 2018b)","plainCitation":"(USEPA, 2018b)","noteIndex":0},"citationItems":[{"id":1217,"uris":["http://zotero.org/groups/945096/items/P9YD2GRH"],"uri":["http://zotero.org/groups/945096/items/P9YD2GRH"],"itemData":{"id":1217,"type":"article","title":"Health Risk Reduction and Cost Analysis of the Proposed Perchlorate National Primary Drinking Water Regulation","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. Detail may not sum to total because of independent rounding.

1. Costs include monitoring for all CWS and NTNCWS. Some consecutive systems that purchase 100% of their water from wholesale systems may not be required to monitor for perchlorate provided States allow integrated system agreements to include perchlorate among the monitoring requirements that the wholesale system fulfills for the consecutive system. The potential number of consecutive systems excluded from perchlorate monitoring depends on system and State decisions and, therefore, is unknown. Excluding monitoring costs for approximately 8,400 consecutive systems that do not report a water source facility (e.g., well or intake) in SDWIS/FED from the monitoring cost analysis reduces annualized monitoring costs by $0.8 million.

Table XII-6: Summary of Household-Level Annual Costs for Systems Treating to Comply with MCL at 56 µg/L (2017$)

Cost Range	3% Discount	7% Discount
Minimum	$11	$14
Average	$40	$47
Maximum	$69	$80

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Source: [ADDIN ZOTERO_ITEM CSL_CITATION

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Perchlorate National Primary Drinking Water

Regulation","author":[{"family":"USEPA","given":""}],"issued":{"date-

parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-

language/schema/raw/master/csl-citation.json"}].

Table XII-7: Summary of Total Annualized Benefits of Avoided Lost IQ Decrements at MCL of 56 µg/L (Millions; 2017$)

Korevaar β distribution	Annual Delta IQ	3% Discount	7% Discount
Upper	243	$3.57	$0.60
Central	136	$2.00	$0.34
Lower	30	$0.44	$0.07

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"T7LDdiyn","properties":{"formattedCitation":"(USEPA, 2018b)","plainCitation":"(USEPA, 2018b)","noteIndex":0},"citationItems":[{"id":1217,"uris":["http://zotero.org/groups/945096/items/P9YD2GRH"],"uri":["http://zotero.org/groups/945096/items/P9YD2GRH"],"itemData":{"id":1217,"type":"article","title":"Health Risk Reduction and Cost Analysis of the Proposed Perchlorate National Primary Drinking Water Regulation","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]

For the alternative MCL of 18 µg/L, Table XII-8 summarizes the total cost of the proposed rule to water systems and primacy agencies, and Table XII-9 summarizes the per-household cost for systems requiring treatment, which vary across the systems. Table XII-10 summarizes the quantified benefits. At this threshold, one entry point for one small system in the UCMR 1 data had an exceedance. Therefore, the EPA extrapolated the treatment costs and benefits from the UCMR 1 estimates to national estimates based on sampling weights.

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Table XII-8: Summary of Total Annualized Costs at MCL of 18 µg/L (Millions; 2017$)

Cost Component	3% Discount (UCMR 1)[1]	7% Discount (UCMR 1)[1]	3% Discount (National)[1]	7% Discount (National)[1]
Drinking Water Systems Treatment Costs	$6.92	$7.29	$7.92	$8.37
Drinking Water Systems Monitoring and Administration Costs	$5.94	$6.38	$5.94	$6.38
Drinking Water Systems Costs Subtotal	$12.85	$13.67	$13.86	$14.75
State Administration Costs	$3.09	$3.21	$3.09	$3.21
Total Costs	$15.95	$16.88	$16.95	$17.96

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"H6Rcd4Hf","properties":{"formattedCitation":"(USEPA, 2018b)","plainCitation":"(USEPA, 2018b)","noteIndex":0},"citationItems":[{"id":1217,"uris":["http://zotero.org/groups/945096/items/P9YD2GRH"],"uri":["http://zotero.org/groups/945096/items/P9YD2GRH"],"itemData":{"id":1217,"type":"article","title":"Health Risk Reduction and Cost Analysis of the Proposed Perchlorate National Primary Drinking Water Regulation","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. Detail may not sum to total because of independent rounding.

1. The EPA applied statistical sampling weights to the results to extrapolate small system results to national results. The entry point at which a measurement exceeds 18 µg/L is one of 20 in its sample stratum; no other sample in the stratum had a measurement of perchlorate greater than the minimum reporting level. The entry point population of 2,155 represents 5.31% of the total population served by the six UCMR 1 systems in the stratum (40,574). Currently, the stratum population of 775,000 accounts for 1.32% of the 58.7 million national population served by small systems. Thus, the UCMR 1 results indicate that 0.07% (5.31% x 1.32%) of small system customers (approximately 41,100) may be exposed to perchlorate greater than 18 µg/L. The EPA calculated per-capita costs for the system and extrapolated to national level based on this population estimate.

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2. Costs include monitoring for all CWS and NTNCWS. Under 40 CFR 141.29 some consecutive systems that purchase 100% of their water from wholesale systems may not be required to monitor for perchlorate provided primacy agencies, with EPA concurrence, allow integrated system agreements to include perchlorate among the monitoring requirements that the wholesale system fulfills for the consecutive system. The potential number of consecutive systems excluded from perchlorate monitoring depends on system and primacy agency decisions and, therefore, is unknown. Excluding monitoring costs for approximately 8,400 consecutive systems that do not report a water source facility (e.g., well or intake) in SDWIS/FED from the monitoring cost analysis reduces annualized monitoring costs by $0.8 million.

Table XII-9: Summary of Household-Level Annual Costs for Systems Treating to Comply with the MCL at 18 µg/L (2017$)

Cost Range	3% Discount (UCMR 1)[1]	7% Discount (UCMR 1)[1]	3% Discount (National)[1]	7% Discount (National)[1]
Minimum	$18	$24	$18	$24
Average	$38	$46	$38	$46
Max	$72	$84	$72	$84

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1. National cost estimates include extrapolation for one small system entry point to national estimates based on sampling weights. The per-household costs are the same for the sample and national extrapolations because the small system cost extrapolation occurs on a per-capita basis.

Table XII-10: Total and Annualized Benefits of Avoided Lost IQ Decrements at 18 µg/L (Millions; 2017$)

Korevaar β distribution	Annual Delta IQ		UCMR 1		National[1]	
	UCMR 1	National[1]	3% Discount	7% Discount	3% Discount	7% Discount
Upper	442	447	$6.50	$1.10	$6.56	$1.11
Central	248	251	$3.65	$0.62	$3.68	$0.62
Lower	54	55	$0.80	$0.13	$0.80	$0.14

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"EN9pibZj","properties":{"formattedCitation":"(USEPA, 2018b)","plainCitation":"(USEPA, 2018b)","noteIndex":0},"citationItems":[{"id":1217,"uris":["http://zotero.org/groups/945096/items/P9YD2GRH"],"uri":["http://zotero.org/groups/945096/items/P9YD2GRH"],"itemData":{"id":1217,"type":"article","title":"Health Risk Reduction and Cost Analysis of the Proposed Perchlorate National Primary Drinking Water Regulation","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]

1. The EPA applied statistical sampling weights to the results to extrapolate small system results to national results. The entry point at which a measurement exceeds 18 µg/L is one of 20 in its sample stratum; no other sample in the stratum had a measurement of perchlorate greater than the minimum reporting level. The entry point population of 2,155 represents 5.31% of the total population served by the six UCMR 1 systems in the stratum (40,574). Currently, the stratum population of 774,780 accounts for 1.32% of the 58.7 million national population served by small systems. Thus, the UCMR 1 results indicate that 0.07% (5.31% x 1.32%) of small system customers (approximately 41,100) may be exposed to perchlorate greater than 18 µg/L. The EPA assumed that this population would incur benefits equivalent to the sampled entry point's population.

For the alternative MCL of 90 µg/L, Table XII-11 summarizes the total cost of the proposed rule to water systems and primacy agencies, and Table XII-12 summarizes the per-household cost for systems requiring treatment, which vary across the systems. Table XII-13 summarizes the quantified benefits. At this threshold, no small systems in the UCMR 1 data had an exceedance. Therefore, treatment costs and benefits for the UCMR 1 data are the national estimates.

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Table XII-11: Summary of Total Annualized Costs at MCL of 90 µg/L (Millions; 2017$)

Cost Component	3% Discount	7% Discount
Drinking Water Systems Treatment Costs	$0.49	$0.52
Drinking Water Systems Monitoring and Administration Costs[1]	$5.93	$6.37
Drinking Water Systems Costs Subtotal	$6.42	$6.89
State Administration Costs	$3.09	$3.20
Total Costs	$9.51	$10.10

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1. Costs include monitoring for all CWS and NTNCWS. Some consecutive systems that purchase 100% of their water from wholesale systems may not be required to monitor for perchlorate provided States allow integrated system agreements to include perchlorate among the monitoring requirements that the wholesale system fulfills for the consecutive system. The potential number of consecutive systems excluded from perchlorate monitoring depends on system and State decisions and, therefore, is unknown. Excluding monitoring costs for approximately 8,400 consecutive systems that do not report a water source facility (e.g., well or intake) in SDWIS/FED from the monitoring cost analysis reduces annualized monitoring costs by $0.8 million.

Table XII-12: Summary of Household-Level Annual Costs for Systems Treating to Comply with MCL at 90 µg/L (2017$)

Cost Range	3% Discount	7% Discount
Minimum	$65	$76
Average	$65	$76
Maximum	$65	$76

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Table XII-13: Summary of Total Annualized Benefits of Avoided Lost IQ Decrements at MCL of 90 µg/L (Millions; 2017$)

Korevaar β distribution	Annual Delta IQ	3% Discount	7% Discount
Upper	222	$3.26	$0.55
Central	124	$1.83	$0.31
Lower	27	$0.40	$0.07

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"T7LDdiyn","properties":{"formattedCitation":"(USEPA, 2018b)","plainCitation":"(USEPA, 2018b)","noteIndex":0},"citationItems":[{"id":1217,"uris":["http://zotero.org/groups/945096/items/P9YD2GRH"],"uri":["http://zotero.org/groups/945096/items/P9YD2GRH"],"itemData":{"id":1217,"type":"article","title":"Health Risk Reduction and Cost Analysis of the Proposed Perchlorate National Primary Drinking Water Regulation","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]

Table XII-14 provides a comparison of benefits and costs for three MCL values. First, the table shows the total annual costs and total annual benefits for each MCL. In all cases, the total costs are substantially higher than the potential range of quantifiable benefits. The table also

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shows the incremental impact on costs and benefits between an MCL of 56 µg/L and an MCL of 18 µg/L and between an MCL of 90 µg/L and 56 µg/L.

Section 1412(b)(4)(C) of the SDWA requires that when proposing a national primary drinking water regulation, "the Administrator shall publish a determination as to whether the benefits of the maximum contaminant level justify, or do not justify, the costs." The infrequent occurrence of perchlorate at levels of health concern imposes high monitoring and administrative cost burdens on public water systems and the States. Based on a comparison of costs and benefits estimated at the proposed MCL of 56 µg/L using the best available science and data, the EPA Administrator has determined based upon the available information that the benefits of establishing an NPDWR for perchlorate do not justify the associated costs.

Under these circumstances, Section 1412(b)(6)(A) of the SDWA provides, with exceptions not relevant here, that "the Administrator *may*, after notice and opportunity for public comment promulgate a maximum contaminant level for the contaminant that maximizes health risk reduction benefits at a cost that is justified by the benefits." The EPA has evaluated the benefits and costs of alternative MCL values of 18 µg/L and 90 µg/L. However, based upon the available information the Administrator also finds that the benefits of an NPDWR at the alternative MCL values would not justify the resulting rule costs. The alternative MCLs would not increase net benefits, while compliance costs associated mainly with nationwide CWS monitoring requirements would remain relatively similar. Consistent with the discretion afforded the Agency by SDWA Section 1412(b)(6)(A) to decide whether or not to adjust an MCL to a

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level where the benefits justify the costs, the EPA is however proposing, and may finalize, the MCL of 56 µg/L notwithstanding the Agency's determination that benefits would not justify the costs.

Table XII-14: Comparison of Annual Costs and Benefits by MCL (Millions; 2017$)

MCL Value	Cost 3% Discount	Benefit 3% Discount	Cost 7% Discount	Benefit 7% Discount
UCMR 1				
90 µg/L	$9.51	$0.40 - $3.26	$10.10	$0.07 - $0.55
56 µg/L	$9.67	$0.44 - $3.57	$10.28	$0.07 - $0.60
18 µg/L	$15.95	$0.80 - $6.50	$16.88	$0.13 - $1.10
Incremental (from 90 µg/L to 56 µg/L)	$0.16	$0.04 - $0.31	$0.18	$0.0 – 0.05
Incremental (from 56 µg/L to 18 µg/L)	$6.28	$0.36 - $2.93	$6.60	$0.06 - $0.50
National				
90 µg/L	$9.51	$0.40 - $3.26	$10.10	$0.07 - $0.55
56 µg/L[1]	$9.67	$0.44 - $3.57	$10.28	$0.07 - $0.60
18 µg/L	$16.95	$0.80 - $6.56	$17.96	$0.14 - $1.11
Incremental (from 90 µg/L to 56 µg/L)	$0.16	$0.04 - $0.31	$0.18	$0.0 – 0.05
Incremental (from 56 µg/L to 18 µg/L)	$7.28	$0.36 - $2.99	$7.69	$0.07 - $0.51

Source: [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"E0mmmXDK","properties":{"formattedCitation":"(USEPA, 2018b)","plainCitation":"(USEPA, 2018b)","noteIndex":0},"citationItems":[{"id":1217,"uris":["http://zotero.org/groups/945096/items/P9YD2GRH"],"uri":["http://zotero.org/groups/945096/items/P9YD2GRH"],"itemData":{"id":1217,"type":"article","title":"Health Risk Reduction and Cost Analysis of the Proposed Perchlorate National Primary Drinking Water Regulation","author":[{"family":"USEPA","given":""}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. Detail may not sum to total because of independent rounding.

1. For the proposed MCL of 56 µg/L and the alternative MCL of 90 µg/L, the national estimates are the same as the estimates based on UCMR 1 data because there were no small system sample results to extrapolate to national small system estimates. At an MCL of 18 µg/L, national

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estimates include extrapolation for one small system entry point to national estimates based on sampling weights described above.

XIII. Uncertainty Analysis

The EPA has presented an extensive discussion of the uncertainties in the key analyses informing this proposal in the uncertainty section of the MCLG Approaches Report and the uncertainties section of the Economic Analysis document (*USEPA, 2018b; USEPA, 2019a)*. A summarized description of these uncertainties are presented below.

A. Uncertainty in the MCLG Derivation

Each input into the analysis to inform the MCLG is a decision point associated with uncertainty. There is uncertainty in different aspects of the BBDR model, ranging from structural and functional relationships to specific parameter values for early pregnancy. There are very few data available to calibrate the pharmacokinetic aspects of the model, particularly at the life stage of interest. Also, the BBDR model does not explicitly consider the effect of the presence of other goitrogens (e.g. thiocyanate, nitrate) or effects of thyroid disease states. Toxicodynamic aspects such as competitive inhibition at the NIS, depletion of iodide stores under different iodine intake levels and physiological states, and the ability of the TSH feedback loop to compensate for perturbations in thyroid function each have their own uncertain features. Additional uncertainty is introduced by linking the BBDR model estimates of maternal fT4 to altered neurodevelopment in offspring. None of the studies used to evaluate potential adverse neurodevelopmental outcomes in offspring born to hypothyroxinemic mothers was performed in the U.S. None of the

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studies measured perchlorate exposure. Not all the studies measured iodide levels in the study populations. The state of the science on the relationship between maternal fT4 levels and offspring neurodevelopment is constantly evolving. There are numerous indices used to assess neurodevelopmental impacts and there is some uncertainty regarding the selection of IQ as the critical endpoint for setting the MCLG.

A recently published paper evaluating the EPA's BBDR model and MCLG Approaches, reiterated the uncertainties the Agency identified in its analyses and questions the use of these quantitative tools for perchlorate in a regulatory context (Clewell et al., 2019).

B. Uncertainty in the Economic Analysis

The EPA provides discussions regarding several sources of uncertainty in the benefit and cost estimates in the Health Risk Reduction and Cost Analysis (USEPA, 2019a). Table XIII-1 provides a summary of sources of uncertainty and their potential effects on estimated costs and benefits. The following discussion addresses uncertainties specific to the benefits analysis.

Table XIII-1. Sources of Uncertainty in Economic Analysis

Description	Potential effect[1]
Baseline Occurrence	
UCMR 1 data are more than one decade old; actual occurrence could be lower (e.g., because of contaminant cleanup) or higher (e.g., because new systems use perchlorate-contaminated source water).	± (benefits and costs will change in the same direction)
UCMR 1 data include a sample of small systems; the Stage 1 results (entry point maximums) indicate that no small systems would exceed 56 µg/L or 90 µg/L and that one small system would exceed 18 µg/L; it is possible that there are additional small systems where the baseline perchlorate is greater than the MCLs that are not captured in the national extrapolation results.	− (benefits and costs will change in the same direction)

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Description	Potential effect[1]
The EPA assumed a uniform distribution of system population served across the entry points; the actual entry point service population could be greater than or less than the estimates.	± (benefits and costs will change in the same direction)
Benefits Analysis	
The health risks and risk reductions are based on maximum recorded concentration estimates and thus do not account for exposures to concentrations greater than or less than this recorded maximum.	± (benefits only)
The EPA assumed that baseline fT4 is equal to the median, which likely underestimates disease benefits as the logarithmic relationship between maternal fT4 and child IQ leads to larger relative changes in fT4, with increasing levels of perchlorate and lower levels of baseline fT4.	− (benefits only)
The EPA assumed a median TSH feedback loop strength for the exposed population does not incorporate the variability in the feedback mechanism of the body's creation of TSH in response to decreasing fT4.	± (benefits only)
The EPA used a 90th percentile water intake rate to derive the MCLG and the dose-response equations for the benefits analysis. This approach results in a protective MCLG value, but may overstate intake for the benefits analysis[2].	+ (benefits only)
The IQ valuation uses estimates that the EPA derived using the same approach as Salkever (1995). Results from other IQ valuation studies might result in higher or lower benefit estimates.	± (benefits only)
The benefits analysis is based on a single health endpoint and the value of the endpoint is based solely on lost earnings.	− (benefits only)
Cost Analysis	
The EPA assumed that systems requiring treatment would incorporate a safety factor – treating to 80% of the proposed MCL or alternative MCL, which increases costs and benefits.	+ (benefits and costs will change in the same direction)
The EPA assumed that all entry points requiring treatment would implement ion exchange, which may overestimate costs if non-treatment is an option for one or more entry points or underestimate costs if site-specific conditions result in higher costs at one or more entry points.	± (costs only)

Description	Potential effect[1]
The EPA developed a monitoring schedule that assumed a uniform distribution of initial monitoring costs over three years; actual costs will vary.	± (costs only)
The EPA assumed that long-term monitoring costs would occur in the last year of the applicable three-year monitoring period or nine-year monitoring cycle; systems may conduct monitoring in an earlier year of the period or cycle.	− (costs only)
The EPA assumed that 90% of ground water systems and 40% of surface water systems obtain perchlorate monitoring waivers; the actual percentages may vary.	± (costs only)

1. A "–" symbol indicates that benefits and/or costs will tend to be underestimated. A "+" symbol indicates that benefits and/or costs will tend to be overestimated. A "±" symbol indicates an unknown direction of uncertainty, i.e., benefits and/or costs could be underestimated or overestimated.
2. The EPA did not include a perchlorate dietary dose in the benefits analysis, which would be unchanged between baseline and proposed MCL scenarios if many areas do not irrigate with drinking water. For people who obtain a significant portion of their fruit, vegetables, and milk from areas irrigated with the water from the same sources as the drinking water, we would expect their exposure may drop with the reduction of perchlorate in food products used locally. Because of this and the natural log form of the IQ response function, this approach may slightly understate the avoided IQ decrement estimates.

The EPA acknowledges the uncertainty regarding the quantitative health risk reduction. In particular, the Agency assumed it could estimate risk reductions based on evidence of a quantifiable relationship between thyroid hormone changes and neurodevelopmental outcomes.

There are a number of potential benefits of reducing perchlorate in drinking water that were not quantified as part of this analysis, which may result in an underestimate of actual benefits. As described by the SAB "children exposed gestationally to maternal hypothyroxinemia (without hypothyroidism) show reduced levels of global and specific cognitive abilities, as well as increased rates of behavior problems including greater dysregulation in early infancy and

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attentional disorders in childhood (Man et al., 1991; Pop et al., 1999; Pop et al., 2003; Kooistra et al., 2006)" (p. 10, SAB for the U.S. EPA, 2013). The EPA's literature review identified potential relationships between maternal thyroid hormone alterations and the risk of schizophrenia, ADHD, expressive language delay, reduced school performance and increased odds of autism, among others, none of which are being currently quantified in this assessment. Other potentially omitted benefits include risks associated with effects of thyroid disorders in adults, including cardiovascular disease risk; changes in thyroid hormone levels and their relationship with total cholesterol, LDL cholesterol, and triglycerides; as well as a possible relationship between increases in TSH and risk of fatal coronary heart disease. Treating for perchlorate in drinking water could also potentially remove nitrate, which is a co-occurring contaminant and a goitrogen. These additional potential health endpoints are not monetized in this benefits analysis. The assumptions used to account for the previously mentioned variability of the BBDR model inputs and uncertainty surrounding the relationship between maternal fT4 and child IQ discussed above may result in an overestimate of the monetized benefits. Because IQ is a surrogate for broad range of potential neurodevelopmental risks, it is unclear whether the analysis as a whole over- or under-estimates the monetized benefits of a reduction of perchlorate in drinking water.

XIV. Request for Comment on Proposed Rule

While all comments relevant to the national primary drinking water regulation for perchlorate proposed today will be considered by the EPA, comments on the following issues

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will be especially helpful to the EPA in developing a final rule. The EPA specifically requests comment on the following topics.

- The adequacy and uncertainties of the BBDR model developed by the EPA to predict thyroid hormone level changes caused by perchlorate exposure to pregnant women with low iodide intake, including the model and model parameters and assumptions (Section III and Approaches Report).
- The adequacy and uncertainties of the EPA's review and application of the epidemiologic literature to quantify the relationship between thyroid hormone changes in pregnant women and neurodevelopmental effects including the assumptions, the selection of the approach used, and the study used (Section III and Approaches Report).
- The adequacy and uncertainties of the methodology to derive the MCLG including points of departure, assumptions, uncertainty factor, and relative source contribution (Section III and Technical Support Document: Deriving a Maximum Contaminant Level Goal for Perchlorate in Drinking Water).
- The proposed MCLG and MCL of 56 µg/L as well as the alternative MCLG and MCL values of 18 µg/L and of 90 µg/L.
- The feasibility of the proposed MCL of 56 µg/L as well as the feasibility of the alternative MCLs of 18 µg/L and 90 µg/L.
- The adequacy of the underlying assumptions and analysis of occurrence (Section VI).
- The costs and availability of Treatment Technologies (Section X).

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- The adequacy of the underlying estimates, assumptions and analysis used to estimate costs and describe unquantified costs including the estimates of monitoring frequency, likelihood of systems receiving a monitoring waiver, the administrative labor rate and the operator labor rate. (Section XII and the Health Risk Reduction Cost Analysis).
- The adequacy of the underlying estimates, assumptions and analysis used to estimate benefits and describe unquantified benefits (Section XII and the Health Risk Reduction Cost Analysis).
- Potential implementation challenges associated with the proposed perchlorate regulation that the EPA should consider, specifically for small systems.
- The Administrator's finding in accordance with Section 1412(b)(4)(C) of the SDWA that the benefits of the proposed 56 µg/L MCL for perchlorate do not justify the costs, and the information that supports that determination as described in Section XII of this notice.
- The Administrator's proposal to, consistent with the discretion afforded him by SDWA Section 1412(b)(6)(A), adopt an MCL of 56 µg/L notwithstanding the Agency's SDWA Section 1412(b)(4)(C) determination that the benefits of the MCL would not justify its costs.
- The Agency's conclusion that no alternative MCL, including the alternative MCL values of 18 µg/L and 90 µg/L discussed above, would "maximize health risk reduction benefits at a cost that is justified by the benefits" and the information and analytical approaches used to arrive at that conclusion. The EPA is especially interested in comments suggesting other approaches to deriving an MCL for which the benefits justify the costs.

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XV. Request for Comment on Potential Regulatory Determination Withdrawal

The EPA is soliciting comments on withdrawing the 2011 Regulatory Determination (see Section II-C, Regulatory History) based on several factors. First, the findings, described in the occurrence section (section VI) and in the updated health effects assessment (Section III), suggest that perchlorate does not occur in public water systems with a frequency and at levels of public health concern[17] and suggest that the regulation of perchlorate does not present a meaningful opportunity for health risk reduction for persons served by public water systems. The proposed regulation would require over sixty thousand public water systems to monitor for perchlorate, but the available data indicates that very few would find it at levels of public health concern. Specifically, perchlorate occurrence information suggests that at an MCL of 56 µg/L only 2 systems (0.004% of all water systems in the U.S.) would exceed the regulatory threshold. Even at an MCL of 18 µg/L, there would only be 15 systems (0.03% of all water systems in the U.S.) that would exceed the regulatory threshold. Only one system would exceed the alternative MCL of 90 µg/L.

The EPA notes that in 2008, the EPA stated in its preliminary regulatory determination that perchlorate did not occur with a frequency and at levels of public health concern in public water systems based upon the health effects and occurrence information available at that time, which indicated that 0.8% of public water system had perchlorate at levels exceeding the HRL of

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[17] As shown in Section VI of this notice there is infrequent occurrence of perchlorate at either 56 µg/L, 18 µg/L or 90 µg/L, which are the possible levels expected to cause adverse human health effects.

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15 µg/L. The EPA also stated that there was not a meaningful opportunity for a NPDWR to reduce health risks based upon the estimates at that time that 0.9 million people had perchlorate levels above the HRL.

The EPA further notes that the Agency has previously determined CCL1 and CCL2 contaminants did not occur with frequency at levels of public health concern when the percentage of water systems exceeding the HRL were greater than the frequency of perchlorate occurrence level at the proposed MCL (0.004% of all water systems in the U.S.). For example, in 2003 the EPA determined that aldrin did not occur with a frequency and at levels of public health concern based upon data that showed 0.2% of water systems had aldrin at levels greater than the HRL. The EPA also concluded that there was not a meaningful opportunity for health risk reduction for persons served through a drinking water regulation based on this occurrence data and the estimate that these systems above the HRL served approximately 1 million people (USEPA, 2003). In 2008 the EPA determined that DCPA Mono- and Di-Acid degradates did not occur with a frequency and at levels of public health concern based on data that showed 0.03% of water systems exceeded the HRL. The EPA also included that there was not a meaningful opportunity for health risk reduction through a drinking water regulation based on this occurrence data and the estimate that these systems above the HRL served approximately 100,000 people (USEPA, 2008e).

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SDWA Section 1412(b)(1)(A)(iii) states that the determination regarding the meaningful opportunity is "in the sole judgement of the Administrator" and therefore there may be other factors that contribute to this determination for any given contaminant.

If, after consideration of public comment, the EPA withdraws the perchlorate regulatory determination, there will be no NPDWR for perchlorate, although the EPA can re-list perchlorate on the CCL and proceed to regulation in the future if the occurrence or risk information changes. As with other unregulated contaminants, the EPA could address the limited instances of elevated levels of perchlorate by working with the states or using its SDWA Section 1431 imminent and substantial endangerment or Section 1412(b)(1)(f) health assessment authorities, as appropriate. The EPA also requests comments on what guidance it could provide the public if the regulatory determination for perchlorate is withdrawn.

XVI. Statutory and Executive Order Reviews

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review

This action is a significant regulatory action since it raises novel legal or policy issues. It was submitted to the Office of Management and Budget (OMB) for review. Any changes made in response to OMB recommendations have been documented in the docket.

The EPA evaluated the potential costs to States and utilities and the potential benefits of the proposed rule. This analysis, *Health Risk Reduction Cost Analysis of the Proposed Perchlorate Rule (USEPA, 2019a)* is available in the docket and is summarized in section XI.

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B. Executive Order 13771: Reducing Regulations and Controlling Regulatory Costs

This action is expected to be an Executive Order 13771 regulatory action. Details on the estimated costs of this proposed rule can be found in the EPA's analysis of the potential costs and benefits associated with this action.

C. Paperwork Reduction Act

The information collection requirements in this proposed rule have been submitted for approval to the Office of Management and Budget (OMB) under the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq*. The information collection requirements are not enforceable until OMB approves them.

The monitoring information collected as a result of this rule will allow the States and the EPA to evaluate compliance with the rule. For the first 3-year period following rule promulgation, the major information requirements concern primacy agency activities to implement the rule including adopting the NPDWR into state regulations, providing training to state and PWS employees, updating their monitoring data systems, and reviewing system monitoring data and waiver requests. Compliance actions for drinking water systems (including monitoring, administration, and treatment costs) would not begin until after Year 3 due to the proposed effective date of this rule.

The estimate of annual average burden hours for the proposed rule during the first three years following promulgation is 48,539 hours. The annual average cost estimate is $7.4 million for labor. The burden hours per response is 2,648 hours and the cost per response is $134,159.

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The frequency of response (average responses per respondent) is 1 for primacy agencies, annually (for upfront administrative activities to implement the rule). The estimated number of likely respondents is 55 over the three-year period (for an average of 18.3 each year).

Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for the EPA's regulations are listed in 40 CFR part 9.

Submit your comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including the use of automated collection techniques, to the EPA at the public docket established for this rule, which includes the ICR, Docket ID No. **EPA-HQ-OW-2018-0780**. You may also send your ICR-related comments to OMB's Office of Information and Regulatory Affairs via email to OIRA_submission@omb.eop.gov, Attention: Desk Officer for the EPA. Since OMB is

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required to make a decision concerning the ICR between 30 and 60 days after receipt, OMB must receive comments no later than **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]**. The EPA will respond to any ICR-related comments in the final rule.

D. Regulatory Flexibility Act (RFA)

I certify that this action will not have a significant economic impact on a substantial number of small entities under the RFA. The Agency has determined that the proposed MCL of 56 µg/L will not result in annual costs that exceed one percent of revenue for small systems affected by the proposed rule.

The small entities subject to the requirements of this action are public water systems serving 10,000 or fewer persons. This is the threshold specified by Congress in the 1996 Amendments to the Safe Drinking Water Act for small system flexibility provisions. In accordance with the RFA requirements, the EPA proposed using this alternative definition in the Federal Register, (63 FR 7620, February 13, 1998), requested public comment, consulted with the Small Business Administration (SBA), and expressed its intention to use the alternative definition for all future drinking water regulations in the Consumer Confidence Reports regulation (63 FR 44511, August 19, 1998). As stated in that final rule, the alternative definition is applied to this proposed regulation.

The proposed rule contains provisions that would affect 58,325 CWS and NTNCWS serving 10,000 or fewer people. In order to meet the proposed rule requirements, all of these

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systems will need to conduct perchlorate monitoring. At the proposed MCL of 56 µg/L, the UCMR 1 monitoring data indicate that no small systems would be required to incur costs to reduce the levels of perchlorate in drinking water, therefore, all small PWSs will incur monitoring costs only. Impacts on small entities are described in more detail in Chapter 7 of the Health Risk Reduction Cost Analysis of the Proposed Perchlorate Rule (USEPA, 2019a). Table XII-1 and Table XII-2 show the annual compliance costs of the proposed rule on the small entities by system size for public and private systems, respectively. Based on a comparison of annual costs with annual revenue estimates, the EPA has determined that no small systems will experience an impact of one percent or greater of average annual revenues (USEPA 2019a).

Table XII-1: Annualized Monitoring and Administrative Costs as a Percentage of Average Annual Revenue for Small Public CWSs by Size Category

Size Category	Average Annual Revenues[a]	3% Discount[b]	7% Discount[b]
Population served <100	$224,248	$88 (0.04%)	$94 (0.04%)
Population served 101-500	$197,315	$88 (0.04%)	$94 (0.05%)
Population served 501-3,300	$202,382	$88 (0.04%)	$94 (0.05%)
Population served 3,301-10,000	$1,092,187	$88 (0.01%)	$94 (0.01%)

Source: Perchlorate Benefit-Cost Analysis Spreadsheet available in the proposed rule docket (EPA-HQ-OW-2018-0780)

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a. Based on the CWSS [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"ZkgC4dzL","properties":{"formattedCitation":"(USEPA, 2009c Table 65)","plainCitation":"(USEPA, 2009c Table 65)","noteIndex":0},"citationItems":[{"id":924,"uris":["http://zotero.org/groups/945096/items/DZNAAV6M"],"uri":["http://zotero.org/groups/945096/items/DZNAAV6M"],"itemData":{"id":924,"type":"article","title":"2006 Community Water System Survey - Volume II: Detailed Tables and Survey Methodology","URL":"https://www.epa.gov/dwstandardsregulations/community-water-system-survey","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2009",5]]},"accessed":{"date-parts":[["2018",8,16]]}},"suffix":"Table 65"}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}] and updated to 2017$ based on the chained consumer price index for fuels and utilities in U.S. city average, all urban consumers [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"rkwEpGYT","properties":{"formattedCitation":"(Bureau of Labor Statistics (BLS), 2018a)","plainCitation":"(Bureau of Labor Statistics (BLS), 2018a)","noteIndex":0},"citationItems":[{"id":984,"uris":["http://zotero.org/groups/945096/items/E3I7HRK8"],"uri":["http://zotero.org/groups/945096/items/E3I7HRK8"],"itemData":{"id":984,"type":"article","title":"Chained consumer price index for fuels and utilities in U.S. city average, all urban consumers, 2000 to 2018","author":[{"literal":"Bureau of Labor Statistics (BLS)"}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. Revenues include all sources of revenue including water revenue, non-water revenue, and municipal transfers to water systems.
b. Total annual monitoring and administrative costs for PWSs are approximately $6.6 million to $7.1 million annually (Exhibit 5 5), with $5.1 million to $5.5 million accruing to small PWSs. Based on 58,325 small systems, this yields an average annual per-system cost of $88 (3% discount rate) to $94 (7% discount rate).

Table XII-2: Annualized Monitoring and Administrative Costs as a Percentage of Average Annual Revenue for Small Private CWSs by Size Category

Size Category	Average Annual Revenues[a]	3% Discount[b]	7% Discount[b]
Population served <100	$139,911	$88 (0.06%)	$94 (0.07%)
Population served 101-500	$351,974	$88 (0.03%)	$94 (0.03%)
Population served 501-3,300	$254,706	$88 (0.03%)	$94 (0.03%)
Population served 3,301-10,000	$951,692	$88 (0.01%)	$94 (0.01%)

Source: Perchlorate Benefit-Cost Analysis Spreadsheet available in the proposed rule docket (EPA-HQ-OW-2018-0780)

a. Based on the CWSS [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"ZkgC4dzL","properties":{"formattedCitation":"(USEPA, 2009c Table 65)","plainCitation":"(USEPA, 2009c Table 65)","noteIndex":0},"citationItems":[{"id":924,"uris":["http://zotero.org/groups/945096/items/DZNAAV6M"],"uri":["http://zotero.org/groups/945096/items/DZNAAV6M"],"itemData":{"id":924,"type":"article","title":"2006 Community Water System Survey - Volume II: Detailed Tables and Survey Methodology","URL":"https://www.epa.gov/dwstandardsregulations/community-water-system-survey","author":[{"literal":"USEPA"}],"issued":{"date-parts":[["2009",5]]},"accessed":{"date-parts":[["2018",8,16]]}},"suffix":"Table 65"}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}] and updated to 2017$ based on the chained consumer price index for fuels and utilities in U.S. city average, all urban consumers [ADDIN ZOTERO_ITEM CSL_CITATION {"citationID":"rkwEpGYT","properties":{"formattedCitation":"(Bureau of Labor Statistics (BLS), 2018a)","plainCitation":"(Bureau of Labor Statistics (BLS), 2018a)","noteIndex":0},"citationItems":[{"id":984,"uris":["http://zotero.org/groups/945096/items/E3I7HRK8"],"uri":["http://zotero.org/groups/945096/items/E3I7HRK8"],"itemData":{"id":984,"type":"article","title":"Chained consumer price index for fuels and utilities in U.S. city average, all urban consumers, 2000 to 2018","author":[{"literal":"Bureau of Labor Statistics (BLS)"}],"issued":{"date-parts":[["2018"]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}]. Revenues include all sources of revenue including water revenue and non-water revenue.
b. Total annual monitoring and administrative costs for PWSs are approximately $6.6 million to $7.1 million annually (Exhibit 5 5), with $5.1 million to $5.5 million accruing to small PWSs. Based on 58,325 small systems, this yields an average annual per-system cost of $88 (3% discount rate) to $94 (7% discount rate).

E. Unfunded Mandates Reform Act

This action does not contain an unfunded mandate of $100 million or more as described in UMRA, 2 U.S.C. 1531–1538. The action imposes minimal enforceable duty on any state, local or tribal governments or the private sector

Based on the cost estimates detailed in Section XI, the EPA determined that compliance costs in any given year would be below the threshold set in UMRA, with maximum single-year

costs of approximately $10.2 million. The EPA has determined that this rule contains a federal mandate that would not result in expenditures of $100 million or more for State, local, and Tribal governments, in the aggregate, or the private sector in any one year.

F. Executive Order 13132: Federalism

This action does not have federalism implications. It will not have substantial direct effects of greater than $25 million on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government. Annual costs are estimated to range from $9.6 million at a 3 percent discount rate to $10.2 million using a 7 percent, with $6.5 million to $7.0 million annually accruing to public entities. The EPA has concluded that this proposed rule may be of interest because it may impose direct compliance costs on State or local governments, and the federal government will not provide the funds necessary to pay those costs.

G. Executive Order 13175: Consultation and Coordination with Indian Tribal Governments

The EPA has concluded that this proposed rule may have Tribal implications, because it may impose direct compliance costs on Tribal governments, and the federal government would not provide the funds necessary to pay those costs. The EPA has identified 768 water systems with 1,167 entry points under Native American ownership that may be subject to the proposed rule. They would bear an estimated total annualized cost of $74,100 at a 3 percent discount rate ($79,625 at 7 percent) to implement this rule as proposed, with all costs attributable to

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monitoring and administrative costs. Estimated average annualized cost per system ranges from $96 at a 3 percent discount rate to $104 at a 7 percent discount rate.

Accordingly, the EPA provides the following Tribal summary impact statement as required by section 5(b) of Executive Order 13175. The EPA consulted with representatives of Tribal officials early in the process of developing this proposed regulation to permit them to have meaningful and timely input into its development. The EPA conducted consultation with Indian Tribes which included a webinar with interested tribes on February 28, 2012, to request input and provide rulemaking information to interested parties. A meeting summary report is available on the docket for public inspection (USEPA 2012a). The EPA notes that 751 of the 768 Tribal systems identified by the Agency as subject to the proposed rule are small systems that are expected to incur only monitoring costs. Due to the health risks associated with perchlorate, capital expenditures needed for compliance with the rule would be eligible for federal funding sources, specifically the Drinking Water State Revolving Fund. In the spirit of Executive Order 13175, and consistent with the EPA policy to promote communications between the EPA and Tribal governments, the EPA specifically solicits additional comment on this proposed rule from Tribal officials.

H. Executive Order 13045: Protection of Children from Environmental Health and Safety Risks

This action is not subject to Executive Order 13045 because it is not economically significant as defined in Executive Order 12866; however, the environmental health risk addressed by this action may have a disproportionate effect on children. Accordingly, the EPA

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evaluated the environmental health or safety effects of perchlorate on children. The results of this evaluation are contained in the Health Effects Technical Support Document (USEPA 2018a) and described in section III of this preamble. The EPA has evaluated the risk associated with perchlorate in drinking water for the sensitive subpopulation – offspring of pregnant women exposed to perchlorate during the first trimester – and established a proposed MCLG that is protective of this subpopulation as well as other children. The EPA also estimated the health risk reduction of the proposed and alternative MCLs. This analysis is described in the Health Risk Reduction and Cost Analysis for the proposed rule (USEPA 2019a) and is summarized in section XI of this preamble. Copies of the Health Effects Technical Support Document and Economic Analysis and supporting information are available in the public docket for today's proposal.

I. Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution, or Use

This rule is not a ''significant energy action'' as defined in Executive Order 13211, ''Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use'' (66 FR 28355 (May 22, 2001)) because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy. This determination is based on the following analysis.

The first consideration is whether the proposed rule would adversely affect the supply of energy. The proposed rule does not regulate power generation, either directly or indirectly. The public and private water systems that the proposed rule regulates do not generate power. Further, the cost increases borne by customers of water utilities as a result of the proposed rule are a low

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percentage of the total cost of water, except for a few water systems that might install treatment technologies and would likely spread that cost over their customer base. In sum, the proposed rule does not regulate the supply of energy, does not generally regulate the utilities that supply energy, and is unlikely to affect significantly the customer base of energy suppliers. Thus, the proposed rule would not translate into adverse effects on the supply of energy.

The second consideration is whether the proposed rule would adversely affect the distribution of energy. The proposed rule does not regulate any aspect of energy distribution. The water systems that are regulated by the proposed rule already have electrical service. At the proposed MCL, one entry point at one system may require incremental power to operate new treatment processes. The increase in peak electricity demand at water utilities is negligible. Therefore, the EPA estimates that the existing connections are adequate and that the proposed rule has no discernable adverse effect on energy distribution.

The third consideration is whether the proposed rule would adversely affect the use of energy. Because only one system is expected to add treatment technologies that use electrical power, this potential impact on sector demand or overall national demand for power is negligible.

Based on its analysis of these considerations, the EPA has concluded that proposed rule is not likely to have a significant adverse effect on the supply, distribution, or use of energy.

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J. National Technology Transfer and Advancement Act of 1995 and 1 CFR part 51

The proposed rule could involve voluntary consensus standards in that it would require monitoring for Perchlorate. The EPA proposed five analytical methods for the identification and quantification of perchlorate in drinking water. The EPA methods 314.0, 314.1, 314.2, 331.0, and 332.0 incorporate quality control criteria which allow accurate quantitation of perchlorate. Additional information about the analytical methods is available in section VII of this notice. The EPA has made, and will continue to make, these documents generally available through [HYPERLINK "http://www.regulations.gov"] and at the U.S. Environmental Protection Agency Drinking Water Docket, William Jefferson Clinton West Building, 1301 Constitution Ave NW, Room 3334, Washington, DC 20460, call (202) 566-2426

The EPA's monitoring and sampling protocols generally include voluntary consensus standards developed by agencies such as ASTM International, Standard Methods and other such bodies wherever the EPA deems these methodologies appropriate for compliance monitoring. The EPA welcomes comments on this aspect of the proposed rulemaking and, specifically, invites the public to identify potentially-applicable voluntary consensus standards and to explain why such standards should be used in this regulation. The Director of the Federal Register approved the voluntary consensus standards incorporated by referenced in § 141.123 of the proposed regulatory text as of April 11, 2007.

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K. Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

The EPA has determined that this proposed rule would not have disproportionately high and adverse human health or environmental effects on minority or low-income populations because it would increase the level of environmental protection for all affected populations without having any disproportionately high and adverse human health or environmental effects on any population, including any minority or low-income population.

The public is invited to comment on this aspect of the proposed rulemaking and, specifically, to recommend additional methods to address Environmental Justice concerns from establishing a drinking water rule for perchlorate in drinking water.

XVII. Consultations with the Science Advisory Board, National Drinking Water Advisory Council, and the Secretary of Health and Human Services

In accordance with sections 1412(d) and 1412(e) of the Safe Drinking Water Act (SDWA), the Agency consulted with the National Drinking Water Advisory Council (NDWAC or the Council); the Secretary of Health and Human Services; and with the EPA Science Advisory Board. The Agency consulted with NDWAC during the Council's October 4-5, 2012 meeting. A summary of the NDWAC recommendations is available in the National Drinking Water Advisory Council, Fall 2012 Meeting Summary Report (NDWAC, 2012b) and the docket for this proposed rule. The EPA carefully considered NDWAC recommendations during the development of a proposed drinking water rule for perchlorate.

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On May 29, 2012, the EPA sought guidance from the EPA Science Advisory Board (SAB) on how best to consider and interpret life stage information, epidemiological and biomonitoring data since the publication of the National Research Council 2005 report, the Agency's physiologically-based pharmacokinetic (PBPK) analyses, and the totality of perchlorate health information to derive a Maximum Contaminant Level Goal (MCLG) for perchlorate (USEPA, 2012; NRC, 2005). On May 29, 2013, the EPA received significant input from SAB, summarized in the report, SAB Advice on Approaches to Derive a Maximum Contaminant Level Goal for Perchlorate (USEPA, 2013a).

On July 15, 2013, the EPA responded by stating that the Agency would consider all the recommendations from the SAB, as it continued working on the development of the rulemaking process for perchlorate (USEPA 2013b). To address SAB recommendations, the EPA collaborated with Food and Drug Administration (FDA) scientists to develop PBPK/pharmacodynamic (PD), or biologically based dose-response (BBDR), models that incorporate all available health related information on perchlorate to predict changes in thyroid hormones in sensitive life stages exposed to different dietary iodide and perchlorate levels (USEPA 2017). As recommended by SAB, the EPA developed these models based upon perchlorate's mode of action (i.e., iodide uptake inhibition by the thyroid) (USEPA 2013a). Additional details are in section III.C. of this notice and in the Health Effects of Perchlorate support document located in the docket for this proposed rule.

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In accordance with SAB recommendations, the EPA developed a two-stage approach to integrate BBDR model results with data on neurodevelopmental outcomes from epidemiological studies, this approach allowed the Agency to link maternal thyroid hormones levels as a result of low iodine intake and perchlorate exposure, to derive an MCLG that directly addresses the most sensitive life stage (USEPA 2013a).

On March 25, 2019, the EPA consulted with the Department of Health and Human Services (HHS). The EPA provided information to HHS officials on the draft proposed perchlorate regulation and considered HHS input as part of the interagency review described in section XVII.A.

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List of Subjects

40 CFR Part 141

Chemicals, Incorporation by reference, Indians-lands, Intergovernmental relations, Radiation protection, Reporting and recordkeeping requirements, Water supply.

40 CFR Part 142

Administrative practice and procedure, Chemicals, Indians-lands, Radiation protection, Reporting and recordkeeping requirements, Water supply.

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Dated: May 23, 2019.

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Andrew R. Wheeler,

Administrator.

ED_005043_00080917-00208

For the reasons stated in the preamble, the Environmental Protection Agency proposes to amend 40 CFR parts 141 and 142 as follows:

PART 141—NATIONAL PRIMARY DRINKING WATER REGULATIONS

1. The authority citation for part 141 continues to read as follows:

   Authority: 42 U.S.C. 300f, 300g-1, 300g-2, 300g-3, 300g-4, 300g-5, 300g-6, 300j-4, 300j-9, and 300j-11.

2. Amend § 141.6 by revising paragraph (a) and adding paragraph (l) to read as follows:

Subpart A—General

§ 141.6 Effective dates.

(a) Except as provided in paragraphs (b) through (l) of this section the regulations set forth in this part shall take effect on June 24, 1977.

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(l) The regulations contained in the revisions to §§ 141.23(a)(4)(i), 141.23(a)(5), 141.23(c),141.23(f)(1), 141.23(i)(1)-(2), 141.23(k)(1)-(3), 141.23(k)(3)(ii), 141.51(b), 141.60(b)(5), 141.62(b), 141.62(c), 141.62(e), Appendix A to Subpart O and Appendix A and B to Subpart Q are effective for the purposes of compliance on [**DATE OF PUBLICATION OF FINAL RULE IN THE FEDERAL REGISTER**].

3. Amend § 141.23 by:

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a. In paragraph (a)(4)(i) table:

i. Revising the table heading; and

ii. Adding an entry for "Perchlorate" in alphabetical order;

b. In paragraph (a)(5), after the text "nickel," adding the text "perchlorate,";

c. In paragraph (c), after the text "nickel," adding the text "perchlorate,";

d. Adding paragraph (c)(10);

e. In paragraph (f)(1), after the text "nickel," adding the text "perchlorate,";

f. In paragraphs (i)(1) and (2), after the text "nickel," adding the text "perchlorate,";

g. Revising paragraph (i)(3);

h. In paragraph (k)(1):

i. Revising the introductory text; and

ii. In the table, adding the table designation, redesignating entries 21 through 26 as 22 through 27, and adding a new entry 21 ~~adding in alphabetical order, an entry for "Perchlorate"~~;

i. In paragraph (k)(2):

i. In the introductory paragraph, after the text "nitrite," adding the text "perchlorate,"; and

ii. In the table, adding the table designation and adding, in alphabetical order, an entry for "Perchlorate";

j. In paragraph (k)(3):

i. In the introductory paragraph, after the text "nitrite" adding the text ", perchlorate,";

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and

ii. In paragraph (ii) table, adding in alphabetical order, an entry for "Perchlorate";

The revisions and additions read as follows:

Subpart C—Monitoring and Analytical Requirements

§141.23 Inorganic chemical sampling and analytical requirements.

*****

(a)***

(4)***

(i)***

TABLE 1 TO PARAGRAPH (a)(4)(i) -- DETECTION LIMITS FOR INORGANIC CONTAMINANTS (COMPOSITED SAMPLES)

Contaminant	MCL (mg/l)	Methodology	Detection limit (mg/l)
**	**	**	*

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Perchlorate	0.056	Ion Chromatography	0.00053
		Inline Column Concentration/Matrix Elimination Ion Chromatography with Suppressed Conductivity Detection	0.00003
		Two-Dimensional Ion Chromatography with Suppressed Conductivity Detection	0.000012-0.000018
		Liquid Chromatography Electrospray Ionization Mass Spectrometry	0.000005 (Tandem Mass Spectrometry [MS/MS]) 0.000008 (Selected Ion Monitoring [SIM])
		Ion Chromatography with Suppressed Conductivity and Electrospray Ionization Mass Spectrometry	0.00002
**	**	**	*

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(c)***

(10) Community water systems and non-transient non-community water systems must conduct initial monitoring for perchlorate as follows:

(i) Community water systems serving greater than 10,000 persons without acceptable historic data, as defined below, must collect four consecutive quarterly samples at all sampling points between January 1, 2023 and December 31, 2025.

(ii) Community water systems serving 10,000 or fewer persons and non-transient non-community water systems without acceptable historic data, as defined below,

must collect four consecutive quarterly samples at all sampling points between January 1, 2026 and December 31, 2028.

(iii) Grandfathering of data: States may allow historical monitoring data collected at a sampling point to satisfy the initial monitoring requirements for that sampling point, for the following situations.

(A) To satisfy initial monitoring requirements, community water systems serving greater than 10,000 persons having only one entry point to the distribution system may use the monitoring data from the compliance monitoring period between January 1, 2020 and December 31, 2022. Community water systems serving 10,000 or fewer persons and non-transient non-community water systems having only one entry point to the distribution system may use the monitoring data from the compliance monitoring period between January 1, 2023 and December 31, 2025.

(B) To satisfy initial monitoring requirements, a system with multiple entry points and having appropriate historical monitoring data for each entry point to the distribution system may use the monitoring data from the compliance monitoring period that began between January 1, 2020 and December 31, 2022, for community water systems serving greater than 10,000 persons and between January 1, 2023 and December 31, 2025, for community water systems serving 10,000 or fewer persons and for non-transient non-community water systems.

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(C) To satisfy initial monitoring requirements, a system with appropriate historical data for a representative point in the distribution system may use the monitoring data from the compliance monitoring period between January 1, 2020 and December 31, 2022, for community water systems serving greater than 10,000 persons and between January 1, 2023 and December 31, 2025, for community water systems serving 10,000 or fewer persons and for non-transient non-community water systems, provided that the State finds that the historical data satisfactorily demonstrate that each entry point to the distribution system is expected to be in compliance based upon the historical data and reasonable assumptions about the variability of contaminant levels between entry points. The State must make a written finding indicating how the data conforms to these requirements.

(iv) The State may waive the final two quarters of initial monitoring for perchlorate for a sampling point if the results of the samples from the previous two quarters are below the detection limit.

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(i)***

(3) Compliance with the maximum contaminant level for nitrate, nitrite and perchlorate is determined based on one sample if the levels of these contaminants are below the MCLs. If the level of perchlorate exceeds the MCL in the initial sample, a confirmation sample is required in accordance with paragraph (f)(1) of this section

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and compliance shall be based on the average of the initial and confirmation sample. If the levels of nitrate and/or nitrite exceed the MCLs in the initial sample, a confirmation sample is required in accordance with paragraph (f)(2) of this section and compliance shall be based on the average of the initial and confirmation sample.

*****

(k)***

(1) Analysis for the following contaminants shall be conducted in accordance with the methods in the following table, or the alternative methods listed in Appendix A to Subpart C of this part, or their equivalent as determined by the EPA. Criteria for analyzing arsenic, barium, beryllium, cadmium, calcium, chromium, copper, lead, nickel, selenium, sodium, and thallium with digestion or directly without digestion, and other analytical test procedures are contained in Technical Notes on Drinking Water Methods, EPA-600/R-94-173, October 1994. This document is available from the National Service Center for Environmental Publications (NSCEP), P.O. Box 42419, Cincinnati, OH 45242-0419 or http://www.epa.gov/nscep/.

Table 2 to paragraph (k)(1)

Contaminant	Methodology[13]	EPA	ASTM[3]	SM[4] (18th, 19th ed.)	SM[4] (20th ed.)	SM Online[22]	Other
*	*	*	*	*	*	*	
21. Perchlorate	Ion Chromatography	314.0[23]					

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	Inline Column Concentration/Matrix Elimination Ion Chromatography with Suppressed Conductivity Detection	314.1[24]					
	Two-Dimensional Ion Chromatography with Suppressed Conductivity Detection	314.2[25]					
	Liquid Chromatography Electrospray Ionization Mass Spectrometry	331.0[26]					
	Ion Chromatography with Suppressed Conductivity and Electrospray Ionization Mass Spectrometry	332.0[27]					
*	*	*	*	*	*	*	

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The approved compliance methods for determining perchlorate in drinking water listed in table 1 to paragraph (k) of this section, are incorporated by reference. The Director of the Federal Register approves this incorporation by reference in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies of the material incorporated by reference in this paragraph (k) may be inspected at the U.S. Environmental Protection Agency, EPA Headquarters Library, in the Water Docket, at the EPA Docket Center (EPA/DC), EPA WJC West, Room 3334, 1301 Constitution Ave., NW, Washington, DC 20460. If you wish to obtain this material

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from the EPA Docket Center, call (202) 566-2426. Copies of this material also may be inspected at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call (202) 741-6030, or go to [HYPERLINK "http://www.archives.gov/federal-register/cfr/ibr-locations.html"].

*****

[3]Annual Book of ASTM Standards, ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428, http://www.astm.org.; Annual Book of ASTM Standards 1994, Vols. 11.01 and 11.02; Annual Book of ASTM Standards 1996, Vols. 11.01 and 11.02; Annual Book of ASTM Standards 1999, Vols. 11.01 and 11.02; Annual Book of ASTM Standards 2003, Vols. 11.01 and 11.02.

*****

[4]Standard Methods for the Examination of Water and Wastewater, American Public Health Association, 800 I Street NW., Washington, DC 20001-3710; Standard Methods for the Examination of Water and Wastewater, 18th edition (1992); Standard Methods for the Examination of Water and Wastewater, 19th edition (1995); Standard Methods for the Examination of Water and Wastewater, 20th edition (1998).The following methods from this edition cannot be used: 3111 B, 3111 D, 3113 B, and 3114 B.

*****

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[13]Because MDLs reported in EPA Methods 200.7 and 200.9 were determined using a 2x preconcentration step during sample digestion, MDLs determined when samples are analyzed by direct analysis (i.e., no sample digestion) will be higher. For direct analysis of cadmium and arsenic by Method 200.7, and arsenic by Method 3120 B, sample preconcentration using pneumatic nebulization may be required to achieve lower detection limits. Preconcentration may also be required for direct analysis of antimony, lead, and thallium by Method 200.9; antimony and lead by Method 3113 B; and lead by Method D3559-90D, unless multiple in-furnace depositions are made.

*****

[22]Standard Methods Online, American Public Health Association, 800 I Street NW., Washington, DC 20001, available at http://www.standardmethods.org. The year in which each method was approved by the Standard Methods Committee is designated by the last two digits in the method number. The methods listed are the only online versions that may be used.

[23] Determination of Perchlorate in Drinking Water Using Ion Chromatography (Revision 1.0, USEPA, 1999a).

[24] Determination of Perchlorate in Drinking Water Using Inline Column Concentration/Matrix Elimination Ion Chromatography with Suppressed Conductivity Detection (Revision 1.0, USEPA, 2005b).

[25] Determination of Perchlorate in Drinking Water Using Two-Dimensional Ion Chromatography with Suppressed Conductivity Detection (USEPA, 2008c).

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[26] Determination of Perchlorate in Drinking Water by Liquid Chromatography Electrospray Ionization Mass Spectrometry" (Revision 1.0, USEPA, 2005c).

[27] Determination of Perchlorate in Drinking Water by Ion Chromatography with Suppressed Conductivity and Electrospray Ionization Mass Spectrometry" (USEPA, Revision 1.0, 2005d).

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*****

(2)***

Table 3 to paragraph (k)(2)

Contaminant	Preservative[1]	Container[2]	Time[3]
**	**	**	*
Perchlorate[7]	4 °C	P or G	28 days
**	**	**	*

[1]For cyanide determinations samples must be adjusted with sodium hydroxide to pH 12 at the time off collection. When chilling is indicated the sample must be shipped and stored at 4 °C or less. Acidification of nitrate or metals samples may be with a concentrated acid or a dilute (50% by volume) solution of the applicable concentrated acid. Acidification of samples for metals analysis is encouraged and allowed at the laboratory rather than at the time of sampling provided the shipping time and other instructions in Section 8.3 of EPA Methods 200.7 or 200.8 or 200.9 are followed.

[2]P = plastic, hard or soft; G = glass, hard or soft.

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[3]In all cases samples should be analyzed as soon after collection as possible. Follow additional (if any) information on preservation, containers or holding times that is specified in method.

*****

[7] Sample collection for perchlorate shall be conducted following the requirements specified in the approved methods in 141.23(k)(1) or the alternative methods listed in appendix A of subpart C of this part, or their equivalent as determined by the EPA.

*****

(3)***

(ii)***

Contaminant	Acceptance limit
*******	*******
Perchlorate	± 20% at ≥0.004 mg/L
*******	*******

*****

4. Amend § 141.51, paragraph (b) in the table, by adding in alphabetical order, an entry for "Perchlorate" to read as follows:

Subpart F—Maximum Contaminant Level Goals and Maximum Residual Disinfectant Level Goals

§141.51 Maximum contaminant level goals for inorganic contaminants.

*****

(b)***

Contaminant	MCLG (mg/l)
****	***
Perchlorate	0.056
****	***

*****

5. Amend § 141.60 by adding paragraph (b)(5) to read as follows:

Subpart G—National Primary Drinking Water Regulations: Maximum Contaminant Levels and Maximum Residual Disinfectant Levels

§141.60 Effective dates.

(b)***

(5) The effective date for § 141.62(b)(17) is [**DATE OF PUBLICATION OF FINAL RULE IN THE FEDERAL REGISTER**].

6. Amend § 141.62 by:

a. In the table in paragraph (b), adding an entry for "(17) Perchlorate" at the end of the table;;

b. In the table in paragraph (c), adding an entry for "Perchlorate" in alphabetical order;

c. In paragraph (c) under the undesignated heading entitled "Key to BATs", adding an entry "14 = Biological Treatment"; and

d. Adding paragraph (e).

The revisions and additions read as follows:

§141.62 Maximum contaminant levels for inorganic contaminants.

*****

(b)***

Contaminant	MCL (mg/l)
****	***
(17) Perchlorate	0.056

(c)***

BAT FOR INORGANIC COMPOUNDS LISTED IN SECTION 141.62(B)

Chemical Name	BAT(s)
****	***
Perchlorate	5, 7, 14
****	***

*****

Key to BATs in Table

*****

14 = Biological Treatment

*****

(e) The Administrator, pursuant to section 1412 of the Act, hereby identified in the following table the affordable technology, treatment technique, or other means available to systems serving 10,000 persons or fewer for achieving compliance with the maximum contaminant level for perchlorate:

Table 1 to Paragraph(e) -- **SMALL SYSTEM COMPLIANCE TECHNOLOGIES (SSCTS) FOR PERCHLORATE**

Small system compliance technology	Affordability for listed small system categories
Ion exchange	All size categories.
Reverse osmosis (point of use)	All size categories

7. Amend Appendix A to Subpart O of Part 141 table, under "Inorganic contaminants", by adding an entry for "Perchlorate" in alphabetical order to read as follows:

Subpart O—Consumer Confidence Reports

APPENDIX A TO SUBPART O OF PART 141—REGUATED CONTAMINANTS

Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects language
*	*	*	*	*	*	*
Inorganic contaminants						
*	*	*	*	*	*	*

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Perchlorate	0.056	1000	56	56	Perchlorate is commonly used in solid rocket propellants, munitions, fireworks, airbag initiators for vehicles, matches and signal flares. Perchlorate may occur naturally, particularly in arid regions such as the southwestern United States and is found as a natural impurity in nitrate salts used to produce nitrate fertilizers, explosives and other products.	Offspring of pregnant women and infants who drink water containing perchlorate in excess of the MCL could experience delays in their physical or mental development.
*	*	*	*	*	*	*

8. Amend Appendix A to Subpart Q of Part 141 table, under "B. Inorganic contaminants", by adding an entry for "Perchlorate" in alphabetical order to read as follows:

Subpart Q Public Notification of Drinking Water Violations

*****

APPENDIX A TO SUBPART Q OF PART 141—NPDWR VIOLATIONS AND OTHER SITUATIONS REQUIRING PUBLIC NOTICE[1]

Contaminant	MCL/MRDL/TT violations[2]		Monitoring & testing procedure violations	
	Tier of public	Citation	Tier of public	Citation

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	notice required		notice required	
*******				
B. Inorganic Chemicals (IOCs)				
*******				
14. Perchlorate	1	141.62(b)	3	141.23(a), (c), 141.23(f)(1)
*******				

[1] Violations and other situations not listed in this table (e.g., failure to prepare Consumer Confidence Reports), do not require notice, unless otherwise determined by the primacy agency. Primacy agencies may, at their option, also require a more stringent public notice tier (e.g., Tier 1 instead of Tier or Tier 2 instead of Tier 3) for specific violations and situations listed in this Appendix, as authorized under 141.202(a) and 141.203(a).

[2] MCL-Maximum contaminant level, MDRL-Maximum residual disinfectant level, TT-treatment technique

*****

9. Amend Appendix B to Subpart Q of Part 141 table, under "C. Inorganic contaminants", by adding an entry for "Perchlorate" in alphabetical order to read as follows :

APPENDIX B TO SUBPART Q OF PART 141—STANDARD HEALTH EFFECTS LANGUAGE FOR PUBLIC NOTIFICATION

Contaminant	MCLG[1] mg/L	MCL[2] mg/L	Standard health effects language for public notification
*******			
C. Inorganic Chemicals (IOCs)			
*******	*******	*******	*******

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21. Perchlorate	0.056	0.056	Offspring of pregnant women and infants who drink water containing perchlorate in excess of the MCL could experience delays in their physical or mental development.
*******	********	********	********

[1] MCLG – Maximum contaminant level goal

[2] MCL – Maximum contaminant level

PART 142—NATIONAL PRIMARY DRINKING WATER REGULATIONS IMPLEMENTATION

10. The authority citation for part 142 continues to read as follows:

Authority: 42 U.S.C. 300f, 300g-1, 300g-2, 300g-3, 300g-4, 300g-5, 300g-6, 300j-4, 300j-9, and 300j-11.

11. In § 142.62 paragraph (b):

a. In the table, by adding an entry for "Perchlorate" in alphabetical order; and

b. Under the undesignated heading entitled "Key to BATs", adding an entry "13 = Biological Treatment".

Subpart G—Identification of Best Technology, Treatment Techniques or Other Means Generally Available.

*****

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§142.62 Variances and exemptions from the maximum contaminant levels for organic and inorganic chemicals.

*****

(b)***

BAT FOR INORGANIC COMPOUNDS LISTED IN §141.62(b)

Chemical Name	BAT(s)
****	****
Perchlorate	5, 7, 14
****	***

*****

Key to BATs in Table

*****

13 = Biological Treatment

*****

Message

From: Christ, Lisa [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=10DBD8E424704E43B5A50F74A4DAC626-LCHRIST]
Sent: 5/23/2019 1:09:57 PM
To: Tiago, Joseph [Tiago.Joseph@epa.gov]
Subject: FW: Revised FRN 5/23/19
Attachments: NPDWR for the Proposed Perchlorate Rule 5-23-19 Ver 0.docx; Redline 5-23-19 Ver0 Perchlorate FRN.docx

From: Hernandez-Quinones, Samuel
Sent: Thursday, May 23, 2019 1:03 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>
Subject: Revised FRN 5/23/19

Hi Eric,
Attached is a clean version of the FRN which incorporates the edits that were offered to OMB earlier tonight. I am also providing here a Redline version that shows the edits the we have incorporated (mainly format) since we sent an updated Version to OMB at 12:53 pm on 5/22/19.

Let me know if you have any comment on the attached files.

Thank You
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

Message

From: Christ, Lisa [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=10DBD8E424704E43B5A50F74A4DAC626-LCHRIST]
Sent: 5/7/2019 1:43:11 PM
To: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
Subject: FW: OMB Comments on Draft Perchlorate MCL NPRM (1 of 2)
Attachments: EPA Perchlorate MCL NPRM DMM(OMB 04-30-19) (002).docx

FYI

From: Messier, Dawn
Sent: Friday, May 03, 2019 3:04 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>
Subject: RE: OMB Comments on Draft Perchlorate MCL NPRM (1 of 2)

Attached are my responses to OMB's comments. Carrie – please feel free to review and add anything else that jumps out at you. Please let me know if you have any questions. Thanks. Dawn

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

From: Burneson, Eric
Sent: Wednesday, May 01, 2019 9:15 AM
To: Wehling, Carrie <Wehling.Carrie@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>
Subject: FW: OMB Comments on Draft Perchlorate MCL NPRM (1 of 2)

Carrie and Dawn:
We received the attached comments from OMB and will need to consult with OGC regarding some of the proposed revisions in the attached document. We are still digesting these comments but I wanted to get them in your hands ASAP as we will likely have questions soon for which we may need quick answers.
Eric

From: Dorjets, Vlad EOP/OMB <Vladik_Dorjet Ex. 6 Personal Privacy (PP)
Sent: Tuesday, April 30, 2019 8:16 PM
To: Nickerson, William <Nickerson.William@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>
Subject: OMB Comments on Draft Perchlorate MCL NPRM (1 of 2)

Bill,

Please find attached OMB's comments on EPA's draft proposal setting an MCL for perchlorate. Specifically, I have attached comments on the NPRM document and the HRRCA. I have also provide a separate set of comments on EPA's

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Please note that I am still awaiting comments from one particular agency. I explained the situation to Eric earlier today so he can provide additional context. I'm hoping to get clarity on the situation tomorrow.

Please don't hesitate to let me know if you have any questions about OMB's comments. In fact, once you have had a chance to review them, it may make sense for us to set up a call to get your reactions and answer any questions you may have. Either way, once I receive a revised set of documents from you, I intend to circulate them for a *very quick* interagency review. While I would normally prefer to get another round of staff-level comments before determining which outstanding concerns require elevation, I don't think we will have the luxury of doing that. When I circulate the comments for another round of review, I thus intend to specify agencies only provide substantive comments which have policy-level support.

Vlad

Message

From: Christ, Lisa [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=10DBD8E424704E43B5A50F74A4DAC626-LCHRIST]
Sent: 4/12/2019 1:30:10 PM
To: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
Subject: FW: Perchlorate
Attachments: EO12866_SDWA NPDWR 2040-AF28 FRN Perchlorate Rule 20190412 Redlinev5.docx

Hi Sam –
It looks like Jennifer did not comment in track changes. She did rename the file though. Can you please confirm all edits are contained here? Then send me the version for OMB review and the updated memos and I'll send everything to Jennifer.

A HUGE THANK YOU FOR ALL THE TIME AND HARD WORK ON THIS!!!

From: Mclain, Jennifer
Sent: Friday, April 12, 2019 9:25 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>; Rodgers-Jenkins, Crystal <Rodgers-Jenkins.Crystal@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>
Subject: Perchlorate

Lisa,

I have completed my review of the draft perchlorate rule and approve submission to OP for OMB review. The attached document contains my minor edits. Fantastic effort by you and your team to complete the requested revisions so quickly.

Thanks so much!
Jennifer

Message

From: Christ, Lisa [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=10DBD8E424704E43B5A50F74A4DAC626-LCHRIST]
Sent: 4/12/2019 5:48:34 PM
To: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]; Khera, Rajiv [khera.rajiv@epa.gov]
Subject: FW: Revised Perchlorate FRN and related items (to go TO OP today
Attachments: EO12866_SDWA NPDWR 2040-AF28 FRN Perchlorate HRRCA 20190412.docx; Transmittal Memo JM to DR 4-9-19.docx; Perchlorate Draft Action Memo 4-9-19.docx; image2019-04-12-134922.pdf; EO12866_SDWA NPDWR 2040-AF28 FRN Perchlorate Rule 20190412.docx

FYI --

From: Corr, Elizabeth
Sent: Friday, April 12, 2019 1:45 PM
To: Lousberg, Macara <Lousberg.Macara@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Brown, Sineta <Brown.Sineta@epa.gov>; Fields, Wanda <Fields.Wanda@epa.gov>
Cc: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>
Subject: Revised Perchlorate FRN and related items (to go TO OP today

HRRCA, transmittal, action memo, pdf of Jennifer's signature, and FRN. Pls let us know if anything else is needed to get the package to OP today. (I will be here til 3 PM.)
Many thanks.

From: Christ, Lisa
Sent: Friday, April 12, 2019 11:38 AM
To: Corr, Elizabeth <Corr.Elizabeth@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>
Cc: Tiago, Joseph <Tiago.Joseph@epa.gov>
Subject: FW: Revised Perchlorate FRN, HRRCA & Transmittal Memos

FYI ---

From: Christ, Lisa
Sent: Friday, April 12, 2019 10:52 AM
To: Mclain, Jennifer <Mclain.Jennifer@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>; Rodgers-Jenkins, Crystal <Rodgers-Jenkins.Crystal@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Khera, Rajiv <khera.rajiv@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: FW: Revised Perchlorate FRN, HRRCA & Transmittal Memos

Hi Jennifer,
Attached for your transmittal to OW are the following:
The FRN for the NPDWR for Perchlorate, proposed rule (a clean and a track changes version for convenience)
Health Risk Reduction Cost Analysis
Transmittal/Action memos

Let us know if you need anything else.

Lisa

From: Hernandez-Quinones, Samuel
Sent: Friday, April 12, 2019 10:44 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Khera, Rajiv <Khera.Rajiv@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: Revised Perchlorate FRN, HRRCA & Transmittal Memos

Hi,

Attached are the revised clean versions of the Perchlorate FRN and HRRCA, which incorporate all the suggested edits to date (4-12-19).

Here also you will find a revised redline version which incorporates all edits and changes to the document made to the FRN since the last OW-IO review (3-11-19).

Finally, attached are the most recent version of the corresponding transmittal memos.

Let me know if you have any questions or comments.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

Message

From: Christ, Lisa [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=10DBD8E424704E43B5A50F74A4DAC626-LCHRIST]
Sent: 2/21/2019 9:14:50 PM
To: Jones, Lindsey [jones.lindsey@epa.gov]
CC: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]; Johnson, Ann [Johnson.Ann@epa.gov]
Subject: draft perchlorate proposal
Attachments: Request for review - Draft Perchlorate Rule Proposal ; Technical Support Documents - Draft Perchlorate Rule Proposal

Hi Lindsey,
As follow up to our call, I'm sending the draft proposal and technical support documents. We received very helpful feedback and comments from Ann Johnson and Chris Dockins. We're in the process of addressing theirs and other EPA reviewers comments. Let us know if you have questions, etc.

Lisa

Message

From: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
Sent: 2/4/2019 3:31:38 PM
To: Johnson, Ann [Johnson.Ann@epa.gov]; Dockins, Chris [Dockins.Chris@epa.gov]; Shao, Nicole [Shao.Nicole@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Flowers, Lynn [Flowers.Lynn@epa.gov]; Foster, Stiven [Foster.Stiven@epa.gov]
CC: Christ, Lisa [Christ.Lisa@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]; Flaharty, Stephanie [Flaharty.Stephanie@epa.gov]; Messier, Dawn [Messier.Dawn@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]; Huff, Lisa [Huff.Lisa@epa.gov]; Khera, Rajiv [Khera.Rajiv@epa.gov]
Subject: Request for review - Draft Perchlorate Rule Proposal
Attachments: Version-Control Perchlorate Rule FRN 2-4-19.docx

Preliminary draft for internal EPA review

Hi,

Attached for your review is the Draft Perchlorate Rule Proposal (Preamble and Regulatory Text). As discussed previously we are asking that you provide your questions and or comments on the draft document to me by COB 2/15/2019. In order to keep with the consent decree deadline, we need to complete this step of the process within two weeks, if there are any issues that require technical discussions please let me know so that we can arrange any necessary working meeting.

I will follow-up with another email later today that contains the draft version of the technical support documents that were used as the basis for the Perchlorate proposal. Since those are very lengthy documents we are not requesting that you submit input and/or comments on those within the two- week time frame.

Please let me know if you have any questions.

Thanks
Sam

==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

Message

From: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
Sent: 2/4/2019 8:54:44 PM
To: Johnson, Ann [Johnson.Ann@epa.gov]; Dockins, Chris [Dockins.Chris@epa.gov]; Shao, Nicole [Shao.Nicole@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Flowers, Lynn [Flowers.Lynn@epa.gov]; Foster, Stiven [Foster.Stiven@epa.gov]; Kyprianou, Rose [Kyprianou.Rose@epa.gov]; Miller, Wynne [Miller.Wynne@epa.gov]; Raffaele, Kathleen [raffaele.kathleen@epa.gov]
CC: Christ, Lisa [Christ.Lisa@epa.gov]; Khera, Rajiv [Khera.Rajiv@epa.gov]
Subject: Technical Support Documents - Draft Perchlorate Rule Proposal
Attachments: 181129_DRAFT MCLG TSD.DOCX; Draft Perchlorate HRRCA 2019-02-03.docx; PerchlorateOccMonitoringReport_Updated 2-1-19.docx; Perchlorate T&C November 2018.docx; Perchlorate BAT and SSCT November 2018.docx; WA459_T4_Vol1 Main Report_181113.docx

Preliminary draft for internal EPA review

Hi,

Attached are copies of the draft technical support documents that were used as basis for the Perchlorate Rule Proposal. As mentioned earlier today we are not requesting comments on these documents within the two-week review time frame.

Economic Analysis
MCLG Derivation Document
Treatment Technologies & Costs Document
Occurrence & Monitoring Report
MCLG Approaches Document
Best Available Technologies Document

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Hernandez-Quinones, Samuel
Sent: Monday, February 04, 2019 10:32 AM
To: Cc: Christ, Lisa <christ.lisa@epa.gov>; Burneson, Eric <burneson.eric@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>
Subject: Request for review - Draft Perchlorate Rule Proposal

Preliminary draft for internal EPA review

Hi,

Attached for your review is the Draft Perchlorate Rule Proposal (Preamble and Regulatory Text). As discussed previously we are asking that you provide your questions and or comments on the draft document to me by

COB 2/15/2019. In order to keep with the consent decree deadline, we need to complete this step of the process within two weeks, if there are any issues that require technical discussions please let me know so that we can arrange any necessary working meeting.

I will follow-up with another email later today that contains the draft version of the technical support documents that were used as the basis for the Perchlorate proposal. Since those are very lengthy documents we are not requesting that you submit input and/or comments on those within the two- week time frame.

Please let me know if you have any questions.

Thanks
Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

Message

From: Christ, Lisa [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=10DBD8E424704E43B5A50F74A4DAC626-LCHRIST]
Sent: 2/6/2019 6:50:20 PM
To: Nurse, Leanne [Nurse.Leanne@epa.gov]
CC: Johnson, Ann [Johnson.Ann@epa.gov]; Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
Subject: FW: Request for review - Draft Perchlorate Rule Proposal
Attachments: Version-Control Perchlorate Rule FRN 2-4-19.docx

Hi Leanne,
I understand you've requested the FRN for the perchlorate proposal – it's attached. Please keep a close hold on the draft notice.

Thank you,
Lisa

From: Hernandez-Quinones, Samuel
Sent: Monday, February 04, 2019 10:32 AM
To: Johnson, Ann <Johnson.Ann@epa.gov>; Dockins, Chris <Dockins.Chris@epa.gov>; Shao, Nicole <Shao.Nicole@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>; Foster, Stiven <Foster.Stiven@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>
Subject: Request for review - Draft Perchlorate Rule Proposal

Preliminary draft for internal EPA review

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Please let me know if you have any questions.

Thanks
Sam
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Samuel Hernández Quiñones, P.E.
Environmental Engineer
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"USEPA Protecting Human Health and the Environment"

Message

From: Christ, Lisa [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=10DBD8E424704E43B5A50F74A4DAC626-LCHRIST]
Sent: 2/1/2019 8:58:50 PM
To: Flaharty, Stephanie [Flaharty.Stephanie@epa.gov]
CC: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
Subject: FW: Revised Version FRN
Attachments: Version-Control Perchlorate Rule FRN 2-1-19 SHQ.docx

Hi Stephanie,
Ex. 6 Personal Privacy (PP). I'm not sure what your schedule is, so I'm sending the attached draft perchlorate proposal for your review. It has undergone review by Eric, Jennifer, OGC and Lee and Dave. Lee and Dave did not have comment at this time. Sam will be sending the attached to the workgroup Monday for a two week review [comments due 2/15]. Our plan is to get the proposal to OP the week of March 4 for transmittal to OMB for 12866 review. Let us know if you have questions, concerns, etc.

Thanks!
Lisa

From: Hernandez-Quinones, Samuel
Sent: Friday, February 01, 2019 3:27 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Subject: Revised Version FRN

Hi Lisa,

Attached is the revised "Draft FRN" file.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

Message

From: Christ, Lisa [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=10DBD8E424704E43B5A50F74A4DAC626-LCHRIST]
Sent: 12/17/2018 4:17:50 PM
To: Wadlington, Christina [Wadlington.Christina@epa.gov]
Subject: FW: Revised Version - Perchlorate FRN
Attachments: Perchlorate Rule FRN 12-12-18-clean.docx

From: Christ, Lisa
Sent: Wednesday, December 12, 2018 2:11 PM
To: Mclain, Jennifer <Mclain.Jennifer@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>
Subject: RE: Revised Version - Perchlorate FRN

Jennifer –
The attached revised FRN addressed your edits and most of your comments/questions. Also, a few additional edits from Eric and Rajiv. As suggested by Eric, some of your questions are "open items" to be addressed post-OW/OGC review.
Lisa

From: Mclain, Jennifer
Sent: Tuesday, December 11, 2018 5:52 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>
Subject: RE: Revised Version - Perchlorate FRN

Lisa,
I am so impressed by the quality of the proposal your team put together. The attached includes my edits and comments/questions. If it would be helpful for you all to sit down and go over some of the later, rather than trying to respond in comment bubbles, I'm happy to do that. I am not as well versed on this information as you all so I may have made edits or comments that are not appropriate. If that is the case, please ignore the edit and don't feel the need to explain why.
Thanks much,
Jennifer

From: Christ, Lisa
Sent: Friday, December 07, 2018 3:16 PM
To: Mclain, Jennifer <Mclain.Jennifer@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>
Subject: FW: Revised Version - Perchlorate FRN

Hi Jennifer,
The attached perchlorate proposal addresses my comments and Eric's. We have some additional information we are working on to provide more context for the HRRCA section. This version is ready for your and OW/OGC review. We'll fold in our additional information in the next round of edits.

Let us know if you have questions or concerns.

Lisa

From: Hernandez-Quinones, Samuel
Sent: Friday, December 07, 2018 3:10 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Subject: Revised Version - Perchlorate FRN

Hi Lisa,

Attached is the revised FRN for Perchlorate.

Thanks

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

Message

From: Christ, Lisa [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=10DBD8E424704E43B5A50F74A4DAC626-LCHRIST]
Sent: 12/13/2018 6:59:54 PM
To: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]; Khera, Rajiv [khera.rajiv@epa.gov]
Subject: FW: Revised Version - Perchlorate FRN
Attachments: Perchlorate Rule FRN 12-7-18 jlm-commentbubbles.docx

Good Afternoon!
I sent the revised draft FRN to Jennifer yesterday. I did not have time to address all of her questions though. We'll be meeting with her Monday to follow up. The attached are her comments, not the revised version. The comments/questions I handled or knew the answer I added a reply in her comment bubbles. I also flagged bubbles for your follow up. Sam, we may need Abt to help answer questions related to the epi studies. Rajiv, yours are in the HRRCA section. We can incorporate these revisions when we get OW and OGC comments 12/21.
Let me know if you have questions, etc.

THANKS!
Lisa

From: Mclain, Jennifer
Sent: Tuesday, December 11, 2018 5:52 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>
Subject: RE: Revised Version - Perchlorate FRN

Lisa,
I am so impressed by the quality of the proposal your team put together. The attached includes my edits and comments/questions. If it would be helpful for you all to sit down and go over some of the later, rather than trying to respond in comment bubbles, I'm happy to do that. I am not as well versed on this information as you all so I may have made edits or comments that are not appropriate. If that is the case, please ignore the edit and don't feel the need to explain why.
Thanks much,
Jennifer

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To: Mclain, Jennifer <Mclain.Jennifer@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>
Subject: FW: Revised Version - Perchlorate FRN

Hi Jennifer,
The attached perchlorate proposal addresses my comments and Eric's. We have some additional information we are working on to provide more context for the HRRCA section. This version is ready for your and OW/OGC review. We'll fold in our additional information in the next round of edits.

Let us know if you have questions or concerns.

Lisa

From: Hernandez-Quinones, Samuel
Sent: Friday, December 07, 2018 3:10 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Subject: Revised Version - Perchlorate FRN

Hi Lisa,

Attached is the revised FRN for Perchlorate.

Thanks

Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

Message

From: Christ, Lisa [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=10DBD8E424704E43B5A50F74A4DAC626-LCHRIST]
Sent: 11/29/2018 9:56:14 PM
To: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
Subject: FW: perchlorate FRN comments
Attachments: Version-Control Perchlorate Rule FRN 11-21-18 SHQv2 gMiller comments.docx

Hi Sam –
Please look at Greg's comment on page 33 regarding the different body weights used in the BBDR model and MCLG derivation. This seems significant to me. Also, the comment on page 34 asking for a reference regarding our assessment that ingestion is the only perchlorate exposure route.
Thanks!
Lisa

From: Miller, Gregory
Sent: Wednesday, November 28, 2018 2:55 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Strong, Jamie <Strong.Jamie@epa.gov>
Subject: perchlorate FRN comments

Thank you Lisa and Sam! Attached are my comments. Let me know if you have any questions. I'm looking over the other material you provided as well but please let me know when the "Technical Support Document: Deriving a Maximum Contaminant Level Goal for Perchlorate in Drinking Water" is ready.

Greg Miller, Senior Environmental Health Scientist
Team Lead, Human Health Risk Assessment Branch
Office of Science and Technology, Health and Ecological Criteria Division
US Environmental Protection Agency, Office of Water
1200 Pennsylvania Ave, NW (MC 4304T)
Washington, DC 20460

phone: (202) 566-2310

From: Christ, Lisa
Sent: Tuesday, November 27, 2018 9:45 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Strong, Jamie <Strong.Jamie@epa.gov>
Cc: Miller, Gregory <Miller.Gregory@epa.gov>
Subject: RE: perchlorate timeline

Sam –
Can you provide the MCLG approaches, occurrence and EA TSDs?
Lisa

From: Hernandez-Quinones, Samuel
Sent: Tuesday, November 27, 2018 9:44 AM

To: Strong, Jamie <Strong.Jamie@epa.gov>
Cc: Miller, Gregory <Miller.Gregory@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: RE: perchlorate timeline

Hi Jamie,

We should be receiving the revised draft of the Perchlorate Health Effects & MCLG Derivation Document this week. As soon as I get that document I will forward to Greg and you.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
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1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Strong, Jamie
Sent: Tuesday, November 27, 2018 9:38 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Cc: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>
Subject: RE: perchlorate timeline

Yes, can you send the TSDs too?

From: Christ, Lisa
Sent: Monday, November 26, 2018 1:17 PM
To: Strong, Jamie <Strong.Jamie@epa.gov>
Cc: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>
Subject: RE: perchlorate timeline

Hi Jamie,

OF course. Here's the draft Eric and Jennifer are currently reviewing. Please provide comments by COB this Friday (or sooner). That will allow us to make any revisions before it goes to Dave Ross and OGC next Monday 12/3. We have drafts of the technical support documents that are referenced in the notice. Let us know if you want to see those too.

Lisa

From: Strong, Jamie
Sent: Monday, November 26, 2018 1:03 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Subject: FW: perchlorate timeline

Lisa,
Can you provide the draft to us early?

Thanks,
Jamie

From: Miller, Gregory
Sent: Monday, November 26, 2018 12:53 PM
To: Strong, Jamie <Strong.Jamie@epa.gov>
Subject: perchlorate timeline

Hey,
Just looking at the perchlorate timeline you gave me. I will be on vacation during the period of IntraAgency Review. Any chance they can get us the draft the week of 12/10-14 during the OG/OGC review?

I'm out starting 12/17 and back in the office on 1/2/19.

Message

From: Christ, Lisa [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=10DBD8E424704E43B5A50F74A4DAC626-LCHRIST]
Sent: 11/29/2018 4:49:29 PM
To: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
Subject: FW: perchlorate FRN comments
Attachments: Version-Control Perchlorate Rule FRN 11-21-18 SHQv2 gMiller comments.docx

Hi Sam –
Please be prepared to summarize Greg's comments/concerns for this afternoon's meeting with Eric. For example he wants us to take comment on the RSC methodology. I'm not sure Eric or Jennifer would agree.

Thanks,
Lisa

From: Miller, Gregory
Sent: Wednesday, November 28, 2018 2:55 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Strong, Jamie <Strong.Jamie@epa.gov>
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Greg Miller, Senior Environmental Health Scientist
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phone: (202) 566-2310

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"USEPA Protecting Human Health and the Environment"

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Sent: 11/26/2018 6:16:40 PM
To: Strong, Jamie [Strong.Jamie@epa.gov]
CC: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]
Subject: RE: perchlorate timeline
Attachments: Version-Control Perchlorate Rule FRN 11-21-18 SHQv2.docx

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From: Miller, Gregory
Sent: Monday, November 26, 2018 12:53 PM
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Subject: perchlorate timeline

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Ex. 6 Personal Privacy (PP)

Message

From: Christ, Lisa [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=10DBD8E424704E43B5A50F74A4DAC626-LCHRIST]
Sent: 11/19/2018 9:24:59 PM
To: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
CC: Khera, Rajiv [Khera.Rajiv@epa.gov]
Subject: RE: Revised Version 2 - Preamble
Attachments: Version-Control Preamble 11-19-18v2 SHQ-lc EO section comments.docx

Okay – my comments on the EO/Administrative section are attached.
Whew

If you have the most up to date version of the reg text, please send and I'll review it too.

TY

From: Hernandez-Quinones, Samuel
Sent: Monday, November 19, 2018 3:30 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Cc: Khera, Rajiv <Khera.Rajiv@epa.gov>
Subject: Revised Version 2 - Preamble

Hi Lisa,

The attached version incorporates the revisions from the Economic technical analysis into the pending sections of the preamble. There are very few open items left, mainly references and cross/labels that I will update once we receive the final version of the Augmented MCLG Report Document.

I labeled this as Version 2 (v2). Let me know if you have any comments or edits so I can transfer them to the master file.

Thanks
Sam

==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

Message

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Sent: 11/19/2018 8:33:33 PM
To: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
CC: Khera, Rajiv [Khera.Rajiv@epa.gov]
Subject: RE: Revised Version 2 - Preamble
Attachments: Version-Control Preamble 11-19-18 SHQ_lc.docx

Hi Sam,
The attachment has my comments on the previous version of the FRN. I'll pick up review of the EO sections using version 2. I set up a meeting with Stephanie tomorrow to go over some formatting questions I have. I also plan to look over the reg text again – is there a newer version?

Thanks!
Lisa

From: Hernandez-Quinones, Samuel
Sent: Monday, November 19, 2018 3:30 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Cc: Khera, Rajiv <Khera.Rajiv@epa.gov>
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Samuel Hernández Quiñones, P.E.
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Sent: 6/17/2020 2:25:34 PM
To: Alattar, Zaineb [alattar.zaineb@epa.gov]; Newcamp, Caitlin [Newcamp.Caitlin@epa.gov]
Subject: FW: Review of Perchlorate Notice Concluded

FYI

From: McLain, Jennifer L. <McLain.Jennifer@epa.gov>
Sent: Wednesday, June 17, 2020 10:25 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Cc: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>; Rodgers-Jenkins, Crystal <Rodgers-Jenkins.Crystal@epa.gov>
Subject: RE: Review of Perchlorate Notice Concluded

Dear perchlorate team – You have been amazing to work with throughout the development of the perchlorate proposed rule and final action. I so appreciate your dedication, persistence, and expertise. A job well done!

Best,
Jennifer

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Wednesday, June 17, 2020 9:04 AM
To: McLain, Jennifer L. <McLain.Jennifer@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>
Cc: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>
Subject: FW: Review of Perchlorate Notice Concluded

Jennifer and Yu-Ting
OMB review of perchlorate is concluded. We can proceed with the necessary steps towards signature and roll out. Many thanks to the perchlorate team for their excellent work!

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]
Sent: Wednesday, June 17, 2020 9:01 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Parikh, Pooja <Parikh.Pooja@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Manibusan,

Mary <Manibusan.Mary@epa.gov>
Subject: Review of Perchlorate Notice Concluded

Eric,

OMB has concluded its review of the Perchlorate notice.

Vlad

JK: Basically, the explanation is that the log distribution results in the larger unit changes at the higher fT4 levels? Does this highlight an insensitivity of the BBDR model?

The smaller delta in fT4 is because the distribution of fT4 is decreased by a consistent ratio as the mean value of fT4 is decreased by perchlorate. Thus changes at *lower* percentiles require a *smaller* unit change to result in the consistent ratio and changes at *higher* percentiles results in *greater* unit changes.

The BBDR model prediction used is the central tendency (i.e., 50th percentile). Because the BBDR model can be calibrated to any given percentile, but does not predict the distribution of fT4 levels, it was necessary to derive a fT4 distribution to identify a hypothyroxinemic threshold. EPA assumed a lognormal distribution with a Geometric Standard Deviation based on 2 to 3 studies depending on the gestational week.

KB: My reaction, as noted in my earlier email, is this result COULD also be attributed to an inaccuracy of the derived regression equations. If we make reference to ADDITIONAL uncertainties in 6.5.6 – we should call out some specifics, I would suggest, rather then imply by omission that it is solely the function of distribution approaches.

Most of the regression analysis equations are simply: Change in neuro outcome = slope X the change in fT4. The regression equations play no part in the size of the change in fT4 from the distribution.

The derivation of the distribution is critical to understanding the entire approach and I think the uncertainties are better highlighted in question 13 that discusses the derived fT4 distribution and not question 11 which focuses on the regression analyses. Our suggested edits to question #13 (highlighted below) incorporate language identifying the size differences in unit changes based on percentile examined and the uncertainties associated with fT4 levels at certain percentiles.

"Hypothyroxinemia is the condition of having an abnormally low level of T4 in the blood and TSH is in the normal range, and in diagnosing this condition the threshold for "abnormally low" is often selected to be the 2.5^{th}, 5th or 10th percentile of the population fT4 distribution. Because the BBDR model can be calibrated to any given percentile, but does not predict the distribution of fT4 levels, it was necessary to derive a fT4 distribution to identify a hypothyroxinemic threshold. EPA assumed a lognormal distribution with a Geometric Standard Deviation based on 2 to 3 studies depending on the gestational week. There is uncertainty regarding the true fT4 levels at various percentiles in the distribution around the median output from the BBDR model. This is exemplified by the fact that for some of the analyses larger unit changes are being seen with increasing percentiles of fT4 in most analyses (See tables 24, 30, 31, 32 and 33 of the MCLG Approaches Report). Specifically, as the mean value of fT4 is decreased due to perchlorate, the distribution of fT4 is decreased by a consistent ratio. Subsequently, for the functions based on the change in fT4, changes at lower percentiles require smaller unit changes to result in the consistent ratio where changes at higher percentiles require greater unit changes to result in the consistent ratio. Please comment on the assumptions, strengths and limitations of the derived fT4 distribution for the purposes of this analysis."

To get to the concern regarding regression equations, I'd suggest we add to question 11a. the following: "Please also comment on the various functional forms of the regression equations (e.g. linear, log-linear, quadratic)."

Regarding the Studies …[placeholder for Abt]

Message

From: Christ, Lisa [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=10DBD8E424704E43B5A50F74A4DAC626-LCHRIST]
Sent: 6/29/2017 6:57:17 PM
To: Huff, Lisa [Huff.Lisa@epa.gov]
Subject: FW: Perchlorate Peer Review Briefing with EPA
Attachments: DRAFT MCLG Approach Charge 06-01-17v2.docx; DRAFT Perchlorate OMB PBriefing 06-28-17.pdf

From: Christ, Lisa
Sent: Thursday, June 29, 2017 9:07 AM
To: Tricas, Marisa <tricas.marisa@epa.gov>
Subject: FW: Perchlorate Peer Review Briefing with EPA

Hi Marisa,
Sorry for any confusion. I sent Caryn the version of the presentation we will be using with OMB today at 3pm. See attached.
Lisa

From: Muellerleile, Caryn
Sent: Thursday, June 29, 2017 8:46 AM
To: Hafez, Ahmed <Hafez.Ahmed@epa.gov>; Strong, Jamie <Strong.Jamie@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Olson, Daniel <Olson.Daniel@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Schwab, Margo EOP/OMB Ex. 6 Personal Privacy (PP) lad Dorjets Ex. 6 Personal Privacy (PP)
Cc: Behl, Betsy <Behl.Betsy@epa.gov>; OP ADP Calendar <OP_ADP_Calendar@epa.gov>; Nurse, Leanne <Nurse.Leanne@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>; Schlosser, Paul <Schlosser.Paul@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Perchlorate Peer Review Briefing with EPA

Attached are materials for this afternoon's briefing.

-----Original Appointment-----
From: Muellerleile, Caryn
Sent: Friday, June 16, 2017 10:14 AM
To: Hafez, Ahmed; Strong, Jamie; Mclain, Jennifer; Grevatt, Peter; Burneson, Eric; Olson, Daniel; Christ, Lisa; Schwab, Margo EOP/OMB; Vlad Dorjets Ex. 6 Personal Privacy (PP)
Cc: Behl, Betsy; OP ADP Calendar; Nurse, Leanne; Johnson, Ann; Flowers, Lynn; Schlosser, Paul; Huff, Lisa
Subject: Perchlorate Peer Review Briefing with EPA
When: Thursday, June 29, 2017 3:00 PM-4:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where Ex. 6 Personal Privacy (PP) access cod Ex. 6 Personal Privacy (PP)

Use conference line Ex. 6 Personal Privacy (PP) and access code Ex. 6 Personal Privacy (PP)

Appointment

From: Christ, Lisa [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=10DBD8E424704E43B5A50F74A4DAC626-LCHRIST]
Sent: 6/21/2017 3:01:53 PM
To: Schlosser, Paul [Schlosser.Paul@epa.gov]

Subject: FW: Perchlorate Peer Review Briefing with EPA
Location: Ex. 6 Personal Privacy (PP)

Start: 6/29/2017 7:00:00 PM
End: 6/29/2017 8:00:00 PM
Show Time As: Tentative

Hi Paul –
It would be great if you could be available by phone to answer questions about the model revisions. Although we plan to focus on the MCLG approaches.

Thanks!
Lisa

-----Original Appointment-----
From: Muellerleile, Caryn
Sent: Friday, June 16, 2017 10:14 AM
To: Muellerleile, Caryn; Hafez, Ahmed; Strong, Jamie; Mclain, Jennifer; Grevatt, Peter; Burneson, Eric; Olson, Daniel; Christ, Lisa; Schwab, Margo EOP/OMB; Vlad Dorjets Ex. 6 Personal Privacy (PP)
Cc: Behl, Betsy; OP ADP Calendar; Nurse, Leanne; Johnson, Ann; Flowers, Lynn
Subject: Perchlorate Peer Review Briefing with EPA
When: Thursday, June 29, 2017 3:00 PM-4:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Ex. 6 Personal Privacy (PP)

Use conference line Ex. 6 Personal Privacy (PP) and access code Ex. 6 Personal Privacy (PP)

Appointment

From: Christ, Lisa [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=10DBD8E424704E43B5A50F74A4DAC626-LCHRIST]
Sent: 6/19/2017 4:17:14 PM
To: Flowers, Lynn [Flowers.Lynn@epa.gov]

Subject: FW: Perchlorate Peer Review Briefing with EPA
Location: Ex. 6 Personal Privacy (PP)

Start: 6/29/2017 7:00:00 PM
End: 6/29/2017 8:00:00 PM
Show Time As: Tentative

-----Original Appointment-----
From: Muellerleile, Caryn
Sent: Friday, June 16, 2017 10:14 AM
To: Muellerleile, Caryn; Hafez, Ahmed; Strong, Jamie; Mclain, Jennifer; Grevatt, Peter; Burneson, Eric; Olson, Daniel; Christ, Lisa; Schwab, Margo EOP/OMB; Vlad Dorjets; Ex. 6 Personal Privacy (PP)
Cc: Behl, Betsy; OP ADP Calendar; Nurse, Leanne; Johnson, Ann
Subject: Perchlorate Peer Review Briefing with EPA
When: Thursday, June 29, 2017 3:00 PM-4:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Ex. 6 Personal Privacy (PP), access code Ex. 6 Personal Privacy (PP)

Use conference line Ex. 6 Personal Privacy (PP) and access code Ex. 6 Personal Privacy (PP)

Message

From: Campbell, Ann [Campbell.Ann@epa.gov]
Sent: 6/29/2017 1:33:08 PM
To: Forsgren, Lee [Forsgren.Lee@epa.gov]; Penman, Crystal [Penman.Crystal@epa.gov]
Subject: Materials for Perchlorate Peer Review Briefing with EPA
Attachments: DRAFT MCLG Approach Charge 06-01-17v2.docx; ATT00001.htm; DRAFT Perchlorate OMB PBriefing 06-28-17.pdf; ATT00002.htm

Begin forwarded message:

From: "Burneson, Eric" <Burneson.Eric@epa.gov>
Date: June 29, 2017 at 9:24:47 AM EDT
To: "Campbell, Ann" <Campbell.Ann@epa.gov>
Cc: "Grevatt, Peter" <Grevatt.Peter@epa.gov>, "Mclain, Jennifer" <Mclain.Jennifer@epa.gov>, "Christ, Lisa" <Christ.Lisa@epa.gov>, "Tricas, Marisa" <tricas.marisa@epa.gov>, "Olson, Daniel" <Olson.Daniel@epa.gov>
Subject: FW: Perchlorate Peer Review Briefing with EPA

Ann: Per Lee's request attached are the materials we will be using in the briefing for OMB today to brief them on the perchlorate MCLG report peer review. The conference call information is below and we are in the process of booking room 2123 so that we can all be in the same room for the call.

From: Muellerleile, Caryn
Sent: Thursday, June 29, 2017 8:46 AM
To: Hafez, Ahmed <Hafez.Ahmed@epa.gov>; Strong, Jamie <Strong.Jamie@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Olson, Daniel <Olson.Daniel@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Schwab, Margo EOP/OMB <Ex. 6 Personal Privacy (PP)>; Vlad Dorjets
Ex. 6 Personal Privacy (PP)
Cc: Behl, Betsy <Behl.Betsy@epa.gov>; OP ADP Calendar <OP_ADP_Calendar@epa.gov>; Nurse, Leanne <Nurse.Leanne@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>; Schlosser, Paul <Schlosser.Paul@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: RE: Perchlorate Peer Review Briefing with EPA

Attached are materials for this afternoon's briefing.

-----Original Appointment-----
From: Muellerleile, Caryn
Sent: Friday, June 16, 2017 10:14 AM
To: Hafez, Ahmed; Strong, Jamie; Mclain, Jennifer; Grevatt, Peter; Burneson, Eric; Olson, Daniel; Christ, Lisa; Schwab, Margo EOP/OMB; Vlad Dorjets (Ex. 6 Personal Privacy (PP)
Cc: Behl, Betsy; OP ADP Calendar; Nurse, Leanne; Johnson, Ann; Flowers, Lynn; Schlosser, Paul; Huff, Lisa
Subject: Perchlorate Peer Review Briefing with EPA
When: Thursday, June 29, 2017 3:00 PM-4:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Ex. 6 Personal Privacy (PP)

Use conference line Ex. 6 Personal Privacy (PP)

Message

From: Aguirre, Janita [Aguirre.Janita@epa.gov]
Sent: 4/6/2019 12:13:24 AM
To: Ross, David P [ross.davidp@epa.gov]; Forsgren, Lee [Forsgren.Lee@epa.gov]
CC: Wildeman, Anna [wildeman.anna@epa.gov]; Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Mejias, Melissa [mejias.melissa@epa.gov]
Subject: PDF version - RE: Perchlorate
Attachments: PDF-Perchlorate Proposed NPDWR Redline 4-5-19.pdf

Internal/deliberative

This didn't make it to the printed reading folder, so I'm attaching a PDF showing the track changes for Dave to read on his iPad.

Thank you,
Janita

Janita Aguirre – Special Assistant
U.S. Environmental Protection Agency | Office of Water
Phone: **(202) 566-1149** | Email: **aguirre.janita@epa.gov**

From: Mclain, Jennifer
Sent: Friday, April 05, 2019 5:24 PM
To: Ross, David P <ross.davidp@epa.gov>; Forsgren, Lee <Forsgren.Lee@epa.gov>
Cc: Wildeman, Anna <wildeman.anna@epa.gov>; Kramer, Jessica L. <kramer.jessical@epa.gov>; McDonough, Owen <mcdonough.owen@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>; Aguirre, Janita <Aguirre.Janita@epa.gov>; Mejias, Melissa <mejias.melissa@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>
Subject: Perchlorate

Internal/deliberative

Dave & Lee

Before OGWDW formally submits the revised draft Perchlorate Proposed NPDWR package to OW, I wanted you to see a version highlighting the substantive changes we made as a result of our conversations over the past month. Please let us know if you have any recommended changes.

Thanks
Jennifer

Jennifer L McLain
Deputy Director
Office of Ground Water and Drinking Water
U.S. EPA
202-564-4029

Message

From: Burneson, Eric [Burneson.Eric@epa.gov]
Sent: 12/21/2018 5:03:01 PM
To: Ross, David P [ross.davidp@epa.gov]
CC: Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Rodgers-Jenkins, Crystal [Rodgers-Jenkins.Crystal@epa.gov]; Forsgren, Lee [Forsgren.Lee@epa.gov]; Campbell, Ann [Campbell.Ann@epa.gov]; Tiago, Joseph [Tiago.Joseph@epa.gov]; Wildeman, Anna [wildeman.anna@epa.gov]
Subject: Revised Version - Perchlorate FRN
Attachments: Version-Control Perchlorate Rule FRN 12-20-18.docx

Dave:
Per your request at Wednesday's OGWDW biweekly meeting, attached please find the most recent version of the Proposed Perchlorate Rule Federal Register Notice. Please note that we provided a prior version to Lee and to OGC last week and while they reviewed the document we continued to make edits to improve clarity. Therefore, the attached version is slightly different from the version provided earlier to Lee and OGC and does not reflect their input.

Please let me know if you have any questions or concerns with the attached.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

Message

From: Messier, Dawn [Messier.Dawn@epa.gov]
Sent: 5/23/2019 1:40:15 AM
To: Fotouhi, David [Fotouhi.David@epa.gov]
CC: Neugeboren, Steven [Neugeboren.Steven@epa.gov]; Wehling, Carrie [Wehling.Carrie@epa.gov]
Subject: RE: Draft Perchlorate Signature /Roll out schedule:
Attachments: Perchlorate NPDWR FRN 05-22-19 (OMB 05-22-19).docx

Ex. 5 Deliberative Process (DP)

I've attached the file with OMB's 7:30 pm comments in case you want to see the original OMB language (on p.49).

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

From: Fotouhi, David
Sent: Wednesday, May 22, 2019 8:23 PM
To: Messier, Dawn <Messier.Dawn@epa.gov>
Cc: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: Re: Draft Perchlorate Signature /Roll out schedule:

Yes; thanks.

Sent from my iPhone

On May 22, 2019, at 8:04 PM, Messier, Dawn <Messier.Dawn@epa.gov> wrote:

> Thanks David. I don't think so. Just heard from OGWDW though that the SBA is raising issues that may hold up OMB clearance. I'll keep you informed of any developments. Barring anything coming of that, may I concur for OGC?
>
> Sent from my iPhone
>
> On May 22, 2019, at 7:49 PM, Fotouhi, David <Fotouhi.David@epa.gov> wrote:
>
> > Thanks. The revised draft looked fine to me. Any issues we should discuss?
> >
> > **David Fotouhi**
> >
> > Principal Deputy General Counsel
> > Office of General Counsel
> > U.S. Environmental Protection Agency

Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Messier, Dawn
Sent: Wednesday, May 22, 2019 5:38 PM
To: Fotouhi, David <Fotouhi.David@epa.gov>
Cc: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: FW: Draft Perchlorate Signature /Roll out schedule:
Importance: High

FYI.

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

From: Burneson, Eric
Sent: Wednesday, May 22, 2019 5:36 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>
Cc: Lousberg, Macara <Lousberg.Macara@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>; Rodgers-Jenkins, Crystal <Rodgers-Jenkins.Crystal@epa.gov>; Aguirre, Janita <Aguirre.Janita@epa.gov>; Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: RE: Draft Perchlorate Signature /Roll out schedule:

All:
I just had a conversation with OMB and they estimate that within the next hour they will be transmitting minor edits to the FRN and that are not substantive in nature. They also expect to let us know that they will be opening ROCIS at that time to receive the final version for close out of OMB review. They noted that there are some issues being raised by SBA that could impede that timeline but they expect those issues will be resolved.

I also learned that the A.O. is still anticipating signature by 10:00 am tomorrow.

Thanks for your continued work on this important project.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Burneson, Eric
Sent: Monday, May 20, 2019 3:54 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>; Hernandez-Quinones, Samuel <hernandez.samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>
Cc: Lousberg, Macara <Lousberg.Macara@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; 'Joe Tiago (Tiago.Joseph@epa.gov)' <Tiago.Joseph@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>; Rodgers-Jenkins, Crystal <Rodgers-Jenkins.Crystal@epa.gov>; Aguirre, Janita <Aguirre.Janita@epa.gov>; Manibusan, Mary <manibusan.mary@epa.gov>
Subject: RE: Draft Perchlorate Signature /Roll out schedule:

All:
Attached please find an updated timeline to reflect some adjustments based upon when OMB is available for discussion tomorrow. We have informed OMB our intended timeline for signature and they indicated that it was extremely compressed and that they could not guarantee clearance in time but that they would do what they could to expedite completion of the interagency review. OMB has been forwarding the comments from other Federal Agencies today but we are still awaiting the OMB consolidated mark up.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Burneson, Eric
Sent: Friday, May 17, 2019 12:39 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>; Hernandez-Quinones, Samuel <hernandez.samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>
Cc: Lousberg, Macara <Lousberg.Macara@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Joe Tiago (Tiago.Joseph@epa.gov) <Tiago.Joseph@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>; Rodgers-Jenkins, Crystal <Rodgers-Jenkins.Crystal@epa.gov>
Subject: Draft Perchlorate Signature /Roll out schedule:

All: We have received notice that the already short time frame for signature for the perchlorate proposal needs to be shortened to assure signature before 1:00 pm on Thursday May 23. Attached please find a timeline of the actions that must take place between receipt of Inter Agency comments from OMB (expected COB on 5/20) and the

new signature deadline we have been asked to work against. Can you please review the attached and let me know if there are significant steps that will require time not anticipated in the attached timeline.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

Message

From: Wehling, Carrie [Wehling.Carrie@epa.gov]
Sent: 4/3/2019 12:46:21 PM
To: Fotouhi, David [Fotouhi.David@epa.gov]
CC: Neugeboren, Steven [Neugeboren.Steven@epa.gov]; Messier, Dawn [Messier.Dawn@epa.gov]
Subject: FW: DELIBERATIVE: Revised Perchlorate FRN
Attachments: FRN Perchlorate Rule Redline for Review 4-2-19egb.docx

Latest draft. I reviewed a draft yesterday – have not looked at this one yet but looks like Eric was addressing my comments.
Carrie

Caroline (Carrie) Wehling
Assistant General Counsel
Water Law Office
U.S. Environmental Protection Agency
Washington DC 20004
202-564-5492
wehling.carrie@epa.gov

From: Burneson, Eric
Sent: Tuesday, April 02, 2019 4:03 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Khera, Rajiv <Khera.Rajiv@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>
Subject: RE: DELIBERATIVE: Revised Perchlorate FRN

Ex. 5 Deliberative Process (DP)

Thank you for preparing this revised draft so quickly. Please let me know if you have questions. I have alerted Jennifer and she expects a revised draft tomorrow. Please let me know if that is not possible.
Eric

From: Christ, Lisa
Sent: Tuesday, April 02, 2019 3:32 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Khera, Rajiv <Khera.Rajiv@epa.gov>
Subject: RE: DELIBERATIVE: Revised Perchlorate FRN

Thanks Sam – my comments are attached.

From: Hernandez-Quinones, Samuel
Sent: Tuesday, April 02, 2019 9:01 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>

Cc: Khera, Rajiv <Khera.Rajiv@epa.gov>
Subject: DELIBERATIVE: Revised Perchlorate FRN

DELIBERATIVE

Hi,

Attached for your review is a redline version of the revised FRN for perchlorate.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

Message

From: Messier, Dawn [Messier.Dawn@epa.gov]
Sent: 5/22/2019 3:36:25 PM
To: Fotouhi, David [Fotouhi.David@epa.gov]
CC: Wehling, Carrie [Wehling.Carrie@epa.gov]; Neugeboren, Steven [Neugeboren.Steven@epa.gov]
Subject: Perchlorate Proposal -- Request for authorization to concur TODAY
Attachments: 5-21 7pm EPA Responses to EO12886 Comments - FRN Perchlorate.docx

Flag: Follow up

Ex. 5 Attorney Work Product (AWP)

Thanks!

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

From: Messier, Dawn
Sent: Monday, May 20, 2019 10:47 AM
To: Fotouhi, David <fotouhi.david@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>
Subject: HEADS UP -- FW: Draft Perchlorate Signature /Roll out schedule:

Hi David. FYI – Looks like the Administrator has pushed up signature of the perchlorate proposal to Thursday 5/23 (before 1pm) from the Tuesday, 5/28 deadline in the CD. In the attached revised schedule, there is a two-hour window for OGC concurrence from 11 – 1 on Wednesday and time dedicated for policy level discussions with OMB late on Tuesday . I will stay in the loop during their interactions with OMB and let you know if anything implicates the CD or otherwise raises legal issues. I will inform DOJ of this change.

Speaking of DOJ, is there anything to report on Puget?

Thanks!

Dawn

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office

202-564-5517

From: Burneson, Eric
Sent: Friday, May 17, 2019 12:39 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>
Cc: Lousberg, Macara <Lousberg.Macara@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>; Rodgers-Jenkins, Crystal <Rodgers-Jenkins.Crystal@epa.gov>
Subject: Draft Perchlorate Signature /Roll out schedule:

All: We have received notice that the already short time frame for signature for the perchlorate proposal needs to be shortened to assure signature before 1:00 pm on Thursday May 23. Attached please find a timeline of the actions that must take place between receipt of Inter Agency comments from OMB (expected COB on 5/20) and the new signature deadline we have been asked to work against. Can you please review the attached and let me know if there are significant steps that will require time not anticipated in the attached timeline.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

Message

From: Fotouhi, David [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=FEBAF0D56AAB43F8A9174B18218C1182-FOTOUHI, DA]
Sent: 4/9/2019 8:24:33 PM
To: Woods, Clint [woods.Clint@epa.gov]
Subject: FW: Revised Perchlorate FRN
Attachments: FRN Perchlorate Rule Redline for Review 4-5-19 SHQ.docx

FYSA

David Fotouhi

Principal Deputy General Counsel
Office of General Counsel
U.S. Environmental Protection Agency
Tel: +1 202.564.1976
fotouhi.david@epa.gov

From: Wehling, Carrie
Sent: Tuesday, April 9, 2019 4:23 PM
To: Fotouhi, David <Fotouhi.David@epa.gov>
Cc: Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>
Subject: FW: Revised Perchlorate FRN

Steve asked that we forward the latest draft – this is the last I've seen.

Caroline (Carrie) Wehling
Assistant General Counsel
Water Law Office
U.S. Environmental Protection Agency
Washington DC 20004
202-564-5492
wehling.carrie@epa.gov

From: Hernandez-Quinones, Samuel
Sent: Friday, April 05, 2019 4:51 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>
Cc: Tiago, Joseph <Tiago.Joseph@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: Revised Perchlorate FRN

Hi,

Attached is the revised redline version which incorporates the latest edits, including revising the footnote on the IQ discussion in section III, as well as a correction to the date in which we initiated consultation with HHS. This document shows the changes made to the FRN since the last OW-IO review.

Let me know if you have any questions or comments.

Thanks
Sam
==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Burneson, Eric
Sent: Thursday, April 04, 2019 6:21 PM
To: Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>
Cc: Tiago, Joseph <Tiago.Joseph@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: Revised Perchlorate FRN

Jennifer: Because we have had issues transmitting multiple files, I am resending this redline document in case it did not come through in the last email.
Eric

From: Burneson, Eric
Sent: Thursday, April 04, 2019 6:17 PM
To: Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>
Cc: Joe Tiago (Tiago.Joseph@epa.gov) <Tiago.Joseph@epa.gov>; Hernandez-Quinones, Samuel <hernandez.samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: Revised Perchlorate FRN

Jennifer:
Attached for transmission to the OW IO are revised draft notices for a Proposed National Primary Drinking Water Regulation. The first attachment is a clean version of the revised document and the second is a redline document that shows the changes made since the last OW-IO review.

Ex. 5 AC/AWP/DP

The attached materials incorporate the comments that we received from you and from OGC. OGC has concluded that the drafts they reviewed "meets the consent decree obligations." Please let us know if you have any questions or concerns with the attached documents.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

Message

From: Mclain, Jennifer [Mclain.Jennifer@epa.gov]
Sent: 7/20/2017 10:29:19 PM
To: Grevatt, Peter [Grevatt.Peter@epa.gov]
Subject: Fwd: Perchlorate Follow up
Attachments: DRAFT_Results Tables_20170720.docx; ATT00001.htm

Begin forwarded message:

From: "Burneson, Eric" <Burneson.Eric@epa.gov>
Date: July 20, 2017 at 6:14:20 PM EDT
To: "Dorjets, Vlad EOP/OMB" Ex. 6 Personal Privacy (PP) , "Schwab, Margo EOP/OMB" Ex. 6 Personal Privacy (PP) "James H Kim Ex. 6 Personal Privacy (PP)
Cc: "Muellerleile, Caryn" <Muellerleile.Caryn@epa.gov>, "Johnson, Ann" <Johnson.Ann@epa.gov>, "Mclain, Jennifer" <Mclain.Jennifer@epa.gov>, "Olson, Daniel" <Olson.Daniel@epa.gov>
Subject: Perchlorate Follow up

Margo, Vlad and Jim;
Thank you for arranging for the interagency call on Tuesday to discuss the next peer review for our analysis to inform an MCLG for perchlorate. In the call you asked if we would provide the results tables for the modeling. Attached per your request are three tables with explanatory text. These tables are from the current draft of the report we are preparing for peer review. A request was also made in the call for us to provide the schedule information for this activity. Please find that information below.

- <!--[if !supportLists]--><!--[endif]-->EPA expects publication FRNs announcing materials for public comment soon
    1. <!--[if !supportLists]--><!--[endif]-->Draft MCLG Approach Report (45 day comment period)
    2. <!--[if !supportLists]--><!--[endif]-->List of 12 peer reviewer candidates and draft charge questions (21 day comment period)
- <!--[if !supportLists]--><!--[endif]-->Conduct second contractor-managed, external peer review of the MCLG Approach Report
    1. <!--[if !supportLists]--><!--[endif]-->Meeting expected to be held in Washington, DC metro area
- <!--[if !supportLists]--><!--[endif]-->Consent decree peer review deadline: October 18, 2017
- <!--[if !supportLists]--><!--[endif]-->Consent decree rule making milestones
    1. <!--[if !supportLists]--><!--[endif]-->Signature of proposed action: October 2018
    2. <!--[if !supportLists]--><!--[endif]-->Signature of final action: December 2019

Thanks again for your help in arranging for an interagency discussion on this important action.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

Message

From: Messier, Dawn [Messier.Dawn@epa.gov]
Sent: 2/19/2019 11:19:16 PM
To: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
Subject: FW: Request for review - Draft Perchlorate Rule Proposal
Attachments: Version-Control Perchlorate Rule FRN 2-4-19.cw comments.docx

Hi Sam – Attached are comments from Carrie. I may have a few additional, which I will get to you pronto. Hope all is well and that you have a nice snow telework day tomorrow! Dawn

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

From: Wehling, Carrie
Sent: Friday, February 15, 2019 3:34 PM
To: Messier, Dawn <Messier.Dawn@epa.gov>
Subject: FW: Request for review - Draft Perchlorate Rule Proposal

Attached are my comments. I'll let you forward these on as you see fit.
Thanks.
Carrie

Caroline (Carrie) Wehling
Assistant General Counsel
Water Law Office
U.S. Environmental Protection Agency
Washington DC 20004
202-564-5492
wehling.carrie@epa.gov

From: Hernandez-Quinones, Samuel
Sent: Monday, February 04, 2019 10:32 AM
To: Johnson, Ann <Johnson.Ann@epa.gov>; Dockins, Chris <Dockins.Chris@epa.gov>; Shao, Nicole <Shao.Nicole@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>; Foster, Stiven <Foster.Stiven@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>
Subject: Request for review - Draft Perchlorate Rule Proposal

Preliminary draft for internal EPA review

Hi,

Attached for your review is the Draft Perchlorate Rule Proposal (Preamble and Regulatory Text). As discussed previously we are asking that you provide your questions and or comments on the draft document to me by COB 2/15/2019. In order to keep with the consent decree deadline, we need to complete this step of the process within two weeks, if there are any issues that require technical discussions please let me know so that we can arrange any necessary working meeting.

I will follow-up with another email later today that contains the draft version of the technical support documents that were used as the basis for the Perchlorate proposal. Since those are very lengthy documents we are not requesting that you submit input and/or comments on those within the two- week time frame.

Please let me know if you have any questions.

Thanks
Sam

==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

Message

From: Lauren Brown [Lauren_Brown@abtassoc.com]
Sent: 4/2/2019 1:53:11 AM
To: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]; Ryan Klein [Ryan_Klein@abtassoc.com]
Subject: RE: Request for Data/Calculation
Attachments: EO12866_SDWA NPDWR 2040-AF28 FRN Perchlorate Rule 20190401 RedLine SHQ_LPMB.docx

Hi Sam:
I was able to take a look and review your edits. Please see my edits in the attached. I didn't make many but filled in data where you needed it and clarified an item or two. Please note that I took a look at this using my husband's computer while I was on vacation so you may see an edit or too marked with his name.

Thanks,
Lauren

Lauren Brown | Associate/Scientist | Abt Associates
O: 301.347.5832 | F: 301.828.9859 | www.abtassociates.com

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From: Hernandez-Quinones, Samuel [mailto:Hernandez.Samuel@epa.gov]
Sent: Friday, March 29, 2019 2:58 PM
To: Ryan Klein <Ryan_Klein@abtassoc.com>
Cc: Lauren Brown <Lauren_Brown@abtassoc.com>; Andrea Chiger <Andrea_Chiger@abtassoc.com>
Subject: RE: Request for Data/Calculation

Hi Ryan/Lauren,

I have completed the revisions to the FRN, but I need to have Abt review the document, specifically pages 45 & 49 to verify for technical accuracy. Also let me know if you see any issues with the other redline edits I have made to the document. I inserted data on the tables based on the information contained in the spreadsheet that you sent to me earlier this week.

Let me know if you have any questions.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Hernandez-Quinones, Samuel
Sent: Friday, March 29, 2019 2:01 PM
To: 'Ryan Klein' <Ryan_Klein@abtassoc.com>
Cc: Lauren_Brown@abtassoc.com; Andrea Chiger <Andrea_Chiger@abtassoc.com>
Subject: RE: Request for Data/Calculation

Hi Ryan,

I am working on several revisions to the draft FRN and would need your assistance in providing additional information for the document. Let me know if you are available today to discuss.

I will be sending the revised document to you shortly with more information about the needed data. Basically we are adding a third alternative to the proposal which considers the option of a 3-point IQ decrement, and we need to update the document before it goes to OMB.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Ryan Klein <Ryan_Klein@abtassoc.com>
Sent: Wednesday, March 27, 2019 12:10 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Lauren_Brown@abtassoc.com; Andrea Chiger <Andrea_Chiger@abtassoc.com>
Subject: RE: Request for Data/Calculation

Hi Sam,

No problem. I carried out the calculation and attached the spreadsheet to this email. Please let me know if you have any further questions!

Sincerely,

Ryan S. Klein, Ph.D. | Senior Analyst | **Abt Associates**
6130 Executive Boulevard | Rockville, MD 20852
O: 301.634.1814 | www.abtassociates.com

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BOLD THINKERS DRIVING
REAL-WORLD IMPACT

From: Hernandez-Quinones, Samuel [mailto:Hernandez.Samuel@epa.gov]
Sent: Wednesday, March 27, 2019 12:02 PM
To: Ryan Klein <Ryan_Klein@abtassoc.com>
Cc: Lauren Brown <Lauren_Brown@abtassoc.com>; Andrea Chiger <Andrea_Chiger@abtassoc.com>
Subject: RE: Request for Data/Calculation

Hi Ryan,

I have an urgent request. Please let me know if you can provide the calculation to show the MCLG derivation (concentration) for a 3-point IQ decrement. I would need this information in the next hour if possible. Sorry for the rush.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Lauren Brown <Lauren_Brown@abtassoc.com>
Sent: Thursday, March 21, 2019 10:09 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Ryan Klein <Ryan_Klein@abtassoc.com>
Subject: RE: Request for Data/Calculation

Hi Sam:
Attached is a table which outlines the calculation. Please let me know if you have any questions.

Lauren

Lauren Brown | Associate/Scientist | Abt Associates
O: 301.347.5832 | F: 301.828.9859 | www.abtassociates.com

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From: Hernandez-Quinones, Samuel [mailto:Hernandez.Samuel@epa.gov]
Sent: Tuesday, March 19, 2019 4:48 PM
To: Lauren Brown <Lauren_Brown@abtassoc.com>
Cc: Ryan Klein <Ryan_Klein@abtassoc.com>
Subject: Request for Data/Calculation

Hi Lauren,

Please let me know if you can prepare a calculation sheet to show the MCLG derivation (concentration) for a 5-point IQ decrement. I would need this information if possible by Friday.

Thanks
Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

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Message

From: Lauren Brown [Lauren_Brown@abtassoc.com]
Sent: 2/26/2019 8:01:33 PM
To: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
CC: Ryan Klein [Ryan_Klein@abtassoc.com]
Subject: FRN edits
Attachments: ATT00001.txt; WORKING Version-Control Perchlorate Rule FRN_abt edits.docx

Hi Sam:
Attached to this email is the track changes version of the working FRN draft you sent to us. We tried to address all the comments/questions flagged for us. Please let us know if we've missed anything you wanted us to address or if additional edits are needed based on internal feedback.

Thanks
Lauren

Lauren Brown | Associate/Scientist | Abt Associates
O: 301.347.5832 | F: 301.828.9859 | www.abtassociates.com

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Message

From: Lauren Brown [Lauren_Brown@abtassoc.com]
Sent: 12/14/2018 7:04:55 PM
To: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
CC: Ryan Klein [Ryan_Klein@abtassoc.com]
Subject: RE: Revised Version - Perchlorate FRN
Attachments: ATT00001.txt; Perchlorate Rule FRN 12-7-18 Abt edits.docx

Thanks Sam. Attached is a version of the FRN which addresses Jennifer's questions and comments. Throughout we added in comments trying to explain our edits where necessary. Please let me know if you have any questions.

Have a great weekend,
Lauren

Lauren Brown | Associate/Scientist | Abt Associates
O: 301.347.5832 | F: 301.828.9859 | www.abtassociates.com

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From: Hernandez-Quinones, Samuel [mailto:Hernandez.Samuel@epa.gov]
Sent: Friday, December 14, 2018 10:47 AM
To: Lauren Brown <Lauren_Brown@abtassoc.com>
Subject: FW: Revised Version - Perchlorate FRN

FYI

Sam

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Mclain, Jennifer
Sent: Tuesday, December 11, 2018 5:52 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>
Subject: RE: Revised Version - Perchlorate FRN

Lisa,
I am so impressed by the quality of the proposal your team put together. The attached includes my edits and comments/questions. If it would be helpful for you all to sit down and go over some of the later, rather than trying to

respond in comment bubbles, I'm happy to do that. I am not as well versed on this information as you all so I may have made edits or comments that are not appropriate. If that is the case, please ignore the edit and don't feel the need to explain why.
Thanks much,
Jennifer

From: Christ, Lisa
Sent: Friday, December 07, 2018 3:16 PM
To: Mclain, Jennifer <Mclain.Jennifer@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>
Subject: FW: Revised Version - Perchlorate FRN

Hi Jennifer,
The attached perchlorate proposal addresses my comments and Eric's. We have some additional information we are working on to provide more context for the HRRCA section. This version is ready for your and OW/OGC review. We'll fold in our additional information in the next round of edits.

Let us know if you have questions or concerns.

Lisa

From: Hernandez-Quinones, Samuel
Sent: Friday, December 07, 2018 3:10 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Subject: Revised Version - Perchlorate FRN

Hi Lisa,

Attached is the revised FRN for Perchlorate.

Thanks

Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

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Message

From: Lauren Brown [Lauren_Brown@abtassoc.com]
Sent: 3/19/2019 8:54:09 PM
To: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
CC: Ryan Klein [Ryan_Klein@abtassoc.com]
Subject: RE: Request for Data/Calculation
Attachments: ATT00001.txt; EO12866_SDWA NPDWR 2040-AF28 FRN Perchlorate Rule 20190311.docx

Hi Sam:
We will look into. Also, the edited FRN is attached. We tracked the changes on p. 37. Is this what you were looking for?

Thanks
Lauren

Lauren Brown | Associate/Scientist | Abt Associates
O: 301.347.5832 | F: 301.828.9859 | www.abtassociates.com

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From: Hernandez-Quinones, Samuel [mailto:Hernandez.Samuel@epa.gov]
Sent: Tuesday, March 19, 2019 4:48 PM
To: Lauren Brown <Lauren_Brown@abtassoc.com>
Cc: Ryan Klein <Ryan_Klein@abtassoc.com>
Subject: Request for Data/Calculation

Hi Lauren,

Please let me know if you can prepare a calculation sheet to show the MCLG derivation (concentration) for a 5-point IQ decrement. I would need this information if possible by Friday.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

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we kindly ask that you notify the sender immediately by return email and delete all copies of the message from your system.

Message

From: Lauren Brown [Lauren_Brown@abtassoc.com]
Sent: 12/13/2018 8:48:55 PM
To: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
CC: Ryan Klein [Ryan_Klein@abtassoc.com]
Subject: FW: Questions on Draft FRN
Attachments: ATT00001.txt; Perchlorate Rule FRN 12-7-18 jlm-commentbubbles.docx

Hi Sam:
We will aim to get this to you by COB tomorrow. Are you available for a call tomorrow morning to discuss?

Thanks
Lauren

Lauren Brown | Associate/Scientist | Abt Associates
O: 301.347.5832 | F: 301.828.9859 | www.abtassociates.com

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From: Hernandez-Quinones, Samuel [mailto:Hernandez.Samuel@epa.gov]
Sent: Thursday, December 13, 2018 3:06 PM
To: Lauren Brown <Lauren_Brown@abtassoc.com>
Subject: Questions on Draft FRN

Hi Lauren,

I need your support in responding to several questions we got from Jennifer on the draft Perchlorate FRN.

As you will see in the attached file there are numerous questions and suggested edits.

I will need your feedback on the health effects comments on pages: 25, 30, 84, 85, and 86. Please let me know if it is possible to have your input by tomorrow COB.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

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Message

From: Evalenko, Sandy [Evalenko.Sandy@epa.gov]
Sent: 3/8/2019 5:01:34 PM
To: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
Subject: RE: Use this version - Comments: e-files for the perchlorate pkg
Attachments: EO12866_SDWA NPDWR 2040-AF28 FRN Perchlorate Rule 20190308.docx

Samuel: OMB is particular regarding the naming convention of the actions submitted to them in ROCIS. Please use this file or resend me the document with the file name on the first page—
EO12866_SDWA NPDWR 2040-AF28 FRN Perchlorate Rule 20190308.docx

Thanks,
Sandy

From: Hernandez-Quinones, Samuel
Sent: Friday, March 08, 2019 11:50 AM
To: Evalenko, Sandy <Evalenko.Sandy@epa.gov>
Cc: Lousberg, Macara <Lousberg.Macara@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: RE: Use this version - Comments: e-files for the perchlorate pkg

Hi,

Attached is the revised version of the FRN which incorporates edits suggested by David Ross. We also updated a footnote and fixed a typo.

Thanks
Sam

==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Burneson, Eric
Sent: Friday, March 08, 2019 11:41 AM
To: Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Cc: Lousberg, Macara <Lousberg.Macara@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>
Subject: RE: Use this version - Comments: e-files for the perchlorate pkg

Thanks Sandy: Sam is incorporating Dave's edits and making a final edit to a footnote typo. He will send the revised to you shortly.
Eric

From: Evalenko, Sandy
Sent: Friday, March 08, 2019 9:59 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Cc: Lousberg, Macara <Lousberg.Macara@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>
Subject: RE: Use this version - Comments: e-files for the perchlorate pkg

Eric: This is the right version (148 pages). I recommended a few edits to the EO section that removed text. The original NPRM submitted in the blue folder was 152 pages.

Once Wanda makes a pdf of the Transmittal memo, I'll forward the rule to OP for OMB review and copy you all.

Sandy

From: Burneson, Eric
Sent: Friday, March 08, 2019 9:00 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Cc: Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Lousberg, Macara <Lousberg.Macara@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>
Subject: FW: Use this version - Comments: e-files for the perchlorate pkg

Team: Please use the attached files to make the edits that Dave requested in his email last night.

Sandy and Macara : can you please confirm the attached is the latest version you are working with?

From: Evalenko, Sandy
Sent: Wednesday, March 06, 2019 1:08 PM
To: Tiago, Joseph <Tiago.Joseph@epa.gov>; Lousberg, Macara <Lousberg.Macara@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Fields, Wanda <Fields.Wanda@epa.gov>
Subject: RE: Use this version - Comments: e-files for the perchlorate pkg

I think you mean the NPRM – the rule is attached.
If not, let me know.
Sandy

From: Tiago, Joseph
Sent: Wednesday, March 06, 2019 1:05 PM
To: Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Lousberg, Macara <Lousberg.Macara@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Fields, Wanda <Fields.Wanda@epa.gov>
Subject: RE: Use this version - Comments: e-files for the perchlorate pkg

Thanks, Sandy!

Note the EO 12866 file is blank – not sure it was intentional.

We'll get you a revised version of the memos.

Joe.

From: Evalenko, Sandy
Sent: Wednesday, March 6, 2019 12:59 PM
To: Tiago, Joseph <Tiago.Joseph@epa.gov>; Lousberg, Macara <Lousberg.Macara@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Fields, Wanda <Fields.Wanda@epa.gov>
Subject: Use this version - Comments: e-files for the perchlorate pkg
Importance: High

In this version, I also added the San and Rin in the subject line for the Transmittal memo.

Thanks for sending the Perchlorate package. I have a few edits/comments.

1. Thank you for preparing both a transmittal memo and draft action memo. Attached are comments and suggestions.

2. A minor edit regarding the NPRM file name and OMB's requirements. OMB is particular regarding the naming convention. I added the title to the first page of the FRN and changed the title of the Proposed Rule file to

   EO12866_SDWA NPDWR Perchlorate 2040-AF28 NPRM 20190305

3. I removed the first paragraph of the Tribal EO (see below) – which was the 1st paragraph in the old template. I did not change anything else in the body/text of the Tribal EO.

Executive Order 13175, entitled ''Consultation and Coordination with Indian Tribal Governments'' (65 FR 67249, November 9, 2000), requires the EPA to develop "an accountable process to ensure meaningful and timely input by Tribal officials in the development of regulatory policies that have Tribal implications." The definition of ''policies that have Tribal implications'' includes regulations that have "substantial direct effects on one or more Indian Tribes, on the relationship between the federal government and the Indian Tribes, or on the distribution of power and responsibilities between the federal government and Indian Tribes." Under Executive Order 13175, the EPA may not issue a regulation that has Tribal implications, that imposes substantial direct compliance costs, and that is not required by statute, unless the federal government provides the funds necessary to pay the direct compliance costs incurred by Tribal governments, or the EPA consults with Tribal officials early in the process of developing the proposed regulation and develops a Tribal summary impact statement.

Please send me the final versions of the memos and I'll print them.

Sandy

From: Lousberg, Macara
Sent: Tuesday, March 05, 2019 7:22 PM
To: Tiago, Joseph <Tiago.Joseph@epa.gov>
Cc: Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>
Subject: Fwd: e-files for the perchlorate pkg

Thanks Joe. Looping in Sandy.

Did you all get any comments from Anna or Lee?

Sent from my iPhone

Begin forwarded message:

From: "Tiago, Joseph" <Tiago.Joseph@epa.gov>
Date: March 5, 2019 at 5:27:53 PM EST
To: "Lousberg, Macara" <Lousberg.Macara@epa.gov>
Cc: "Burneson, Eric" <Burneson.Eric@epa.gov>, "Mclain, Jennifer" <Mclain.Jennifer@epa.gov>
Subject: FW: e-files for the perchlorate pkg

Hi Macara,

Please find attached the Perchlorate FRN package for review and processing. I'm bringing the hard copy of the package to you shortly.

Let me know if you have any questions.

Regards,

Joe.

Message

From: Flaharty, Stephanie [Flaharty.Stephanie@epa.gov]
Sent: 12/4/2018 3:02:43 PM
To: Hernandez-Quinones, Samuel [Hernandez.Samuel@epa.gov]
Subject: RE: Pls. Pass on the current version of Perchlorate
Attachments: Version-Control Perchlorate Rule FRN 12-4-18.sf amend language format.docx

Hi Sam,

So, I've revised the formatting in the rule language section (attached). I'll do a more detailed review as we move closer…

Thanks,
Steph

From: Hernandez-Quinones, Samuel
Sent: Tuesday, December 04, 2018 8:41 AM
To: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>
Subject: RE: Pls. Pass on the current version of Perchlorate

Hi
Steph,

Attached is the version I am working on. The regulatory text starts in page 132.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Flaharty, Stephanie
Sent: Tuesday, December 04, 2018 7:01 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Cc: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: Pls. Pass on the current version of Perchlorate

Morning Lisa,

I have some modifications to the amendatory language, informed by the recently proposed UIC rule, that I want to make.

Thanks,
Steph

Message

From: Hernandez-Quinones, Samuel [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=4C46D56B82F143DF82F81D322BD109D7-HERNANDEZ-QUINONES, SAMUEL]
Sent: 2/20/2019 6:54:19 PM
To: Lauren Brown [Lauren_Brown@abtassoc.com]
CC: Ryan Klein [Ryan_Klein@abtassoc.com]
Subject: RE: Comments on Perchlorate Document
Attachments: Version-Control Perchlorate Rule FRN 2-4-19.3_OCSPP.DOCX

Hi Lauren,

Here is one of the files I received from OCSPP. I think it is easier if you look at the comments embedded in the file and then we can discuss how to address them. I tried to include these in my consolidated list, but it is very confusing as I have to make reference back to the text in question.

The specific comment that you should look are in pages 28 – 33 & 83 – 87. Once you have a chance to look at this let me know when it would be a good time have a phone call to discuss.

Thanks
Sam

==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Lauren Brown <Lauren_Brown@abtassoc.com>
Sent: Wednesday, February 20, 2019 11:43 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Ryan Klein <Ryan_Klein@abtassoc.com>
Subject: RE: Comments on Perchlorate Document

Okay, thank you for the heads up.

Lauren

Lauren Brown | Associate/Scientist | Abt Associates
O: 301.347.5832 | F: 301.828.9859 | www.abtassociates.com

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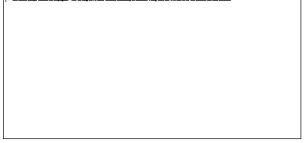

From: Hernandez-Quinones, Samuel [mailto:Hernandez.Samuel@epa.gov]
Sent: Wednesday, February 20, 2019 10:48 AM

To: Lauren Brown <Lauren_Brown@abtassoc.com>
Subject: Comments on Perchlorate Document

Hi Lauren,

I have received several comments on the perchlorate documents. I will send you a consolidated version of the comments, so we can discuss how to address them.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

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Message

From: Hernandez-Quinones, Samuel [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=4C46D56B82F143DF82F81D322BD109D7-HERNANDEZ-QUINONES, SAMUEL]
Sent: 2/8/2019 3:56:28 PM
To: Newcamp, Caitlin [Newcamp.Caitlin@epa.gov]
Subject: RE: Perchlorate
Attachments: actionmemo-template-update.2018-03-08.docx; Perchlorate AA Briefing_1-18-2018.v2.pptx; Perchlorate Reg Plan 1pagerv3.docx; Version-Control Perchlorate Rule FRN 2-4-19.docx

Here is the action memo template and the briefing documents I mentioned during our call earlier today.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Newcamp, Caitlin
Sent: Friday, February 08, 2019 10:02 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: RE: Perchlorate

Hello Sam – You can call me now; going to get coffee with Brynne at 10:30. If it will take longer than 30 minutes I am free after 1. 202-564-0429

From: Hernandez-Quinones, Samuel
Sent: Friday, February 08, 2019 9:58 AM
To: Newcamp, Caitlin <Newcamp.Caitlin@epa.gov>
Subject: Perchlorate

Hi Caitlin,

Let me know when it is a good time to call you today.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

Message

From: Hernandez-Quinones, Samuel [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=4C46D56B82F143DF82F81D322BD109D7-HERNANDEZ-QUINONES, SAMUEL]
Sent: 3/29/2019 6:57:57 PM
To: Ryan Klein [Ryan_Klein@abtassoc.com]
CC: Lauren_Brown@abtassoc.com; Andrea Chiger [Andrea_Chiger@abtassoc.com]
Subject: RE: Request for Data/Calculation
Attachments: EO12866_SDWA NPDWR 2040-AF28 FRN Perchlorate Rule 20190329 RedLine SHQ.docx

Hi Ryan/Lauren,

I have completed the revisions to the FRN, but I need to have Abt review the document, specifically pages 45 & 49 to verify for technical accuracy. Also let me know if you see any issues with the other redline edits I have made to the document. I inserted data on the tables based on the information contained in the spreadsheet that you sent to me earlier this week.

Let me know if you have any questions.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Hernandez-Quinones, Samuel
Sent: Friday, March 29, 2019 2:01 PM
To: 'Ryan Klein' <Ryan_Klein@abtassoc.com>
Cc: Lauren_Brown@abtassoc.com; Andrea Chiger <Andrea_Chiger@abtassoc.com>
Subject: RE: Request for Data/Calculation

Hi Ryan,

I am working on several revisions to the draft FRN and would need your assistance in providing additional information for the document. Let me know if you are available today to discuss.

I will be sending the revised document to you shortly with more information about the needed data. Basically we are adding a third alternative to the proposal which considers the option of a 3-point IQ decrement, and we need to update the document before it goes to OMB.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water

Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Ryan Klein <Ryan_Klein@abtassoc.com>
Sent: Wednesday, March 27, 2019 12:10 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Lauren_Brown@abtassoc.com; Andrea Chiger <Andrea_Chiger@abtassoc.com>
Subject: RE: Request for Data/Calculation

Hi Sam,

No problem. I carried out the calculation and attached the spreadsheet to this email. Please let me know if you have any further questions!

Sincerely,

Ryan S. Klein, Ph.D. | Senior Analyst | **Abt Associates**
6130 Executive Boulevard | Rockville, MD 20852
O: 301.634.1814 | www.abtassociates.com

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From: Hernandez-Quinones, Samuel [mailto:Hernandez.Samuel@epa.gov]
Sent: Wednesday, March 27, 2019 12:02 PM
To: Ryan Klein <Ryan_Klein@abtassoc.com>
Cc: Lauren Brown <Lauren_Brown@abtassoc.com>; Andrea Chiger <Andrea_Chiger@abtassoc.com>
Subject: RE: Request for Data/Calculation

Hi Ryan,

I have an urgent request. Please let me know if you can provide the calculation to show the MCLG derivation (concentration) for a 3-point IQ decrement. I would need this information in the next hour if possible. Sorry for the rush.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Lauren Brown <Lauren_Brown@abtassoc.com>
Sent: Thursday, March 21, 2019 10:09 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Ryan Klein <Ryan_Klein@abtassoc.com>
Subject: RE: Request for Data/Calculation

Hi Sam:
Attached is a table which outlines the calculation. Please let me know if you have any questions.

Lauren

Lauren Brown | Associate/Scientist | Abt Associates
O: 301.347.5832 | F: 301.828.9859 | www.abtassociates.com

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From: Hernandez-Quinones, Samuel [mailto:Hernandez.Samuel@epa.gov]
Sent: Tuesday, March 19, 2019 4:48 PM
To: Lauren Brown <Lauren_Brown@abtassoc.com>
Cc: Ryan Klein <Ryan_Klein@abtassoc.com>
Subject: Request for Data/Calculation

Hi Lauren,

Please let me know if you can prepare a calculation sheet to show the MCLG derivation (concentration) for a 5-point IQ decrement. I would need this information if possible by Friday.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

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Message

From: Hernandez-Quinones, Samuel [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=4C46D56B82F143DF82F81D322BD109D7-HERNANDEZ-QUINONES, SAMUEL]
Sent: 11/21/2018 10:08:29 PM
To: Burneson, Eric [Burneson.Eric@epa.gov]; Mclain, Jennifer [Mclain.Jennifer@epa.gov]
CC: Christ, Lisa [Christ.Lisa@epa.gov]
BCC: samuelhernandez Ex. 6 Personal Privacy (PP)
Subject: RE: Draft Perchlorate FRN
Attachments: Version-Control Perchlorate Rule FRN 11-21-18 SHQv2.docx

Hi,

I'm sorry, I just realized the earlier message I sent to all of you had an incorrect version of the FRN document.

Please find the correct version attached to this email. My apologies.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Burneson, Eric
Sent: Wednesday, November 21, 2018 4:58 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: Re: Draft Perchlorate FRN

Thank you Sam. Happy Thanksgiving

Sent from my iPhone

On Nov 21, 2018, at 4:05 PM, Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov> wrote:

> Hi,
>
> Attached you will find the draft Preamble and Regulatory text for the Proposed Perchlorate Rulemaking effort.
>
> Please send your comments and/or edits to me and I will incorporate in the controlled version of the document.
>
> Thank You
> Sam
> ==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

<Version-Control Perchlorate Rule FRN 11-21-18 SHQ.docx>

Message

From: Hernandez-Quinones, Samuel [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=4C46D56B82F143DF82F81D322BD109D7-HERNANDEZ-QUINONES, SAMUEL]
Sent: 12/20/2018 3:37:58 PM
To: Khera, Rajiv [Khera.Rajiv@epa.gov]
Subject: RE: Revised Version - Perchlorate FRN
Attachments: Working Version 12-20 Perchlorate FRN V1.docx

Hi Rajiv,

Please, make your edits on the attached document. I am still waiting for additional input from Abt on the health effects language, but I will incorporate those to your revisions on this version.

Thanks
Sam

==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Khera, Rajiv
Sent: Thursday, December 20, 2018 10:00 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: RE: Revised Version - Perchlorate FRN

Hi Sam-
If you have not yet made the edits on the Occurrence and HRRCA sections, I will take care of them on the version that you plan to send to Eric later today. If you already made the changes then I will review them to make sure they are okay.
Thanks!
Rajiv

From: Hernandez-Quinones, Samuel
Sent: Thursday, December 20, 2018 9:53 AM
To: Huff, Lisa <Huff.Lisa@epa.gov>
Cc: Khera, Rajiv <Khera.Rajiv@epa.gov>; Goldberg, Michael <Goldberg.Michael@epa.gov>
Subject: RE: Revised Version - Perchlorate FRN

Hi Lisa,

I talked with Eric and told him that I will send a revised version of the document later today, once some pending revisions are incorporated. He indicated that that we should go ahead and continue working on incorporating the edits and that if needed we could submit the updated version by tomorrow.

I will try to have it ready today.

Thanks

Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Huff, Lisa
Sent: Thursday, December 20, 2018 9:20 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Khera, Rajiv <Khera.Rajiv@epa.gov>; Rodgers-Jenkins, Crystal <Rodgers-Jenkins.Crystal@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Goldberg, Michael <Goldberg.Michael@epa.gov>
Subject: Re: Revised Version - Perchlorate FRN

Sam,

Since Lisa Christ is on leave I don't know if she's checking email. Is there another version of the FRN since Monday that reflects more edits based on Jennifer's questions/comments? If yes please let Eric know at your earliest convenience.

Thanks,

Lisa

From: Burneson, Eric
Sent: Thursday, December 20, 2018 9:15:37 AM
To: Christ, Lisa; Huff, Lisa
Cc: Hernandez-Quinones, Samuel; Khera, Rajiv; Rodgers-Jenkins, Crystal
Subject: RE: Revised Version - Perchlorate FRN

Lisa:
Yesterday Dave Ross asked for a copy of the Perchlorate FRN. We can give him the same version that went to Lee. However if there is a revised version that addresses some of the "open items" we discussed with Jennifer on Monday, it would be good to send that revised version forward. Can you let me know if an updated version is available today?
Thanks
Eric

From: Christ, Lisa
Sent: Wednesday, December 12, 2018 2:11 PM
To: Mclain, Jennifer <Mclain.Jennifer@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>
Subject: RE: Revised Version - Perchlorate FRN

Jennifer –
The attached revised FRN addressed your edits and most of your comments/questions. Also, a few additional edits from Eric and Rajiv. As suggested by Eric, some of your questions are "open items" to be addressed post-OW/OGC review.
Lisa

From: Mclain, Jennifer
Sent: Tuesday, December 11, 2018 5:52 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>
Subject: RE: Revised Version - Perchlorate FRN

Lisa,
I am so impressed by the quality of the proposal your team put together. The attached includes my edits and comments/questions. If it would be helpful for you all to sit down and go over some of the later, rather than trying to respond in comment bubbles, I'm happy to do that. I am not as well versed on this information as you all so I may have made edits or comments that are not appropriate. If that is the case, please ignore the edit and don't feel the need to explain why.
Thanks much,
Jennifer

From: Christ, Lisa
Sent: Friday, December 07, 2018 3:16 PM
To: Mclain, Jennifer <Mclain.Jennifer@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>
Subject: FW: Revised Version - Perchlorate FRN

Hi Jennifer,
The attached perchlorate proposal addresses my comments and Eric's. We have some additional information we are working on to provide more context for the HRRCA section. This version is ready for your and OW/OGC review. We'll fold in our additional information in the next round of edits.

Let us know if you have questions or concerns.

Lisa

From: Hernandez-Quinones, Samuel
Sent: Friday, December 07, 2018 3:10 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Subject: Revised Version - Perchlorate FRN

Hi Lisa,

Attached is the revised FRN for Perchlorate.

Thanks

Sam
==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

Message

From: Hernandez-Quinones, Samuel [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=4C46D56B82F143DF82F81D322BD109D7-HERNANDEZ-QUINONES, SAMUEL]
Sent: 4/12/2019 2:46:05 PM
To: Lauren_Brown@abtassoc.com
Subject: FW: Revised Perchlorate FRN, HRRCA & Transmittal Memos
Attachments: EO12866_SDWA NPDWR 2040-AF28 FRN Perchlorate Rule 20190412.docx; REDLINE - EO12866_SDWA NPDWR 2040-AF28 FRN Perchlorate Rule 20190412.docx; EO12866_SDWA NPDWR 2040-AF28 FRN Perchlorate HRRCA 20190412.docx; Transmittal Memo AA to OPEI 4-9-19.docx; Transmittal Memo EB to JM 4-9-19.docx; Transmittal Memo JM to DR 4-9-19.docx; Perchlorate Draft Action Memo 4-9-19.docx; Perchlorate Draft Action Memo 4-9-19.docx

FYI.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Hernandez-Quinones, Samuel
Sent: Friday, April 12, 2019 10:44 AM
To: Christ, Lisa <christ.lisa@epa.gov>; Burneson, Eric <burneson.eric@epa.gov>
Cc: Khera, Rajiv <Khera.Rajiv@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: Revised Perchlorate FRN, HRRCA & Transmittal Memos

Hi,

Attached are the revised clean versions of the Perchlorate FRN and HRRCA, which incorporate all the suggested edits to date (4-12-19).

Here also you will find a revised redline version which incorporates all edits and changes to the document made to the FRN since the last OW-IO review (3-11-19).

Finally, attached are the most recent version of the corresponding transmittal memos.

Let me know if you have any questions or comments.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW

Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

Message

From: Hernandez-Quinones, Samuel [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=4C46D56B82F143DF82F81D322BD109D7-HERNANDEZ-QUINONES, SAMUEL]
Sent: 11/20/2018 5:03:58 PM
To: Samuel Hernandez [redacted]
Subject: 1
Attachments: Version-Control Preamble 11-20-18 SHQ.docx

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

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Message

From: Hernandez-Quinones, Samuel [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=4C46D56B82F143DF82F81D322BD109D7-HERNANDEZ-QUINONES, SAMUEL]
Sent: 12/13/2018 8:05:59 PM
To: Lauren_Brown@abtassoc.com
Subject: Questions on Draft FRN
Attachments: Perchlorate Rule FRN 12-7-18 jlm-commentbubbles.docx

Hi Lauren,

I need your support in responding to several questions we got from Jennifer on the draft Perchlorate FRN.

As you will see in the attached file there are numerous questions and suggested edits.

I will need your feedback on the health effects comments on pages: 25, 30, 84, 85, and 86. Please let me know if it is possible to have your input by tomorrow COB.

Thanks
Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

Message

From: Hernandez-Quinones, Samuel [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=4C46D56B82F143DF82F81D322BD109D7-HERNANDEZ-QUINONES, SAMUEL]
Sent: 4/5/2019 12:57:50 PM
To: Lauren Brown [Lauren_Brown@abtassoc.com]
Subject: RE: Request for additional assessment
Attachments: FRN Perchlorate Rule Redline for Review 4-3-19SHQ-V1.jlm2.docx; EO12866_SDWA NPDWR 2040-AF28 FRN Perchlorate Rule 20190404.docx

Hi Lauren,

I forgot to send this to you yesterday. Here you will see Jennifer's comments as well as the Revised Clean Copy that I sent to the Front Office Yesterday.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Lauren Brown <Lauren_Brown@abtassoc.com>
Sent: Thursday, April 04, 2019 2:03 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Ryan Klein <Ryan_Klein@abtassoc.com>; Andrea Chiger <Andrea_Chiger@abtassoc.com>
Subject: RE: Request for additional assessment

Hi Sam:
It stands for Diagnostic and Statistical Manual of Mental Disorders, fourth edition.

Lauren

Lauren Brown | Associate/Scientist | Abt Associates
O: 301.347.5832 | F: 301.828.9859 | www.abtassociates.com

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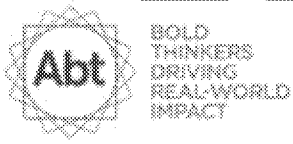

From: Hernandez-Quinones, Samuel [mailto:Hernandez.Samuel@epa.gov]
Sent: Thursday, April 4, 2019 1:50 PM
To: Lauren Brown <Lauren_Brown@abtassoc.com>
Cc: Ryan Klein <Ryan_Klein@abtassoc.com>; Andrea Chiger <Andrea_Chiger@abtassoc.com>

Subject: RE: Request for additional assessment
Importance: High

Hi Lauren,

I had a question on the IQ writeup. Do you know how to spell the acronym highlighted below?

"In addition, IQ scores can help diagnose disorders such as mental retardation and to identify children for placement into specialized learning programs (Beres et al., 2000). For example, one criterion for the diagnosis of mild mental retardation in the DSM-IV is an IQ score between 50-55 and 70 (American Psychological Association, 2000)."

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Lauren Brown <Lauren_Brown@abtassoc.com>
Sent: Wednesday, April 03, 2019 2:32 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Ryan Klein <Ryan_Klein@abtassoc.com>; Lawrence Reichle <Lawrence_Reichle@abtassoc.com>
Subject: RE: Request for additional assessment

Hi Sam:
See the revised table attached and let me know if this is what you were thinking. Please note the footnote for Finken, as we discussed as the values for doses of perchlorate get higher we had less precise output from the BBDR model, therefore we assumed the dose of perchlorate associated with a 3% change from Finken is the mid point between the two values (16 and 17 µg/kg/day) that we did have data for. If you would like us to handle this differently please let us know.

Let me know if you have any questions

Lauren

Lauren Brown | Associate/Scientist | Abt Associates
O: 301.347.5832 | F: 301.828.9859 | www.abtassociates.com

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BOLD THINKERS DRIVING REAL-WORLD IMPACT

From: Hernandez-Quinones, Samuel [mailto:Hernandez.Samuel@epa.gov]
Sent: Wednesday, April 3, 2019 2:20 PM
To: Lauren Brown <Lauren_Brown@abtassoc.com>

Cc: Ryan Klein <Ryan_Klein@abtassoc.com>; Andrea Chiger <Andrea_Chiger@abtassoc.com>
Subject: RE: Request for additional assessment

Hi Lauren,

Thanks for the input. Let me know if I can have the updated table in the next 15 minutes so I can incorporate in the revised version. I am leaving around 2:30pm, if the table will not be ready by then, please send it also to Rajiv and Lisa so they can include in the revised version.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Lauren Brown <Lauren_Brown@abtassoc.com>
Sent: Wednesday, April 03, 2019 1:08 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Ryan Klein <Ryan_Klein@abtassoc.com>; Andrea Chiger <Andrea_Chiger@abtassoc.com>
Subject: RE: Request for additional assessment

Hi Sam:
See the attached edits and responses to comments. Also, I was sent a revised table with the 3% changes just a moment ago so I will review and if it looks good send your way.

Thanks
Lauren

Lauren Brown | Associate/Scientist | Abt Associates
O: 301.347.5832 | F: 301.828.9859 | www.abtassociates.com

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From: Hernandez-Quinones, Samuel [mailto:Hernandez.Samuel@epa.gov]
Sent: Wednesday, April 3, 2019 8:42 AM
To: Lauren Brown <Lauren_Brown@abtassoc.com>
Cc: Ryan Klein <Ryan_Klein@abtassoc.com>; Andrea Chiger <Andrea_Chiger@abtassoc.com>
Subject: RE: Request for additional assessment

Hi Lauren,

I had some questions regarding the IQ writeup and I am sending those to you for your review and feedback.

Let me know if those questions can be addressed. Also let me know if we can discuss briefly via phone.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Lauren Brown <Lauren_Brown@abtassoc.com>
Sent: Friday, March 22, 2019 4:45 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Ryan Klein <Ryan_Klein@abtassoc.com>; Andrea Chiger <Andrea_Chiger@abtassoc.com>
Subject: RE: Request for additional assessment

Hi Sam:
Attached to this email is our IQ write up attempting to address the questions you have laid our below. Please note that we did this write up considering IQ in the broadest sense. There are many different tests which can evaluate IQ. If you want us to provide more specifics on the IQ test that is specific to the Korevaar paper please let us know.

As a reminder I am out next week on vacation. Here are some contacts for you for next week:

- For any follow up questions on this IQ write up please correspond with Ryan and Andrea (CCed on this email). Andrea helped develop this write up and has developed many of the summaries we've needed to pull together for perchlorate on various neurodevelopmental tests.
- March 25th-mid day on the 28th for other questions/requests please reach out to Ryan
- For midday 28th – April 1 please reach out to Meghan Lynch (Meghan_Lynch@abtassoc.com; 617.520.2442)

I will be back in the office on the 2nd of April.

Have a good weekend,
Lauren

Lauren Brown | Associate/Scientist | Abt Associates
O: 301.347.5832 | F: 301.828.9859 | www.abtassociates.com

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From: Hernandez-Quinones, Samuel [mailto:Hernandez.Samuel@epa.gov]
Sent: Thursday, March 21, 2019 11:54 AM
To: Lauren Brown <Lauren_Brown@abtassoc.com>
Cc: Ryan Klein <Ryan_Klein@abtassoc.com>
Subject: RE: Request for additional assessment

Hi Lauren,

Please let me know if you can prepare a discussion with references of what IQ is measuring, how the IQ scale is developed and what it represents.

Please also include a rationale for why we believe it is an appropriate measure of neurodevelopmental effects but also include discussion of why there is uncertainty as to what particular IQ change represents adverse effect.

Let me know if you can have this completed by COB tomorrow?

Thanks
Sam

==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Hernandez-Quinones, Samuel
Sent: Thursday, March 21, 2019 9:18 AM
To: Lauren_Brown@abtassoc.com
Cc: Ryan Klein <Ryan_Klein@abtassoc.com>
Subject: Request for additional assessment

Hi Lauren,

I had a request to see if we could figure out what the standard deviation of IQ is for the distribution of children and to determine the perchlorate dose associated with that IQ decrement.

Is this something you are able to do with the data/information you have?

Thanks
Sam

==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

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Message

From: Hernandez-Quinones, Samuel [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=4C46D56B82F143DF82F81D322BD109D7-HERNANDEZ-QUINONES, SAMUEL]
Sent: 4/24/2019 5:01:08 PM
To: Smith, Glynda [Smith.Glynda@epa.gov]
Subject: Revised Perchlorate FRN
Attachments: EO12866_SDWA NPDWR 2040-AF28 FRN Perchlorate Rule 20190415.docx

Hi Glynda,

FYI, attached is the most recent version of the Perchlorate FRN which we were able to get to OMB last week. I will let you know if we get any questions or comments on this. I anticipate that the OMB review will be completed in the next couple of weeks since the proposal has to be signed by 5/28/19.

Thanks
Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

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Message

From: Hernandez-Quinones, Samuel [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=4C46D56B82F143DF82F81D322BD109D7-HERNANDEZ-QUINONES, SAMUEL]
Sent: 4/3/2019 12:54:19 PM
To: Lauren_Brown@abtassoc.com
Subject: FW: DELIBERATIVE: Revised Perchlorate FRN
Attachments: FRN Perchlorate Rule Redline for Review 4-2-19egb.docx

fyi

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Burneson, Eric
Sent: Tuesday, April 02, 2019 4:03 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Khera, Rajiv <Khera.Rajiv@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>
Subject: RE: DELIBERATIVE: Revised Perchlorate FRN

Ex. 5 Deliberative Process (DP)

Thank you for preparing this revised draft so quickly. Please let me know if you have questions. I have alerted Jennifer and she expects a revised draft tomorrow. Please let me know if that is not possible.
Eric

From: Christ, Lisa
Sent: Tuesday, April 02, 2019 3:32 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Khera, Rajiv <Khera.Rajiv@epa.gov>
Subject: RE: DELIBERATIVE: Revised Perchlorate FRN

Thanks Sam – my comments are attached.

From: Hernandez-Quinones, Samuel
Sent: Tuesday, April 02, 2019 9:01 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Khera, Rajiv <Khera.Rajiv@epa.gov>
Subject: DELIBERATIVE: Revised Perchlorate FRN

DELIBERATIVE

Hi,

Attached for your review is a redline version of the revised FRN for perchlorate.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

Message

From: Hernandez-Quinones, Samuel [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=4C46D56B82F143DF82F81D322BD109D7-HERNANDEZ-QUINONES, SAMUEL]
Sent: 5/30/2019 5:47:59 PM
To: Alattar, Zaineb [alattar.zaineb@epa.gov]
Subject: Docket Support
Attachments: 190520_DRAFT MCLG TSD_CLEAN.DOCX; Perchlorate Rule OW-19-000-5459.pdf; Perchlorate HRRCA Docket 2019 05 10.xlsx

Hi Zaineb,

Please see attached documents. I will stop by shortly to talk with you.

Thanks
Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
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Inorganic Chemicals
Iron and Steel Manufacturing
Laboratories, Dental and Medical
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Laboratories, Research
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Nonferrous Metals Forming and Metal Powders
Nonferrous Metals Manufacturing (NFM)
Oil & Gas Extraction
Ore Mining and Dressing
OCPSF (Organic Chemicals, Plastics and Synthetic Fibers)
Paint Formulating
PBST (Petroleum Bulk Stations and Terminals)
Pesticide Chemicals Manufacturing, Formulation and Repackaging,
Petroleum Refining
Pharmaceutical Manufacturing
Phosphate Manufacturing
Photographic Processing
Plastic Molding and Forming (PM&F)
Porcelain Enameling
POTWs (Publicly Owned Treatment Works)
Pulp, Paper, and Paperboard
Roofing Materials (Tars and Asphalt)
Rubber Manufacturing
Soaps and Detergents Manufacturing
Steam Electric Power Generation
Sugar Processing
Textile Mills
Timber Products Processing
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Tobacco
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UNDS (Uniform Naval Discharge Standards)
Waste Combustors (Commercial Incinerators Combusting Hazardous Waste)
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Title	Full title of the article, study, or report. For memoranda, letters, and e-mail correspondence, use the format: Memorandum to Angela Beard, Vice President, Medical Research Department, Flonasd Corporation: Subject *xyz*; Letter to Susan Clark, Citizen: subjuect *abc*; or Email to John Wright, Contractor, Viztronix: Subject *abc*.
DOCUMENT_SUB TYPE	The document sub_type field is a linked field to Document Type in FDMS, it's designed to assist users in locating the document of their choice by allowing them to narrowly limit their search criteria.
SOURCE_CITATION	For copyright protected material, this must be a bibliographic citation the public can use to identify the document and to locate a copy through alternative means such as Inter-library Loan. The source citation does NOT need to include the title or the author name but should include the publisher's name and city, date of publication, editor or compilers' names, and volume or serial numbers. Example of a source citation for a Journal article : Nature 393(2002):639-40.
AUTHOR (Include Company Affiliation)	Name of the individual who authored, edited, compiled or wrote the memorandum, report, study, article, or book. For documents with multiple authors, list the primary author (e.g., Bartram, Deborah, et. al.). Use full names whenever possible.
AUTHOR_DATE	Enter as MM/DD/YYYY. Provide the date of publication, issue, edition, or version. For meeting and telephone notes provide the date of the actual event. If only the month and year are known, enter the first day of the month. For example: use 05/01/2002 rather than 05/2002.
PAGE_COUNT	Enter the total number of pages of the PDF. This is the total page count so be sure to include all blank pages.
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CBI	If any part of this item is confidential business information, mark "Y." CBI content should also be mentioned in the ABSTRACT field.
KEYWORD 1 AND KEYWORD 2	Words to aid in searching the index for specific items. Refer to existing index for example key words.
ELECTRONIC LOCATION	EAD users leave this field blank. This is for ERG use, only.
DOCKET_ITEM	Documents will be identified in the project file index as Y (the item is or will be delivered to the EPA docket) or N (the item is project file, only ,and will not be delivered to the EPA docket).
PROJECT_FILE_SECTION	Submitter will identify project file section number. See Project File Outline Sections Tab within this document.

Data Format/Options
4-digit number
free text (500 characters)
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Dropdown Menu Options: Please use one of the listed selections from the drop down menu.
free text (150 characters)
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numeric, as listed in the "Project File Outline Sections" tab

DOCUMENT_SUB TYPE	SOURCE_CITATION	AUTHOR (include Company Affiliation)	AUTHOR_DATE

Select One
Analysis
Comment Response
Data
E-mail
Economic Analysis
Fact/Data Sheet
Form
Guidance
ICR Supporting Statement
Index
Interagency Review
Letter
Map
Meeting Materials
Memorandum
Office of Management and Budget (OMB)
Permit, Registration
Physical Item
Press Release, Public Announcement/Notice
Public Hearing Transcript, Deposition, Testimony
Publication; Copyrighted Material
Publication; Other Governmental
Publication; Previous/Related FR Notice
Publication; USEPA
Report
Speech
Study
Technical Support Document

PAGE_COUNT	COPYRIGHT PROTECTED	CBI	KEYWORD_1	KEYWORD_2	ELECTRONIC_LOCATION
	Select One TRUE FALSE	Select One TRUE FALSE			

DOCKET_ITEM	PROJECT_FILE_SECTION	DATE_SENT_ERG	EMAIL_TRANSMISSION_ERG
Select One TRUE FALSE			Select One TRUE FALSE

Message

From: Hernandez-Quinones, Samuel [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=4C46D56B82F143DF82F81D322BD109D7-HERNANDEZ-QUINONES, SAMUEL]
Sent: 12/4/2018 1:55:01 PM
To: Smith, Glynda [Smith.Glynda@epa.gov]
Subject: Comments/Edit to Analytical Methods Section - Draft FRN
Attachments: Version-Control Perchlorate Rule FRN 12-4-18.docx

Hi Glynda,

I received comments from Eric Burneson on the draft FRN for Perchlorate, and I wanted to send this for your review and feedback. The comment is specifically on page 56. I would appreciate if you can provide some language to address Eric's comment.

Let me know if you have any questions, and once again thank you.
Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

Message

From: Hernandez-Quinones, Samuel [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=4C46D56B82F143DF82F81D322BD109D7-HERNANDEZ-QUINONES, SAMUEL]
Sent: 12/21/2018 2:58:56 PM
To: Alattar, Zaineb [alattar.zaineb@epa.gov]
Subject: RE: Perchlorate rule tasks?
Attachments: Version-Control Perchlorate Rule FRN 12-20-18.docx; 181129_DRAFT MCLG TSD.DOCX

Hi Zaineb,

As we discussed earlier today here are the documents that you can review and provide feedback on.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Alattar, Zaineb
Sent: Friday, December 21, 2018 9:48 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: Perchlorate rule tasks?

Hi Sam,

Is there any work I can do on the perchlorate rule in the coming weeks? If there is a government shutdown, ORISE participants can continue working so just let me know. I will be out next week but I can work on anything after that.

Thank you,

Zaineb

Zaineb Alattar, MPH
ORISE Participant
U.S. EPA Office of Water
1200 Pennsylvania Ave., N.W.
Washington, DC 20460
202.564.9458
alattar.zaineb@epa.gov

Message

From: Hernandez-Quinones, Samuel [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=4C46D56B82F143DF82F81D322BD109D7-HERNANDEZ-QUINONES, SAMUEL]
Sent: 12/4/2018 1:40:53 PM
To: Flaharty, Stephanie [Flaharty.Stephanie@epa.gov]
Subject: RE: Pls. Pass on the current version of Perchlorate
Attachments: Version-Control Perchlorate Rule FRN 12-4-18.docx

Hi
Steph,

Attached is the version I am working on. The regulatory text starts in page 132.

Thanks
Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Flaharty, Stephanie
Sent: Tuesday, December 04, 2018 7:01 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Cc: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: Pls. Pass on the current version of Perchlorate

Morning Lisa,

I have some modifications to the amendatory language, informed by the recently proposed UIC rule, that I want to make.

Thanks,
Steph

Message

From: Hernandez-Quinones, Samuel [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=4C46D56B82F143DF82F81D322BD109D7-HERNANDEZ-QUINONES, SAMUEL]
Sent: 5/2/2019 5:30:38 PM
To: Burden, Susan [Burden.Susan@epa.gov]
CC: Shao, Nicole [Shao.Nicole@epa.gov]
Subject: RE: Perchlorate
Attachments: ORD Review.docx; EPA Perchlorate MCL NPRM (OMB 04-30-19).docx; EPA Perchlorate MCL NPRM (CDC FDA NIH).docx

Hi Susan

Here is the list of comments that we are asking assistance from ORD. I am also sending documents which contain comments from the CDC and OMB. I have flagged the pages were ORD should focus their review.

Please let me know if you have any question and once again thank you for your assistance.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Burden, Susan
Sent: Thursday, May 02, 2019 1:15 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Shao, Nicole <Shao.Nicole@epa.gov>
Subject: RE: Perchlorate

Hi Sam,

When you're ready, please send the documents to both me and Nicole Shao.

Thanks,

Susan

Susan Burden, Ph.D.
Chief, Program Support Staff
Office of Science Policy
Office of Research and Development
US Environmental Protection Agency
Phone: (202) 564-6308
Email: burden.susan@epa.gov

From: Hernandez-Quinones, Samuel
Sent: Thursday, May 02, 2019 8:57 AM
To: Burden, Susan <Burden.Susan@epa.gov>
Subject: RE: Perchlorate

Hi Susan, let me know if I can call you around 9:30am.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Burden, Susan
Sent: Wednesday, May 01, 2019 6:27 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Deener, Kathleen <Deener.Kathleen@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Subject: Re: Perchlorate

Hi all,

I'll connect with Sam on this in the morning, and we'll go from there.

Thanks,

Susan

Susan Burden, Ph.D.
Staff Chief, Program Support Staff
Office of Science Policy
Office of Research and Development
U.S. Environmental Protection Agency
(202) 564-6408 | (202) 740-0169

On May 1, 2019, at 6:16 PM, Burneson, Eric <Burneson.Eric@epa.gov> wrote:

> Thanks Kacee:
> I am adding Sam Hernandez to this reply and will ask Sam to coordinate with Susan.
> Eric
>
> ---
>
> **From:** Deener, Kathleen
> **Sent:** Wednesday, May 01, 2019 6:14 PM
> **To:** Burneson, Eric <Burneson.Eric@epa.gov>

Cc: Flowers, Lynn <Flowers.Lynn@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Burden, Susan <Burden.Susan@epa.gov>
Subject: RE: Perchlorate

Hi Eric,

Thanks for reaching out about this. I'm adding Susan Burden, OSP's Program Support Staff Chief, to the email. We can coordinate in OSP, and we'll keep the group small (the few NCEA folks you mentioned). Nicole Shao, on Susan's staff, has been involved in the regulatory workgroup, so Susan may ask her to coordinate with the NCEA team.

I'm happy to talk, as well, if that would be helpful.

Kacee Deener, MPH
Acting Director, Office of Science Policy
Office of Research and Development
US Environmental Protection Agency
(ph) 202.564.1990 | (mobile) 202.510.1490
deener.kathleen@epa.gov

From: Burneson, Eric
Sent: Wednesday, May 01, 2019 2:24 PM
To: Deener, Kathleen <Deener.Kathleen@epa.gov>
Cc: Flowers, Lynn <Flowers.Lynn@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: Perchlorate

Kacee:
We just received extensive comments on the perchlorate rulemaking including a number of edits to the text characterizing the BBDR model that ORD had been instrumental in helping us prepare. We would have normally turned to Lynn Flowers for help in evaluating these proposed changes but we understand she is out of the office until May 10. Is there someone else you can designate for us to work with on these edits. A few notes:

1. In addition to Lynn we have worked with Tina Bahadori, Emma Lavoie, and Dave Bussard from ORD's management team on this project in the past.
2. We will need to keep a close hold on the documents and therefore are not looking for an extensive team to be involved in the review.
3. We would prioritize any work on this OMB pass back over the response to the Clewell paper that we had previously asked ORD to help us with.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

Message

From: Hernandez-Quinones, Samuel [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=4C46D56B82F143DF82F81D322BD109D7-HERNANDEZ-QUINONES, SAMUEL]
Sent: 11/28/2018 8:29:27 PM
To: Lauren_Brown@abtassoc.com
Subject: FW: Draft Perchlorate FRN
Attachments: Version-Control Perchlorate Rule FRN 11-26-18 EGB.docx

FYI

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Burneson, Eric
Sent: Wednesday, November 28, 2018 2:31 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>; Rodgers-Jenkins, Crystal <Rodgers-Jenkins.Crystal@epa.gov>
Subject: RE: Draft Perchlorate FRN

Sam, Lisa and Rajiv:
I have completed my review of the draft Perchlorate FRN and believe you have developed a very solid draft at this stage and you should feel very good about the quality of work you have produced. There quite a few edits marked in the attached documents that I would like you to review and either accept or note for discussion. There are also a number of comments included that I would like you to consider and make any necessary edits to address. The key issues that I see that require attention are:

Ex. 5 Deliberative Process (DP)

Thank you for the work you have done on this important document. I would like to meet with you tomorrow once you have had an opportunity to review the attached edits and comments.

Eric

From: Hernandez-Quinones, Samuel
Sent: Wednesday, November 21, 2018 5:08 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>
Subject: RE: Draft Perchlorate FRN

Hi,

I'm sorry, I just realized the earlier message I sent to all of you had an incorrect version of the FRN document.

Please find the correct version attached to this email. My apologies.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Burneson, Eric
Sent: Wednesday, November 21, 2018 4:58 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: Re: Draft Perchlorate FRN

Thank you Sam. Happy Thanksgiving

Sent from my iPhone

On Nov 21, 2018, at 4:05 PM, Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov> wrote:

> Hi,
>
> Attached you will find the draft Preamble and Regulatory text for the Proposed Perchlorate Rulemaking effort.
>
> Please send your comments and/or edits to me and I will incorporate in the controlled version of the document.
>
> Thank You
> Sam
> ==========
> Samuel Hernández Quiñones, P.E.
> Environmental Engineer
> Office of Water

Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

<Version-Control Perchlorate Rule FRN 11-21-18 SHQ.docx>

Appointment

From: Burneson, Eric [Burneson.Eric@epa.gov]
Sent: 8/7/2017 9:01:47 PM
To: Burneson, Eric [Burneson.Eric@epa.gov]; Christ, Lisa [Christ.Lisa@epa.gov]; Hafez, Ahmed [Hafez.Ahmed@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Huff, Lisa [Huff.Lisa@epa.gov]; Olson, Daniel [Olson.Daniel@epa.gov]; Johnson, Ann [Johnson.Ann@epa.gov]; Muellerleile, Caryn [Muellerleile.Caryn@epa.gov]
CC: Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Flowers, Lynn [Flowers.Lynn@epa.gov]; Bussard, David [Bussard.David@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]

Subject: Perchlorate charge
Location: EPA east 2339 or Ex. 6 Personal Privacy (PP)

Start: 8/8/2017 1:00:00 PM
End: 8/8/2017 1:30:00 PM
Show Time As: Busy

From: Burneson, Eric
Sent: Monday, August 07, 2017 4:42 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Hafez, Ahmed <Hafez.Ahmed@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>; Olson, Daniel <Olson.Daniel@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>
Cc: Behl, Betsy <Behl.Betsy@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>; Bussard, David <Bussard.David@epa.gov>; Strong, Jamie <Strong.Jamie@epa.gov>
Subject: FW: Perchlorate charge

I will set up a meeting to discuss these tomorrow.

From: Kim, Jim H. EOP/OMB Ex. 6 Personal Privacy (PP)
Sent: Monday, August 07, 2017 3:45 PM
To: Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Cc: Schwab, Margo EOP/OMB Ex. 6 Personal Privacy (PP); Dorjets, Vlad EOP/OMB Ex. 6 Personal Privacy (PP); Laity, Jim A. EOP/OMB Ex. 6 Personal Privacy (PP)
Subject: Perchlorate charge

Hi Caryn, Eric and Lynn,

Thank you for your patience as we worked on this. Attached is a version of the charge with our suggestions in tracked changes. Please let me know if you have any questions.

Best regards,
Jim

James Kim, Ph.D., DABT
Office of Management and Budget

202-395-3085

Ex. 6 Personal Privacy (PP)

Message

From: Corrales, Mark [Corrales.Mark@epa.gov]
Sent: 6/4/2020 2:53:31 PM
To: Johnson, Ann [Johnson.Ann@epa.gov]
Subject: RE: Perchlorate

BB is just very interested in closely following it / high priority. Wanted to know if she can/should call in today. I am telling her no political will be on.

From: Johnson, Ann <Johnson.Ann@epa.gov>
Sent: Thursday, June 4, 2020 10:52 AM
To: Corrales, Mark <Corrales.Mark@epa.gov>
Subject: FW: Perchlorate

Just in…

I will add this to my OMB notes for Tuesday, but thought you might want the info now.

From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]
Sent: Thursday, June 4, 2020 10:50 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>
Subject: Perchlorate

Eric – Both HHS and DOD let me know this morning that they don't have any comments on the perchlorate notice. I'll wait for this afternoon's call in case I want to capture anything we hear in OMB's comments but expect to send you whatever I have at some point tonight.

Message

From: Muellerleile, Caryn [Muellerleile.Caryn@epa.gov]
Sent: 8/8/2017 11:59:13 AM
To: Johnson, Ann [Johnson.Ann@epa.gov]
Subject: FW: Perchlorate charge
Attachments: DRAFT MCLG Approach Charge 08-02-17clean_OMB comments.docx

From: Kim, Jim H. EOP/OMB Ex. 6 Personal Privacy (PP)
Sent: Monday, August 07, 2017 3:45 PM
To: Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Cc: Schwab, Margo EOP/OMB < Ex. 6 Personal Privacy (PP) ; Dorjets, Vlad EOP/OMB Ex. 6 Personal Privacy (PP) ; Laity, Jim A. EOP/OMB Ex. 6 Personal Privacy (PP)
Subject: Perchlorate charge

Hi Caryn, Eric and Lynn,

Thank you for your patience as we worked on this. Attached is a version of the charge with our suggestions in tracked changes. Please let me know if you have any questions.

Best regards,
Jim

James Kim, Ph.D., DABT
Office of Management and Budget
202-395-3085
Ex. 6 Personal Privacy (PP)

Message

From: Muellerleile, Caryn [Muellerleile.Caryn@epa.gov]
Sent: 8/11/2017 8:00:36 PM
To: Johnson, Ann [Johnson.Ann@epa.gov]
Subject: FW: Perchlorate charge
Attachments: DRAFT MCLG Approach Charge 08-11-17.docx

From: Burneson, Eric
Sent: Friday, August 11, 2017 3:41 PM
To: James_H_Kim@omb.eop.gov; Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)
Cc: Schwab, Margo EOP/OMB Ex. 6 Personal Privacy (PP); Laity, Jim A. EOP/OMB Ex. 6 Personal Privacy (PP) Grevatt, Peter <Grevatt.Peter@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Subject: RE: Perchlorate charge

Vlad and Jim:
Thank you for helping to facilitate a constructive meeting with our Federal partners this week on the perchlorate peer review. We believe that the input we received from you and our Federal partners has helped us to communicate more clearly about our analysis and the critical assumptions, strengths and limitations.

Attached is a revised draft charge that responds to the concerns identified in our discussion on Wednesday. In preparing the attached revisions, we tried to better organize the issues and break down complex charge questions into more direct questions. Prior to distribution to the other Federal Agencies, we ask that you review the attached charge and let us know if you have any suggestions for better addressing the identified concerns.

Our goal is to have input from the other Federal Agencies by Friday, August 18th so that we can move forward with the next steps in conducting the peer review. Therefore we hope to have your feedback by early next week.

Thanks in advance for your continued input.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Burneson, Eric
Sent: Tuesday, August 08, 2017 7:29 PM
To: 'Kim, Jim H. EOP/OMB' Ex. 6 Personal Privacy (PP); Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Cc: Schwab, Margo EOP/OMB Ex. 6 Personal Privacy (PP) Dorjets, Vlad EOP/OMB Ex. 6 Personal Privacy (PP) Laity, Jim A. EOP/OMB <Ex. 6 Personal Privacy (PP) Grevatt, Peter <Grevatt.Peter@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>
Subject: RE: Perchlorate charge

Jim:
Thanks very much for your comments on the draft peer review charge. We have incorporated your input in the revised draft charge document (dated 8-8-17)that will soon be distributed to Inter Agency partners. To assist your understanding in how we incorporated your edits we have also prepared the attached response document for your consideration.

Thanks again for your helpful input.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Kim, Jim H. EOP/OMB Ex. 6 Personal Privacy (PP)
Sent: Monday, August 07, 2017 3:45 PM
To: Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Cc: Schwab, Margo EOP/OMB Ex. 6 Personal Privacy (PP); Dorjets, Vlad EOP/OMB Ex. 6 Personal Privacy (PP); Laity, Jim A. EOP/OMB < Ex. 6 Personal Privacy (PP)
Subject: Perchlorate charge

Hi Caryn, Eric and Lynn,

Thank you for your patience as we worked on this. Attached is a version of the charge with our suggestions in tracked changes. Please let me know if you have any questions.

Best regards,
Jim

James Kim, Ph.D., DABT
Office of Management and Budget
202-395-3085
Ex. 6 Personal Privacy (PP)

Appointment

From: Nickerson, William [Nickerson.William@epa.gov]
Sent: 5/21/2019 4:08:58 PM
To: Johnson, Ann [Johnson.Ann@epa.gov]

Subject: FW: Hold for OMB call re Perchlorate
Location: EPA East 2331 A or Ex. 6 Personal Privacy (PP)

Start: 5/21/2019 7:30:00 PM
End: 5/21/2019 8:30:00 PM
Show Time As: Tentative

-----Original Appointment-----
From: Burneson, Eric
Sent: Thursday, May 16, 2019 11:42 AM
To: Burneson, Eric; Christ, Lisa; Hernandez-Quinones, Samuel; Khera, Rajiv; Nickerson, William; Vlad Dorjets
Ex. 6 Personal Privacy (PP)
Subject: Hold for OMB call re Perchlorate
When: Tuesday, May 21, 2019 3:30 PM-4:30 PM (UTC-05:00) Eastern Time (US & Canada).
Where: EPA East 2331 A or Ex. 6 Personal Privacy (PP)

Due to some schedule changes I was just informed of regarding signature of this proposal we will need to have our discussion on Tuesday rather than Wednesday. Can we please hold this time for a follow up discussion?

Message

From: Nickerson, William [Nickerson.William@epa.gov]
Sent: 5/20/2019 8:13:42 PM
To: Johnson, Ann [Johnson.Ann@epa.gov]
CC: Corrales, Mark [Corrales.Mark@epa.gov]; Curry, Bridgid [Curry.Bridgid@epa.gov]
Subject: FW: SBA Comments on Perchlorate
Attachments: EPA Responses to EO12886 Comments - FRN Perchlorate NPDWR 5-15-19_KB_SBA_EDIT 0520 v1.docx

From: Dorjets, Vlad EOP/OMB [redacted] **Ex. 6 Personal Privacy (PP)**
Sent: Monday, May 20, 2019 3:49 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Nickerson, William <Nickerson.William@epa.gov>
Subject: SBA Comments on Perchlorate

Here are comments provided by SBA. I already let Kevin know that by providing his comments on the redline instead of the clean version, he has made it challenging to identify his comments and therefore I could not guarantee that we would see them all.

Message

From: Nickerson, William [Nickerson.William@epa.gov]
Sent: 5/20/2019 8:13:27 PM
To: Johnson, Ann [Johnson.Ann@epa.gov]
CC: Corrales, Mark [Corrales.Mark@epa.gov]; Curry, Bridgid [Curry.Bridgid@epa.gov]
Subject: FW: NASA Comments on Perchlorate
Attachments: Perchlorate EO 12866 NASA Review UPDATED 05_20_2019 final.docx

From: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)
Sent: Monday, May 20, 2019 1:28 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Nickerson, William <Nickerson.William@epa.gov>
Subject: NASA Comments on Perchlorate

Attached please find the comments submitted by NASA on the perchlorate NPRM. I think some sort of a response would be appropriate. Can discuss those reasons – and my thinking on this in general - by phone offline.

Message

From: Nickerson, William [Nickerson.William@epa.gov]
Sent: 5/20/2019 8:13:14 PM
To: Johnson, Ann [Johnson.Ann@epa.gov]
CC: Corrales, Mark [Corrales.Mark@epa.gov]; Curry, Bridgid [Curry.Bridgid@epa.gov]
Subject: FW: FDA Comments on Perchlorate
Attachments: EO12866_SDWA NPDWR 2040-AF28 FRN Perchlorate Rule 20190515 -- FDA Comments 05-20-19 (1).docx

Just forwarding this one as an FYI, and two more shortly, that came in today.

From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]
Sent: Monday, May 20, 2019 12:11 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Nickerson, William <Nickerson.William@epa.gov>
Subject: FDA Comments on Perchlorate

Eric,

I'm working hard to get you OMB comments as soon as possible. Hard to say exactly when that will be as some of the comments I'm receiving from agencies require follow-on discussions to ensure that the comments are as productive as possible given timing constraints. Along those lines, [Ex. 5 Deliberative Process (DP)]

[Ex. 5 Deliberative Process (DP)]

Vlad

Message

From: Nickerson, William [Nickerson.William@epa.gov]
Sent: 5/1/2019 4:52:28 PM
To: Johnson, Ann [Johnson.Ann@epa.gov]
Subject: Fw: Interagency Comments on Draft Perchlorate MCL NPRM (2 of 2)
Attachments: EPA Perchlorate MCL NPRM (DOD).pdf; EPA Perchlorate MCL TSD (CDC).docx; EPA Perchlorate MCL TSD (DOD).pdf; EPA Perchlorate MCL (NASA).docx; EPA Perchlorate MCL (SBA).docx; EPA Perchlorate MCL HRRCA (CDC).docx; EPA Perchlorate MCL HRRCA (DOD).pdf; EPA Perchlorate MCL NPRM (CDC FDA NIH).docx

same deal

From: Dorjets, Vlad EOP/OMB <Ex. 6 Personal Privacy (PP)>
Sent: Tuesday, April 30, 2019 8:16 PM
To: Nickerson, William
Cc: Burneson, Eric
Subject: Interagency Comments on Draft Perchlorate MCL NPRM (2 of 2)

Bill,

Per my previous message, please find attached comments from certain interagency reviewers on EPA's draft proposal setting an MCL for perchlorate.

Vlad

Message

From: Nickerson, William [Nickerson.William@epa.gov]
Sent: 4/5/2019 2:19:05 PM
To: Johnson, Ann [Johnson.Ann@epa.gov]
Subject: new draft of Perchlorate
Attachments: Perchlorate Proposed NPDWR Redline 4-4-19.docx

Ann,

This is very close hold and has not been cleared by the OW IO yet. Could you take a quick look, particularly on pages 36-41, to see if there is anything of concern. Thank you.

Bill

Message

From: Johnson, Ann [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BF046C29B1604A0E9F712B671C4F3CE5-JOHNSON, ANN]
Sent: 6/4/2020 2:55:35 PM
To: Corrales, Mark [Corrales.Mark@epa.gov]
Subject: RE: Perchlorate

Sure.

From: Corrales, Mark <Corrales.Mark@epa.gov>
Sent: Thursday, June 4, 2020 10:55 AM
To: Johnson, Ann <Johnson.Ann@epa.gov>
Subject: RE: Perchlorate

She said OK she won't call in but would like us to send her a readout on the call.

From: Johnson, Ann <Johnson.Ann@epa.gov>
Sent: Thursday, June 4, 2020 10:52 AM
To: Corrales, Mark <Corrales.Mark@epa.gov>
Subject: FW: Perchlorate

Just in…

I will add this to my OMB notes for Tuesday, but thought you might want the info now.

From: Dorjets, Vlad EOP/OMB <**Ex. 6 Personal Privacy (PP)**
Sent: Thursday, June 4, 2020 10:50 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>
Subject: Perchlorate

Eric – Both HHS and DOD let me know this morning that they don't have any comments on the perchlorate notice. I'll wait for this afternoon's call in case I want to capture anything we hear in OMB's comments but expect to send you whatever I have at some point tonight.

Message

From: Johnson, Ann [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BF046C29B1604A0E9F712B671C4F3CE5-JOHNSON, ANN]
Sent: 6/17/2020 1:04:15 PM
To: Corrales, Mark (Corrales.Mark@epa.gov) [Corrales.Mark@epa.gov]; Nickerson, William (Nickerson.William@epa.gov) [Nickerson.William@epa.gov]
Subject: FW: Review of Perchlorate Notice Concluded

From: Dorjets, Vlad EOP/OMB **Ex. 6 Personal Privacy (PP)**
Sent: Wednesday, June 17, 2020 9:01 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Parikh, Pooja <Parikh.Pooja@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: Review of Perchlorate Notice Concluded

Eric,

OMB has concluded its review of the Perchlorate notice.

Vlad

Message

From: Johnson, Ann [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BF046C29B1604A0E9F712B671C4F3CE5-JOHNSON, ANN]
Sent: 7/21/2017 12:02:57 PM
To: Rees, Sarah [rees.sarah@epa.gov]
CC: Muellerleile, Caryn [Muellerleile.Caryn@epa.gov]; Corrales, Mark (Corrales.Mark@epa.gov) [Corrales.Mark@epa.gov]; Curry, Bridgid (Curry.Bridgid@epa.gov) [Curry.Bridgid@epa.gov]
Subject: FW: Perchlorate Follow up

Sarah,

Just keeping you informed…

Below is the information (minus attachment) that Eric Burneson transmitted to OMB yesterday evening. I have not heard whether there have been further requests for the actual MCLG report. It's possible that such a request would come through different channels. Please let Caryn or me know if you have any questions.

Ann

From: Burneson, Eric
Sent: Thursday, July 20, 2017 6:14 PM
To: Dorjets, Vlad EOP/OMB [redacted]; Schwab, Margo EOP/OMB [redacted]; James_H_Kim [redacted]
Cc: Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Olson, Daniel <Olson.Daniel@epa.gov>
Subject: Perchlorate Follow up

Margo, Vlad and Jim;
Thank you for arranging for the interagency call on Tuesday to discuss the next peer review for our analysis to inform an MCLG for perchlorate. In the call you asked if we would provide the results tables for the modeling. Attached per your request are three tables with explanatory text. These tables are from the current draft of the report we are preparing for peer review. A request was also made in the call for us to provide the schedule information for this activity. Please find that information below.

- EPA expects publication FRNs announcing materials for public comment soon
    1. Draft MCLG Approach Report (45 day comment period)
    2. List of 12 peer reviewer candidates and draft charge questions (21 day comment period)
- Conduct second contractor-managed, external peer review of the MCLG Approach Report
    1. Meeting expected to be held in Washington, DC metro area
- Consent decree peer review deadline: October 18, 2017
- Consent decree rule making milestones
    1. Signature of proposed action: October 2018
    2. Signature of final action: December 2019

Thanks again for your help in arranging for an interagency discussion on this important action.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency

202 564 5250

Message

From: Johnson, Ann [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BF046C29B1604A0E9F712B671C4F3CE5-JOHNSON, ANN]
Sent: 8/11/2017 9:00:59 PM
To: Muellerleile, Caryn [Muellerleile.Caryn@epa.gov]
Subject: Re: Perchlorate charge

Thanks! Eric said earlier today that he'd be sending out. It's good to know it went.

From: Muellerleile, Caryn
Sent: Friday, August 11, 2017 4:00:36 PM
To: Johnson, Ann
Subject: FW: Perchlorate charge

From: Burneson, Eric
Sent: Friday, August 11, 2017 3:41 PM
To: James_H_Kim@Ex. 6 Personal Privacy (PP); Dorjets, Vlad EOP/OMB; Ex. 6 Personal Privacy (PP)
Cc: Schwab, Margo EOP/OMB; Ex. 6 Personal Privacy (PP); Laity, Jim A. EOP/OMB; Ex. 6 Personal Privacy (PP); Grevatt, Peter <Grevatt.Peter@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Subject: RE: Perchlorate charge

Vlad and Jim:
Thank you for helping to facilitate a constructive meeting with our Federal partners this week on the perchlorate peer review. We believe that the input we received from you and our Federal partners has helped us to communicate more clearly about our analysis and the critical assumptions, strengths and limitations.

Attached is a revised draft charge that responds to the concerns identified in our discussion on Wednesday. In preparing the attached revisions, we tried to better organize the issues and break down complex charge questions into more direct questions. Prior to distribution to the other Federal Agencies, we ask that you review the attached charge and let us know if you have any suggestions for better addressing the identified concerns.

Our goal is to have input from the other Federal Agencies by Friday, August 18th so that we can move forward with the next steps in conducting the peer review. Therefore we hope to have your feedback by early next week.

Thanks in advance for your continued input.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Burneson, Eric
Sent: Tuesday, August 08, 2017 7:29 PM

To: 'Kim, Jim H. EOP/OMB' Ex. 6 Personal Privacy (PP) Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Cc: Schwab, Margo EOP/OMB < Ex. 6 Personal Privacy (PP) ; Dorjets, Vlad EOP/OMB < Ex. 6 Personal Privacy (PP) ; Laity, Jim A. EOP/OMB < Ex. 6 Personal Privacy (PP) Grevatt, Peter <Grevatt.Peter@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>
Subject: RE: Perchlorate charge

Jim:
Thanks very much for your comments on the draft peer review charge. We have incorporated your input in the revised draft charge document (dated 8-8-17)that will soon be distributed to Inter Agency partners. To assist your understanding in how we incorporated your edits we have also prepared the attached response document for your consideration.

Thanks again for your helpful input.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Kim, Jim H. EOP/OMB Ex. 6 Personal Privacy (PP)
Sent: Monday, August 07, 2017 3:45 PM
To: Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Cc: Schwab, Margo EOP/OMB Ex. 6 Personal Privacy (PP) Dorjets, Vlad EOP/OMB Ex. 6 Personal Privacy (PP) ; Laity, Jim A. EOP/OMB < Ex. 6 Personal Privacy (PP)
Subject: Perchlorate charge

Hi Caryn, Eric and Lynn,

Thank you for your patience as we worked on this. Attached is a version of the charge with our suggestions in tracked changes. Please let me know if you have any questions.

Best regards,
Jim

James Kim, Ph.D., DABT
Office of Management and Budget
202-395-3085
Ex. 6 Personal Privacy (PP)

Message

From: Johnson, Ann [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BF046C29B1604A0E9F712B671C4F3CE5-JOHNSON, ANN]
Sent: 5/2/2019 12:20:13 PM
To: Dockins, Chris [Dockins.Chris@epa.gov]
Subject: FW: Interagency Comments on Draft Perchlorate MCL NPRM (2 of 2)
Attachments: EPA Perchlorate MCL NPRM (DOD).pdf; ATT00001.htm; EPA Perchlorate MCL TSD (CDC).docx; ATT00002.htm; EPA Perchlorate MCL TSD (DOD).pdf; ATT00003.htm; EPA Perchlorate MCL (NASA).docx; ATT00004.htm; EPA Perchlorate MCL (SBA).docx; ATT00005.htm; EPA Perchlorate MCL HRRCA (CDC).docx; ATT00006.htm; EPA Perchlorate MCL HRRCA (DOD).pdf; ATT00007.htm; EPA Perchlorate MCL NPRM (CDC FDA NIH).docx; ATT00008.htm

From: Hernandez-Quinones, Samuel
Sent: Wednesday, May 1, 2019 6:24 PM
To: Johnson, Ann <Johnson.Ann@epa.gov>
Subject: FW: Interagency Comments on Draft Perchlorate MCL NPRM (2 of 2)

FYI

Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Burneson, Eric
Sent: Tuesday, April 30, 2019 9:25 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>
Cc: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>
Subject: Fwd: Interagency Comments on Draft Perchlorate MCL NPRM (2 of 2)

Sent from my iPhone

Begin forwarded message:

> **From:** "Dorjets, Vlad EOP/OMB" < **Ex. 6 Personal Privacy (PP)**
> **To:** "Nickerson, William" <Nickerson.William@epa.gov>
> **Cc:** "Burneson, Eric" <Burneson.Eric@epa.gov>
> **Subject: Interagency Comments on Draft Perchlorate MCL NPRM (2 of 2)**
>
> Bill,

Per my previous message, please find attached comments from certain interagency reviewers on EPA's draft proposal setting an MCL for perchlorate.

Vlad

Message

From: Johnson, Ann [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BF046C29B1604A0E9F712B671C4F3CE5-JOHNSON, ANN]
Sent: 2/21/2019 9:19:15 PM
To: Dockins, Chris [Dockins.Chris@epa.gov]
CC: Corrales, Mark (Corrales.Mark@epa.gov) [Corrales.Mark@epa.gov]; Curry, Bridgid (Curry.Bridgid@epa.gov) [Curry.Bridgid@epa.gov]
Subject: FW: draft perchlorate proposal
Attachments: Request for review - Draft Perchlorate Rule Proposal ; Technical Support Documents - Draft Perchlorate Rule Proposal

From: Christ, Lisa
Sent: Thursday, February 21, 2019 4:15 PM
To: Jones, Lindsey <jones.lindsey@epa.gov>
Cc: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>
Subject: draft perchlorate proposal

Hi Lindsey,
As follow up to our call, I'm sending the draft proposal and technical support documents. We received very helpful feedback and comments from Ann Johnson and Chris Dockins. We're in the process of addressing theirs and other EPA reviewers comments. Let us know if you have questions, etc.

Lisa

Message

From: Johnson, Ann [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=BF046C29B1604A0E9F712B671C4F3CE5-JOHNSON, ANN]
Sent: 2/15/2019 4:54:19 PM
To: Corrales, Mark (Corrales.Mark@epa.gov) [Corrales.Mark@epa.gov]; Curry, Bridgid (Curry.Bridgid@epa.gov) [Curry.Bridgid@epa.gov]
CC: Nickerson, William (Nickerson.William@epa.gov) [Nickerson.William@epa.gov]
Subject: FW: Request for review - Draft Perchlorate Rule Proposal
Attachments: Version-Control Perchlorate Rule FRN 2-4-19_aj.docx

FYI.

Bill: Cc'ing you because I understand that Lindsey had some interest.

From: Johnson, Ann
Sent: Friday, February 15, 2019 11:53 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Dockins, Chris <Dockins.Chris@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>
Subject: RE: Request for review - Draft Perchlorate Rule Proposal

Sam,

Thank you for the opportunity to review the notice.

Attached are my comments. Please note that they're staff-level and don't reflect any input from senior management. The vast majority of the comments are editorial for your consideration, although I've flagged a few comments (with ▓) that are a bit more substantive. You'll see that I spent more time on some parts of the notice than I did on others. Chris Dockins is reviewing the EA-related material, and I have comment on any of that.

I'm out today, but am happy to explain any of my comments or provide any assistance next week.

Have a great holiday weekend!

Ann

From: Hernandez-Quinones, Samuel
Sent: Monday, February 4, 2019 10:32 AM
To: Johnson, Ann <Johnson.Ann@epa.gov>; Dockins, Chris <Dockins.Chris@epa.gov>; Shao, Nicole <Shao.Nicole@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>; Foster, Stiven <Foster.Stiven@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>
Subject: Request for review - Draft Perchlorate Rule Proposal

Preliminary draft for internal EPA review

Hi,

Attached for your review is the Draft Perchlorate Rule Proposal (Preamble and Regulatory Text). As discussed previously we are asking that you provide your questions and or comments on the draft document to me by

COB 2/15/2019. In order to keep with the consent decree deadline, we need to complete this step of the process within two weeks, if there are any issues that require technical discussions please let me know so that we can arrange any necessary working meeting.

I will follow-up with another email later today that contains the draft version of the technical support documents that were used as the basis for the Perchlorate proposal. Since those are very lengthy documents we are not requesting that you submit input and/or comments on those within the two- week time frame.

Please let me know if you have any questions.

Thanks
Sam

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

Appointment

From: Burneson, Eric [Burneson.Eric@epa.gov]
Sent: 8/7/2017 9:01:47 PM
To: Burneson, Eric [Burneson.Eric@epa.gov]; Christ, Lisa [Christ.Lisa@epa.gov]; Hafez, Ahmed [Hafez.Ahmed@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Huff, Lisa [Huff.Lisa@epa.gov]; Olson, Daniel [Olson.Daniel@epa.gov]; Johnson, Ann [Johnson.Ann@epa.gov]; Muellerleile, Caryn [Muellerleile.Caryn@epa.gov]
CC: Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Flowers, Lynn [Flowers.Lynn@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]

Subject: Perchlorate charge
Location: EPA east 2339 or 1 866 299 3188 code 202 564 5250

Start: 8/8/2017 1:00:00 PM
End: 8/8/2017 1:30:00 PM
Show Time As: Busy

From: Burneson, Eric
Sent: Monday, August 07, 2017 4:42 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Hafez, Ahmed <Hafez.Ahmed@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>; Olson, Daniel <Olson.Daniel@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>
Cc: Behl, Betsy <Behl.Betsy@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>; Bussard, David <Bussard.David@epa.gov>; Strong, Jamie <Strong.Jamie@epa.gov>
Subject: FW: Perchlorate charge

I will set up a meeting to discuss these tomorrow.

From: Kim, Jim H. EOP/OMB [Ex. 6 Personal Privacy (PP)
Sent: Monday, August 07, 2017 3:45 PM
To: Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Cc: Schwab, Margo EOP/OMB <Ex. 6 Personal Privacy (PP)>; Dorjets, Vlad EOP/OMB Ex. 6 Personal Privacy (PP); Laity, Jim A. EOP/OMB <Ex. 6 Personal Privacy (PP)
Subject: Perchlorate charge

Hi Caryn, Eric and Lynn,

Thank you for your patience as we worked on this. Attached is a version of the charge with our suggestions in tracked changes. Please let me know if you have any questions.

Best regards,
Jim

James Kim, Ph.D., DABT
Office of Management and Budget

202-395-3085
Ex. 6 Personal Privacy (PP)

Appointment

From: Burneson, Eric [Burneson.Eric@epa.gov]
Sent: 8/7/2017 9:01:44 PM
To: Christ, Lisa [Christ.Lisa@epa.gov]; Hafez, Ahmed [Hafez.Ahmed@epa.gov]; Miller, Gregory [Miller.Gregory@epa.gov]; Huff, Lisa [Huff.Lisa@epa.gov]; Olson, Daniel [Olson.Daniel@epa.gov]; Johnson, Ann [Johnson.Ann@epa.gov]
CC: Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Behl, Betsy [Behl.Betsy@epa.gov]; Flowers, Lynn [Flowers.Lynn@epa.gov]; Bussard, David [Bussard.David@epa.gov]; Strong, Jamie [Strong.Jamie@epa.gov]

Subject: Perchlorate charge
Location: EPA east 2339 or Ex. 6 Personal Privacy (PP)

Start: 8/8/2017 1:00:00 PM
End: 8/8/2017 1:30:00 PM
Show Time As: Tentative

From: Burneson, Eric
Sent: Monday, August 07, 2017 4:42 PM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Hafez, Ahmed <Hafez.Ahmed@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>; Olson, Daniel <Olson.Daniel@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>
Cc: Behl, Betsy <Behl.Betsy@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>; Bussard, David <Bussard.David@epa.gov>; Strong, Jamie <Strong.Jamie@epa.gov>
Subject: FW: Perchlorate charge

I will set up a meeting to discuss these tomorrow.

From: Kim, Jim H. EOP/OMB [Ex. 6 Personal Privacy (PP)
Sent: Monday, August 07, 2017 3:45 PM
To: Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>
Cc: Schwab, Margo EOP/OMB <Ex. 6 Personal Privacy (PP)>; Dorjets, Vlad EOP/OMB Ex. 6 Personal Privacy (PP)> Laity, Jim A. EOP/OMB <Ex. 6 Personal Privacy (PP)>
Subject: Perchlorate charge

Hi Caryn, Eric and Lynn,

Thank you for your patience as we worked on this. Attached is a version of the charge with our suggestions in tracked changes. Please let me know if you have any questions.

Best regards,
Jim

James Kim, Ph.D., DABT
Office of Management and Budget

202-395-3085
Ex. 6 Personal Privacy (PP)

Message

From: Wehling, Carrie [Wehling.Carrie@epa.gov]
Sent: 5/29/2019 2:26:22 PM
To: Mclain, Jennifer [Mclain.Jennifer@epa.gov]
CC: Messier, Dawn [Messier.Dawn@epa.gov]
Subject: RE: Uploaded new versions of Perchlorate

Thanks for following up, Jennifer. Copying Dawn for her thoughts.

Ex. 5 AC/DP

Thanks.
Carrie

Caroline (Carrie) Wehling
Assistant General Counsel
Water Law Office
U.S. Environmental Protection Agency
Washington DC 20004
202-564-5492
wehling.carrie@epa.gov

From: Mclain, Jennifer
Sent: Wednesday, May 29, 2019 10:17 AM
To: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: Uploaded new versions of Perchlorate

Ex. 5 AC/DP

From: Wehling, Carrie
Sent: Friday, May 24, 2019 10:18 AM
To: Ross, David P <ross.davidp@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Forsgren, Lee <Forsgren.Lee@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Aguirre, Janita <Aguirre.Janita@epa.gov>; Mejias, Melissa <mejias.melissa@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Fotouhi, David <Fotouhi.David@epa.gov>
Subject: RE: Uploaded new versions of Perchlorate

Congratulations, all. OGWDW (and Dawn!) did an amazing job here on a really tough project with a tough court deadline.

That having been said……
I know that you all have incredibly ambitious timelines for the rest of the year. So, I just want to remind you that our next court deadline for perchlorate is this December 19 (with only a limited extension possible) and that deadline is to sign a final MCLG and NPDWR for perchlorate.

Ex. 5 AC/DP

Thanks.

Carrie

Caroline (Carrie) Wehling
Assistant General Counsel
Water Law Office
U.S. Environmental Protection Agency
Washington DC 20004
202-564-5492
wehling.carrie@epa.gov

From: Ross, David P
Sent: Thursday, May 23, 2019 6:19 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Forsgren, Lee <Forsgren.Lee@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Aguirre, Janita <Aguirre.Janita@epa.gov>; Mejias, Melissa <mejias.melissa@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>
Subject: Re: Uploaded new versions of Perchlorate, 2040-AF28 into ROCIS

Thanks everyone for your great work on such a challenging issue. I very much appreciate the hard work and dedication to developing a strong regulatory proposal and supporting documentation within the timelines established by the consent decree. Please take some time to decompress over the Memorial Day weekend, enjoy the milestone, and recharge for the LCR sprint that comes next!

Dave

Sent from my iPad

On May 23, 2019, at 11:09 AM, Burneson, Eric <Burneson.Eric@epa.gov> wrote:

> Dave:
> Be advised that OMB has cleared the perchlorate proposal and we are sending forward the documents for signature and rollout. Thank you for your leadership on this important effort and for your timely input on the key issues we have had to address throughout the review process.
> As you know the perchlorate team and members of the OW and OGC staff have put significant effort into achieve this milestone. It is a privilege to work with such talented and dedicated staff. I thank them for all the great work to get us to this important milestone
>
> Eric Burneson, P.E.
> Director of Standards and Risk Management
> Office of Ground Water and Drinking Water

U.S. Environmental Protection Agency
202 564 5250

From: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]
Sent: Thursday, May 23, 2019 10:58 AM
To: Manibusan, Mary <Manibusan.Mary@epa.gov>; Adams, Darryl <Adams.Darryl@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Nurse, Leanne <Nurse.Leanne@epa.gov>
Subject: RE: Uploaded new versions of Perchlorate, 2040-AF28 into ROCIS

OMB has concluded its review of the Perchlorate rule. I realize this review had some particular challenges so we want to thank everybody for all their hard work and thoughtful responses to OMB and interagency comments.

We understand that EPA is planning on signing and rolling out this rule later today. We would appreciate it if you could send us your roll-out material in advance so that we can could take a quick look to see how EPA is planning on messaging this NPRM.

From: Manibusan, Mary <Manibusan.Mary@epa.gov>
Sent: Thursday, May 23, 2019 10:44 AM
To: Adams, Darryl <Adams.Darryl@epa.gov>
Cc: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]; Burneson, Eric <Burneson.Eric@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Nurse, Leanne <Nurse.Leanne@epa.gov>
Subject: Re: Uploaded new versions of Perchlorate, 2040-AF28 into ROCIS

Vlad,
Please confirm when OMB has officially concluded.
Thanks,
Mary

Sent from my iPhone

On May 23, 2019, at 10:41 AM, Adams, Darryl <Adams.Darryl@epa.gov> wrote:

> Vlad et al,
> I've uploaded the new versions into ROCIS. Please let me if there are any issues. Thank you.
>
> <image003.jpg>
>
> Darryl Adams
> Regulatory Management Division
> Office of Policy, U.S. EPA
> 202 564-6569
> Mail Code 1803A, Room 3512D WJC North

Message

From: Campbell, Ann [Campbell.Ann@epa.gov]
Sent: 5/23/2019 8:00:46 PM
To: Dennis, Allison [Dennis.Allison@epa.gov]; Mclain, Jennifer [Mclain.Jennifer@epa.gov]; Guilaran, Yu-Ting [Guilaran.Yu-Ting@epa.gov]
Subject: Fwd: SIGNED: National Primary Drinking Water Regulations: Proposed Perchlorate Rule (SAN 5555)
Attachments: Perchlorate Rule OW-19-000-5459.pdf; ATT00001.htm

Begin forwarded message:

From: "Pritchard, Eileen" <Pritchard.Eileen@epa.gov>
To: "Wheeler, Andrew" <wheeler.andrew@epa.gov>, "Jackson, Ryan" <jackson.ryan@epa.gov>, "Lyons, Troy" <lyons.troy@epa.gov>, "Bennett, Tate" <Bennett.Tate@epa.gov>, "White, Elizabeth" <white.elizabeth@epa.gov>, "Leopold, Matt (OGC)" <Leopold.Matt@epa.gov>, "Molina, Michael" <molina.michael@epa.gov>, "Best-Wong, Benita" <Best-Wong.Benita@epa.gov>, "Forsgren, Lee" <Forsgren.Lee@epa.gov>, "Ross, David P" <ross.davidp@epa.gov>, "Konkus, John" <konkus.john@epa.gov>, "Darwin, Henry" <darwin.henry@epa.gov>, "Bolen, Brittany" <bolen.brittany@epa.gov>, "McIntosh, Chad" <mcintosh.chad@epa.gov>, "Schiermeyer, Corry" <schiermeyer.corry@epa.gov>
Cc: "Wooden-Aguilar, Helena" <Wooden-Aguilar.Helena@epa.gov>, "Grantham, Nancy" <Grantham.Nancy@epa.gov>, "Richardson, RobinH" <Richardson.RobinH@epa.gov>, "Hope, Brian" <Hope.Brian@epa.gov>, "Campbell, Ann" <Campbell.Ann@epa.gov>, "Lousberg, Macara" <Lousberg.Macara@epa.gov>, "Ruf, Christine" <Ruf.Christine@epa.gov>, "Evalenko, Sandy" <Evalenko.Sandy@epa.gov>, "Drinkard, Andrea" <Drinkard.Andrea@epa.gov>, "Sauerhage, Maggie" <Sauerhage.Maggie@epa.gov>, "Dennis, Allison" <Dennis.Allison@epa.gov>, "Wildeman, Anna" <wildeman.anna@epa.gov>, "McDonough, Owen" <mcdonough.owen@epa.gov>, "Pritchard, Eileen" <Pritchard.Eileen@epa.gov>, "Kime, Robin" <Kime.Robin@epa.gov>, "Nickerson, William" <Nickerson.William@epa.gov>, "DeBell, Kevin" <debell.kevin@epa.gov>, "Lovell, Will (William)" <lovell.william@epa.gov>, "Aguirre, Janita" <Aguirre.Janita@epa.gov>, "Bowles, Jack" <Bowles.Jack@epa.gov>, "Benevento, Douglas" <benevento.douglas@epa.gov>, "Gaines, Cynthia" <Gaines.Cynthia@epa.gov>, "Manibusan, Mary" <Manibusan.Mary@epa.gov>, "Sawyers, Andrew" <Sawyers.Andrew@epa.gov>, "Shimkin, Martha" <Shimkin.Martha@epa.gov>, "Kasat, Rakhi" <Kasat.Rakhi@epa.gov>, "Hackel, Angela" <Hackel.Angela@epa.gov>, "Nurse, Leanne" <Nurse.Leanne@epa.gov>, "Johnson, Ann" <Johnson.Ann@epa.gov>, "Wadlington, Christina" <Wadlington.Christina@epa.gov>, "Evalenko, Sandy" <Evalenko.Sandy@epa.gov>
Subject: SIGNED: National Primary Drinking Water Regulations: Proposed Perchlorate Rule (SAN 5555)

Good Afternoon.

Today, the Administrator signed the proposed rule entitled, **"National Primary Drinking Water Regulations: Proposed Perchlorate Rule. (SAN 5555)."**

This rule proposes to solicit public comment on the EPA' s proposal to establish a national primary drinking water regulation (NPDWR) and a non-enforceable maximum contaminant level goal (MCLG) for perchlorate under the Safe Drinking Water Act (SDWA). The proposed NPDWR includes an enforceable maximum contaminant level (MCL) of 0.056 mg/L (56 µg/L), which is proposed to be set at a level equal to the proposed MCLG. The EPA is seeking comment in the attached notice on whether the Agency should consider setting the perchlorate MCLG and MCL at alternative values of0.018 mg/L (18 µg/L) and

0.090 mg/L (90 µg/L). The EPA is also seeking comment on whether it should withdraw the Agency's 2011 determination to regulate perchlorate in drinking water.

An additional extension was given for signature of the proposed rule until May 28, 2019. The EPA is addressing the consent decree requirements to sign a NPDWR and issue a MCLG for perchlorate in this proposed rule by May 28, 2019.

Attached is the signed and dated proposed rule. For your convenience, please go to **p. 146** for the Administrator's signature.

Please contact me if you have any questions regarding this email.

Eileen Pritchard
Special Assistant: Office of the Administrator
(202) 564-6576 (d)
pritchard.eileen@epa.gov

Message

From: Mclain, Jennifer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2BC5B268184348BBB383A56B0042B603-JENNIFER MCLAIN]
Sent: 12/12/2018 8:31:22 PM
To: Lee Forsgren (Forsgren.Lee@epa.gov) [Forsgren.Lee@epa.gov]; Ross, David P [ross.davidp@epa.gov]; Wildeman, Anna [wildeman.anna@epa.gov]
CC: McDonough, Owen [mcdonough.owen@epa.gov]; Best-Wong, Benita [Best-Wong.Benita@epa.gov]; Tiago, Joseph [Tiago.Joseph@epa.gov]; Campbell, Ann [Campbell.Ann@epa.gov]; Burneson, Eric [Burneson.Eric@epa.gov]
Subject: Draft Perchlorate FRN
Attachments: Perchlorate Rule FRN 12-12-18-clean.docx

A holiday treat! Eric's team has done an amazing job in quickly developing a draft Perchlorate Proposed Rule. Per our expedited schedule, the attached preamble & rule are for simultaneous OW and OGC review. (We are sending to OGC separately). We are planning for a briefing with Ryan Jackson the week of January 7, 2019 with the goal of and EPA submission to OMB by the end of January. We will be working to get briefing materials to you the week of December 31, 2018. In the meantime, Eric and I will continue our conversations with Nancy Beck and Charlotte Bertrand on the technical analysis. Please let us know if you would like to have any of the supporting documents for review at any point in this process. As always, we are available for any questions or discussions.

Jennifer

Message

From: Mclain, Jennifer [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2BC5B268184348BBB383A56B0042B603-JENNIFER MCLAIN]
Sent: 4/12/2019 3:09:21 PM
To: Corr, Elizabeth [Corr.Elizabeth@epa.gov]; Flaharty, Stephanie [Flaharty.Stephanie@epa.gov]
Subject: FW: Revised Perchlorate FRN, HRRCA & Transmittal Memos
Attachments: EO12866_SDWA NPDWR 2040-AF28 FRN Perchlorate Rule 20190412.docx; REDLINE - EO12866_SDWA NPDWR 2040-AF28 FRN Perchlorate Rule 20190412.docx; EO12866_SDWA NPDWR 2040-AF28 FRN Perchlorate HRRCA 20190412.docx; Transmittal Memo AA to OPEI 4-9-19.docx; Transmittal Memo EB to JM 4-9-19.docx; Transmittal Memo JM to DR 4-9-19.docx; Perchlorate Draft Action Memo 4-9-19.docx

From: Christ, Lisa
Sent: Friday, April 12, 2019 10:52 AM
To: Mclain, Jennifer <Mclain.Jennifer@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>; Rodgers-Jenkins, Crystal <Rodgers-Jenkins.Crystal@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: FW: Revised Perchlorate FRN, HRRCA & Transmittal Memos

Hi Jennifer,
Attached for your transmittal to OW are the following:
The FRN for the NPDWR for Perchlorate, proposed rule (a clean and a track changes version for convenience)
Health Risk Reduction Cost Analysis
Transmittal/Action memos

Let us know if you need anything else.

Lisa

From: Hernandez-Quinones, Samuel
Sent: Friday, April 12, 2019 10:44 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Khera, Rajiv <Khera.Rajiv@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>
Subject: Revised Perchlorate FRN, HRRCA & Transmittal Memos

Hi,

Attached are the revised clean versions of the Perchlorate FRN and HRRCA, which incorporate all the suggested edits to date (4-12-19).

Here also you will find a revised redline version which incorporates all edits and changes to the document made to the FRN since the last OW-IO review (3-11-19).

Finally, attached are the most recent version of the corresponding transmittal memos.

Let me know if you have any questions or comments.

Thanks
Sam
==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

Message

From: Mclain.Jennifer@epa.gov [Mclain.Jennifer@epa.gov]
Sent: 5/23/2019 8:14:20 PM
To: Burneson, Eric [Burneson.Eric@epa.gov]; Christ, Lisa [Christ.Lisa@epa.gov]
CC: Guilaran, Yu-Ting [Guilaran.Yu-Ting@epa.gov]
Subject: Fwd: SIGNED: National Primary Drinking Water Regulations: Proposed Perchlorate Rule (SAN 5555)
Attachments: Perchlorate Rule OW-19-000-5459.pdf; ATT00001.htm

Congratulations!

Jennifer

Begin forwarded message:

> **From:** "Campbell, Ann" <Campbell.Ann@epa.gov>
> **To:** "Dennis, Allison" <Dennis.Allison@epa.gov>, "Mclain, Jennifer" <Mclain.Jennifer@epa.gov>, "Guilaran, Yu-Ting" <Guilaran.Yu-Ting@epa.gov>
> **Subject: Fwd: SIGNED: National Primary Drinking Water Regulations: Proposed Perchlorate Rule (SAN 5555)**

Begin forwarded message:

> **From:** "Pritchard, Eileen" <Pritchard.Eileen@epa.gov>
> **To:** "Wheeler, Andrew" <wheeler.andrew@epa.gov>, "Jackson, Ryan" <jackson.ryan@epa.gov>, "Lyons, Troy" <lyons.troy@epa.gov>, "Bennett, Tate" <Bennett.Tate@epa.gov>, "White, Elizabeth" <white.elizabeth@epa.gov>, "Leopold, Matt (OGC)" <Leopold.Matt@epa.gov>, "Molina, Michael" <molina.michael@epa.gov>, "Best-Wong, Benita" <Best-Wong.Benita@epa.gov>, "Forsgren, Lee" <Forsgren.Lee@epa.gov>, "Ross, David P" <ross.davidp@epa.gov>, "Konkus, John" <konkus.john@epa.gov>, "Darwin, Henry" <darwin.henry@epa.gov>, "Bolen, Brittany" <bolen.brittany@epa.gov>, "McIntosh, Chad" <mcintosh.chad@epa.gov>, "Schiermeyer, Corry" <schiermeyer.corry@epa.gov>
> **Cc:** "Wooden-Aguilar, Helena" <Wooden-Aguilar.Helena@epa.gov>, "Grantham, Nancy" <Grantham.Nancy@epa.gov>, "Richardson, RobinH" <Richardson.RobinH@epa.gov>, "Hope, Brian" <Hope.Brian@epa.gov>, "Campbell, Ann" <Campbell.Ann@epa.gov>, "Lousberg, Macara" <Lousberg.Macara@epa.gov>, "Ruf, Christine" <Ruf.Christine@epa.gov>, "Evalenko, Sandy" <Evalenko.Sandy@epa.gov>, "Drinkard, Andrea" <Drinkard.Andrea@epa.gov>, "Sauerhage, Maggie" <Sauerhage.Maggie@epa.gov>, "Dennis, Allison" <Dennis.Allison@epa.gov>, "Wildeman, Anna" <wildeman.anna@epa.gov>, "McDonough, Owen" <mcdonough.owen@epa.gov>, "Pritchard, Eileen" <Pritchard.Eileen@epa.gov>, "Kime, Robin" <Kime.Robin@epa.gov>, "Nickerson, William" <Nickerson.William@epa.gov>, "DeBell, Kevin" <debell.kevin@epa.gov>, "Lovell, Will (William)" <lovell.william@epa.gov>, "Aguirre, Janita" <Aguirre.Janita@epa.gov>, "Bowles, Jack" <Bowles.Jack@epa.gov>, "Benevento, Douglas" <benevento.douglas@epa.gov>, "Gaines, Cynthia" <Gaines.Cynthia@epa.gov>, "Manibusan, Mary" <Manibusan.Mary@epa.gov>, "Sawyers, Andrew" <Sawyers.Andrew@epa.gov>, "Shimkin, Martha" <Shimkin.Martha@epa.gov>, "Kasat, Rakhi" <Kasat.Rakhi@epa.gov>, "Hackel, Angela" <Hackel.Angela@epa.gov>, "Nurse, Leanne"

<Nurse.Leanne@epa.gov>, "Johnson, Ann" <Johnson.Ann@epa.gov>, "Wadlington, Christina" <Wadlington.Christina@epa.gov>, "Evalenko, Sandy" <Evalenko.Sandy@epa.gov>

Subject: SIGNED: National Primary Drinking Water Regulations: Proposed Perchlorate Rule (SAN 5555)

Good Afternoon.

Today, the Administrator signed the proposed rule entitled, **"National Primary Drinking Water Regulations: Proposed Perchlorate Rule. (SAN 5555)."**

This rule proposes to solicit public comment on the EPA' s proposal to establish a national primary drinking water regulation (NPDWR) and a non-enforceable maximum contaminant level goal (MCLG) for perchlorate under the Safe Drinking Water Act (SDWA). The proposed NPDWR includes an enforceable maximum contaminant level (MCL) of 0.056 mg/L (56 µg/L), which is proposed to be set at a level equal to the proposed MCLG. The EPA is seeking comment in the attached notice on whether the Agency should consider setting the perchlorate MCLG and MCL at alternative values of0.018 mg/L (18 µg/L) and 0.090 mg/L (90 µg/L). The EPA is also seeking comment on whether it should withdraw the Agency's 2011 determination to regulate perchlorate in drinking water.

An additional extension was given for signature of the proposed rule until May 28, 2019. The EPA is addressing the consent decree requirements to sign a NPDWR and issue a MCLG for perchlorate in this proposed rule by May 28, 2019.

Attached is the signed and dated proposed rule. For your convenience, please go to **p. 146** for the Administrator's signature.

Please contact me if you have any questions regarding this email.

Eileen Pritchard
Special Assistant: Office of the Administrator
(202) 564-6578 (d)
pritchard.eileen@epa.gov

Message

From: Evalenko, Sandy [Evalenko.Sandy@epa.gov]
Sent: 5/23/2019 2:57:38 PM
To: Messier, Dawn [Messier.Dawn@epa.gov]
Subject: RE: NPDWR Perchlorate NPRM

Awesome!

From: Messier, Dawn
Sent: Thursday, May 23, 2019 10:55 AM
To: Evalenko, Sandy <Evalenko.Sandy@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>
Subject: RE: NPDWR Perchlorate NPRM

David Fotouhi authorized me to concur on behalf of OGC.

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

From: Evalenko, Sandy
Sent: Thursday, May 23, 2019 10:55 AM
To: Messier, Dawn <Messier.Dawn@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>
Subject: NPDWR Perchlorate NPRM

Please send a separate email with OGC's concurrence. Will your email suffice or do we need to also get David Fotouhi's clearance also?

From: Burneson, Eric
Sent: Thursday, May 23, 2019 10:52 AM
To: Tiago, Joseph <Tiago.Joseph@epa.gov>
Cc: Messier, Dawn <Messier.Dawn@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: FW: perchlorate

Below is the concurrence from OGC. Let us know if something more formal is required.

From: Messier, Dawn
Sent: Thursday, May 23, 2019 9:53 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: perchlorate

I'm fine with both.

Dawn Messier
U.S.E.P.A.

Office of General Counsel
Water Law Office
202-564-5517

From: Messier, Dawn
Sent: Thursday, May 23, 2019 9:51 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: perchlorate

FRN all good.

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

From: Burneson, Eric
Sent: Thursday, May 23, 2019 9:45 AM
To: Messier, Dawn <Messier.Dawn@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: FW: perchlorate

Please review ASAP and let me know if there are any show stoppers

---

From: Dorjets, Vlad EOP/OMB [mailto:Vladik_Dorjets@omb.eop.gov]
Sent: Thursday, May 23, 2019 9:43 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: perchlorate

Final edits.

Message

From: Evalenko, Sandy [Evalenko.Sandy@epa.gov]
Sent: 5/17/2019 1:31:36 PM
To: Messier, Dawn [Messier.Dawn@epa.gov]
CC: Evalenko, Sandy [Evalenko.Sandy@epa.gov]
Subject: FYI -- WPS edits - Revised Perchlorate FRN
Attachments: Clean EO12866_SDWA NPDWR 2040-AF28 FRN Perchlorate Rule.SE. 20190303.asd (002).docx

Dawn: Here it is… I have a second email to share.

From: Evalenko, Sandy
Sent: Tuesday, March 05, 2019 9:47 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Lousberg, Macara <Lousberg.Macara@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>
Subject: WPS edits - Revised Perchlorate FRN

Lisa and Samuel: Attached are my edits; most of these are editorial and adding "the" in front of EPA. I made some significant edits to the Executive Order and Statutory review section. The templates have been revised and descriptions of each EO or statute have been removed. I did not make any revisions to the Tribal EO and think that Karen Gude should review this one. I plan to call OCIR to discuss the edits that I made to the Federalism EO section to better understand their edits.

Please let me know if you have any questions.
Thanks,
Sandy

From: Lousberg, Macara
Sent: Monday, March 04, 2019 8:47 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Evalenko, Sandy <Evalenko.Sandy@epa.gov>
Subject: RE: Revised Perchlorate FRN

Thanks Eric. Sandy is reviewing the document now and hopes to have comments by midday (all very minor edits so far).

In terms of the blue folder package, what should we expect to see in it vs. anything that might be sent later; ie risk assessment, economic analysis, etc. And have those companion documents already been reviewed and cleared by political leadership as well?

Will OGC's concurrence be included in the package, and will there be a short transmittal memo for Dave to sign the package forward to OP?

Thanks.

Macara

From: Burneson, Eric
Sent: Sunday, March 03, 2019 9:24 AM
To: Lousberg, Macara <Lousberg.Macara@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>
Cc: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>; Christ, Lisa

<Christ.Lisa@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>
Subject: FW: Revised Perchlorate FRN

Macara and Sandy:
Attached please find the draft FRN for the proposed perchlorate regulation that we have transmitted to Dave and Lee. As noted below we intend to submit a formal "blue folder" to you on Monday for transmission to OP and subsequent to submission to OMB for review. Thanks in advance for your assistance in reviewing and transmitting these materials to OP.
Please contact Lisa Christ or Sam Hernandez if you have any questions about the attached materials.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Burneson, Eric
Sent: Sunday, March 03, 2019 9:14 AM
To: Ross, David P <ross.davidp@epa.gov>; Forsgren, Lee <Forsgren.Lee@epa.gov>
Cc: Kramer, Jessica L. <kramer.jessical@epa.gov>; Wildeman, Anna <wildeman.anna@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>
Subject: Revised Perchlorate FRN

Dave and Lee:
Attached please find files containing the revised Federal Register Notice for the Proposed Perchlorate Drinking Water Regulation. One is a clean and the other a redline strikeout version showing the changes to the document since your last review. We made changes to the document in response to comments from intra agency reviewers. The following are changes that may be of particular interest.

Ex. 5 Deliberative Process (DP)

Ex. 5 Deliberative Process (DP)

Please let me know if you have any questions or concerns with the attached materials.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

Message

From: Neugeboren, Steven [Neugeboren.Steven@epa.gov]
Sent: 5/28/2019 1:17:20 PM
To: Wehling, Carrie [Wehling.Carrie@epa.gov]; Messier, Dawn [Messier.Dawn@epa.gov]
Subject: FW: Uploaded new versions of Perchlorate

Thanks Dawn for the careful and excellent work in getting this through. And Carrie I agree we need to make sure folks stay focused on getting timely decisions.

Steve Neugeboren
Associate General Counsel for Water
U.S. EPA
1200 Pennsylvania Ave., NW
Washington, DC 20460
202 (564-5488)

From: Wehling, Carrie
Sent: Friday, May 24, 2019 10:18 AM
To: Ross, David P <ross.davidp@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Forsgren, Lee <Forsgren.Lee@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Aguirre, Janita <Aguirre.Janita@epa.gov>; Mejias, Melissa <mejias.melissa@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>; Neugeboren, Steven <Neugeboren.Steven@epa.gov>; Fotouhi, David <Fotouhi.David@epa.gov>
Subject: RE: Uploaded new versions of Perchlorate

Congratulations, all. OGWDW (and Dawn!) did an amazing job here on a really tough project with a tough court deadline.

That having been said……

Ex. 5 Attorney Client (AC)

Thanks.

Carrie

Caroline (Carrie) Wehling
Assistant General Counsel
Water Law Office
U.S. Environmental Protection Agency
Washington DC 20004

202-564-5492
wehling.carrie@epa.gov

From: Ross, David P
Sent: Thursday, May 23, 2019 6:19 PM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Forsgren, Lee <Forsgren.Lee@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Aguirre, Janita <Aguirre.Janita@epa.gov>; Mejias, Melissa <mejias.melissa@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>
Subject: Re: Uploaded new versions of Perchlorate, 2040-AF28 into ROCIS

Thanks everyone for your great work on such a challenging issue. I very much appreciate the hard work and dedication to developing a strong regulatory proposal and supporting documentation within the timelines established by the consent decree. Please take some time to decompress over the Memorial Day weekend, enjoy the milestone, and recharge for the LCR sprint that comes next!

Dave

Sent from my iPad

On May 23, 2019, at 11:09 AM, Burneson, Eric <Burneson.Eric@epa.gov> wrote:

> Dave:
> Be advised that OMB has cleared the perchlorate proposal and we are sending forward the documents for signature and rollout. Thank you for your leadership on this important effort and for your timely input on the key issues we have had to address throughout the review process.
> As you know the perchlorate team and members of the OW and OGC staff have put significant effort into achieve this milestone. It is a privilege to work with such talented and dedicated staff. I thank them for all the great work to get us to this important milestone
>
> Eric Burneson, P.E.
> Director of Standards and Risk Management
> Office of Ground Water and Drinking Water
> U.S. Environmental Protection Agency
> 202 564 5250

From: Dorjets, Vlad EOP/OMB [**Ex. 6 Personal Privacy (PP)**
Sent: Thursday, May 23, 2019 10:58 AM
To: Manibusan, Mary <Manibusan.Mary@epa.gov>; Adams, Darryl <Adams.Darryl@epa.gov>
Cc: Burneson, Eric <Burneson.Eric@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Nurse, Leanne <Nurse.Leanne@epa.gov>
Subject: RE: Uploaded new versions of Perchlorate, 2040-AF28 into ROCIS

OMB has concluded its review of the Perchlorate rule. I realize this review had some particular challenges so we want to thank everybody for all their hard work and thoughtful responses to OMB and interagency comments.

We understand that EPA is planning on signing and rolling out this rule later today. We would appreciate it if you could send us your roll-out material in advance so that we can could take a quick look to see how EPA is planning on messaging this NPRM.

From: Manibusan, Mary <Manibusan.Mary@epa.gov>
Sent: Thursday, May 23, 2019 10:44 AM
To: Adams, Darryl <Adams.Darryl@epa.gov>
Cc: Dorjets, Vlad EOP/OMB [Ex. 6 Personal Privacy (PP)]; Burneson, Eric <Burneson.Eric@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Nurse, Leanne <Nurse.Leanne@epa.gov>
Subject: Re: Uploaded new versions of Perchlorate, 2040-AF28 into ROCIS

Vlad,
Please confirm when OMB has officially concluded.
Thanks,
Mary

Sent from my iPhone

On May 23, 2019, at 10:41 AM, Adams, Darryl <Adams.Darryl@epa.gov> wrote:

> Vlad et al,
> I've uploaded the new versions into ROCIS. Please let me if there are any issues. Thank you.
>
> <image003.jpg>
>
> Darryl Adams
> Regulatory Management Division
> Office of Policy, U.S. EPA
> 202 564-6569
> Mail Code 1803A, Room 3512D WJC North

Message

From: Messier, Dawn [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=A13A4CD15EC94FE181AA84E34AC0561A-DMESSIER]
Sent: 5/23/2019 3:13:54 PM
To: Wehling, Carrie [Wehling.Carrie@epa.gov]
Subject: FW: perchlorate

Fyi

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

From: Messier, Dawn
Sent: Thursday, May 23, 2019 10:54 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>
Cc: Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: RE: perchlorate

OGC concurs with signature of the proposed perchlorate rule federal register notice recently approved by OMB. Thanks!

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

From: Burneson, Eric
Sent: Thursday, May 23, 2019 10:52 AM
To: Tiago, Joseph <Tiago.Joseph@epa.gov>
Cc: Messier, Dawn <Messier.Dawn@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>
Subject: FW: perchlorate

Below is the concurrence from OGC. Let us know if something more formal is required.

From: Messier, Dawn
Sent: Thursday, May 23, 2019 9:53 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: perchlorate

I'm fine with both.

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office

202-564-5517

From: Messier, Dawn
Sent: Thursday, May 23, 2019 9:51 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: perchlorate

FRN all good.

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

From: Burneson, Eric
Sent: Thursday, May 23, 2019 9:45 AM
To: Messier, Dawn <Messier.Dawn@epa.gov>
Cc: Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: FW: perchlorate

Please review ASAP and let me know if there are any show stoppers

---

From: Dorjets, Vlad EOP/OMB **Ex. 6 Personal Privacy (PP)**
Sent: Thursday, May 23, 2019 9:43 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: perchlorate

Final edits.

Message

From: Messier, Dawn [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=A13A4CD15EC94FE181AA84E34AC0561A-DMESSIER]
Sent: 5/16/2019 9:46:22 PM
To: Evalenko, Sandy [Evalenko.Sandy@epa.gov]
Subject: FW: WPS edits - Revised Perchlorate FRN
Attachments: Clean EO12866_SDWA NPDWR 2040-AF28 FRN Perchlorate Rule.SE. 20190303.asd (002).docx

Importance: High

Hi Sandy. Can you send my the templates you used in making the attached comments. I'm comparing to the 2017 templates on the intranet and the language isn't precisely lining up. Thanks!

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

From: Hernandez-Quinones, Samuel
Sent: Thursday, May 16, 2019 5:33 PM
To: Messier, Dawn <Messier.Dawn@epa.gov>
Subject: FW: WPS edits - Revised Perchlorate FRN

Hi Dawn, this is the email I got from OW.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Evalenko, Sandy
Sent: Tuesday, March 05, 2019 9:47 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Lousberg, Macara <Lousberg.Macara@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>
Subject: WPS edits - Revised Perchlorate FRN

Lisa and Samuel: Attached are my edits; most of these are editorial and adding "the" in front of EPA. I made some significant edits to the Executive Order and Statutory review section. The templates have been revised and descriptions of each EO or statute have been removed. I did not make any revisions to the Tribal EO and think that Karen Gude should review this one. I plan to call OCIR to discuss the edits that I made to the Federalism EO section to better understand their edits.

Please let me know if you have any questions.

Thanks,
Sandy

From: Lousberg, Macara
Sent: Monday, March 04, 2019 8:47 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Evalenko, Sandy <Evalenko.Sandy@epa.gov>
Subject: RE: Revised Perchlorate FRN

Thanks Eric. Sandy is reviewing the document now and hopes to have comments by midday (all very minor edits so far).

In terms of the blue folder package, what should we expect to see in it vs. anything that might be sent later; ie risk assessment, economic analysis, etc. And have those companion documents already been reviewed and cleared by political leadership as well?

Will OGC's concurrence be included in the package, and will there be a short transmittal memo for Dave to sign the package forward to OP?

Thanks.

Macara

From: Burneson, Eric
Sent: Sunday, March 03, 2019 9:24 AM
To: Lousberg, Macara <Lousberg.Macara@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>
Cc: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>
Subject: FW: Revised Perchlorate FRN

Macara and Sandy:
Attached please find the draft FRN for the proposed perchlorate regulation that we have transmitted to Dave and Lee. As noted below we intend to submit a formal "blue folder" to you on Monday for transmission to OP and subsequent to submission to OMB for review. Thanks in advance for your assistance in reviewing and transmitting these materials to OP.
Please contact Lisa Christ or Sam Hernandez if you have any questions about the attached materials.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Burneson, Eric
Sent: Sunday, March 03, 2019 9:14 AM
To: Ross, David P <ross.davidp@epa.gov>; Forsgren, Lee <Forsgren.Lee@epa.gov>
Cc: Kramer, Jessica L. <kramer.jessical@epa.gov>; Wildeman, Anna <wildeman.anna@epa.gov>; Mclain, Jennifer

<Mclain.Jennifer@epa.gov>
Subject: Revised Perchlorate FRN

Dave and Lee:
Attached please find files containing the revised Federal Register Notice for the Proposed Perchlorate Drinking Water Regulation. One is a clean and the other a redline strikeout version showing the changes to the document since your last review. We made changes to the document in response to comments from intra agency reviewers. The following are changes that may be of particular interest.

Ex. 5 Deliberative Process (DP)

Please let me know if you have any questions or concerns with the attached materials.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

Message

From: Messier, Dawn [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=A13A4CD15EC94FE181AA84E34AC0561A-DMESSIER]
Sent: 10/5/2016 4:43:12 PM
To: Ex. 6 Personal Privacy (PP)
Subject: Complaint in NRDC perchlorate litigation
Attachments: Courtlink_Docket_US_DIS_NYSCD_1.16cv1251_02.18.2016.pdf; Courtlink_Docket_US_DIS_NYSD_1.16cv1251_02.18.2016.htm

Here's the complaint. I will also forward you the recent court order with the accelerated briefing schedule.

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

Message

From: Parikh, Pooja [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=5572FACE2E61429CB6F14C3864554CCA-PARIKH, POOJA]
Sent: 9/9/2020 1:25:33 PM
To: Wehling, Carrie [Wehling.Carrie@epa.gov]; O'Donnell, Jessica (ENRD) [Jessica.O'Donnell@usdoj.gov]
CC: Hostetler, Eric (ENRD) [Eric.Hostetler@usdoj.gov]; Meghan Greenfield [Meghan.Greenfield@usdoj.gov]
Subject: RE: new perchlorate petition
Attachments: Proposed rule.pdf; Final action.pdf

Attaching the relevant FR notices.

Pooja S. Parikh
Attorney- Advisor
U.S. Environmental Protection Agency
Office of General Counsel, Water Law Office
Phone: 202 564-0839
Email: parikh.pooja@epa.gov

From: Wehling, Carrie <Wehling.Carrie@epa.gov>
Sent: Wednesday, September 09, 2020 8:27 AM
To: O'Donnell, Jessica (ENRD) <Jessica.O'Donnell@usdoj.gov>; Parikh, Pooja <Parikh.Pooja@epa.gov>
Cc: Hostetler, Eric (ENRD) <Eric.Hostetler@usdoj.gov>; Meghan Greenfield <Meghan.Greenfield@usdoj.gov>
Subject: RE: new perchlorate petition

Ex. 5 AC/AWP/DP

Carrie

Caroline (Carrie) Wehling
Assistant General Counsel
Water Law Office
U.S. Environmental Protection Agency
Washington DC 20004
202-564-5492
wehling.carrie@epa.gov

From: O'Donnell, Jessica (ENRD) <Jessica.O'Donnell@usdoj.gov>
Sent: Tuesday, September 08, 2020 6:21 PM
To: Wehling, Carrie <Wehling.Carrie@epa.gov>; Parikh, Pooja <Parikh.Pooja@epa.gov>
Cc: Hostetler, Eric (ENRD) <Eric.Hostetler@usdoj.gov>; Meghan Greenfield <Meghan.Greenfield@usdoj.gov>
Subject: new perchlorate petition

Hi Carrie and Pooja,

We received the attached petition for review regarding EPA's action on perchlorate. We'd appreciate it if you could give us a little background for assignment purposes.

Thanks,
Jessica

Jessica O'Donnell
Assistant Section Chief
Environmental Defense Section
202.305.0851

Message

From: Parikh, Pooja [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=5572FACE2E61429CB6F14C3864554CCA-PARIKH, POOJA]
Sent: 6/17/2020 5:53:43 PM
To: Bretz, Emily (USANYS) [Emily.Bretz@usdoj.gov]
Subject: RE: Review of Perchlorate Notice Concluded

I think there could still be some minor changes. I'll send you the final once encoded.

From: Bretz, Emily (USANYS) <Emily.Bretz@usdoj.gov>
Sent: Wednesday, June 17, 2020 1:45 PM
To: Parikh, Pooja <Parikh.Pooja@epa.gov>
Subject: RE: Review of Perchlorate Notice Concluded

Thank you! I assume "encoding" won't change the language or page numbers?

From: Parikh, Pooja <Parikh.Pooja@epa.gov>
Sent: Wednesday, June 17, 2020 12:49 PM
To: Bretz, Emily (USANYS) <EBretz@usa.doj.gov>
Subject: FW: Review of Perchlorate Notice Concluded

Here is the latest version; it is still being "encoded," whatever that means.

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Wednesday, June 17, 2020 12:34 PM
To: Parikh, Pooja <Parikh.Pooja@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>
Subject: FW: Review of Perchlorate Notice Concluded

Pooja
Attached is the version that has been sent to OP f."encoding".
Stephanie: OGC needs to share with DOJ for the court filing. Please share with Pooja any modifications that result from "encoding"
Eric

From: Flaharty, Stephanie
Sent: Wednesday, June 17, 2020 9:13 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>; McLain, Jennifer L. <McLain.Jennifer@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>
Cc: Wadlington, Christina <Wadlington.Christina@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>
Subject: RE: Review of Perchlorate Notice Concluded

All: attached is the OMB- and OGC-approved FRN, currently be encoded by OP/FR

From: Burneson, Eric <Burneson.Eric@epa.gov>
Sent: Wednesday, June 17, 2020 9:04 AM
To: McLain, Jennifer L. <McLain.Jennifer@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>
Cc: Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Hernandez-Quinones, Samuel

<Hernandez.Samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>
Subject: FW: Review of Perchlorate Notice Concluded

Jennifer and Yu-Ting
OMB review of perchlorate is concluded. We can proceed with the necessary steps towards signature and roll out. Many thanks to the perchlorate team for their excellent work!

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

From: Dorjets, Vlad EOP/OMB [**Ex. 6 Personal Privacy (PP)**
Sent: Wednesday, June 17, 2020 9:01 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Parikh, Pooja <Parikh.Pooja@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: Review of Perchlorate Notice Concluded

Eric,

OMB has concluded its review of the Perchlorate notice.

Vlad

Message

From: Wehling, Carrie [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=E3E55F11FDC7489698BE69849B301DA6-CWEHLING]
Sent: 3/1/2019 4:53:30 PM
To: Dawn Messier Ex. 6 Personal Privacy (PP)
Subject: FW: Consent Decree Language - Request for Review
Attachments: RedLine Version 2-28-19 V1 Perchlorate FRN.docx

Caroline (Carrie) Wehling
Assistant General Counsel
Water Law Office
U.S. Environmental Protection Agency
Washington DC 20004
202-564-5492
wehling.carrie@epa.gov

From: Hernandez-Quinones, Samuel
Sent: Thursday, February 28, 2019 3:51 PM
To: Messier, Dawn <Messier.Dawn@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: Consent Decree Language - Request for Review

Thank You Dawn,

I have incorporated this into the most recent version of the proposed rule FRN.

Attached to this email is the revised version of the document, which contains the consent decree language as well as other edits in "redline/strikeout". I am sending this document to ask for your review on page 12 (Consent Decree Language) & Page 99 (Request For comment). I am requesting OGC feedback specifically on page 99 since we have made some revisions on the "request for comment section" as suggested by Carrie last week.

Please let me know if you are ok with our edits. I would appreciate if you can provide your feedback to me by noon tomorrow.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

From: Messier, Dawn
Sent: Thursday, February 28, 2019 3:25 PM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>
Subject: RE: Consent Decree Language - Request for Review

Here's the reg. agenda language approved by me and edited by Anna Wildeman (with the additional "available in the docket for today's rulemaking"). Does this work?

Ex. 5 AC/DP

Dawn Messier
U.S.E.P.A.
Office of General Counsel
Water Law Office
202-564-5517

From: Hernandez-Quinones, Samuel
Sent: Tuesday, February 26, 2019 3:56 PM
To: Wehling, Carrie <Wehling.Carrie@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>
Subject: Consent Decree Language - Request for Review

Hi Carrie and Dawn,

As recommended by OGC we are including language in the perchlorate FRN to acknowledge the consent decree deadlines. We have developed a couple of options that could be inserted in the FRN, but I would really appreciate if you could provide your feedback and also let me know if you have any concerns with the language below? Let me know if you suggest any edits.

Thanks
Sam

Ex. 5 AC/DP

==========

Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

Message

From: Wildeman, Anna [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=05DD0AF69BFA40429E438B7646502B99-WILDEMAN, A]
Sent: 3/3/2019 10:14:47 PM
To: Tovar, Katlyn [tovar.katlyn@epa.gov]; Braschayko, Kelley [braschayko.kelley@epa.gov]; Penman, Crystal [Penman.Crystal@epa.gov]
Subject: FW: Revised Perchlorate FRN
Attachments: Clean EO12866_SDWA NPDWR 2040-AF28 FRN Perchlorate Rule 20190303.docx

Can one of you please print this for me Monday morning? Thanks!

From: Burneson, Eric
Sent: Sunday, March 3, 2019 9:15 AM
To: Ross, David P <ross.davidp@epa.gov>; Forsgren, Lee <Forsgren.Lee@epa.gov>
Cc: Kramer, Jessica L. <kramer.jessical@epa.gov>; Wildeman, Anna <wildeman.anna@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>
Subject: Revised Perchlorate FRN

Dave and Lee:
Attached please find files containing the revised Federal Register Notice for the Proposed Perchlorate Drinking Water Regulation. One is a clean and the other a redline strikeout version showing the changes to the document since your last review. We made changes to the document in response to comments from intra agency reviewers. The following are changes that may be of particular interest.

Ex. 5 Deliberative Process (DP)

Please let me know if you have any questions or concerns with the attached materials.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

Message

From: Johnson, Ann [Johnson.Ann@epa.gov]
Sent: 2/15/2019 4:54:19 PM
To: Corrales, Mark [Corrales.Mark@epa.gov]; Curry, Bridgid [Curry.Bridgid@epa.gov]
CC: Nickerson, William [Nickerson.William@epa.gov]
Subject: FW: Request for review - Draft Perchlorate Rule Proposal
Attachments: Version-Control Perchlorate Rule FRN 2-4-19_aj.docx

FYI.

Bill: Cc'ing you because I understand that Lindsey had some interest.

From: Johnson, Ann
Sent: Friday, February 15, 2019 11:53 AM
To: Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>
Cc: Dockins, Chris <Dockins.Chris@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>
Subject: RE: Request for review - Draft Perchlorate Rule Proposal

Sam,

Thank you for the opportunity to review the notice.

Attached are my comments. Please note that they're staff-level and don't reflect any input from senior management. The vast majority of the comments are editorial for your consideration, although I've flagged a few comments (with ▓) that are a bit more substantive. You'll see that I spent more time on some parts of the notice than I did on others. Chris Dockins is reviewing the EA-related material, and I have comment on any of that.

I'm out today, but am happy to explain any of my comments or provide any assistance next week.

Have a great holiday weekend!

Ann

From: Hernandez-Quinones, Samuel
Sent: Monday, February 4, 2019 10:32 AM
To: Johnson, Ann <Johnson.Ann@epa.gov>; Dockins, Chris <Dockins.Chris@epa.gov>; Shao, Nicole <Shao.Nicole@epa.gov>; Miller, Gregory <Miller.Gregory@epa.gov>; Flowers, Lynn <Flowers.Lynn@epa.gov>; Foster, Stiven <Foster.Stiven@epa.gov>
Cc: Christ, Lisa <Christ.Lisa@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Huff, Lisa <Huff.Lisa@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>
Subject: Request for review - Draft Perchlorate Rule Proposal

Preliminary draft for internal EPA review

Hi,

Attached for your review is the Draft Perchlorate Rule Proposal (Preamble and Regulatory Text). As discussed previously we are asking that you provide your questions and or comments on the draft document to me by COB 2/15/2019. In order to keep with the consent decree deadline, we need to complete this step of the

process within two weeks, if there are any issues that require technical discussions please let me know so that we can arrange any necessary working meeting.

I will follow-up with another email later today that contains the draft version of the technical support documents that were used as the basis for the Perchlorate proposal. Since those are very lengthy documents we are not requesting that you submit input and/or comments on those within the two- week time frame.

Please let me know if you have any questions.

Thanks
Sam
==========
Samuel Hernández Quiñones, P.E.
Environmental Engineer
Office of Water
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC 20460
202-564-1735

"USEPA Protecting Human Health and the Environment"

Message

From: Laity, Jim A. EOP/OMB [Ex. 6 Personal Privacy (PP)]
Sent: 9/12/2018 8:47:00 PM
To: Foster, Stiven [Foster.Stiven@epa.gov]; Jones, Danielle Y. EOP/OMB [Ex. 6 Personal Privacy (PP)]
CC: Cooperstein, Sharon [Cooperstein.Sharon@epa.gov]; Nickerson, William [Nickerson.William@epa.gov]; Hostage, Barbara [Hostage.Barbara@epa.gov]; Cogliano, Gerain [Cogliano.Gerain@epa.gov]; Raffaele, Kathleen [raffaele.kathleen@epa.gov]
Subject: RE: Follow up to PFOA PFOS GW Guide Briefing

Thx Stivin, we will take a look at these materials right away. jim

From: Foster, Stiven <Foster.Stiven@epa.gov>
Sent: Wednesday, September 12, 2018 4:41 PM
To: Jones, Danielle Y. EOP/OMB [Ex. 6 Personal Privacy (PP)]
Cc: Laity, Jim A. EOP/OMB [Ex. 6 Personal Privacy (PP)] Cooperstein, Sharon <Cooperstein.Sharon@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>; Hostage, Barbara <Hostage.Barbara@epa.gov>; Cogliano, Gerain <Cogliano.Gerain@epa.gov>; Raffaele, Kathleen <raffaele.kathleen@epa.gov>
Subject: Follow up to PFOA PFOS GW Guide Briefing

Hello Danielle,

I am following up on some requests for additional information that were made last week during our briefing for the interagency reviewers on the draft Interim Recommendations to Address Groundwater Contaminated with PFOA and PFOS.

First, the attached file is the 2009 Perchlorate Memo that identifies the Lifetime Drinking Water Health Advisory as a Preliminary Remediation Goal.

Second, here is the text from the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) that addresses acceptable exposure levels for remediation goals when the contaminants of concern are not carcinogens:

> 40 CFR § 300.430(e)(2)(i)(A)(1): For systemic toxicants, acceptable exposure levels shall represent concentration levels to which the human population, including sensitive subgroups, may be exposed without adverse effect during a lifetime or part of a lifetime, incorporating an adequate margin of safety.

In 2016, EPA established a lifetime drinking water health advisory level of 70 ppt for individual or combined concentrations of PFOA and PFOS that "offers a margin of protection for all Americans throughout their life from adverse health effects resulting from exposure to PFOA and PFOS in drinking water." (Fact sheet PFOA & PFOS Drinking Water Health Advisories >https://www.epa.gov/sites/production/files/2016-06/documents/drinkingwaterhealthadvisories_pfoa_pfos_updated_5.31.16.pdf<).

Finally, we were asked to provide some additional information on the use of a relative source contribution (RSC) term in selecting remedies under CERCLA. The NCP (40 CFR § 300.430(e)(2)(i)(B)) requires that:

> Maximum contaminant level goals (MCLGs), established under the Safe Drinking Water Act, that are set at levels above zero, shall be attained by remedial actions for ground or surface waters that are current or potential sources of drinking water, where the MCLGs are relevant and appropriate [*see* 40 CFR § 300.400(g)(2)].

The RSC term is typically used in determining a maximum contaminant level goal (MCLG) when the MCLG is set at a level above zero. Its purpose is to ensure that the contribution to exposure from drinking water does not cause the lifetime daily exposure of persons to a contaminant to exceed the "reference dose," an estimate of the amount of a chemical

that a person can be exposed on a daily basis that is not anticipated to cause adverse health effects over a lifetime. The RSC is a factor used to make sure that the MCLG is protective even if persons are exposed to the contaminant but other routes (inhalation, dermal absorption) or other sources (e.g., food).

Please let me know if you have any follow up questions,

Stiven

202-566-1911

Message

From: Muellerleile, Caryn [Muellerleile.Caryn@epa.gov]
Sent: 3/26/2019 1:32:21 AM
To: Nickerson, William [Nickerson.William@epa.gov]
CC: Wiggins, Lanelle [Wiggins.Lanelle@epa.gov]
Subject: FW: EPA Agenda - comments
Attachments: Draft Redline EPA Agenda Entries-OMB Comments.docx

Hi Bill,

Attached is the scrubbed version that I will send to the RSC. I just wrote to Danielle to ask when they would like responses – hopefully not until next week when I'm back.

Typically I remove comments about significance determinations and requests for briefings on those, but this time I left them in for programs to see. **Lanelle**: I recommend each RMD desk officer note which action (and stage) those requests came in for.

The addition of guidance info related to rules (2060-AR28 & 2060-AU01) is unique and new.

There are comments on the OP action, pages 246-247. I'll make sure NCEE gets those, but wanted you to know before Will or Brittany sees them.

Last: her comments 1-3 below are not ones I am sending to programs. For each of those requests there is a logical response that I will send on behalf of the agency.

I can be online again for 1-2 hours tomorrow morning if you have any wish to discuss. Most likely 9:30-11:30 your time.

Caryn

From: Jones, Danielle Y. EOP/OMB <Ex. 6 Personal Privacy (PP)
Sent: Monday, March 25, 2019 5:37 PM
To: Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>
Cc: Wiggins, Lanelle <Wiggins.Lanelle@epa.gov>; Whiteman, Chad S. EOP/OMB <Ex. 6 Personal Privacy (PP)
Subject: EPA Agenda - comments

Hi Caryn,

Attached are the EOP comments on EPA's Spring 2019 agenda entries. Below are some general comments that apply to the entire agenda:

1. Please note that in several instances edits were provided to list an action and date for timetables. Some offices provided proposed and final rule timetable entries, and other offices only provided if there was a statutory or legal deadline. It would be great if all the EPA offices were consistent.
2. There are several instances when significant rules have "Other" for the EO 13771 designation. Please have the programs select either regulatory or deregulatory for those actions. There should be no reason for the program to have listed "Other."
3. There are several instances where the EO 12866 significance was not designated appropriately. We tried our best to indicate those with our comments/edits, but it would be helpful if folks could do a final scrub.

Thanks so much and please let me know if you have any questions regarding the comments.

Best,
Danielle

Danielle Y. Jones
Senior Policy Analyst
Office of Management and Budget
Phone: (202) 395-1741 | Ex. 6 Personal Privacy (PP)

Message

From: Nickerson, William [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=148F2C1C05B54F358E29C59B841664AA-WNICKER]
Sent: 3/28/2019 9:08:03 PM
To: Theroux, Rich P. EOP/OMB [Ex. 6 Personal Privacy (PP)]; Whiteman, Chad S. EOP/OMB [Ex. 6 Personal Privacy (PP)]
Subject: materials for tomorrow's quarterly meeting
Attachments: Actions Projected to go to OMB by June 30 2019.docx; OMB determinations for actions being signed by June 30 2019.docx

We typically talk through the "Actions Projected....." document; the other is more of an FYI.

"Actions Projected ...." is organized first by EPA program office, then by any actions currently at OMB, and then by the date we project we will be sending the actions for review.

See you tomorrow.

William (Bill) Nickerson
Acting Office Director
Office of Regulatory Policy and Management
Office of Policy
Phone: (202) 566-0326

Appointment

From: Nickerson, William [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=148F2C1C05B54F358E29C59B841664AA-WNICKER]
Sent: 4/25/2019 2:36:16 PM
To: Johnson, Ann [Johnson.Ann@epa.gov]

Subject: FW: E.O. 12866 MTG re: National Primary Drinking Water Regulations: Regulation of Perchlorate (RIN 2040-AF28)
Location: Room 9258, New Executive Office Building (NEOB)/OMB - 725 17th Street, NW, Washington, DC 20503

Start: 4/30/2019 8:00:00 PM
End: 4/30/2019 8:30:00 PM
Show Time As: Tentative

-----Original Appointment-----
From: Jones, Lisa M. EOP/OMB **Ex. 6 Personal Privacy (PP)**
Sent: Tuesday, April 23, 2019 4:39 PM
To: Jones, Lisa M. EOP/OMB; Mancini, Dominic J. EOP/OMB; Theroux, Rich P. EOP/OMB; Dorjets, Vlad EOP/OMB; Thomas, Amanda L. EOP/OMB; Schwab, Margo EOP/OMB; Kluever, April N. EOP/OMB; Glass, Jacob S. EOP/OMB; Falk Curtin, Edna T. EOP/OMB; Nickerson, William; Burneson, Eric; Christ, Lisa
Subject: E.O. 12866 MTG re: National Primary Drinking Water Regulations: Regulation of Perchlorate (RIN 2040-AF28)
When: Tuesday, April 30, 2019 4:00 PM-4:30 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Room 9258, New Executive Office Building (NEOB)/OMB - 725 17th Street, NW, Washington, DC 20503

This meeting was requested by the American Water Works Association.

Call-in: 202-395-6392; code 2036490.

Here's the link for security information needed and the link may be shared: **Ex. 5 Deliberative Process (DP)**

Please include name as it shows exactly on driver's license or other government-issued identification to be used. Thank you.

Message

From: Nickerson, William [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=148F2C1C05B54F358E29C59B841664AA-WNICKER]
Sent: 5/22/2019 1:59:20 PM
To: Corrales, Mark [Corrales.Mark@epa.gov]
CC: Curry, Bridgid [Curry.Bridgid@epa.gov]
Subject: FW: For your review: Perchlorate - pass back language
Attachments: 5-21 7pm EPA Responses to EO12886 Comments - FRN Perchlorate.pdf; 5-21 7pm EPA Responses to EO12886 Comments - FRN Perchlorate.docx

FYI on current status

From: Burneson, Eric
Sent: Tuesday, May 21, 2019 7:38 PM
To: Nickerson, William <Nickerson.William@epa.gov>
Cc: Johnson, Ann <Johnson.Ann@epa.gov>
Subject: FW: For your review: Perchlorate - pass back language

FYI

From: Burneson, Eric
Sent: Tuesday, May 21, 2019 7:36 PM
To: Ross, David P <ross.davidp@epa.gov>
Cc: Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>; Mejias, Melissa <mejias.melissa@epa.gov>; Aguirre, Janita <Aguirre.Janita@epa.gov>; Guilaran, Yu-Ting <Guilaran.Yu-Ting@epa.gov>; Wildeman, Anna <wildeman.anna@epa.gov>; Forsgren, Lee <Forsgren.Lee@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Messier, Dawn <Messier.Dawn@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Hernandez-Quinones, Samuel <hernandez.samuel@epa.gov>; Khera, Rajiv <Khera.Rajiv@epa.gov>
Subject: For your review: Perchlorate - pass back language

Dave:
Attached for your review is the pass back document we prepared to respond to the OMB and the other federal agency comments received yesterday. The attached document (both in PDF and Word) reflect the changes we tentatively agreed to earlier today in our conversation with OMB staff.

Please advise if you are comfortable with our transmitting the attached document to OMB or if there are any further modifications you would like for us to make prior to sending. The perchlorate team and I will be ready to discuss any questions or comments you have at your earliest convenience.
Please note that we will be reviewing this mark-up concurrently with you to address any typographical errors that may have occurred while we were addressing OMB's comments.

Thanks for your continued support on this important action.

Eric Burneson, P.E.
Director of Standards and Risk Management
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
202 564 5250

Appointment

From: Nickerson, William [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=148F2C1C05B54F358E29C59B841664AA-WNICKER]
Sent: 3/6/2019 3:47:56 PM
To: Johnson, Ann [Johnson.Ann@epa.gov]

Subject: Fw: Perchlorate Proposed NPDWR
Location: DCRoomEast2418/DC-ICC-OW-OGWDW or call in 202 991 0477 Conf ID 107799

Start: 3/7/2019 9:00:00 PM
End: 3/7/2019 10:00:00 PM
Show Time As: Tentative

From: Burneson, Eric
Sent: Tuesday, March 5, 2019 5:21 PM
To: Burneson, Eric; Vlad Dorjets (Ex. 6 Personal Privacy (PP)); Christ, Lisa; Nickerson, William; Hernandez-Quinones, Samuel; Khera, Rajiv
Cc: Guilaran, Yu-Ting; Mclain, Jennifer; Flaherty, Colleen; Schwab, Margo EOP/OMB
Subject: Perchlorate Proposed NPDWR
When: Thursday, March 7, 2019 4:00 PM-5:00 PM.
Where: DCRoomEast2418/DC-ICC-OW-OGWDW or call in 202 991 0477 Conf ID 107799

Pre Brief for OMB on the proposed perchlorate drinking water regulation.

Message

From: Jackson, Ryan [jackson.ryan@epa.gov]
Sent: 5/23/2019 8:01:25 PM
To: Schiermeyer, Corry [schiermeyer.corry@epa.gov]; Lyons, Troy [lyons.troy@epa.gov]; Bolen, Brittany [bolen.brittany@epa.gov]
Subject: FW: SIGNED: National Primary Drinking Water Regulations: Proposed Perchlorate Rule (SAN 5555)
Attachments: Perchlorate Rule OW-19-000-5459.pdf

Perchlorate signed.

From: Pritchard, Eileen
Sent: Thursday, May 23, 2019 3:54 PM
To: Wheeler, Andrew <wheeler.andrew@epa.gov>; Jackson, Ryan <jackson.ryan@epa.gov>; Lyons, Troy <lyons.troy@epa.gov>; Bennett, Tate <Bennett.Tate@epa.gov>; White, Elizabeth <white.elizabeth@epa.gov>; Leopold, Matt (OGC) <Leopold.Matt@epa.gov>; Molina, Michael <molina.michael@epa.gov>; Best-Wong, Benita <Best-Wong.Benita@epa.gov>; Forsgren, Lee <Forsgren.Lee@epa.gov>; Ross, David P <ross.davidp@epa.gov>; Konkus, John <konkus.john@epa.gov>; Darwin, Henry <darwin.henry@epa.gov>; Bolen, Brittany <bolen.brittany@epa.gov>; McIntosh, Chad <mcintosh.chad@epa.gov>; Schiermeyer, Corry <schiermeyer.corry@epa.gov>
Cc: Wooden-Aguilar, Helena <Wooden-Aguilar.Helena@epa.gov>; Grantham, Nancy <Grantham.Nancy@epa.gov>; Richardson, RobinH <Richardson.RobinH@epa.gov>; Hope, Brian <Hope.Brian@epa.gov>; Campbell, Ann <Campbell.Ann@epa.gov>; Lousberg, Macara <Lousberg.Macara@epa.gov>; Ruf, Christine <Ruf.Christine@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Drinkard, Andrea <Drinkard.Andrea@epa.gov>; Sauerhage, Maggie <Sauerhage.Maggie@epa.gov>; Dennis, Allison <Dennis.Allison@epa.gov>; Wildeman, Anna <wildeman.anna@epa.gov>; McDonough, Owen <mcdonough.owen@epa.gov>; Pritchard, Eileen <Pritchard.Eileen@epa.gov>; Kime, Robin <Kime.Robin@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>; DeBell, Kevin <debell.kevin@epa.gov>; Lovell, Will (William) <lovell.william@epa.gov>; Aguirre, Janita <Aguirre.Janita@epa.gov>; Bowles, Jack <Bowles.Jack@epa.gov>; Benevento, Douglas <benevento.douglas@epa.gov>; Gaines, Cynthia <Gaines.Cynthia@epa.gov>; Manibusan, Mary <Manibusan.Mary@epa.gov>; Sawyers, Andrew <Sawyers.Andrew@epa.gov>; Shimkin, Martha <Shimkin.Martha@epa.gov>; Kasat, Rakhi <Kasat.Rakhi@epa.gov>; Hackel, Angela <Hackel.Angela@epa.gov>; Nurse, Leanne <Nurse.Leanne@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>; Wadlington, Christina <Wadlington.Christina@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>
Subject: SIGNED: National Primary Drinking Water Regulations: Proposed Perchlorate Rule (SAN 5555)

Good Afternoon.

Today, the Administrator signed the proposed rule entitled, **"National Primary Drinking Water Regulations: Proposed Perchlorate Rule. (SAN 5555)."**

This rule proposes to solicit public comment on the EPA' s proposal to establish a national primary drinking water regulation (NPDWR) and a non-enforceable maximum contaminant level goal (MCLG) for perchlorate under the Safe Drinking Water Act (SDWA). The proposed NPDWR includes an enforceable maximum contaminant level (MCL) of 0.056 mg/L (56 µg/L), which is proposed to be set at a level equal to the proposed MCLG. The EPA is seeking comment in the attached notice on whether the Agency should consider setting the perchlorate MCLG and MCL at alternative values of0.018 mg/L (18 µg/L) and 0.090 mg/L (90 µg/L). The EPA is also seeking comment on whether it should withdraw the Agency's 2011 determination to regulate perchlorate in drinking water.

An additional extension was given for signature of the proposed rule until May 28, 2019. The EPA is addressing the consent decree requirements to sign a NPDWR and issue a MCLG for perchlorate in this proposed rule by May 28, 2019.

Attached is the signed and dated proposed rule. For your convenience, please go to **p. 146** for the Administrator's signature.

Please contact me if you have any questions regarding this email.

Eileen Pritchard
Special Assistant: Office of the Administrator
(202) 564-6578 (d)
pritchard.eileen@epa.gov

Message

From: Bolen, Brittany [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=31E872A691114372B5A6A88482A66E48-BOLEN, BRIT]
Sent: 6/17/2020 1:07:48 PM
To: Manibusan, Mary [manibusan.mary@epa.gov]
CC: Nickerson, William [Nickerson.William@epa.gov]; Corrales, Mark [Corrales.Mark@epa.gov]; Kramer, Melissa [Kramer.Melissa@epa.gov]; Tyree, Robin [Tyree.Robin@epa.gov]; Yarbrough, John (Daniel) [Yarbrough.Daniel@epa.gov]; Wheeler, Kevin [Wheeler.Kevin@epa.gov]
Subject: RE: OMB has concluded review of Perchlorate Notice

Thank you, Mary. I just got clarification from the administrator that the latest possible window he can sign this is prior to 8am tomorrow. I'll defer to you on whether you want to route to me tonight or very early tomorrow morning. Copying the IO team to help track this.

From: Manibusan, Mary <Manibusan.Mary@epa.gov>
Sent: Wednesday, June 17, 2020 9:03 AM
To: Bolen, Brittany <bolen.brittany@epa.gov>
Cc: Nickerson, William <Nickerson.William@epa.gov>; Corrales, Mark <Corrales.Mark@epa.gov>; Kramer, Melissa <Kramer.Melissa@epa.gov>
Subject: OMB has concluded review of Perchlorate Notice

FYI.

From: Dorjets, Vlad EOP/OMB **Ex. 6 Personal Privacy (PP)**
Sent: Wednesday, June 17, 2020 9:01 AM
To: Burneson, Eric <Burneson.Eric@epa.gov>
Cc: Parikh, Pooja <Parikh.Pooja@epa.gov>; Christ, Lisa <Christ.Lisa@epa.gov>; Johnson, Ann <Johnson.Ann@epa.gov>; Wehling, Carrie <Wehling.Carrie@epa.gov>; Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>; Manibusan, Mary <Manibusan.Mary@epa.gov>
Subject: Review of Perchlorate Notice Concluded

Eric,

OMB has concluded its review of the Perchlorate notice.

Vlad

Message

From: Grevatt, Peter [Grevatt.Peter@epa.gov]
Sent: 2/3/2017 12:55:59 PM
To: Burneson, Eric [Burneson.Eric@epa.gov]; Bergman, Ronald [Bergman.Ronald@epa.gov]; Thompkins, Anita [Thompkins.Anita@epa.gov]; Oshida, Phil [Oshida.Phil@epa.gov]; Bissonette, Eric [Bissonette.Eric@epa.gov]; Cooper, Tiffany [Cooper.Tiffany@epa.gov]; Gonzalez, Yvonne V. [Gonzalez.Yvonne@epa.gov]
Subject: FW: Follow On Guidance on 2-for-1 Regulatory EO
Attachments: Interim guidance on Reducing Regulations EO.pdf; ATT00001.htm

Importance: High

We have until Tuesday noon to submit comments. One of those might relate to how we address regulatory actions that are being taken under court order, as well as those like 1417 that are being taken to codify statutory requirements in our regulations. I expect that the overall frame of this is unlikely to change significantly from what they have developed in the attachment. Let's discuss next week how we might go about addressing this in the context of LCR, perchlorate, 1417 and the DBP rules. Thanks.

From: Lousberg, Macara
Sent: Friday, February 03, 2017 7:37 AM
To: Sawyers, Andrew <Sawyers.Andrew@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Southerland, Elizabeth <Southerland.Elizabeth@epa.gov>; Goodin, John <Goodin.John@epa.gov>
Cc: Chancey, Barbara <Chancey.Barbara@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Lape, Jeff <lape.jeff@epa.gov>; Frace, Sheila <Frace.Sheila@epa.gov>; Conerly, Octavia <Conerly.Octavia@epa.gov>; Nandi, Romell <Nandi.Romell@epa.gov>; Farris, Erika D. <Farris.Erika@epa.gov>; Gonzalez, Yvonne V. <Gonzalez.Yvonne@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Gerstein, Arielle <gerstein.arielle@epa.gov>; Nelson, Tomeka <Nelson.Tomeka@epa.gov>; Stebe, Katherine <Stebe.Katherine@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Corona, Joel <Corona.Joel@epa.gov>; Trombley, Michael <Trombley.Michael@epa.gov>; Ruf, Christine <Ruf.Christine@epa.gov>; Campbell, Ann <Campbell.Ann@epa.gov>; Peck, Gregory <Peck.Gregory@epa.gov>; Shapiro, Mike <Shapiro.Mike@epa.gov>; Best-Wong, Benita <Best-Wong.Benita@epa.gov>
Subject: Follow On Guidance on 2-for-1 Regulatory EO
Importance: High

Per Mike's direction, I'm sharing OMB's follow on guidance for the 2 for 1 Regulatory EO. Please provide comments to me no later than **noon next Tuesday, February 7th** so that Mike and Benita have time to review them by OP's Tuesday's COB deadline. Thanks and if you have any questions please let me know.

Macara

From: Shapiro, Mike
Sent: Thursday, February 02, 2017 5:09 PM
To: Lousberg, Macara <Lousberg.Macara@epa.gov>; Ruf, Christine <Ruf.Christine@epa.gov>
Cc: Best-Wong, Benita <Best-Wong.Benita@epa.gov>
Subject: FW: Follow On Guidance on 2-for-1 Regulatory EO

Macara/Christine,

Please coordinate a review of this. Thanks.

Mike

Michael Shapiro
Acting Assistant Administrator, Office of Water

US EPA, 4101M
1200 Pennsylvania Ave., NW
Washington, DC 20460
202-564-5700

From: Kenny, Shannon
Sent: Thursday, February 02, 2017 3:59 PM
To: 2017HQfirstassistants <2017HQfirstassistants@epa.gov>
Cc: Rees, Sarah <rees.sarah@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>; Owens, Nicole <Owens.Nicole@epa.gov>
Subject: Follow On Guidance on 2-for-1 Regulatory EO

All,
I'm attaching here the first draft guidance we have received related to the 2-for-1 regulatory EO ("Reducing Regulation and Controlling Regulatory Costs"). For this interim guidance, OIRA is focusing on implementation of Section 2 of the Executive Order, which covers Fiscal Year 2017.

There is some good news in here -- when counting costs, they have scoped this effort to include only costs of new significant actions taken after January 20, rather than including non-significant actions (e.g., SIPs) or actions taken under the Obama Administration during the first half of the FY17 fiscal year. When counting savings, however, we can include repeal of or modifications to any past regulation, regardless of whether it was deemed significant.

We have the opportunity to submit comments to OMB, but will need your comments by **Tuesday COB** in order to compile and prioritize them and run them through the many channels here. Please submit your comments to me with a cc to Nicole Owens.

Shannon

Sent from my iPad

Message

From: Christ, Lisa [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=10DBD8E424704E43B5A50F74A4DAC626-LCHRIST]
Sent: 2/6/2017 5:49:35 PM
To: Huff, Lisa [Huff.Lisa@epa.gov]
Subject: FW: Follow On Guidance on 2-for-1 Regulatory EO
Attachments: Interim guidance on Reducing Regulations EO.pdf

From: Burneson, Eric
Sent: Friday, February 03, 2017 8:30 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>; Rodgers-Jenkins, Crystal <Rodgers-Jenkins.Crystal@epa.gov>
Subject: Fwd: Follow On Guidance on 2-for-1 Regulatory EO

Can we have our economists look this over and provide comment?

Sent from my iPhone

Begin forwarded message:

> **From:** "Grevatt, Peter" <Grevatt.Peter@epa.gov>
> **To:** "Burneson, Eric" <Burneson.Eric@epa.gov>, "Bergman, Ronald" <Bergman.Ronald@epa.gov>, "Thompkins, Anita" <Thompkins.Anita@epa.gov>, "Oshida, Phil" <Oshida.Phil@epa.gov>, "Bissonette, Eric" <Bissonette.Eric@epa.gov>, "Cooper, Tiffany" <Cooper.Tiffany@epa.gov>, "Gonzalez, Yvonne V." <Gonzalez.Yvonne@epa.gov>
> **Subject: FW: Follow On Guidance on 2-for-1 Regulatory EO**
>
> We have until Tuesday noon to submit comments. One of those might relate to how we address regulatory actions that are being taken under court order, as well as those like 1417 that are being taken to codify statutory requirements in our regulations. I expect that the overall frame of this is unlikely to change significantly from what they have developed in the attachment. Let's discuss next week how we might go about addressing this in the context of LCR, perchlorate, 1417 and the DBP rules. Thanks.
>
> From: Lousberg, Macara
> Sent: Friday, February 03, 2017 7:37 AM
> To: Sawyers, Andrew <Sawyers.Andrew@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Southerland, Elizabeth <Southerland.Elizabeth@epa.gov>; Goodin, John <Goodin.John@epa.gov>
> Cc: Chancey, Barbara <Chancey.Barbara@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Lape, Jeff <lape.jeff@epa.gov>; Frace, Sheila <Frace.Sheila@epa.gov>; Conerly, Octavia <Conerly.Octavia@epa.gov>; Nandi, Romell <Nandi.Romell@epa.gov>; Farris, Erika D. <Farris.Erika@epa.gov>; Gonzalez, Yvonne V. <Gonzalez.Yvonne@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Gerstein, Arielle <gerstein.arielle@epa.gov>; Nelson, Tomeka <Nelson.Tomeka@epa.gov>; Stebe, Katherine <Stebe.Katherine@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Corona, Joel <Corona.Joel@epa.gov>; Trombley, Michael <Trombley.Michael@epa.gov>; Ruf, Christine <Ruf.Christine@epa.gov>; Campbell, Ann <Campbell.Ann@epa.gov>; Peck, Gregory <Peck.Gregory@epa.gov>; Shapiro, Mike <Shapiro.Mike@epa.gov>; Best-Wong, Benita <Best-Wong.Benita@epa.gov>
> Subject: Follow On Guidance on 2-for-1 Regulatory EO
> Importance: High
>
> Per Mike's direction, I'm sharing OMB's follow on guidance for the 2 for 1 Regulatory EO. Please provide

comments to me no later than noon next Tuesday, February 7th so that Mike and Benita have time to review them by OP's Tuesday's COB deadline. Thanks and if you have any questions please let me know.

Macara

From: Shapiro, Mike
Sent: Thursday, February 02, 2017 5:09 PM
To: Lousberg, Macara <Lousberg.Macara@epa.gov<mailto:Lousberg.Macara@epa.gov>>; Ruf, Christine <Ruf.Christine@epa.gov<mailto:Ruf.Christine@epa.gov>>
Cc: Best-Wong, Benita <Best-Wong.Benita@epa.gov<mailto:Best-Wong.Benita@epa.gov>>
Subject: FW: Follow On Guidance on 2-for-1 Regulatory EO

Macara/Christine,

Please coordinate a review of this. Thanks.

Mike

Michael Shapiro
Acting Assistant Administrator, Office of Water
US EPA, 4101M
1200 Pennsylvania Ave., NW
Washington, DC 20460
202-564-5700

From: Kenny, Shannon
Sent: Thursday, February 02, 2017 3:59 PM
To: 2017HQfirstassistants <2017HQfirstassistants@epa.gov<mailto:2017HQfirstassistants@epa.gov>>
Cc: Rees, Sarah <rees.sarah@epa.gov<mailto:rees.sarah@epa.gov>>; Nickerson, William <Nickerson.William@epa.gov<mailto:Nickerson.William@epa.gov>>; Owens, Nicole <Owens.Nicole@epa.gov<mailto:Owens.Nicole@epa.gov>>
Subject: Follow On Guidance on 2-for-1 Regulatory EO

All,
I'm attaching here the first draft guidance we have received related to the 2-for-1 regulatory EO ("Reducing Regulation and Controlling Regulatory Costs"). For this interim guidance, OIRA is focusing on implementation of Section 2 of the Executive Order, which covers Fiscal Year 2017.

There is some good news in here -- when counting costs, they have scoped this effort to include only costs of new significant actions taken after January 20, rather than including non-significant actions (e.g., SIPs) or actions taken under the Obama Administration during the first half of the FY17 fiscal year. When counting savings, however, we can include repeal of or modifications to any past regulation, regardless of whether it was deemed significant.

We have the opportunity to submit comments to OMB, but will need your comments by Tuesday COB in order to compile and prioritize them and run them through the many channels here. Please submit your comments to me with a cc to Nicole Owens.

Shannon

Sent from my iPad

Message

From: Christ, Lisa [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=10DBD8E424704E43B5A50F74A4DAC626-LCHRIST]
Sent: 2/3/2017 5:55:40 PM
To: Rodgers-Jenkins, Crystal [Rodgers-Jenkins.Crystal@epa.gov]
CC: Georges, Jessica [Georges.Jessica@epa.gov]; Helm, Erik [Helm.Erik@epa.gov]; Huff, Lisa [Huff.Lisa@epa.gov]
Subject: RE: EO on Regulations
Attachments: Interim guidance on Reducing Regulations EO_TAB.pdf

Hi Crystal,
Attached is the pdf with some comments imbedded. Also, please see overarching comments/questions/observations below.
Let me know if you need anything else.
Lisa

EO Reducing Regulation and Controlling Regulatory Cost

I. General

The guidance applies to "regulatory actions" issued before September 30, 2017. We plan to propose LCR 12/2017, 1st quarter of FY2018 and the EO states that during the Presidential budget process, the Director shall identify to agencies the total amount of incremental costs allowed. How might FY18 budget delays impact the proposal date (assuming EPA is allocated an amount other than zero)?

II. Coverage

The EO applies to proposed and final regulations and guidance, unless prohibited by law. In OGWDW's case the anti-backsliding provision of the SDWA may prevent our program from removing previous regulatory requirements. The EO guidance strengthens this argument by also indicating that the Agency must "confirm that they will continue to achieve their regulatory objectives after the deregulatory action." The EO allows for balancing of cost at the Agency level so we may wind up negotiating amongst EPA Offices in order to identify rules that can be repealed to offset drinking water regulations.

The guidance indicates that this EO is applicable to EO 12866 "significant actions" (that's the $100,000,000 or novel legal issues test) and the 2007 Good Guidance Memo. In this case the 1417 Lead Free Regulation would not be captured by the requirements of the new EO unless reclassified by OMB.

Remanded rules and rules overturned by legislative action may count on a case-by-case basis towards meeting the deregulatory requirements of the EO. However, this applies to rules issued before January 20 and vacated or remanded **after** that date. Nickel would not qualify.

III. Accounting Questions

The EO also requires that incremental regulatory costs do not exceed zero. The guidance also indicates that Agencies should not use the total cost estimates from previous rulemakings as the yardstick for comparing the new regulation requirement to those being repealed. The sunk cost from previous rulemaking cannot be counted, only continuing opportunity cost into the future. Given, that initial implementation cost is significant for most current regulations, our program may find that the repeal of more than two regulations would be required to offset the cost of a new regulation. On a case-by-case bases unquantified costs may be counted as part of overall cost savings from removing a regulation.

The guidance seems to imply that it may be possible to only remove some parts of existing regulations to maintain the zero cost increase requirement. We should ask for more detailed guidance on this point.

Costs incurred as part of the deregulatory rules (decommissioning cost of removing treatment technology) will also have to be accounted for in the assessment of the EO's zero new incremental cost requirement. Also, offsetting cost savings, such as energy savings that result from regulatory requirements, cannot be counted as cost savings for this EO.

The annualization of both the new rule and those being removed must occur over the same time period.

IV. Process and Waiver Questions

Waivers from the EO may be obtained if a regulation has an imminent statutorily required or court ordered deadline, such as perchlorate

The rules to be removed should be identified and indicated in the proposal of the new regulation. It is preferred if the regulations being removed are repealed before or commensurate with the issuance of the new regulation. The same action can combine the deregulatory requirements and the new regulation. Under strict interpretation of the EO, the Agency only has to identify the regulation to be repealed by the final action of a new regulation.

It appears benefits are not to be used to offset cost in the assessment of cost under this EO – confirmation/clarification would be helpful. The EO does not impact EO 12866 and good guidance requirements for the assessment of costs and benefit.

From: Rodgers-Jenkins, Crystal
Sent: Friday, February 03, 2017 10:32 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Cc: Albert, Ryan <Albert.Ryan@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Subject: RE: EO on Regulations

SRRB will likely also have comments. Please send me your comments since you guys will be done with yours first. I will add SRRB's comments to your set and send our consolidated comments to Eric.

Big thanks!

From: Christ, Lisa
Sent: Friday, February 03, 2017 10:30 AM
To: Rodgers-Jenkins, Crystal <Rodgers-Jenkins.Crystal@epa.gov>
Cc: Albert, Ryan <Albert.Ryan@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Subject: RE: EO on Regulations

Got it. Thanks.
Do you want me to send TAB comments to you? Or do you want me to consolidate? I expect TAB comments by 2pm.

From: Rodgers-Jenkins, Crystal
Sent: Friday, February 03, 2017 10:28 AM
To: Christ, Lisa <Christ.Lisa@epa.gov>
Cc: Albert, Ryan <Albert.Ryan@epa.gov>; Burneson, Eric <Burneson.Eric@epa.gov>
Subject: FW: EO on Regulations

Hi Lisa,

SRMD has the lead reviewing and providing comment on the EO on regulations. While the EO applies to regulatory actions planned on or before September 30, 2017, Jennifer Mclain recommends that we take the below questions from Alan Robeson into consideration when drafting our comments. See email from Alan (below).

Take care,
Crystal

From: Mclain, Jennifer
Sent: Friday, February 03, 2017 10:00 AM
To: Rodgers-Jenkins, Crystal <Rodgers-Jenkins.Crystal@epa.gov>
Subject: FW: EO on Regulations

From: Roberson, Alan [mailto:aroberson@asdwa.org]
Sent: Thursday, February 02, 2017 9:18 AM
To: Grevatt, Peter <Grevatt.Peter@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>
Cc: Darrell Osterhoudt <dosterhoudt@asdwa.org>
Subject: EO on Regulations

Peter, I talked to Jennifer briefly on Tuesday at the Partnerships Meeting about the enclosed EO on Regulations as it has raised a couple of questions from my members that I would appreciate some clarifications on:

1. Does this apply to revising a current regulation such as the Lead & Copper Rule where the revisions are expected to be proposed sometime this year?
2. Does the "one-in, two-out" approach apply to proposed regulations or is it just for final regulations?

Any clarifications would be greatly appreciated as I have gotten several questions from my members and would like to get back to them - thanks. Alan

****

J. Alan Roberson, P.E.
Executive Director

Association of State Drinking Water Administrators (ASDWA)
1401 Wilson Blvd. - Suite 1225
Arlington, VA 22209

Office: (703) 812-9507

Ross, David P Calendar

ross.davidp@epa.gov

Monday, January 01, 2018 – Wednesday, July 04, 2018

Time zone: (UTC-05:00) Eastern Time (US & Canada)

(Adjusted for Daylight Saving Time)

January 2018

Su	Mo	Tu	We	Th	Fr	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

February 2018

Su	Mo	Tu	We	Th	Fr	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28			

March 2018

Su	Mo	Tu	We	Th	Fr	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

April 2018

Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

May 2018

Su	Mo	Tu	We	Th	Fr	Sa
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

June 2018

Su	Mo	Tu	We	Th	Fr	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

... To July 2018

Busy | Tentative | Free

Out of Office | Working Elsewhere | Outside of Working Hours

January 2018

Mon, Jan 1

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 8:00 AM**	**Free**
■	8:00 AM – 5:00 PM	New Year's Day
☐	**After 5:00 PM**	**Free**

Tue, Jan 2 – Fri, Jan 5

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 5:00 PM**	**Free**
☐	**After 5:00 PM**	**Free**

Sat, Jan 6 – Sun, Jan 7

☐	**All Day**	**Free**

Mon, Jan 8

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 3:45 PM**	**Free**
■	3:45 PM – 4:15 PM	Meeting: Dave Ross Administrator's Office [redacted]
☐	**4:15 PM – 5:00 PM**	**Free**
■	5:00 PM – 5:30 PM	Meeting with Sarah Greenwalt, Dave Ross, & David Fotouhi re Ohio 303(d) letter Sarah Greenwalt's office Forsgren, Lee
☐	**After 5:30 PM**	**Free**

Tue, Jan 9

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 8:45 AM**	**Free**
■	8:45 AM – 9:00 AM	Daily Check in 3219A WJCE Shapiro, Mike
☐	**9:00 AM – 9:30 AM**	**Free**
■	9:30 AM – 10:00 AM	David's planning time
■	10:00 AM – 10:15 AM	Pre-Brief: Senator Sullivan/Whitehouse Meeting Administrator's Office

[redacted]

■	10:15 AM – 11:00 AM	Meeting: Senator Sullivan and Senator Whitehouse Administrator's Office [redacted]
■	11:00 AM – 12:00 PM	PFAS Briefing 3233 WJCE Call in [redacted] passcode [redacted] Forsgren, Lee
■	12:00 PM – 1:00 PM	Lunch
□	**1:00 PM – 2:00 PM**	**Free**
■	2:00 PM – 2:30 PM	PFOA Discussion Room 3402 WJC North Jackson, Ryan
■	2:30 PM – 3:30 PM	Lead 3233 WJCE Ross, David P
■	3:30 PM – 4:00 PM	David's planning time
□	**4:00 PM – 4:45 PM**	**Free**
■	4:45 PM – 5:45 PM	WOTUS 3219A WJCE Ross, David P
□	**After 5:45 PM**	**Free**

Wed, Jan 10

□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 8:30 AM**	**Free**
■	8:30 AM – 9:00 AM	Maine Water Quality Discussion David F's office Ringel, Aaron
□	**9:00 AM – 9:30 AM**	**Free**
■	9:30 AM – 10:00 AM	David's Planning time
■	10:00 AM – 10:45 AM	WOTUS Call in [redacted] passcode [redacted] 3233 WJCE Ross, David P
□	**10:45 AM – 11:00 AM**	**Free**
■	11:00 AM – 12:00 PM	Waters of the US Briefing #1 3233 WJCE Call in [redacted] passcode [redacted] Forsgren, Lee
□	**12:00 PM – 1:00 PM**	**Free**
■	1:00 PM – 2:00 PM	David's Planning time
■	2:00 PM – 3:00 PM	Direct Hydrologic Connection and Discharge of a Pollutant Under the CWA and NPDES 3233 WJCE Call in [redacted] passcode [redacted] [redacted]

Forsgren, Lee

☐	**3:00 PM – 3:30 PM**	**Free**
■	3:30 PM – 4:00 PM	David's Planning time
☐	**4:00 PM – 4:30 PM**	**Free**
■	4:30 PM – 5:00 PM	Briefing: West Lake Follow-up / Lead Update Administrator's Office [redacted]
☐	**After 5:00 PM**	**Free**

Thu, Jan 11

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 1:00 PM	Benita using 3233
■	9:00 AM – 1:00 PM	OW Monthly Business Review 3233 WJC East Call in number # [redacted] Passcode [redacted] Best-Wong, Benita
■	12:00 PM – 1:00 PM	Brownbag: Meeting with Justina Fugh 3219A WJCE Ross, David P
■	1:00 PM – 2:00 PM	Briefing for Sarah Greenwalt, re: EPA's Domestic and International Work to Address Marine Litter OITA's Fish Bowl Conference Room, 3rd floor RRB, #31107 (Big conference room across from the receptionist desk) Nishida, Jane
■	2:00 PM – 2:30 PM	David's Planning time
☐	**2:30 PM – 3:00 PM**	**Free**
■	3:00 PM – 3:30 PM	Call to Ohio EPA Call in [redacted] passcode [redacted] WJCE 3219A Ross, David P
■	3:00 PM – 3:30 PM	Kerry Kuntz using 3233 Ross, David P
☐	**3:30 PM – 4:00 PM**	**Free**
■	4:00 PM – 5:00 PM	David's Planning time
☐	**After 5:00 PM**	**Free**

Fri, Jan 12

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 9:30 AM	Conduit Theory Sarah's Office

		Ross, David P
■	9:30 AM – 10:00 AM	Official Portrait WJCN 6330 Ross, David P
■	10:00 AM – 10:30 AM	FW: Mercury Pollution Discussion Room 3402 WJC North Jackson, Ryan
■	10:30 AM – 11:30 AM	Budget Briefing for David Ross 3233 WJC East Best-Wong, Benita
☐	**11:30 AM – 12:30 PM**	**Free**
■	12:30 PM – 2:00 PM	Benita using 3233
■	1:30 PM – 3:00 PM	David's planning time
■	3:00 PM – 4:00 PM	Benita using 3233
■	3:00 PM – 6:00 PM	Do not schedule
☐	**After 6:00 PM**	**Free**

Sat, Jan 13 – Sun, Jan 14

☐	**All Day**	**Free**

Mon, Jan 15

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 8:00 AM**	**Free**
■	8:00 AM – 5:00 PM	Martin Luther King Jr Day
☐	**5:00 PM – 5:15 PM**	**Free**
■	5:15 PM – 8:19 PM	DL 5998 departs MSN @ 5:15pm arrives DCA @ 8:19PM
☐	**After 8:19 PM**	**Free**

Tue, Jan 16

☐	All Day	Ann Telework
☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 10:00 AM	Water Infrastructure Programs 3233 WJCE Call in [redacted] passcode [redacted] Forsgren, Lee
■	10:00 AM – 11:00 AM	2016 ELG Program Plan Prebrief 3233 WJCE Ross, David P
■	11:00 AM – 12:00 PM	OR Temperature TMDLs and Columbia River TMDL Litigation 3233 WJCE Call in [redacted] passcode

[redacted]
Forsgren, Lee

▨	12:00 PM – 1:00 PM	National HQ & RG 1st Assistants VTC DCRoomARN3330/DC-AR-OARM RegionalOperations
■	1:00 PM – 3:00 PM	David's Planning time
■	3:00 PM – 3:45 PM	OW Weekly Staff Meeting 3233 WJCE Call in [redacted] passcode [redacted] Ross, David P
□	**3:45 PM – 4:00 PM**	**Free**
■	4:00 PM – 4:45 PM	Multi-Claim Water Quality Standards Litigation in Washington Call in # [redacted] Passcode [redacted] 3223 WJC East Forsgren, Lee
□	**4:45 PM – 5:00 PM**	**Free**
□	**After 5:00 PM**	**Free**

Wed, Jan 17

□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 8:30 AM**	**Free**
■	8:30 AM – 9:00 AM	Coffee w/ OGWDW 2123 WJCE
■	9:00 AM – 9:30 AM	David's planning time
▨	9:00 AM – 9:30 AM	FW: EPA Water talk Phone call--Can EPA provide a number call Herrgott, Alex H. [redacted]
■	9:30 AM – 10:30 AM	OWM Program Overview 3233 WJCE Call in [redacted] passcode [redacted] Ross, David P
▨	10:30 AM – 11:30 AM	FW: Dr. Martin Luther King Day 2018 Commemoration - "MLK50 Forward: Together We Win with Love for Humanity" In person at HQ: WJC East, Room 1152; Remote viewing via EPAtv Allen, Tania
■	11:30 AM – 12:15 PM	Meeting with NM EMNRD 3219A WJCE Call in [redacted] passcode [redacted] Ross, David P
□	**12:15 PM – 1:00 PM**	**Free**
■	1:00 PM – 2:30 PM	David's Planning time
▨	1:00 PM – 2:30 PM	E-Enterprise Leadership Council (EELC) Conference Call /

[redacted] / Code [redacted]
3412 WJC-N
Darwin, Henry

■	2:30 PM – 3:30 PM	OGWDW - Program Overview Call in [redacted] passcode [redacted] 3233 WJCE Ross, David P
■	3:30 PM – 4:15 PM	David's Planning time
■	4:15 PM – 5:15 PM	US - Mexico Border Briefing Call in [redacted] passcode [redacted] 3233 WJCE Ross, David P
□	**After 5:15 PM**	**Free**

Thu, Jan 18

□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 10:00 AM**	**Free**
■	10:00 AM – 11:00 AM	WOTUS Briefing #2 Call in [redacted] passcode [redacted] 3233 WJCE Ross, David P
■	11:00 AM – 12:00 PM	LCR Briefing #2 Call in [redacted] passcode [redacted] 3233 WJCE Ross, David P
□	**12:00 PM – 1:00 PM**	**Free**
■	1:00 PM – 2:00 PM	PFAS briefing #2 Call in [redacted] passcode [redacted] 3233 WJCE Ross, David P
■	2:00 PM – 2:30 PM	General Call Dave's polycom [redacted] 3219A WJCE Ross, David P
■	2:30 PM – 4:00 PM	David's Planning time
■	4:00 PM – 4:30 PM	Meeting with Justin Maierhofer 1201 Constitution Ave NW, Washington DC 20460 3233 WJCE Please call [redacted] for escort Ross, David P
□	**4:30 PM – 5:00 PM**	**Free**
□	**5:00 PM – 6:00 PM**	**Free**
▨	6:00 PM – 9:00 PM	FW: Informal Happy Hour - Celebrating One Year Blackfinn 1620 I Street NW, Washington, DC 20006 Rateike, Bradley A. [redacted]
□	**After 9:00 PM**	**Free**

Fri, Jan 19

☐	All Day	Crystal P - Telework
☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 10:00 AM**	**Free**
■	10:00 AM – 10:45 AM	OWOW Program Overview Call in [redacted] passcode [redacted] 3233 WJCE Ross, David P
☐	**10:45 AM – 11:00 AM**	**Free**
■	11:00 AM – 12:00 PM	Dave's Planning time
☐	**12:00 PM – 5:00 PM**	**Free**
☐	**After 5:00 PM**	**Free**

Sat, Jan 20 – Sun, Jan 21

☐	**All Day**	**Free**

Mon, Jan 22

☐	All Day	Crystal P- OOO
☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 1:00 PM**	**Free**
■	1:00 PM – 2:00 PM	General 3219A WJCE Ross, David P
☐	**2:00 PM – 5:00 PM**	**Free**
☐	**5:00 PM – 5:30 PM**	**Free**
■	5:30 PM – 6:00 PM	General 3219A WJCE Ross, David P
☐	**After 6:00 PM**	**Free**

Tue, Jan 23

☐	All Day	Ann Telework
☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 4:00 PM	Do not schedule
■	10:30 AM – 11:00 AM	Sherry Howard using 3233 Ross, David P
■	4:00 PM – 4:30 PM	Briefing: WOTUS Step 1 Administrator's Office [redacted]
▨	4:00 PM – 4:45 PM	Final Agency Review for Final 2016 Effluent Guidelines Program Plan

		3233 WJCE Call in [redacted] passcode [redacted] Forsgren, Lee
■	4:30 PM – 5:30 PM	Dessert/Champagne Baby Reception greenroom Ross, David P
□	**After 5:30 PM**	**Free**

Wed, Jan 24

□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 9:30 AM**	**Free**
■	9:30 AM – 10:00 AM	Car confirmed Ross, David P
■	9:30 AM – 11:00 AM	Mayors Water Council Meeting (USCM 86th Annual Winter Meeting) Congressional Room/Capital Hilton Hotel (16th & K) Hannon, Arnita
■	10:00 AM – 10:30 AM	US Conference of Mayors, Water Council Capital Hilton hotel
■	10:30 AM – 11:00 AM	Car confirmed Ross, David P
□	**11:00 AM – 1:00 PM**	**Free**
■	1:00 PM – 1:30 PM	Check-in with Dave Ross 3402 WJC-N Jackson, Ryan
□	**1:30 PM – 1:45 PM**	**Free**
■	1:45 PM – 2:30 PM	Meeting: DHS/CBP on Tijuana Wastewater Initiative Alm Room Jackson, Ryan
□	**2:30 PM – 3:00 PM**	**Free**
■	3:00 PM – 4:00 PM	Prebrief for Jan 31-Feb 1 Hypoxia Task Force (THF) Meeting 3233 WJCE Call in [redacted] ext [redacted] Ross, David P
□	**4:00 PM – 5:00 PM**	**Free**
■	5:00 PM – 5:30 PM	Meeting with L. Michael Bogert 1201 Constitution Ave NW, Washington DC 20460 WJCE 3219A Call [redacted] for escort Ross, David P
□	**5:30 PM – 5:45 PM**	**Free**
■	5:45 PM – 6:15 PM	General Sarah's Office Ross, David P
□	**After 6:15 PM**	**Free**

Thu, Jan 25

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 9:30 AM	Dave's planning time
■	9:30 AM – 10:00 AM	Meet and Greet: Samantha, Brittany and David 3513A Dravis, Samantha
■	10:00 AM – 11:00 AM	Dave's Planning time
☐	**11:00 AM – 11:15 AM**	**Free**
■	11:15 AM – 12:00 PM	EPA's Efforts to Work Collaboratively with States to Develop Numeric Nutrient Criteria 3233 WJCE Call in [redacted] passcode [redacted] Ross, David P
☐	**12:00 PM – 2:00 PM**	**Free**
■	2:00 PM – 3:00 PM	ECOS Member Meeting 3219A WJCE call-in number is [redacted] with conference ID [redacted] Ross, David P
■	3:00 PM – 3:45 PM	Gold King Mine Briefing (Call in number: [redacted] Code: [redacted] DCRoomARN4045/DC-Ariel-Rios-OGC Leopold, Matt
☐	**3:45 PM – 4:00 PM**	**Free**
■	4:00 PM – 5:00 PM	Dave's Planning time
☐	**After 5:00 PM**	**Free**

Fri, Jan 26

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 9:30 AM	Notification of Security Clearance Status 3219A WJCE Ross, David P
■	9:30 AM – 10:30 AM	WWF Briefing Call in [redacted] passcode [redacted] 3219A WJCE Ross, David P
■	10:30 AM – 11:00 AM	SES Panel Prep 3219A WJCE Ross, David P
■	11:00 AM – 11:45 AM	Overview of EPA and Missouri's Proposed Rule for Nutrients for Lakes/Reservoirs 3233 WJCE Call in [redacted] passcode [redacted]

		Ross, David P
■	11:45 AM – 12:00 PM	NPDES LEAN Kaizen Event Wrap Up WJCW 1426
□	**12:00 PM – 1:00 PM**	**Free**
■	1:00 PM – 1:30 PM	General w/ Deborah Nagle (OST) 3219A WJCE Ross, David P
■	1:30 PM – 2:30 PM	EPW Prebrief 3219A WJCE Ross, David P
□	**2:30 PM – 3:00 PM**	**Free**
■	3:00 PM – 4:00 PM	UIC Permit Kaizen Event WJCN 2513
□	**4:00 PM – 5:00 PM**	**Free**
□	**After 5:00 PM**	**Free**

Sat, Jan 27 – Sun, Jan 28

□	**All Day**	**Free**

Mon, Jan 29

□	**Before 7:30 AM**	**Free**
■	7:30 AM – 7:00 PM	2017 National Executive Leadership Development Conference Omni Shoreham Hotel, Regency Ballroom
■	9:30 AM – 10:00 AM	Car confirmed
■	10:00 AM – 11:00 AM	Prep
■	11:00 AM – 12:00 PM	EPW Testify Prep: Water Briefing Administrator's Office [redacted]
■	2:30 PM – 3:00 PM	Meeting with Jeffrey Sands [redacted] Ross, David P
□	**7:00 PM – 7:30 PM**	**Free**
■	7:30 PM – 9:00 PM	AA-RA Dinner
□	**After 9:00 PM**	**Free**

Tue, Jan 30

□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 8:40 AM**	**Free**
■	8:40 AM – 9:00 AM	Car confirmed Ross, David P
■	9:00 AM – 11:45 AM	Panel Discussion - 2017 National Executive Leadership

		Development Conference Omni Shoreham hotel, Regency Ballroom
■	9:00 AM – 3:00 PM	2017 National Executive Leadership Development Conference Omni Shoreham Hotel, Regency Ballroom
■	12:00 PM – 12:30 PM	Travel Time - UBER
■	1:00 PM – 1:30 PM	Passport Photos for David P. Ross WJCN 6330K Ross, David P
■	2:30 PM – 3:00 PM	Car confirmed
■	3:00 PM – 5:00 PM	Water Division Directors Meeting Omni Shoreham Hotel - Hampton Ballroom Ross, David P
■	5:00 PM – 5:30 PM	Travel Time - UBER
□	**After 5:30 PM**	**Free**

Wed, Jan 31

□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 10:00 AM	Meeting with Chris Hladick R10 3219A WJCE Ross, David P
■	10:00 AM – 10:30 AM	Dave Ross Office of David Ross Dunn, Alexandra
■	10:30 AM – 11:00 AM	Car confirmed
■	11:00 AM – 1:30 PM	NASDA Grand Hyatt Washington (Washington, District of Columbia, United States)
■	12:30 PM – 2:30 PM	Bob Rose using 3233 Ross, David P
■	1:30 PM – 2:00 PM	Car confirmed
■	2:00 PM – 5:00 PM	Hypoxia Task Force Meeting - HOLD Arlington, VA Flahive, Katie
■	5:00 PM – 5:30 PM	Car confirmed Ross, David P
□	**After 5:30 PM**	**Free**

February 2018

Thu, Feb 1

□	**Before 7:30 AM**	**Free**

☐	**7:30 AM – 8:00 AM**	**Free**
■	8:00 AM – 8:30 AM	CWA Defensive Litigation Discussion w/Region 10 (Call in number: [redacted] Code: [redacted] WJC-N Room 4000 Leopold, Matt
☐	**8:30 AM – 8:40 AM**	**Free**
■	8:40 AM – 9:00 AM	Car confirmed
■	9:00 AM – 5:00 PM	Hypoxia Task Force Meeting Key Bridge Marriott, 1401 Lee Highway, Arlington, Virginia
■	10:30 AM – 11:00 AM	Travel Time - UBER
■	11:00 AM – 11:30 AM	TSCA OW Nexus Ross, David P
■	1:00 PM – 1:45 PM	MA and NH Small MS4 General Permits 3233 WJCE Call in [redacted] passcode [redacted] Ross, David P
■	2:00 PM – 2:30 PM	Allison using 3233 Ross, David P
■	2:00 PM – 2:30 PM	Meeting with Brent Fewell 1201 Constitution Ave NW, Washington DC 20460 3219A WJCe Please call [redacted] for escort Ross, David P
■	2:30 PM – 3:00 PM	Car confirmed
■	5:00 PM – 5:30 PM	TRAVEL TIME - UBER
☐	**After 5:30 PM**	**Free**

▲ Fri, Feb 2

☐	All Day	Ann Compressed
☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:30 AM**	**Free**
■	9:30 AM – 10:00 AM	Office Hours
☐	**10:00 AM – 11:00 AM**	**Free**
■	11:00 AM – 11:45 AM	Office Hours
■	11:45 AM – 12:30 PM	General 3219A WJCE Ross, David P
☐	**12:30 PM – 5:00 PM**	**Free**
☐	**5:00 PM – 7:15 PM**	**Free**
■	7:15 PM – 8:20 PM	Southwest flight 6934 departs DCA @ 7:15pm arrives MKE @ 8:20pm
☐	**After 8:20 PM**	**Free**

▲ Sat, Feb 3

☐	**All Day**	**Free**

Sun, Feb 4

☐	**Before 2:05 PM**	**Free**
■	2:05 PM – 4:40 PM	Southwest flight 1863 departs MKE @ 2:05pm arrives DCA @ 4:50PM
☐	**After 4:40 PM**	**Free**

Mon, Feb 5

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 10:00 AM**	**Free**
■	10:00 AM – 10:45 AM	OST Program Overview 3233 WJCE Ross, David P
☐	**10:45 AM – 11:00 AM**	**Free**
■	11:00 AM – 11:45 AM	Pre-Brief for Region 1 Visit Call in [redacted] conference code [redacted] 3233 WJC East Best-Wong, Benita
☐	**11:45 AM – 12:00 PM**	**Free**
■	12:00 PM – 1:00 PM	Lunch Del Friscos - 1201 Pennsylanaia Ave NW Ross, David P
■	1:00 PM – 2:00 PM	Office Hours
☐	**2:00 PM – 4:15 PM**	**Free**
■	4:15 PM – 4:30 PM	Car confirmed
■	4:30 PM – 5:00 PM	Courtesy Meeting with Cong. Paul Tonko for David Ross and Aaron Ringel 2463 Rayburn House Office Building Rodrick, Christian
■	5:00 PM – 5:30 PM	Travel Time - UBER
■	5:30 PM – 6:00 PM	Navajo TAS & Conduit Theory 3219 A WJCE - Call in [redacted] - ID [redacted] Forsgren, Lee
☐	**After 6:00 PM**	**Free**

Tue, Feb 6

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 6:00 PM	Region 1 Visit - Boston
■	10:00 AM – 11:00 AM	Benita using 3233
■	10:30 AM – 12:08 PM	AA flight 2129 departs DCA 1030am arrives Boston

		@12:08pm
■	11:00 AM – 1:00 PM	Karen Gude using 3233 Ross, David P
■	3:00 PM – 4:00 PM	Meeting with Great Bay Coalition McConnell Center, 61 Locust Street, Dover, NH, Room 305
□	**After 6:00 PM**	**Free**

Wed, Feb 7

□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 8:00 AM**	**Free**
■	8:00 AM – 9:00 AM	Breakfast with Dave Ross TBD Dunn, Alexandra
■	8:00 AM – 6:00 PM	Regional Review Boston - R1 Boston, Mass. 3233 WJC EAST Best-Wong, Benita
■	9:00 AM – 12:00 PM	FYI Tour of the Mystic River Watersheds
■	1:45 PM – 2:30 PM	FYI - Region 1 All Hands Meetings
■	3:00 PM – 3:15 PM	ANPC Call in [redacted] and passcode [redacted]
▨	3:30 PM – 4:00 PM	Sr Leaders call regarding potential Shutdown WJCN 3346, VTC/Call in information below Richardson, RobinH
□	**6:00 PM – 7:00 PM**	**Free**
■	7:00 PM – 8:54 PM	AA fligh 2120 departs BOS @ 7:00pm arrives DCA @ 8:54pm
□	**After 8:54 PM**	**Free**

Thu, Feb 8

□	All Day	Crystal E - Telework
□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 8:00 AM**	**Free**
■	8:00 AM – 6:00 PM	Hold - Regional Review Boston - R1 Boston, Mass. 3233 WJC EAST Best-Wong, Benita
■	1:00 PM – 2:00 PM	Longterm planning 3219A WJCE Ross, David P
■	2:45 PM – 3:15 PM	Interview Prep 3219A WJCE Ross, David P
■	3:30 PM – 3:45 PM	Politico Interview TBD Ross, David P

■	4:00 PM – 4:30 PM	General Discussion with David 3402 WJC-N Jackson, Ryan
■	5:00 PM – 5:30 PM	Meeting with Sasha Koo Oshima 3219A WJCE Ross, David P
□	**After 6:00 PM**	**Free**

Fri, Feb 9

□	All Day	Crystal P - Leaving @ 1:30pm
□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 8:45 AM**	**Free**
■	8:45 AM – 9:00 AM	Daily Check in 3219A WJCE Call in [redacted] passcode [redacted] Ross, David P
□	**9:00 AM – 9:30 AM**	**Free**
■	9:30 AM – 10:00 AM	Meet and Greet with Bill Wehrum and David Ross WJC-N 5406 (Bill Wehrum's Office) Wehrum, Bill
■	10:00 AM – 11:00 AM	Meet and Greet with Ryan Fisher 1201 Constitution Ave NW, Washington DC 20460 WJCE 3219A Please call [redacted] for escort Ross, David P
■	11:00 AM – 11:45 AM	Weekly Planning Call in [redacted] passcode [redacted]. 3219A WJCE Ross, David P
□	**11:45 AM – 1:00 PM**	**Free**
■	1:00 PM – 2:00 PM	General Dave's Office Fotouhi, David
■	2:00 PM – 2:30 PM	Draft 2018 Spring Reg Agenda 3219A WJCE Ross, David P
□	**2:30 PM – 3:00 PM**	**Free**
■	3:00 PM – 3:45 PM	General Call in [redacted] passcode [redacted]. 3219A WJCE Ross, David P
□	**3:45 PM – 5:00 PM**	**Free**
□	**5:00 PM – 5:30 PM**	**Free**
■	5:30 PM – 6:00 PM	Call with Senator Carper Ross, David P
□	**After 6:00 PM**	**Free**

Sat, Feb 10 – Sun, Feb 11

☐	**All Day**	**Free**

Mon, Feb 12

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:00 AM**	**Free**
▨	9:00 AM – 10:30 AM	OW Monthly Business Review Call in [redacted] passcode [redacted] 3233 WJC East Best-Wong, Benita
■	10:30 AM – 11:00 AM	Meet and Greet Timothy Petty -Dept of Interior 1201 Constitution Ave NW, Washington DC 20460 WJCE 3219A Ross, David P
■	11:00 AM – 12:00 PM	Office Hours
☐	**12:00 PM – 1:00 PM**	**Free**
■	1:00 PM – 2:00 PM	PCC Options Call in [redacted] passcode [redacted] 1201 Constitution Ave NW Washington DC 20460 WJCe 3233 Please call [redacted] for escort Ross, David P
☐	**2:00 PM – 4:00 PM**	**Free**
■	4:00 PM – 4:45 PM	Regulatory Flexibility Act and WOS Program Position for Federal Rulemakings 3233 WJCE; Call in [redacted] passcode [redacted] Ross, David P
☐	**4:45 PM – 5:00 PM**	**Free**
■	5:00 PM – 5:30 PM	Meet and Greet 3219A WJCE Ross, David P
☐	**After 5:30 PM**	**Free**

Tue, Feb 13

☐	All Day	Ann Telework
☐	All Day	Crystal E - Telework
☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 9:45 AM	Steam Electric Effluent Guidelines 3233 WJCE Call in [redacted] passcode [redacted] Ross, David P
☐	**9:45 AM – 10:00 AM**	**Free**
■	10:00 AM – 10:30 AM	Meeting with the Michigan Council of Governments 1201 Constitution Ave NW, Washington DC 20460 WJCE 3233 Please call [redacted] for escort Ross, David P

☐	**10:30 AM – 10:45 AM**	**Free**
■	10:45 AM – 11:15 AM	Meeting with Marc Himmelstein 1201 Constitution Ave NW, Washington DC 20640 3219A WJCE Please call [redacted] for escort Ross, David P
■	11:15 AM – 12:00 PM	State and Tribal 404 Assumption 3233 WJCE Call in [redacted] passcode [redacted] Ross, David P
☐	**12:00 PM – 1:00 PM**	**Free**
■	1:00 PM – 3:00 PM	Office Hours
■	2:00 PM – 2:30 PM	General 3219A WJCE Ross, David P
☐	**3:00 PM – 3:15 PM**	**Free**
■	3:15 PM – 4:00 PM	Potential Regulatory Options for Perchlorate 3233 WJCE Call in [redacted] passcode [redacted] Ross, David P
■	4:00 PM – 4:30 PM	Transportation to EEOB WJCN Courtyard Dravis, Samantha
■	4:30 PM – 5:30 PM	EPA/OW Environmental Discussion EEOB 229 Szabo, Aaron L. [redacted]
■	5:30 PM – 6:00 PM	Return Transportation to WJCN is not available Dravis, Samantha
☐	**After 6:00 PM**	**Free**

Wed, Feb 14

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:30 AM**	**Free**
■	9:30 AM – 10:30 AM	Office Hours
☐	**10:30 AM – 12:00 PM**	**Free**
■	12:00 PM – 1:00 PM	Lunch
☐	**1:00 PM – 3:00 PM**	**Free**
■	3:00 PM – 3:15 PM	Car confirmed Ross, David P
■	3:15 PM – 3:45 PM	Sen. Blunt and Members of Missouri Delegation Meeting w/ AA Ross SR-260 Rodrick, Christian
☐	**3:45 PM – 3:50 PM**	**Free**
■	3:50 PM – 4:05 PM	car confirmed Ross, David P
☐	**4:05 PM – 5:00 PM**	**Free**

☐	**After 5:00 PM**	**Free**

Thu, Feb 15

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 11:00 AM**	**Free**
■	11:00 AM – 11:30 AM	Call with R2 Peter to call Dave directly [redacted] Ross, David P
■	11:30 AM – 12:00 PM	Puerto Rico 3219A WJCE Call in [redacted] passcode [redacted] Ross, David P
■	12:00 PM – 1:00 PM	Lunch
■	1:00 PM – 1:30 PM	WOTUS - Step 2 Rule Baseline 3219A WJCE Call in [redacted] passcode [redacted] Ross, David P
■	1:30 PM – 2:00 PM	Office Hours
■	2:00 PM – 3:00 PM	Principals Meeting on Reducing Childhood Lead Exposures Green Room [redacted]
☐	**3:00 PM – 3:30 PM**	**Free**
▨	3:30 PM – 4:00 PM	Meeting with Pulp & Paperworkers' Resource Council 1201 Constitution Ave NW, Washington DC 20460, WJCE 3233 Please call [redacted] for escort Ross, David P
■	4:00 PM – 5:00 PM	Office Hours
☐	**After 5:00 PM**	**Free**

Fri, Feb 16

☐	All Day	Ann Compressed
☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 8:00 AM**	**Free**
■	8:00 AM – 6:00 PM	OOO
■	11:00 AM – 11:45 AM	Briefing: 404 Assumption and Army Corps Administrator's Office / Dial-In for those traveling: [redacted] Code [redacted] [redacted]
■	3:00 PM – 3:30 PM	Conference Call with Craig Butler Please call Mr. Butler @ [redacted] Ross, David P
☐	**After 6:00 PM**	**Free**

Sat, Feb 17 – Sun, Feb 18

☐	**All Day**	**Free**

Mon, Feb 19

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 8:00 AM**	**Free**
■	8:00 AM – 5:00 PM	President's Day
☐	**After 5:00 PM**	**Free**

Tue, Feb 20

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:15 AM**	**Free**
■	9:15 AM – 9:30 AM	Mini Van confirmed Ross, David P
▨	9:30 AM – 10:00 AM	Conservation Technology Information Center 425 3rd Street SW, Washington DC Ross, David P
■	10:00 AM – 10:30 AM	Mini Van confirmed Ross, David P
☐	**10:30 AM – 1:30 PM**	**Free**
■	1:30 PM – 6:00 PM	Damaris Christensen using 3233 Ross, David P
■	2:00 PM – 3:00 PM	Senior Staff
■	2:00 PM – 3:15 PM	WOTUS Webinar for Tribes 3233 WJCE Ross, David P
■	3:30 PM – 4:45 PM	WOTUS Webinar for States 3233 WJCE Ross, David P
☐	**After 6:00 PM**	**Free**

Wed, Feb 21

☐	**Before 1:00 AM**	**Free**
■	1:00 AM – 1:30 AM	2
☐	**1:30 AM – 7:30 AM**	**Free**
☐	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 12:00 PM	Office Hours
■	9:30 AM – 10:00 AM	Benita using 3233
■	10:00 AM – 10:15 AM	Filing Ross, David P
■	12:00 PM – 1:00 PM	Lunch
☐	**1:00 PM – 3:00 PM**	**Free**
■	3:00 PM – 3:45 PM	Overview of OW's Homeland Security Mission

		3233 WJCE Call in [redacted] passcode [redacted] Ross, David P
■	3:45 PM – 4:30 PM	WOTUS 7129 WJCW Ross, David P
□	**4:30 PM – 5:00 PM**	**Free**
□	**After 5:00 PM**	**Free**

Thu, Feb 22

□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 9:30 AM	Conference Call with The Nature Conservancy Call in [redacted] passcode [redacted] 1201 Constitution Ave NW, Washington DC 20004 3233 WJCe Please call [redacted] for escort Ross, David P
□	**9:30 AM – 1:00 PM**	**Free**
■	1:00 PM – 1:30 PM	Office Hours
□	**1:30 PM – 2:00 PM**	**Free**
▨	2:00 PM – 2:30 PM	Meeting with the Perchlorate Study Group (PSG) 1201 Constitution Ave NW, Washington DC 20460 WJCE 3219 Please call [redacted] for escort Ross, David P
□	**2:30 PM – 3:00 PM**	**Free**
■	3:00 PM – 3:45 PM	Overview of EPA's Proposed Rule to establish Aluminum Criteria for Oregon 3233 WJCE Call in [redacted] passcode [redacted] Ross, David P
□	**3:45 PM – 4:00 PM**	**Free**
■	4:00 PM – 4:30 PM	Meeting with National Association of Home Builders (NAHB) 1201 Constitution Ave NW, Washington Dc 20460 3233 WJCE Please call [redacted] for escort Ross, David P
■	4:30 PM – 5:15 PM	Hells Canyon and Site-Specific Temp Criteria 3233 WJCE Call in [redacted] passcode [redacted] Ross, David P
□	**5:15 PM – 5:30 PM**	**Free**
▨	5:30 PM – 7:30 PM	Staff Gathering Proper 21, 1319 F St NW Cory, Preston (Katherine)
□	**After 7:30 PM**	**Free**

Fri, Feb 23

☐	All Day	Ann OOO
☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 9:30 AM	Discussion of Florida 404 Assumption Call in # [redacted] - pass [redacted] Forsgren, Lee
■	9:30 AM – 10:00 AM	External speaking engagements 3219A WJCE Ross, David P
■	10:00 AM – 10:30 AM	Meeting with AFPM 1201 Constitution Ave NW, Washington DC 20460 WJCE 3233 Please call [redacted] for escort Ross, David P
■	10:30 AM – 12:00 PM	Office Hours
☐	**12:00 PM – 5:00 PM**	**Free**
☐	**After 5:00 PM**	**Free**

Sat, Feb 24

☐	**All Day**	**Free**

Sun, Feb 25

☐	**Before 7:00 AM**	**Free**
■	7:00 AM – 9:20 AM	Western Governors Association Breakfast / DC Fly-In Green Room [redacted]
☐	**After 9:20 AM**	**Free**

Mon, Feb 26

☐	All Day	Ann OOO
☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 11:30 AM**	**Free**
■	11:30 AM – 12:00 PM	Meeting with Jeff Little John 3219A; William Jefferson Building EAST Ross, David P
■	12:00 PM – 1:30 PM	FW: Ceremonial Swearing-In for Matt Leopold as EPA's General Counsel EPA Headquarters, U.S. EPA Rachel Carson Green Room (1200 Pennsylvania Avenue NW) Leopold, Matt
▨	1:00 PM – 1:45 PM	WOTUS Tribal Consultation Meeting 3233 WJCE [redacted] code [redacted] Ross, David P
☐	**1:45 PM – 4:15 PM**	**Free**

■	4:15 PM – 5:00 PM	Idaho Program Authorization and Criminal Intent Standard 3233 WJCE Call in [redacted] passcode [redacted] Ross, David P
☐	**After 5:00 PM**	**Free**

Tue, Feb 27

☐	All Day	Ann OOO
☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 8:00 AM**	**Free**
■	8:00 AM – 8:45 AM	General 3204 WJC-South Bodine, Susan
☐	**8:45 AM – 9:00 AM**	**Free**
■	9:00 AM – 9:30 AM	Meeting UWAG 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call [redacted] for escort Ross, David P
■	9:30 AM – 10:00 AM	Van departs for EEOB WJCN Courtyard Dravis, Samantha
■	10:00 AM – 11:00 AM	EPA/OW/OGC/RFA Meeting - WAVES Link attached EEOB 248 Dravis, Samantha
■	11:00 AM – 11:30 AM	Return Transportation EEOB Dravis, Samantha
☐	**11:30 AM – 3:30 PM**	**Free**
■	3:30 PM – 4:00 PM	Ohio 3219A WJCE Ross, David P
☐	**4:00 PM – 4:30 PM**	**Free**
■	4:30 PM – 5:15 PM	General wth Sarah Greenwalt 3219A WJCE Ross, David P
☐	**After 5:15 PM**	**Free**

Wed, Feb 28

☐	All Day	Ann OOO
☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 9:30 AM	Informational Briefing - Blending 3233 WJCe Call in [redacted] passcode [redacted] Ross, David P

■	9:30 AM – 10:00 AM	Discussion: 404 Assumptions David's Office (Room 3219A Bldg WJCE) Glenn, Trey
□	**10:00 AM – 10:30 AM**	**Free**
■	10:30 AM – 11:15 AM	WOTUS 3233 WJCE Call in [redacted] code [redacted] Ross, David P
□	**11:15 AM – 12:00 PM**	**Free**
■	12:00 PM – 1:00 PM	Lunch
□	**1:00 PM – 2:30 PM**	**Free**
■	2:30 PM – 3:00 PM	Car confirmed
■	3:00 PM – 4:00 PM	Meeting with Assistant Secretary Timothy Petty Dept of Interior Ross, David P
■	At 4:00 PM	TRAVEL TIME ***UBER***
□	**4:00 PM – 4:30 PM**	**Free**
■	4:30 PM – 4:45 PM	Prebrief on extending the classification of two water-related documents. 3219A WJCe Ross, David P
□	**4:45 PM – 5:00 PM**	**Free**
□	**After 5:00 PM**	**Free**

March 2018

Thu, Mar 1

□	All Day	Ann OOO
□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 9:30 AM**	**Free**
■	9:30 AM – 10:00 AM	Meeting with Packaging Corporation of America (PCA) 1201 Constitution Ave NW; 3219 WJCE; Please call 202-[redacted] for escort Ross, David P
□	**10:00 AM – 1:00 PM**	**Free**
■	1:00 PM – 2:00 PM	WOTUS Rulemaking Analyses 3233 WJCE Call in [redacted] passcode [redacted] Ross, David P
□	**2:00 PM – 2:30 PM**	**Free**
■	2:30 PM – 3:00 PM	Meeting with National Mining Association 1201 Constitution Ave NW, Washington DC 20460 WJCE 3233 Please call [redacted] for escort Ross, David P
■	3:00 PM – 3:30 PM	Ohio/EPA Follow up

		3219A WJCE Call in [redacted] passcode [redacted] Ross, David P
☒	3:00 PM – 4:00 PM	Water Division Directors Monthly Call [redacted] code: [redacted] HQ meet in room 3233E Balasa, Kate
☒	3:00 PM – 4:00 PM	WDD meeting in 3233 Ross, David P
■	3:30 PM – 4:15 PM	Briefing: CWA Groundwater Conduit Issue Administrator's Office [redacted]
■	4:15 PM – 4:45 PM	Office Hours
☐	**4:45 PM – 5:00 PM**	**Free**
☒	5:00 PM – 6:00 PM	Shellfish Aquaculture/NWP 48 Materials 3219B WJCE Call in [redacted] passcode [redacted] Forsgren, Lee
☐	**After 6:00 PM**	**Free**

Fri, Mar 2

☐	All Day	Ann OOO
☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 10:00 AM**	**Free**
■	10:00 AM – 10:30 AM	Meeting with Tracy Mehan 1201 Constitution Ave NW, Washington DC 20460 WJCE 3219A Please call [redacted] for escort Ross, David P
☐	**10:30 AM – 1:30 PM**	**Free**
■	1:30 PM – 3:10 PM	Leave for airport
■	3:10 PM – 4:31 PM	Delta flight 6117 departs DCA @ 3:10PM arrives MSN @ 4:31PM
☐	**4:31 PM – 5:00 PM**	**Free**
☐	**After 5:00 PM**	**Free**

Sat, Mar 3

☐	**All Day**	**Free**

Sun, Mar 4

☐	**Before 5:15 PM**	**Free**
■	5:15 PM – 8:13 PM	Delta flight 5998 departs MSN @ 5:15pm arrives DCA @ 8:13PM
☐	**After 8:13 PM**	**Free**

Mon, Mar 5

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 10:00 AM	Louise Kitamura using 3233. Ross, David P
■	9:10 AM – 9:40 AM	Pre-Brief: Cabinet Cyber Meeting Administrator's Office [redacted]
■	10:00 AM – 12:00 PM	Office Hours
■	10:30 AM – 10:45 AM	Benefits. 3219A WJCE Ross, David P
■	12:00 PM – 12:30 PM	Meet and Greet with Ted Stanich. 3219A WJCE Ross, David P
■	12:30 PM – 1:00 PM	Lunch
■	1:00 PM – 1:45 PM	Pre-brief for WOTUS State and Tribal in person meetings 3233 WJCe Call in [redacted] passcode [redacted] Ross, David P
☐	**1:45 PM – 4:45 PM**	**Free**
■	4:45 PM – 5:15 PM	General with Peter Grevatt. 3219A WJCE Ross, David P
☐	**After 5:15 PM**	**Free**

Tue, Mar 6

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:00 AM**	**Free**
▨	9:00 AM – 10:30 AM	WOTUS Tribal Workshop 1153 WJCE
■	10:30 AM – 11:00 AM	Briefing: WOTUS Administrator's Office [redacted]
■	11:00 AM – 12:00 PM	WOTUS Tribal Workshop 1153 WJCE
☐	**12:00 PM – 1:00 PM**	**Free**
■	1:00 PM – 1:45 PM	Background briefing for OW on ORD's Safe and Sustainable Water Resources Program WJC-E 3233; via video to Joe; call-in: [redacted] code: [redacted] Orme-Zavaleta, Jennifer
☐	**1:45 PM – 2:00 PM**	**Free**
■	2:00 PM – 2:30 PM	Car Confirmed
■	2:30 PM – 3:15 PM	Ross, David (09-14) **NEW* TDY-EPA Brazil x 5 days, leaving on 03/16, [redacted] *See body of INVITE*

		2401 E St., NW, Washington D.C. 20521 Calendar MED HU Domestic
■	3:15 PM – 3:45 PM	Car confirmed
☐	**3:45 PM – 5:00 PM**	**Free**
☐	**After 5:00 PM**	**Free**

Wed, Mar 7

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 10:30 AM	WOTUS Tribal Workshop
■	10:30 AM – 12:00 PM	Office Hours
☐	**12:00 PM – 3:15 PM**	**Free**
■	3:15 PM – 5:00 PM	WOTUS Tribal Workshop 1153 WJCE
■	4:00 PM – 5:00 PM	Lee using 3233
☐	**After 5:00 PM**	**Free**

Thu, Mar 8

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 8:45 AM**	**Free**
■	8:45 AM – 9:00 AM	Daily Check in 3219A WJCE Ross, David P
■	9:00 AM – 12:00 PM	WOTUS 1153 WJCE
☐	**12:00 PM – 1:00 PM**	**Free**
■	1:00 PM – 2:30 PM	Benita Using 3233
■	1:15 PM – 2:30 PM	WOTUS 1153 WJCE
■	2:30 PM – 3:15 PM	Meeting w/ OH EPA 1201 Constitution Ave NW, Washington DC 20004 WJCE 3219A Please call [redacted] for escort Ross, David P
■	3:15 PM – 3:30 PM	General Call Brittany Bolen direct [redacted] Ross, David P
■	3:30 PM – 5:00 PM	WOTUS 1153 WJCE
☐	**After 5:00 PM**	**Free**

Fri, Mar 9

☐	**Before 7:30 AM**	**Free**

☐	**7:30 AM – 9:30 AM**	**Free**
■	9:30 AM – 11:15 AM	WOTUS 1153 WJCE Ross, David P
▨	11:15 AM – 11:45 AM	WOTUS 1153 WJCE
☐	**11:45 AM – 12:00 PM**	**Free**
■	12:00 PM – 1:00 PM	Lunch with Provi Spina TBD Ross, David P
☐	**1:00 PM – 3:15 PM**	**Free**
■	3:15 PM – 5:00 PM	WOTUS 1153 WJCE
☐	**After 5:00 PM**	**Free**

Sat, Mar 10 – Sun, Mar 11

☐	**All Day**	**Free**

Mon, Mar 12

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 1:00 PM**	**Free**
■	1:00 PM – 1:45 PM	Water Infrastructure and Resiliency Finance Center Overview 3233 WJCE Call in [redacted] passcode [redacted] Ross, David P
☐	**1:45 PM – 4:00 PM**	**Free**
■	4:00 PM – 4:30 PM	Meeting with Al McGartland 3219A WJCE Ross, David P
☐	**4:30 PM – 5:00 PM**	**Free**
☐	**After 5:00 PM**	**Free**

Tue, Mar 13

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:15 AM**	**Free**
■	9:15 AM – 9:45 AM	General with Brittany Bolen 3219A WJCE or call Dave direct [redacted] Ross, David P
☐	**9:45 AM – 10:00 AM**	**Free**
■	10:00 AM – 10:30 AM	Office Hours
■	10:30 AM – 11:00 AM	Meeting: Lead Vision Alm Room; Call-In (use only if out of town):

[redacted] Code [redacted] Media Office to Initiate: Pin [redacted]
[redacted]

■	11:00 AM – 12:00 PM	Office Hours
■	12:00 PM – 1:30 PM	Benita using 3233
□	**1:30 PM – 5:00 PM**	**Free**
□	**5:00 PM – 6:30 PM**	**Free**
■	6:30 PM – 7:00 PM	Dinner Acqua al 2 - 212 7th Street SE, Washington DC 20003 Wagner, Kenneth
□	**After 7:00 PM**	**Free**

Wed, Mar 14

□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 10:00 AM	Office Hours
■	10:00 AM – 10:30 AM	Briefing: Steam Electric ELG Revisions Administrator's Office [redacted]
■	10:30 AM – 12:00 PM	Exclusions and Ditches 3233 WJCE Call in [redacted] code [redacted] Ross, David P
■	12:00 PM – 1:00 PM	Lunch
■	1:00 PM – 1:10 PM	Meeting with Henry Darwin 3402 WJCN Ross, David P
■	1:10 PM – 1:30 PM	Meeting with Henry Darwin 3402 WJCN Ross, David P
□	**1:30 PM – 2:00 PM**	**Free**
■	2:00 PM – 2:45 PM	EPA/OIRA Conference Call: Step 2 - Call in: [redacted] [redacted] Participant ID: [redacted] 3219 EPA East Dravis, Samantha
□	**2:45 PM – 3:30 PM**	**Free**
■	3:30 PM – 5:00 PM	Office Hours
■	5:00 PM – 5:45 PM	WOTUS Call in [redacted] passcode [redacted] 3219A WJCE Ross, David P
□	**After 5:45 PM**	**Free**

Thu, Mar 15

□	**Before 7:30 AM**	**Free**
□		

	7:30 AM – 9:00 AM	**Free**
■	9:00 AM – 9:45 AM	Lead and Copper Rule 3233 WJCE Call in [redacted] passcode [redacted] Ross, David P
☐	**9:45 AM – 12:00 PM**	**Free**
■	12:00 PM – 12:30 PM	Car confirmed Ross, David P
■	12:30 PM – 1:00 PM	ICWP- WSWC Washington DC Roundtable Crystal Gateway Marriott 1700 Jefferson Davis Highway, Arlington VA 22202
■	1:00 PM – 1:30 PM	Car confirmed Ross, David P
☐	**1:30 PM – 2:00 PM**	**Free**
■	2:00 PM – 2:30 PM	Blending 3219A WJCE Ross, David P
■	2:30 PM – 3:00 PM	Meet and Greet (OW-OIG) 3219A WJCE Ross, David P
☐	**3:00 PM – 3:45 PM**	**Free**
■	3:45 PM – 4:00 PM	General w/ Peter Grevatt 3219A WJCE Ross, David P
☐	**4:00 PM – 4:30 PM**	**Free**
■	4:30 PM – 5:00 PM	WOTUS w/ Mindy 3219A WJCE Ross, David P
☐	**After 5:00 PM**	**Free**

Fri, Mar 16

☐	All Day	Ann Compressed
☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:15 AM**	**Free**
■	9:15 AM – 9:45 AM	Call: PFAS Letter [redacted] Code [redacted] Lincoln to initiate: Pin [redacted] [redacted]
☐	**9:45 AM – 10:00 AM**	**Free**
■	10:00 AM – 12:00 PM	Office Hours
■	11:00 AM – 11:30 AM	WOTUS catch up 3219A Eisenberg, Mindy
■	11:00 AM – 12:00 PM	Benita using 3233
☐	**12:00 PM – 1:00 PM**	**Free**

■	1:00 PM – 1:30 PM	Call with Liz Bowman Call David direct [redacted] or cell [redacted] Ross, David P
□	**1:30 PM – 2:30 PM**	**Free**
■	2:30 PM – 3:00 PM	General with Deborah Nagle 3219A WJCE Ross, David P
■	3:00 PM – 4:00 PM	Benita using 3233
□	**4:00 PM – 5:00 PM**	**Free**
□	**After 5:00 PM**	**Free**

Sat, Mar 17 – Sun, Mar 18

□	**All Day**	**Free**

Mon, Mar 19

□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 8:45 AM**	**Free**
■	8:45 AM – 9:00 AM	Daily check in 3219A WJCE Ross, David P
■	9:00 AM – 9:30 AM	Weekly Planning 3219A WJCE Ross, David P
■	9:00 AM – 5:00 PM	Office Hours
■	12:00 PM – 1:00 PM	Lunch
■	1:30 PM – 1:45 PM	208 Letters 3219A WJCE Ross, David P
■	4:00 PM – 4:30 PM	Pre-Brief: Media Roundtable Administrator's Office [redacted]
□	**After 5:00 PM**	**Free**

Tue, Mar 20

□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 8:45 AM**	**Free**
■	8:45 AM – 9:00 AM	Daily check in Call in [redacted] passcode [redacted] 3219A WJCE Ross, David P
■	9:00 AM – 5:00 PM	Office Hours
■	9:30 AM – 10:00 AM	Briefing: WIFIA Loan Program Administrator's Office [redacted]

■	10:00 AM – 10:15 AM	Meeting Administrator's Office [redacted]
▨	10:15 AM – 11:00 AM	Priorities for Finalizing Portions of the NPDES Update Rule 3233 WJCE Call in [redacted] passcode [redacted] Forsgren, Lee
■	10:30 AM – 11:30 AM	Dave's Planning time
■	11:30 AM – 12:00 PM	Illinois River Call [redacted] code [redacted] Gray, David
■	12:00 PM – 12:30 PM	Brownbag: ECOS Prep call in [redacted] passcode [redacted] 3219A WJCE Ross, David P
■	12:30 PM – 1:00 PM	Lunch
■	2:00 PM – 3:00 PM	Follow up on Tributaries and Ditches 3233 WJCE Call in [redacted] passcode [redacted] Ross, David P
■	3:15 PM – 4:00 PM	IO Overview Program 3233 WJCE Ross, David P
▨	4:15 PM – 5:00 PM	Bi Weekly w/ OWOW 3233 WJCE Call in [redacted] passcode [redacted] Ross, David P
■	4:30 PM – 5:00 PM	General w/OW WJC-N 4000 Leopold, Matt
□	**After 5:00 PM**	**Free**

Wed, Mar 21

□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 8:45 AM**	**Free**
■	8:45 AM – 9:00 AM	Daily check in Call in [redacted] passcode [redacted] 3219A WJCE Ross, David P
■	9:00 AM – 5:00 PM	Office Hours
■	10:30 AM – 11:30 AM	Follow up from States Discussion and Schedule 3233 WJCE Call in [redacted] passcode [redacted] Ross, David P
■	12:00 PM – 1:00 PM	Lunch
□	**After 5:00 PM**	**Free**

Thu, Mar 22

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 9:30 AM	Briefing: Delegation of CWA Authority Administrator's Office / [redacted] Code [redacted] [redacted]
☐	**9:30 AM – 12:00 PM**	**Free**
■	12:00 PM – 1:00 PM	Senior Leaders Contingency Planning for Potential Shutdown EPA HQ WJC 3346 (OARM's Conference Room) RegionalOperations
☐	**1:00 PM – 5:00 PM**	**Free**
☐	**After 5:00 PM**	**Free**

Fri, Mar 23

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 5:00 PM	Office Hours
■	9:30 AM – 10:15 AM	Briefing: Lead and Copper Rule Administrator's Office [redacted]
■	11:00 AM – 11:30 AM	OIG Biosolids Review 3219A WJCE Ross, David P
■	12:00 PM – 1:00 PM	Lunch
☐	**After 5:00 PM**	**Free**

Sat, Mar 24

☐	**All Day**	**Free**

Sun, Mar 25

☐	**Before 6:25 PM**	**Free**
■	6:25 PM – 9:57 PM	DL flight 1187 departs MSP @ 6:25pm arrives DCA @ 9:57pm
☐	**After 9:57 PM**	**Free**

Mon, Mar 26

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 7:45 AM**	**Free**
■	7:45 AM – 8:15 AM	WIFIA 3219A WJCE Call in [redacted] passcode [redacted] Ross, David P

☐	**8:15 AM – 8:45 AM**	**Free**
■	8:45 AM – 9:00 AM	Daily Check in 3219A WJCE Ross, David P
☐	**9:00 AM – 1:30 PM**	**Free**
■	1:30 PM – 2:00 PM	General with Mindy Eisenberg 3219A WJCE Ross, David P
■	2:00 PM – 2:30 PM	Meeting with Al McGartland 3219A WJCE Ross, David P
☐	**2:30 PM – 5:00 PM**	**Free**
☐	**After 5:00 PM**	**Free**

Tue, Mar 27

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 2:00 PM**	**Free**
■	2:00 PM – 2:30 PM	Catch Up w/Dave Ross Dave to call the Under Secretary; [redacted] Northey, Bill - OSEC, Washington, DC
■	2:30 PM – 3:00 PM	Meeting with Ducks Unlimited 1201 Constitution Ave NW, Washington DC 20004 WJCE 3219B Please call [redacted] for escort Forsgren, Lee
☐	**3:00 PM – 3:30 PM**	**Free**
■	3:30 PM – 4:00 PM	Five-Year Recreational Criteria Review 3219A WJCE Ross, David P
■	4:00 PM – 5:00 PM	FY18 Operating Plan EPA HQ WJC 3346 (OARM's Conference Room) RegionalOperations
☐	**After 5:00 PM**	**Free**

Wed, Mar 28

☐	All Day	Ann OOO
☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:30 AM**	**Free**
■	9:30 AM – 10:30 AM	WIFIA - NOFA 3219A WJCE Ross, David P
■	10:30 AM – 11:30 AM	Wetlands 3233 WJCE Call in [redacted] passcode [redacted] Ross, David P

☐	**11:30 AM – 11:45 AM**	**Free**
■	11:45 AM – 12:00 PM	General with Deborah Nagle 3219A WJCE Ross, David P
■	12:00 PM – 12:30 PM	Lunch
■	12:30 PM – 1:00 PM	Car confirmed
■	1:00 PM – 2:00 PM	DC Water's Anacostia River Tunnel System Grand Opening Celebration 2600 Independence Ave SE (parking available in RFK Stadium's Lot 8)
■	2:00 PM – 2:30 PM	Car confirmed
☐	**2:30 PM – 5:00 PM**	**Free**
■	5:00 PM – 5:30 PM	WIFIA 3219A WJCE Ross, David P
☐	**After 5:30 PM**	**Free**

Thu, Mar 29

☐	All Day	Ann OOO
☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 9:30 AM	Update from Region 9 WJC East 3219A (enter from consitution ave) Strauss, Alexis
☐	**9:30 AM – 1:00 PM**	**Free**
■	1:00 PM – 1:45 PM	WOTUS - Economics 3219A WJCE Ross, David P
☐	**1:45 PM – 2:00 PM**	**Free**
■	2:00 PM – 2:45 PM	Meet and Greet Ross/Orme-Zavaleta WJC-E 3219A Orme-Zavaleta, Jennifer
☐	**2:45 PM – 3:00 PM**	**Free**
▨	3:00 PM – 3:45 PM	The 2017 Campus Rain Works Challenge 3233 WJCE Call in [redacted] passcode [redacted] Ross, David P
☐	**3:45 PM – 4:30 PM**	**Free**
■	4:30 PM – 5:00 PM	General w/ Peter Grevatt 3219A WJCE Ross, David P
☐	**After 5:00 PM**	**Free**

Fri, Mar 30

☐	All Day	Ann OOO
☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 8:00 AM**	**Free**
■	8:00 AM – 5:00 PM	OOO Drive
☐	**After 5:00 PM**	**Free**

Sat, Mar 31

☐	**All Day**	**Free**

April 2018

Sun, Apr 1

☐	**Before 5:15 PM**	**Free**
■	5:15 PM – 8:13 PM	Delta flight 5938 departs MSN @ 5:15pm arrives MSN @ 8:13pm
☐	**After 8:13 PM**	**Free**

Mon, Apr 2

☐	All Day	Ann OOO
☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 1:00 PM**	**Free**
■	1:00 PM – 1:45 PM	OIG Biosolids Report 3219A WJCE Ross, David P
☐	**1:45 PM – 2:00 PM**	**Free**
■	2:00 PM – 3:00 PM	Senior Staff Meeting Alm Room Smith, Walker
☐	**3:00 PM – 5:00 PM**	**Free**
☐	**After 5:00 PM**	**Free**

Tue, Apr 3

☐	All Day	Ann OOO
☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 9:30 AM	General with Mindy Eisenberg and John Goodin 3219A WJCE Ross, David P
☐	**9:30 AM – 1:00 PM**	**Free**

■	1:00 PM – 2:00 PM	WOTUS - Reg Texts Call in [redacted] passcode [redacted] 3219A WJCE Ross, David P
■	2:00 PM – 2:45 PM	Fish Consumption Rates -Washington, Idaho, Maine Call in [redacted] passcode [redacted] 3233 WJCE Ross, David P
□	**2:45 PM – 2:55 PM**	**Free**
■	2:55 PM – 3:15 PM	Briefing: New WIFIA NOFA Announcements Administrator's Office [redacted]
▨	3:00 PM – 4:00 PM	Mike Flynn Retirement celebration WJCN Suite 3330
□	**4:00 PM – 4:15 PM**	**Free**
■	4:15 PM – 4:30 PM	Briefing: Illinois River Alm Room / Video Conference with Region 6 [redacted]
□	**4:30 PM – 5:00 PM**	**Free**
□	**After 5:00 PM**	**Free**

Wed, Apr 4

□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 10:30 AM**	**Free**
■	10:30 AM – 11:30 AM	WOTUS Exclusions 3233 WJCE Call in [redacted] passcode [redacted] Ross, David P
□	**11:30 AM – 1:00 PM**	**Free**
■	1:00 PM – 2:30 PM	OW Bowling Chart 3412 WJCN Ross, David P
□	**2:30 PM – 3:00 PM**	**Free**
■	3:00 PM – 5:00 PM	IWQS Meeting w/ R10 1201 Constitution Ave NW, Washington DC 20640 WJCE 3233 Please call [redacted] for escort Ross, David P
□	**5:00 PM – 5:15 PM**	**Free**
■	5:15 PM – 5:45 PM	Update on Massachusetts and New Hampshire MS4 permits Call [redacted] Ross, David P
□	**5:45 PM – 11:30 PM**	**Free**
■	After 11:30 PM	\\\\\\\\-q2

Thu, Apr 5

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 1:00 PM**	**Free**
■	1:00 PM – 1:30 PM	Meeting with Tom Brennan 3219A WJCE Ross, David P
☐	**1:30 PM – 5:00 PM**	**Free**
☐	**After 5:00 PM**	**Free**

Fri, Apr 6

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 9:30 AM	Coffee
■	9:30 AM – 10:00 AM	General with Mindy Eisenberg and John Goodin 3219A WJCE Ross, David P
■	10:00 AM – 12:00 PM	Office Hours
☐	**12:00 PM – 5:00 PM**	**Free**
☐	**After 5:00 PM**	**Free**

Sat, Apr 7

☐	**All Day**	**Free**

Sun, Apr 8

☐	**Before 5:15 PM**	**Free**
■	5:15 PM – 8:13 PM	Delta flight 5998 departs MSN @ 5:15pm arrives DCA @ 8:13pm
☐	**After 8:13 PM**	**Free**

Mon, Apr 9

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 10:00 AM**	**Free**
■	10:00 AM – 10:30 AM	Prep for EOP WOTUS Discussion 3219A WJCE Bolen, Brittany
☐	**10:30 AM – 4:00 PM**	**Free**
■	4:00 PM – 5:00 PM	Reading/Review
■	5:00 PM – 6:00 PM	WOTUS 3219A WJCE Call in [redacted] passcode [redacted] Ross, David P

☐	**After 6:00 PM**	**Free**

Tue, Apr 10

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 11:30 AM**	**Free**
■	11:30 AM – 12:00 PM	Briefing: WOTUS Step 1 & Step 2 Administrator's Office [redacted]
☐	**12:00 PM – 4:00 PM**	**Free**
■	4:00 PM – 4:30 PM	Transportation to EEOB WJCN Courtyard Bolen, Brittany
■	4:30 PM – 5:30 PM	EPA and EOP Meeting: WOTUS - WAVES Link in Notes EEOB 229 Bolen, Brittany
■	5:30 PM – 6:00 PM	Note: Return Transportation is Not Available Bolen, Brittany
☐	**After 6:00 PM**	**Free**

Wed, Apr 11

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 10:00 AM**	**Free**
■	10:00 AM – 10:30 AM	Meeting with CEO of Suez North America 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call [redacted] for escort Ross, David P
☐	**10:30 AM – 1:00 PM**	**Free**
■	1:00 PM – 5:00 PM	Office Hours
■	5:00 PM – 6:00 PM	EPA's Incident Management and Communications for Executives (OW) HQ EOC Ops Room (WJCN 433) Eoc, Epahq
☐	**After 6:00 PM**	**Free**

Thu, Apr 12

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 11:00 AM**	**Free**
■	11:00 AM – 11:30 AM	Briefing: Blending at Publicly Owned Treatment Plants Administrator's Office [redacted]
■	11:30 AM – 12:00 PM	Office Hours
☐	**12:00 PM – 1:00 PM**	**Free**
■		

	1:00 PM – 1:45 PM	WIFIA Loan Docs Call in [redacted] passcode [redacted]. 3219A WJCE Ross, David P
	1:45 PM – 3:00 PM	**Free**
	3:00 PM – 3:30 PM	Meeting with NACWA 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call [redacted] for escort Ross, David P
	3:30 PM – 4:00 PM	**Free**
	4:00 PM – 4:30 PM	General with Mindy Eisenberg and John Goodin 3219A WJCE Ross, David P
	4:30 PM – 5:00 PM	**Free**
	After 5:00 PM	**Free**

Fri, Apr 13

	All Day	AC Compressed
	Before 7:30 AM	**Free**
	7:30 AM – 10:00 AM	**Free**
	10:00 AM – 11:45 AM	Office Hours
	11:45 AM – 12:15 PM	HOLD: Briefing: King County WIFIA Loan Administrator's Office [redacted]
	12:15 PM – 3:15 PM	**Free**
	3:15 PM – 4:00 PM	Meeting: RD James, Army Corps Administrator's Office [redacted]
	4:00 PM – 5:00 PM	**Free**
	After 5:00 PM	**Free**

Sat, Apr 14 – Sun, Apr 15

	All Day	**Free**

Mon, Apr 16

	All Day	Water Week
	Before 7:30 AM	**Free**
	7:30 AM – 10:00 AM	**Free**
	10:00 AM – 10:30 AM	Private
	10:30 AM – 1:00 PM	**Free**
	1:00 PM – 3:00 PM	Office Hours
	3:00 PM – 4:00 PM	**Free**

■	4:00 PM – 4:30 PM	CWA 404 Delegation Call in # [redacted] Conference extention [redacted] Participant code [redacted]
■	4:30 PM – 5:00 PM	General with Mindy Eisenberg and John Goodin 3219A WJCE Ross, David P
□	**After 5:00 PM**	**Free**

Tue, Apr 17

□	All Day	Water Week
□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 11:00 AM**	**Free**
■	11:00 AM – 12:00 PM	WOTUS TSD/ Econ 3233 WJCE Call in [redacted] passcode [redacted] Ross, David P
□	**12:00 PM – 1:30 PM**	**Free**
■	1:30 PM – 2:00 PM	Car confirmed
■	2:00 PM – 3:00 PM	National Water Policy Fly In (NACWA, WEF, WRF, WateReuse)
■	3:00 PM – 3:30 PM	Car confirmed
□	**3:30 PM – 5:00 PM**	**Free**
□	**After 5:00 PM**	**Free**

Wed, Apr 18

□	All Day	Water Week
□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 10:30 AM**	**Free**
■	10:30 AM – 11:30 AM	WOTUS Check in 3233 WJCE Call in [redacted] passcode [redacted] Ross, David P
■	11:30 AM – 12:00 PM	Ohio Options 3219A WJCE Ross, David P
□	**12:00 PM – 1:00 PM**	**Free**
■	1:00 PM – 2:45 PM	Office Hours
■	2:00 PM – 3:00 PM	Reading/Review
■	2:45 PM – 3:00 PM	Travel Time
■	3:00 PM – 4:00 PM	Interagency Review of the WOTUS Supplemental Notice Discussion Department of Justice, 950 Pennsylvania Ave., NW Room 2143

		Wood, Jeffrey (ENRD)
■	4:00 PM – 4:30 PM	Travel Time
■	4:30 PM – 5:00 PM	Meet and Greet with ACWA Call in [redacted] passcode [redacted] 1201 Constitution Ave NW, Washington DC 20004; WJCE 3219A; Please call [redacted] for escort Ross, David P
□	**After 5:00 PM**	**Free**

Thu, Apr 19

□	All Day	Water Week
□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 10:00 AM**	**Free**
■	10:00 AM – 10:45 AM	MA and NH Small MS4 Geneal Permits: Effective Date 3233 WJCE; Call in [redacted] passcode [redacted] Ross, David P
□	**10:45 AM – 1:00 PM**	**Free**
■	1:00 PM – 4:30 PM	Office Hours
■	4:30 PM – 5:30 PM	WOTUS Legal Framework 3233 WJCE Call in [redacted] passcode [redacted] Ross, David P
□	**After 5:30 PM**	**Free**

Fri, Apr 20

□	All Day	Water Week
□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 9:30 AM	WOTUS Small Group Discussion 3219 A WJC East Building Forsgren, Lee
■	9:00 AM – 12:00 PM	Office Hours
■	9:45 AM – 10:00 AM	Car confirmed
■	10:00 AM – 10:45 AM	Office of Water 1400 Independence Ave SW Room 227-E, Washington, DC 20250 Northey, Bill - OSEC, Washington, DC
■	10:50 AM – 11:00 AM	Car confirmed
□	**12:00 PM – 1:30 PM**	**Free**
■	1:30 PM – 2:00 PM	General w/ Mindy Eisenberg 3219A WJCE Ross, David P
□	**2:00 PM – 4:00 PM**	**Free**

■	4:00 PM – 5:00 PM	Reading/Review
□	**After 5:00 PM**	**Free**

Sat, Apr 21

□	**All Day**	**Free**

Sun, Apr 22

□	All Day	Earth Day!

Mon, Apr 23

□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 1:00 PM**	**Free**
■	1:00 PM – 5:00 PM	Office Hours
■	3:00 PM – 3:30 PM	Call w/ David Ross Call David [redacted] Stepp, Cathy
■	5:00 PM – 6:00 PM	WOTUS 3219A WJCE Call in [redacted] passcode [redacted] Ross, David P
□	**After 6:00 PM**	**Free**

Tue, Apr 24

□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 1:30 PM**	**Free**
■	1:30 PM – 2:30 PM	Reading/Review
□	**2:30 PM – 3:30 PM**	**Free**
■	3:30 PM – 4:00 PM	Hearing Prep: OW Administrator's Office [redacted]
□	**4:00 PM – 4:30 PM**	**Free**
■	4:30 PM – 5:00 PM	Meet and Greet with David Ross (OW) WJC-N 3412 Wheeler, Andrew
□	**After 5:00 PM**	**Free**

Wed, Apr 25

□	All Day	Administrative Professionals Day United States
□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 8:30 AM**	**Free**
■		

	8:30 AM – 9:30 AM	Migratory Bird Conservation Commission Meeting Department of the Interior (Main Building) 1849 C Street, NW, Washington DC
■	9:00 AM – 12:00 PM	Office Hours
■	9:30 AM – 10:00 AM	Travel time
■	10:30 AM – 11:30 AM	WOTUS Preamble 3233 WJCE Call in [redacted] passcode [redacted] Ross, David P
■	12:00 PM – 1:00 PM	Lunch
□	**1:00 PM – 3:00 PM**	**Free**
■	3:00 PM – 3:30 PM	Reading/Review
■	3:30 PM – 4:00 PM	Ohio 3219A WJCE Ross, David P
□	**4:00 PM – 5:00 PM**	**Free**
□	**After 5:00 PM**	**Free**

Thu, Apr 26

□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 9:30 AM**	**Free**
■	9:30 AM – 12:00 PM	OW 2016 Honor Awards 1153 WJCE Ross, David P
□	**12:00 PM – 1:00 PM**	**Free**
■	1:00 PM – 5:00 PM	Office Hours
□	**After 5:00 PM**	**Free**

Fri, Apr 27

□	All Day	AC Compressed
□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 12:00 PM	Office Hours
■	10:30 AM – 11:00 AM	General with Mindy Eisenberg and John Goodin 3219A WJCE Ross, David P
□	**12:00 PM – 1:00 PM**	**Free**
■	1:00 PM – 5:00 PM	Office Hours
■	2:00 PM – 3:00 PM	Reading/Review
□	**After 5:00 PM**	**Free**

Sat, Apr 28 – Sun, Apr 29

□	**All Day**	**Free**

Mon, Apr 30

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 3:30 PM**	**Free**
■	3:30 PM – 4:00 PM	Conference call with Craig Butler Call [redacted] Ross, David P
☐	**4:00 PM – 5:00 PM**	**Free**
☐	**After 5:00 PM**	**Free**

May 2018

Tue, May 1

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 1:00 PM**	**Free**
■	1:00 PM – 5:00 PM	Office Hours
■	3:00 PM – 4:00 PM	Reading/Review
☐	**After 5:00 PM**	**Free**

Wed, May 2

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 12:00 PM	Office Hours
■	12:00 PM – 1:00 PM	Lunch
■	1:00 PM – 1:40 PM	PARS ***DO NOT MOVE** 3219A WJCE Ross, David P
■	1:30 PM – 2:30 PM	Reading/Review
☐	**2:30 PM – 4:30 PM**	**Free**
■	4:30 PM – 5:00 PM	General with Peter Grevatt 3219A WJCE Ross, David P
☐	**After 5:00 PM**	**Free**

Thu, May 3

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 9:30 AM	Reading/Review
■	9:30 AM – 9:45 AM	General with Caroline Wahlen 3219A WJCE

		Ross, David P
☐	**9:45 AM – 12:00 PM**	**Free**
■	12:00 PM – 1:00 PM	Lunch
■	1:00 PM – 5:00 PM	Office Hours
■	3:45 PM – 4:00 PM	Chesapeake Bay Commission 1153 WJCE
■	4:00 PM – 4:45 PM	FW: Meeting with Hunton & Williams Matt's office Leopold, Matt
☐	**After 5:00 PM**	**Free**

Fri, May 4

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 12:00 PM	Office Hours
■	9:30 AM – 10:00 AM	General with Mindy Eisenberg and John Goodin 3219A WJCE Ross, David P
■	11:00 AM – 12:30 PM	FW: Reminder: Please RSVP - EPA Deputy Administrator's Ceremonial Swearing-In Green Room Wheeler, Andrew
■	12:30 PM – 1:00 PM	Bill W - Lunch
■	1:00 PM – 2:00 PM	Reading/Review
■	2:00 PM – 2:45 PM	Direct Hydrological Connection Discussion w/FEI (Call in number: [redacted] Code: [redacted] EPA Headquarters, 1200 Penn. Ave. NW, 4th Floor, Room 4045 Leopold, Matt
■	2:30 PM – 2:50 PM	Briefing: OH 303(d) Update Administrator's Office [redacted]
☐	**2:50 PM – 5:00 PM**	**Free**
☐	**After 5:00 PM**	**Free**

Sat, May 5 – Sun, May 6

☐	**All Day**	**Free**

Mon, May 7

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 1:00 PM**	**Free**
■	1:00 PM – 6:00 PM	Office Hours

☐	**After 6:00 PM**	**Free**

Tue, May 8

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 9:30 AM	PARS w/ Lee 3219A WJCE Ross, David P
☐	**9:30 AM – 10:30 AM**	**Free**
■	10:30 AM – 11:00 AM	General Discussion with David Ross WJC-N 3412 Wheeler, Andrew
☐	**11:00 AM – 12:00 PM**	**Free**
■	12:00 PM – 1:00 PM	Lunch
■	1:00 PM – 5:00 PM	Office Hours
■	1:30 PM – 2:00 PM	Draft PFAS Leadership Summit Messaging Meeting WJC-N 3412 Wheeler, Andrew
■	2:45 PM – 3:30 PM	Reading/Review
■	3:00 PM – 3:30 PM	General with Mindy Eisenberg and John Goodin 3219A WJCE Ross, David P
■	3:30 PM – 4:30 PM	OW Briefing for the Deputy Administrator 3233 WJCE (OW's Conference Room) Wheeler, Andrew
☐	**After 5:00 PM**	**Free**

Wed, May 9

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 12:00 PM	Office Hours
■	9:30 AM – 10:00 AM	FL Assumption 3219A WJCE Ross, David P
■	12:00 PM – 1:00 PM	Lunch
☐	**1:00 PM – 2:15 PM**	**Free**
■	2:15 PM – 2:30 PM	Check in w/ Alexandra Dunn 3219A Wjce Ross, David P
☐	**2:30 PM – 5:00 PM**	**Free**
☐	**After 5:00 PM**	**Free**

Thu, May 10

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 1:00 PM**	**Free**
■	1:00 PM – 5:00 PM	Office Hours
■	3:45 PM – 4:30 PM	Meeting with MBT (Millennial Bulk Terminal) 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call [redacted] for escort Forsgren, Lee
☐	**After 5:00 PM**	**Free**

Fri, May 11

☐	All Day	AC Compressed
☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 12:00 PM	Office Hours
☐	**12:00 PM – 1:15 PM**	**Free**
■	1:15 PM – 3:15 PM	Leave for airport
▨	2:30 PM – 3:15 PM	Coast Guard Pre-brief (Call in number: [redacted] Code: [redacted] 4045 Leopold, Matt
■	3:15 PM – 4:35 PM	Delta 6117 departs DCA @ 3:15pm arrives MSN @ 4:35pm
☐	**4:35 PM – 5:00 PM**	**Free**
☐	**After 5:00 PM**	**Free**

Sat, May 12

☐	**All Day**	**Free**

Sun, May 13

☐	**Before 5:15 PM**	**Free**
■	5:15 PM – 8:20 PM	Delta Flight 5998 departs MSN @ 5:15pm arrives DCA @ 8:20pm
☐	**After 8:20 PM**	**Free**

Mon, May 14

☐	All Day	Elaine -OOO
☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 11:30 AM**	**Free**
■	11:30 AM – 12:15 PM	Briefing: PFAS Administrator's Office

[redacted]

☐	**12:15 PM – 1:00 PM**	**Free**
■	1:00 PM – 2:00 PM	Reading/Review
■	1:00 PM – 5:30 PM	Office Hours
■	2:00 PM – 3:00 PM	Senior Staff Meeting Alm Room [redacted]
■	3:45 PM – 4:15 PM	Briefing: Idaho NPDES Delegation Administrator's Office [redacted]
■	4:45 PM – 5:00 PM	WIFIA Outreach Room 3402 WJC North Jackson, Ryan
☐	**After 5:30 PM**	**Free**

Tue, May 15

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 10:30 AM	Water Associations Engagement Meeting 1200 Pennsylvania Ave NW, Washington DC 20004 (South Lobby) ALM Room Please call [redacted] for escort Forsgren, Lee
☐	**10:30 AM – 10:45 AM**	**Free**
■	10:45 AM – 11:30 AM	Hearing Prep: OW Administrator's Office [redacted]
■	11:30 AM – 12:00 PM	Reading/Review
☐	**12:00 PM – 1:00 PM**	**Free**
■	1:00 PM – 5:00 PM	Office Hours
■	2:00 PM – 2:30 PM	Staff Briefing Ross, David P
☐	**After 5:00 PM**	**Free**

Wed, May 16

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 12:00 PM	Office Hours
■	12:00 PM – 1:00 PM	Lunch
☐	**1:00 PM – 2:00 PM**	**Free**
■	2:00 PM – 2:15 PM	Car confirmed
■	2:15 PM – 3:00 PM	Invitation: Water Cabinet Meeting @ Wed May 16, 2018 2:15pm - 3pm (EDT) (penman.crystal@epa.gov)

		U.S. Department of the Interior, 1849 C St NW, WDC, ROOM 6641 michelle_mebane@ios.doi.gov
■	3:00 PM – 3:30 PM	car confirmed
☐	**3:30 PM – 5:00 PM**	**Free**
☐	**5:00 PM – 5:45 PM**	**Free**
■	5:45 PM – 6:15 PM	General Matt's office Fotouhi, David
☐	**After 6:15 PM**	**Free**

Thu, May 17

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 1:00 PM**	**Free**
■	1:00 PM – 5:00 PM	Office Hours
■	5:00 PM – 5:30 PM	WOTUS Rulemaking 4000 WJCN Leopold, Matt
☐	**After 5:30 PM**	**Free**

Fri, May 18

☐	All Day	Crystal P - Telework
☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 9:45 AM	Budget 3219A WJCE Ross, David P
■	9:00 AM – 12:00 PM	Office Hours
■	11:00 AM – 11:30 AM	NDMA discussion with HQ OW AA (9:00 MT // 11:00 ET) Conf. Call [redacted] code [redacted] (R8 RA PIN) - Region 8 attendees in RA Office Benevento, Douglas
☐	**12:00 PM – 4:15 PM**	**Free**
■	4:15 PM – 5:00 PM	Briefing: Proposed Lead-Based Paint Hazard Standards Administrator's Office [redacted]
☐	**After 5:00 PM**	**Free**

Sat, May 19 – Sun, May 20

☐	**All Day**	**Free**

Mon, May 21

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:45 AM**	**Free**
■	9:45 AM – 10:30 AM	Briefing: PFAS National Dialogue Meeting Administrator's Office [redacted]
☐	**10:30 AM – 1:00 PM**	**Free**
■	1:00 PM – 5:00 PM	Office Hours
■	3:00 PM – 3:30 PM	WOTUS Supplement/Call-in [redacted] Code: [redacted] 4000 WJCN Leopold, Matt
■	4:00 PM – 4:30 PM	Region 7 Check in 3219A WJCE Call [redacted] passcode [redacted] Ross, David P
■	4:30 PM – 5:00 PM	WOTUS 3219A WJCE Ross, David P
☐	**After 5:00 PM**	**Free**

Tue, May 22

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 8:30 AM**	**Free**
■	8:30 AM – 9:30 AM	PFAS National Dialogue Meeting WJC East, Map Room [redacted]
■	8:30 AM – 5:30 PM	PFAS National Leadership Summit 1153 WJCE
■	12:00 PM – 1:00 PM	Lunch
■	4:30 PM – 5:30 PM	PFAS Summit Closing Remarks
☐	**After 5:30 PM**	**Free**

Wed, May 23

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 8:00 AM**	**Free**
■	8:00 AM – 12:30 PM	PFAS National Leadership Summit 1153 WJCE
■	12:30 PM – 1:00 PM	General with Ann 3219A WJCE
☐	**1:00 PM – 1:15 PM**	**Free**
■	1:15 PM – 1:30 PM	Call with Tim Petty [redacted] Ross, David P
☐	**1:30 PM – 2:10 PM**	**Free**

■	2:10 PM – 2:30 PM	Car confirmed Ross, David P
■	2:30 PM – 4:00 PM	(NFE) 404(g) and Section 10 Waters between USEPA, HQDA, and USACE (UNCLASSIFIED) 441 G St. NW, Washington, D.C. 20314, Room 3K10 Semonite, Todd T LTG USARMY HQDA OCE (US)
■	4:00 PM – 4:30 PM	Car confirmed Ross, David P
■	4:30 PM – 5:00 PM	WOTUS Supplemental Conference Call-in Number [redacted] Conference code: [redacted] Wood, Jeffrey (ENRD)
□	**After 5:00 PM**	**Free**

Thu, May 24

□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 2:00 PM**	**Free**
■	2:00 PM – 2:30 PM	WOTUS Check in 3219A WJCE Ross, David P
□	**2:30 PM – 3:00 PM**	**Free**
■	3:00 PM – 3:30 PM	Prebrief - PFAS 3219A WJCE Ross, David P
□	**3:30 PM – 4:30 PM**	**Free**
■	4:30 PM – 5:00 PM	Debrief- PFAS Summit Administrator's Office [redacted]
□	**After 5:00 PM**	**Free**

Fri, May 25

□	All Day	AC Compressed
□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 12:00 PM	Office Hours
■	12:00 PM – 1:00 PM	Lunch
■	1:00 PM – 5:00 PM	Office Hours
□	**After 5:00 PM**	**Free**

Sat, May 26 – Sun, May 27

□	**All Day**	**Free**

Mon, May 28

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 8:00 AM**	**Free**
■	8:00 AM – 5:00 PM	Memorial Day
☐	**After 5:00 PM**	**Free**

Tue, May 29

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 11:30 AM**	**Free**
■	11:30 AM – 11:45 AM	WOTUS Check in 3219A WJCE Ross, David P
■	11:45 AM – 12:00 PM	Lunch
■	12:00 PM – 1:00 PM	Working Lunch 4000 Leopold, Matt
■	1:00 PM – 1:30 PM	Planning for American Water Works Association Annual Conference 3219A Call in # [redacted] passcode [redacted] Ross, David P
■	1:00 PM – 6:00 PM	Office Hours
■	4:30 PM – 5:30 PM	Bimonthly AA Check-In WJC-N 3530 / Teleconference Wheeler, Andrew
☐	**After 6:00 PM**	**Free**

Wed, May 30

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 11:15 AM**	**Free**
■	11:15 AM – 12:00 PM	Meeting: Army Corps Administrator's Office [redacted]
■	12:00 PM – 1:00 PM	Lunch
■	1:00 PM – 6:00 PM	Office Hours
■	1:30 PM – 2:00 PM	NHAB Case 3219A WJCE Ross, David P
☐	**After 6:00 PM**	**Free**

Thu, May 31

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:00 AM**	**Free**

■	9:00 AM – 9:30 AM	General with John Goodin 3219A WJCE Ross, David P
□	**9:30 AM – 9:45 AM**	**Free**
■	9:45 AM – 10:00 AM	General w/ Anna 3219A WJCE Ross, David P
□	**10:00 AM – 11:00 AM**	**Free**
■	11:00 AM – 12:00 PM	Hearing Prep Call in # [redacted] passcode [redacted] 3219A WJCE Ross, David P
■	12:00 PM – 1:00 PM	Lunch
■	1:00 PM – 2:00 PM	Reading/Review
■	1:00 PM – 5:00 PM	Office Hours
□	**After 5:00 PM**	**Free**

June 2018

Fri, Jun 1

□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 8:00 AM**	**Free**
■	8:00 AM – 12:00 PM	Office Hours
■	11:30 AM – 12:00 PM	Call with Army 3219A Ross, David P
■	12:00 PM – 1:00 PM	Lunch
■	1:00 PM – 5:00 PM	Office Hours
■	2:00 PM – 3:00 PM	Nutrients 3233 WJCE Call in # [redacted] passcode [redacted] McDonough, Owen
□	**After 5:00 PM**	**Free**

Sat, Jun 2 – Sun, Jun 3

□	**All Day**	**Free**

Mon, Jun 4

□	All Day	Crystal - OOO
□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 8:45 AM**	**Free**
■	8:45 AM – 9:00 AM	Staff Meeting 3219A WJCE Call in [redacted] passcode [redacted]

Ross, David P

☐	**9:00 AM – 12:00 PM**	**Free**
■	12:00 PM – 1:00 PM	Lunch
■	1:00 PM – 2:00 PM	Reading/Review
■	1:00 PM – 5:00 PM	Office Hours
☐	**After 5:00 PM**	**Free**

Tue, Jun 5

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 12:00 PM**	**Free**
■	12:00 PM – 1:00 PM	Lunch
■	1:00 PM – 5:00 PM	Office Hours
▨	3:00 PM – 3:45 PM	Missouri lakes Nutrient Criteria 3233 WJCE Call in [redacted] passcode [redacted] Ross, David P
■	4:00 PM – 4:45 PM	Mapping Section 3233 WJCE Call in [redacted] passcode [redacted] Ross, David P
■	4:30 PM – 5:30 PM	Regional Office Structure 4045 WJC-N Darwin, Henry
■	5:00 PM – 6:00 PM	Reading/Review
☐	**After 6:00 PM**	**Free**

Wed, Jun 6

☐	All Day	Crystal P - Telework
☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 8:00 AM**	**Free**
■	8:00 AM – 12:00 PM	Office Hours
▨	10:50 AM – 11:20 AM	Briefing: Alaska Mitigation Memo Administrator's Office [redacted]
■	12:00 PM – 1:00 PM	Lunch
☐	**1:00 PM – 1:30 PM**	**Free**
■	1:30 PM – 2:00 PM	WOTUS Check in 3219A WJCE Ross, David P
☐	**2:00 PM – 4:00 PM**	**Free**
■	4:00 PM – 5:00 PM	Reading/Review
☐	**After 5:00 PM**	**Free**

Thu, Jun 7

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 10:30 AM**	**Free**
▨	10:30 AM – 11:00 AM	Puerto Rico 3219A WJCE Ross, David P
☐	**11:00 AM – 1:00 PM**	**Free**
■	1:00 PM – 5:00 PM	Office Hours
☐	**After 5:00 PM**	**Free**

Fri, Jun 8

☐	All Day	AC Compressed
☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 12:00 PM**	**Free**
■	12:00 PM – 1:00 PM	Working lunch 4000 WJC-N Leopold, Matt (OGC)
☐	**1:00 PM – 2:00 PM**	**Free**
■	2:00 PM – 2:30 PM	Pre brief - ICR Call in [redacted] passcode [redacted] 3219A WJCE Ross, David P
☐	**2:30 PM – 4:30 PM**	**Free**
■	4:30 PM – 5:30 PM	WOTUS EPA-Room 4045 Wood, Jeffrey (ENRD)
☐	**After 5:30 PM**	**Free**

Sat, Jun 9 – Sun, Jun 10

☐	**All Day**	**Free**

Mon, Jun 11

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 8:45 AM**	**Free**
■	8:45 AM – 9:00 AM	Staff Meeting 3219A WJCE Ross, David P
☐	**9:00 AM – 12:00 PM**	**Free**
■	12:00 PM – 1:00 PM	Lunch
■	1:00 PM – 5:00 PM	Office Hours
■	1:30 PM – 2:00 PM	Briefing: WOTUS Step 2 Administrator's Office [redacted]
☐	**5:00 PM – 5:30 PM**	**Free**

■	5:30 PM – 6:30 PM	Reading/Review
□	**After 6:30 PM**	**Free**

Tue, Jun 12

□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 12:00 PM**	**Free**
■	12:00 PM – 1:00 PM	Lunch
■	1:00 PM – 2:00 PM	Reading/Review
■	1:00 PM – 5:00 PM	Office Hours
□	**After 5:00 PM**	**Free**

Wed, Jun 13

□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 8:00 AM**	**Free**
■	8:00 AM – 12:00 PM	Office Hours
■	12:00 PM – 1:00 PM	Lunch
■	1:00 PM – 5:00 PM	Office Hours
■	4:00 PM – 4:30 PM	Reading/Review
□	**5:00 PM – 5:30 PM**	**Free**
■	5:30 PM – 6:00 PM	Follow-up call Call: [redacted] ID: [redacted] Bolen, Brittany
□	**After 6:00 PM**	**Free**

Thu, Jun 14

□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 12:00 PM**	**Free**
■	12:00 PM – 1:00 PM	Lunch
☑	1:00 PM – 1:30 PM	International Meeting with Management Team and Water Cooperation with Australia 3233 WJCE Call in [redacted] passcode [redacted] Penman, Crystal
■	1:00 PM – 5:00 PM	Office Hours
■	4:30 PM – 5:00 PM	Reading/Review
□	**After 5:00 PM**	**Free**

Fri, Jun 15

□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 8:00 AM**	**Free**
■	8:00 AM – 12:00 PM	Office Hours

■	9:30 AM – 10:00 AM	Fw: Transportation WJCN Courtyard Bolen, Brittany
■	10:00 AM – 11:00 AM	Fw: Pre-Brief EEOB (TBD) Szabo, Aaron L. [redacted]
■	11:00 AM – 11:30 AM	Fw: Transportation EEOB Bolen, Brittany
■	12:00 PM – 1:00 PM	Lunch
■	1:00 PM – 5:00 PM	Office Hours
■	1:30 PM – 3:10 PM	Depart for Airport
■	3:10 PM – 4:23 PM	DL 6117 flight departs DCA @ 3:10pm arrives MSN @ 4:23pm
☐	**After 5:00 PM**	**Free**

Sat, Jun 16 – Sun, Jun 17

☐	**All Day**	**Free**

Mon, Jun 18

☐	All Day	Crystal P- OOO
☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 8:00 AM**	**Free**
■	8:00 AM – 6:00 PM	OOO
▨	5:00 PM – 5:30 PM	FW: Briefing: Perchlorate Teleconference Wheeler, Andrew
☐	**After 6:00 PM**	**Free**

Tue, Jun 19

☐	All Day	Crystal P - Telework
☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:30 AM**	**Free**
■	9:30 AM – 10:00 AM	Pre-Brief to Quarterly Performance Review 3219A WJCE Ross, David P
▨	10:00 AM – 11:00 AM	OW PRIDE Month Event with Arli Christian, State Policy Director for the National Center for Transgender Equality WJC-E 1117A Best-Wong, Benita
■	11:00 AM – 11:30 AM	Briefing: Perchlorate Administrator's Office / Call-In: [redacted]

		Code [redacted] [redacted]
☐	**11:30 AM – 1:00 PM**	**Free**
■	1:00 PM – 1:30 PM	Conference Call with John Hall Call in # [redacted] passcode [redacted] Ross, David P
■	1:00 PM – 5:00 PM	Office Hours
■	2:00 PM – 2:30 PM	Meeting with Water Research Foundation 1201 Constitution Ave NW, Washington DC 20460 WJCE 3233 Please call [redacted] for escort Ross, David P
■	3:00 PM – 5:00 PM	Quarterly Performance Review Alm Room / Regions by Video Conference [redacted]
☐	**5:00 PM – 5:45 PM**	**Free**
■	5:45 PM – 6:00 PM	MS4 Update - NH & MA Alex will call Dave at [redacted] Dunn, Alexandra
☐	**After 6:00 PM**	**Free**

Wed, Jun 20

☐	All Day	Crystal P - OOO
☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 8:00 AM**	**Free**
■	8:00 AM – 12:00 PM	Office Hours
■	12:00 PM – 1:00 PM	Lunch
☐	**1:00 PM – 3:30 PM**	**Free**
■	3:30 PM – 4:00 PM	PFAS Discussion Conference Call: [redacted] dial-in; [redacted] conf code) Jackson, Ryan
☐	**4:00 PM – 5:00 PM**	**Free**
☐	**After 5:00 PM**	**Free**

Thu, Jun 21

☐	All Day	Crystal P - Telework
☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 8:00 AM**	**Free**
■	8:00 AM – 8:30 AM	Fw: Lead and Copper Rule Briefing - updated* WJC-N 3412 Wheeler, Andrew
☐	**8:30 AM – 8:45 AM**	**Free**
■	8:45 AM – 9:15 AM	Briefing: NH PFAS Community Engagement

		Administrator's Office / Conference Call (Region 1): [redacted] Code [redacted] [redacted]
☐	**9:15 AM – 11:00 AM**	**Free**
■	11:00 AM – 11:30 AM	WV 303d List Call [redacted] passcode [redacted] 3233 WJCE Ross, David P
☐	**11:30 AM – 1:00 PM**	**Free**
■	1:00 PM – 5:00 PM	Office Hours
■	2:00 PM – 2:45 PM	Pre-brief Steam Electric Call in [redacted] passcode [redacted] 3233 WJCE Ross, David P
■	3:00 PM – 3:30 PM	External Engagement Meeting Call in [redacted] passcode [redacted] 3233 WJCE Ross, David P
▨	3:00 PM – 5:00 PM	<RESCHEDULE>OW's Celebrate Summer Gathering 2123 WJCE Ross, David P
☐	**After 5:00 PM**	**Free**

Fri, Jun 22

☐	All Day	AC Compressed
☐	All Day	Crystal P - OOO
☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 9:00 AM**	**Free**
■	9:00 AM – 9:45 AM	Pre brief - National Water Division Director's Meeting Call in [redacted] passcode [redacted] 3219A WJCE Ross, David P
☐	**9:45 AM – 10:15 AM**	**Free**
■	10:15 AM – 11:00 AM	Briefing: Lead and Copper Rule Administrator's Office / Call-In: [redacted] Code [redacted] [redacted]
☐	**11:00 AM – 11:15 AM**	**Free**
■	11:15 AM – 11:45 AM	Follow-up: Missouri Numeric Nutrient Criteria for Lakes and Reservoirs Administrator's Office / Conference Call (Region 7): [redacted] Code [redacted] [redacted]
☐	**11:45 AM – 4:30 PM**	**Free**
▨	4:30 PM – 6:30 PM	FW: Deputy Wheeler All Hands (4:30 PM) 3412 WJC North - Wheeler's Office

Shimmin, Kaitlyn

☐	**After 6:30 PM**	**Free**

Sat, Jun 23 – Sun, Jun 24

☐	**All Day**	**Free**

Mon, Jun 25

☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 8:45 AM**	**Free**
■	8:45 AM – 9:00 AM	Staff Meeting 3219A WJCE Ross, David P
■	9:00 AM – 10:00 AM	Office Hours
■	10:00 AM – 11:00 AM	Discussion: WOTUS Step 2 WJC-N 3412 Wheeler, Andrew
■	11:00 AM – 12:00 PM	Office Hours
■	12:00 PM – 1:00 PM	Lunch
■	1:00 PM – 2:00 PM	Pre Brief for NDRP Principals Meeting Room 3233 WJCE Teleconference Call in #[redacted] [redacted] Passcode [redacted] Ross, David P
▨	2:00 PM – 3:00 PM	Senior Staff Meeting Alm Room [redacted]
☐	**3:00 PM – 5:00 PM**	**Free**
☐	**After 5:00 PM**	**Free**

Tue, Jun 26

☐	All Day	PFAS @ R3- PHL Willow Grove, PA
☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 8:45 AM**	**Free**
■	8:45 AM – 9:00 AM	Staff Meeting 3219A Ross, David P
☐	**9:00 AM – 12:00 PM**	**Free**
■	12:00 PM – 1:00 PM	Lunch
▨	1:00 PM – 1:30 PM	Meeting on ELGS 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call [redacted] for escort Ross, David P
■		

	1:00 PM – 5:00 PM	Office Hours
■	2:30 PM – 3:00 PM	Meeting with R9 Regional Administrator 3219A WJCE Ross, David P
■	4:00 PM – 4:30 PM	Meeting with ASDWA Conference call number 877-885-3221. 1201 Constitution Ave NW, Washington DC 20460; WJCE 3233; Please call [redacted] for escort Ross, David P
□	**5:00 PM – 6:00 PM**	**Free**
■	6:00 PM – 7:00 PM	WOTUS Meeting 3219A WJCE Ross, David P
□	**After 7:00 PM**	**Free**

Wed, Jun 27

□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 8:30 AM**	**Free**
■	8:30 AM – 6:00 PM	Save the Date - National Water Division Director's Meeting 1153 WJC East Balasa, Kate
■	8:30 AM – End of Day	National Water Division Directors Meeting EPA HQ, Room 1153 Balasa, Kate

Thu, Jun 28

■	Start of Day – 6:00 PM	National Water Division Directors Meeting EPA HQ, Room 1153 Balasa, Kate
■	5:30 PM – 6:15 PM	Meeting with Waterboys Foundation Entrance to EDGAR Bar & Kitchen at The Mayflower Hotel - 1127 Connecticut Ave NW, Washington DC 22036 Ross, David P
□	**After 6:15 PM**	**Free**

Fri, Jun 29

□	**Before 7:30 AM**	**Free**
□	**7:30 AM – 9:30 AM**	**Free**
■	9:30 AM – 10:00 AM	Car confirmed Ross, David P
■	10:00 AM – 11:30 AM	National Drought Resilience Partnership Principals Meeting The Pinchot Room (2SE-04) Yates Federal Building

(USDA Forest Service Headquarters) 201 14th Street SW
Washington DC
Callaway, Shelby - NRCS, Washington, DC

■	11:30 AM – 12:00 PM	Car confirmed Ross, David P
■	12:00 PM – 1:00 PM	American College of Environmental Lawyers Interview (ACOEL) 1201 Constitution Ave NW, Washington DC 20004 3219A WJCE Please call [redacted] for escort Ross, David P
■	1:00 PM – 2:00 PM	Briefings Follow-Up: Perchlorate/LCR 30 minute each briefing POC: Will Lovell & Ann Campbell 3412 WJCN Administrator's Office Wheeler, Andrew
☐	**2:00 PM – 5:00 PM**	**Free**
☐	**After 5:00 PM**	**Free**

Sat, Jun 30

☐	**Before 6:04 AM**	**Free**
■	6:04 AM – 7:34 AM	Delta 1291 departs DCA @ 6:04AM arrives DTW @ 7:34AM
☐	**7:34 AM – 8:30 AM**	**Free**
■	8:30 AM – 8:55 AM	DL flight 4637 departs DTW @ 8:30AM arrives MSN @ 8:55AM
☐	**After 8:55 AM**	**Free**

July 2018

Sun, Jul 1

☐	**All Day**	**Free**

Mon, Jul 2

☐	All Day	AC OOO
☐	All Day	Crystal - P OOO
☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 8:00 AM**	**Free**
■	8:00 AM – 6:00 PM	OOO
☐	**After 6:00 PM**	**Free**

Tue, Jul 3

☐	All Day	AC OOO

☐	All Day	Crystal P - OOO
☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 8:00 AM**	**Free**
■	8:00 AM – 6:00 PM	OOO
☐	**After 6:00 PM**	**Free**

Wed, Jul 4

☐	All Day	AC OOO
☐	**Before 7:30 AM**	**Free**
☐	**7:30 AM – 8:00 AM**	**Free**
■	8:00 AM – 6:00 PM	4th of JULY
☐	**After 6:00 PM**	**Free**

Details

Monday, January 01, 2018

Time 8:00 AM – 5:00 PM
Subject New Year's Day
Show Time As Busy
Categories EZ Record - Private, Holiday

Monday, January 08, 2018

Time 3:45 PM – 4:15 PM
Subject Meeting: Dave Ross
Location Administrator's Office
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
[redacted] <[redacted]>	Organizer
Jackson, Ryan <jackson.ryan@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required

Time 5:00 PM – 5:30 PM
Subject Meeting with Sarah Greenwalt, Dave Ross, & David Fotouhi re Ohio 303(d) letter
Location Sarah Greenwalt's office
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
Forsgren, Lee <Forsgren.Lee@epa.gov>	Organizer

Ross, David P <ross.davidp@epa.gov>	Required

Tuesday, January 09, 2018

Time 8:45 AM – 9:00 AM
Subject Daily Check in
Location 3219A WJCE
Show Time As Busy

Attendees

Name <E-mail>	Attendance
Shapiro, Mike <Shapiro.Mike@epa.gov>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Lousberg, Macara <Lousberg.Macara@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Required
Edwards, Crystal <Edwards.Crystal@epa.gov>	Required
Peck, Gregory <Peck.Gregory@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

Time 9:30 AM – 10:00 AM
Subject David's planning time
Show Time As Busy
Categories Blue Category

Time 10:00 AM – 10:15 AM
Subject Pre-Brief: Senator Sullivan/Whitehouse Meeting
Location Administrator's Office
Show Time As Busy
Categories Red Category

Attendees

Name <E-mail>	Attendance
[redacted] <[redacted]>	Organizer
Jackson, Ryan <jackson.ryan@epa.gov>	Required
Lyons, Troy <lyons.troy@epa.gov>	Required
Palich, Christian <palich.christian@epa.gov>	Required

Ross, David P <ross.davidp@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required

Time 10:15 AM – 11:00 AM
Subject Meeting: Senator Sullivan and Senator Whitehouse
Location Administrator's Office
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
[redacted] <[redacted]>	Organizer
Lyons, Troy <lyons.troy@epa.gov>	Required
Palich, Christian <palich.christian@epa.gov>	Required
Jackson, Ryan <jackson.ryan@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Ross, David <ross.davidp@epa.gov>	Required

Time 11:00 AM – 12:00 PM
Subject PFAS Briefing
Location 3233 WJCE Call in [redacted] passcode [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Forsgren, Lee <Forsgren.Lee@epa.gov>	Organizer
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Holsinger, Hannah <Holsinger.Hannah@epa.gov>	Required
Behl, Betsy <Behl.Betsy@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Mclain, Jennifer <Mclain.Jennifer@epa.gov>	Required
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Optional

Tiago, Joseph <Tiago.Joseph@epa.gov>	Optional

Time 12:00 PM – 1:00 PM
Subject Lunch
Show Time As Busy
Categories Orange Category

Time 2:00 PM – 2:30 PM
Subject PFOA Discussion
Location Room 3402 WJC North
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
Jackson, Ryan <jackson.ryan@epa.gov>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Orme-Zavaleta, Jennifer <Orme-Zavaleta.Jennifer@epa.gov>	Required
Yamada, Richard (Yujiro) <yamada.richard@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Flynn, Mike <Flynn.Mike@epa.gov>	Required
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required

Time 2:30 PM – 3:30 PM
Subject Lead
Location 3233 WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Burneson, Eric <Burneson.Eric@epa.gov>	Required
Wadlington, Christina <Wadlington.Christina@epa.gov>	Required
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required

Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required

Time 3:30 PM – 4:00 PM
Subject David's planning time
Show Time As Busy
Categories Blue Category

Time 4:45 PM – 5:45 PM
Subject WOTUS
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Optional

Wednesday, January 10, 2018

Time 8:30 AM – 9:00 AM
Subject Maine Water Quality Discussion
Location David F's office
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
Ringel, Aaron <ringel.aaron@epa.gov>	Organizer
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required

Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Rodrick, Christian <rodrick.christian@epa.gov>	Required
Shimmin, Kaitlyn <shimmin.kaitlyn@epa.gov>	Required
Lyons, Troy <lyons.troy@epa.gov>	Required

Time 9:30 AM – 10:00 AM
Subject David's Planning time
Show Time As Busy
Categories Blue Category

Time 10:00 AM – 10:45 AM
Subject WOTUS Call in [redacted] passcode [redacted]
Location 3233 WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Peck, Gregory <Peck.Gregory@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Downing, Donna <Downing.Donna@epa.gov>	Required
Kwok, Rose <Kwok.Rose@epa.gov>	Required
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Required
Wehling, Carrie <Wehling.Carrie@epa.gov>	Required
Klasen, Matthew <Klasen.Matthew@epa.gov>	Required
Wendelowski, Karyn <wendelowski.karyn@epa.gov>	Required
Kaiser, Sven-Erik <Kaiser.Sven-Erik@epa.gov>	Required
Christensen, Damaris <Christensen.Damaris@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Schwab, Justin <schwab.justin@epa.gov>	Required

'Bangerter, Layne' <bangerter.layne@epa.gov>	Required
McDavit, Michael W. <Mcdavit.Michael@epa.gov>	Required
Frithsen, Jeff <Frithsen.Jeff@epa.gov>	Required
Nickerson, William <Nickerson.William@epa.gov>	Required
Stokely, Peter <Stokely.Peter@epa.gov>	Required
Frazer, Brian <Frazer.Brian@epa.gov>	Required
Dravis, Samantha <dravis.samantha@epa.gov>	Required
Keating, Jim <Keating.Jim@epa.gov>	Required
'ian.p.osullivan@usace.army.mil' <ian.p.osullivan@usace.army.mil>	Required
'jennifer.a.moyer@usace.army.mil' <jennifer.a.moyer@usace.army.mil>	Required
David.F.Dale@usace.army.mil <David.F.Dale@usace.army.mil>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Bowles, Jack <Bowles.Jack@epa.gov>	Required
Damico, Brian <Damico.Brian@epa.gov>	Required
Cheatham, Reggie <cheatham.reggie@epa.gov>	Required
'Donald.e.jackson@usace.army.mil' <Donald.e.jackson@usace.army.mil>	Required
Hewitt, Julie <Hewitt.Julie@epa.gov>	Required
Brown, Byron <brown.byron@epa.gov>	Required
Bowman, Liz <Bowman.Liz@epa.gov>	Required
Peterson, Carol <Peterson.Carol@epa.gov>	Required
Dennis, Allison <Dennis.Allison@epa.gov>	Required

Thomas, Latosha <Thomas.Latosha@epa.gov>	Required
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required
Chemerys, Ruth <Chemerys.Ruth@epa.gov>	Required
Wesson, Dolores <Wesson.Dolores@epa.gov>	Required
Bolen, Brittany <bolen.brittany@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required
FertikEdgerton, Rachel <FertikEdgerton.Rachel@epa.gov>	Required
Borum, Denis <Borum.Denis@epa.gov>	Required
Orvin, Chris <Orvin.Chris@epa.gov>	Required
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
Kupchan, Simma <Kupchan.Simma@epa.gov>	Required
Cherry, Andrew <Cherry.Andrew@epa.gov>	Required
Lousberg, Macara <Lousberg.Macara@epa.gov>	Required
Theis, Joseph <Theis.Joseph@epa.gov>	Required
Bahk, Benjamin <Bahk.Benjamin@epa.gov>	Required
Pollins, Mark <Pollins.Mark@epa.gov>	Required
Evalenko, Sandy <Evalenko.Sandy@epa.gov>	Required
'Lamont, Douglas W SES (US' <douglas.w.lamont2.civ@mail.mil>	Required
'Schmauder, Craig R SES (US' <craig.r.schmauder.civ@mail.mil>	Required

cindy.s.barger <cindy.s.barger.civ@mail.mil>	Required
McGartland, Al <McGartland.Al@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Required
Washington, Valerie <Washington.Valerie@epa.gov>	Required
Clark, Becki <Clark.Becki@epa.gov>	Required
Indermark, Michele <Indermark.Michele@epa.gov>	Required
Hanson, Andrew <Hanson.Andrew@epa.gov>	Required
Principe, Vanessa <Principe.Vanessa@epa.gov>	Required
Swackhammer, J-Troy <Swackhammer.J-Troy@epa.gov>	Required
Howard, MarkW <Howard.MarkW@epa.gov>	Required
Connors, Sandra <Connors.Sandra@epa.gov>	Required
Jennings, Kim <Jennings.Kim@epa.gov>	Required
Cook-Shyovitz, Becky <Cook-Shyovitz.Becky@epa.gov>	Required
'Cope, Clayton' <cope.clayton@epa.gov>	Required
Goodwin, Kara <goodwin.kara@epa.gov>	Required
Bennett, Tate <Bennett.Tate@epa.gov>	Required
Libertz, Catherine <Libertz.Catherine@epa.gov>	Required
Denton, Loren <Denton.Loren@epa.gov>	Required
ODea, Elise <odea.elise@epa.gov>	Required

Time 11:00 AM – 12:00 PM
Subject Waters of the US Briefing #1
Location 3233 WJCE Call in [redacted] passcode [redacted]
Show Time As Busy

Attendees	**Name <E-mail>**	**Attendance**
	Forsgren, Lee <Forsgren.Lee@epa.gov>	Organizer

Ross, David P <ross.davidp@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
McDavit, Michael W. <Mcdavit.Michael@epa.gov>	Required
Downing, Donna <Downing.Donna@epa.gov>	Required
Christensen, Damaris <Christensen.Damaris@epa.gov>	Required
Kwok, Rose <Kwok.Rose@epa.gov>	Required
Chemerys, Ruth <Chemerys.Ruth@epa.gov>	Required
Wesson, Dolores <Wesson.Dolores@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Peck, Gregory <Peck.Gregory@epa.gov>	Optional
Weiler, Katherine <Weiler.Katherine@epa.gov>	Optional

Time 1:00 PM – 2:00 PM
Subject David's Planning time
Show Time As Busy
Categories Blue Category

Time 2:00 PM – 3:00 PM
Subject Direct Hydrologic Connection and Discharge of a Pollutant Under the CWA and NPDES
Location 3233 WICE Call in [redacted] passcode [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Forsgren, Lee <Forsgren.Lee@epa.gov>	Organizer
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required

Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
Frace, Sheila <Frace.Sheila@epa.gov>	Required
Zobrist, Marcus <Zobrist.Marcus@epa.gov>	Required
Fotouhi, David <Fotouhi.David@epa.gov>	Required
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Required
Wehling, Carrie <Wehling.Carrie@epa.gov>	Required
Wendelowski, Karyn <wendelowski.karyn@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Optional
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Farris, Erika D. <Farris.Erika@epa.gov>	Optional
Leopold, Matt <Leopold.Matt@epa.gov>	Optional
Lousberg, Macara <Lousberg.Macara@epa.gov>	Optional

Time 3:30 PM – 4:00 PM
Subject David's Planning time
Show Time As Busy
Categories Blue Category

Time 4:30 PM – 5:00 PM
Subject Briefing: West Lake Follow-up / Lead Update
Location Administrator's Office
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
[redacted] <[redacted]>	Organizer
Kelly, Albert <kelly.albert@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required

Ross, David P <ross.davidp@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Optional

Thursday, January 11, 2018

Time 9:00 AM – 1:00 PM
Subject Benita using 3233
Show Time As Busy
Categories Blue Category

Time 9:00 AM – 1:00 PM
Subject OW Monthly Business Review
Location 3233 WJC East Call in number #[redacted] Passcode [redacted]
Show Time As Busy

J. "Max" Corbin

VTC Analyst, US EPA – End User Services

EPA OITO Contractor

O:[redacted]

Corbin.James@epa.gov <mailto:Corbin.James@epa.gov>

mcorbin@visiontech.biz <mailto:mcorbin@visiontech.biz>

www.visiontech.biz <http://www.visiontech.biz/>

Team SAIC Redefining Ingenuity ™

Sharon Vazquez

[redacted]

Attendees	Name <E-mail>	Attendance
	Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Organizer
	Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

Ross, David P <ross.davidp@epa.gov>	Required
OW Office Directors <OWOfficeDirectors@epa.gov>	Required
OW Deputy Office Directors <OWDeputyOfficeDirectors@epa.gov>	Required
Balasa, Kate <balasa.kate@epa.gov>	Required
Korleski, Christopher <korleski.christopher@epa.gov>	Required
Vazquez, Sharon <Vazquez.Sharon@epa.gov>	Required
Gollan, Christopher <Gollan.Christopher@epa.gov>	Required
King, RyanM <King.RyanM@epa.gov>	Required
Fontaine, Tim <Fontaine.Tim@epa.gov>	Required
Spraul, Greg <Spraul.Greg@epa.gov>	Required
Stepp, Cathy <stepp.cathy@epa.gov>	Required
Chu, Ed <Chu.Ed@epa.gov>	Required
Moore, Kristie <Moore.Kristie@epa.gov>	Optional
Bissonette, Eric <Bissonette.Eric@epa.gov>	Optional
Cummings, Travis <Cummings.Travis@epa.gov>	Optional
Stabenfeldt, Lynn <Stabenfeldt.Lynn@epa.gov>	Optional
Farber, Kit <Farber.Kit@epa.gov>	Optional
Ortiz, Agnes <Ortiz.Agnes@epa.gov>	Optional
Crawford, Tiffany <Crawford.Tiffany@epa.gov>	Optional
Mclain, Jennifer <Mclain.Jennifer@epa.gov>	Optional
Lape, Jeff <lape.jeff@epa.gov>	Optional
Frace, Sheila <Frace.Sheila@epa.gov>	Optional

Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Optional
Nagle, Deborah <Nagle.Deborah@epa.gov>	Optional
Grevatt, Peter <Grevatt.Peter@epa.gov>	Optional
Williams, Felicia <Williams.Felicia@epa.gov>	Optional
Connors, Sandra <Connors.Sandra@epa.gov>	Optional
Goodin, John <Goodin.John@epa.gov>	Optional
Jencius, Morgan <jencius.morgan@epa.gov>	Optional
Stebe, Katherine <Stebe.Katherine@epa.gov>	Optional
Wood, Robert <Wood.Robert@epa.gov>	Optional

Time 12:00 PM – 1:00 PM
Subject Brownbag: Meeting with Justina Fugh
Location 3219A WJCE
Show Time As Busy
Categories Orange Category
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Fugh, Justina <Fugh.Justina@epa.gov>	Required

Time 1:00 PM – 2:00 PM
Subject Briefing for Sarah Greenwalt, re: EPA's Domestic and International Work to Address Marine Litter
Location OITA's Fish Bowl Conference Room, 3rd floor RRB, #31107 (Big conference room across from the receptionist desk)
Show Time As Busy
Categories Blue Category
Attendees

Name <E-mail>	Attendance
Nishida, Jane <Nishida.Jane@epa.gov>	Organizer
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Smith, Walker <Smith.Walker@epa.gov>	Required
Bailey, Marianne <Bailey.Marianne@epa.gov>	Required

Sims, JaniceHQ <Sims.JaniceHQ@epa.gov>	Required
Horan, Andrew <Horan.Andrew@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Robiou, Grace <Robiou.Grace@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Shah, Surabhi <Shah.Surabhi@epa.gov>	Required
Benson, Robert <Benson.Robert@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Koo-Oshima, Sasha <Koo-Oshima.Sasha@epa.gov>	Optional
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Optional
Washington, Valerie <Washington.Valerie@epa.gov>	Optional
Muehling, Brian <Muehling.Brian@epa.gov>	Optional
Finman, Hodayah <Finman.Hodayah@epa.gov>	Optional
Kasman, Mark <Kasman.Mark@epa.gov>	Optional
Vance, Ronald <Vance.Ronald@epa.gov>	Optional
Picardi, Rick <Picardi.Rick@epa.gov>	Optional

Time 2:00 PM – 2:30 PM
Subject David's Planning time
Show Time As Busy
Categories Blue Category

Time 3:00 PM – 3:30 PM
Subject Call to Ohio EPA Call in [redacted] passcode [redacted]
Location WJCE 3219A
Show Time As Busy

This is a hold for now while we work on setting up a time with Ohio's Craig Butler.

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
'sherrie.thompson@epa.ohio.gov' <sherrie.thompson@epa.ohio.gov>	Required
Craig.Butler@epa.ohio.gov <Craig.Butler@epa.ohio.gov>	Optional

---

Time 3:00 PM – 3:30 PM
Subject Kerry Kuntz using 3233
Show Time As Busy
Categories Blue Category

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Kuntz, Kerry <Kuntz.Kerry@epa.gov>	Required

Time 4:00 PM – 5:00 PM
Subject David's Planning time
Show Time As Busy
Categories Blue Category

Friday, January 12, 2018

Time 9:00 AM – 9:30 AM
Subject Conduit Theory
Location Sarah's Office
Show Time As Busy
Categories Red Category

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Bolen, Brittany <bolen.brittany@epa.gov>	Optional
Dravis, Samantha <dravis.samantha@epa.gov>	Optional

	Fotouhi, David <fotouhi.david@epa.gov>	Required

Time 9:30 AM – 10:00 AM
Subject Official Portrait
Location WJCN 6330
Show Time As Busy

Attendees	**Name <E-mail>**	**Attendance**
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Vance, Eric <Vance.Eric@epa.gov>	Required
	Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Optional

Time 10:00 AM – 10:30 AM
Subject FW: Mercury Pollution Discussion
Location Room 3402 WJC North
Show Time As Busy

-----Original Appointment-----
From: Jackson, Ryan
Sent: Thursday, January 11, 2018 11:27 AM
To: Jackson, Ryan; Greenwalt, Sarah; Bolen, Brittany; Dravis, Samantha; Gunasekara, Mandy; Wehrum, Bill; Bowman, Liz
Subject: Mercury Pollution Discussion
When: Friday, January 12, 2018 10:00 AM-10:30 AM (UTC-05:00) Eastern Time (US & Canada).
Where: Room 3402 WJC North

Categories Red Category

Attendees	**Name <E-mail>**	**Attendance**
	Jackson, Ryan <jackson.ryan@epa.gov>	Organizer
	Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
	Bolen, Brittany <bolen.brittany@epa.gov>	Required
	Dravis, Samantha <dravis.samantha@epa.gov>	Required
	Gunasekara, Mandy <Gunasekara.Mandy@epa.gov>	Required
	Wehrum, Bill <Wehrum.Bill@epa.gov>	Required
	Bowman, Liz <Bowman.Liz@epa.gov>	Required
	Ross, David P <ross.davidp@epa.gov>	Optional

Time 10:30 AM – 11:30 AM
Subject Budget Briefing for David Ross
Location 3233 WJC East
Show Time As Busy
POC: Laura Drummond

Attendees

Name <E-mail>	Attendance
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Fontaine, Tim <Fontaine.Tim@epa.gov>	Required
Drummond, Laura <Drummond.Laura@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Optional

Time 12:30 PM – 2:00 PM
Subject Benita using 3233
Show Time As Busy
Categories Blue Category

Time 1:30 PM – 3:00 PM
Subject David's planning time
Show Time As Busy
Categories Blue Category

Time 3:00 PM – 4:00 PM
Subject Benita using 3233
Show Time As Busy
Categories Blue Category

Time 3:00 PM – 6:00 PM
Subject Do not schedule
Show Time As Busy
Categories Blue Category

Monday, January 15, 2018

Time 8:00 AM – 5:00 PM
Subject Martin Luther King Jr Day
Show Time As Busy
Categories EZ Record - Private, Yellow Category, Business, Holiday

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Time 5:15 PM – 8:19 PM
Subject DL 5998 departs MSN @ 5:15pm arrives DCA @ 8:19PM
Show Time As Busy

Categories Blue Category

Tuesday, January 16, 2018

Time All Day
Subject Ann Telework
Show Time As Free

Doctor's appointment 11-2

Time 9:00 AM – 10:00 AM
Subject Water Infrastructure Programs
Location 3233 WJCE Call in [redacted] passcode [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Forsgren, Lee <Forsgren.Lee@epa.gov>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
Frace, Sheila <Frace.Sheila@epa.gov>	Required
Stein, Raffael <Stein.Raffael@epa.gov>	Required
Gueriguian, Leo <Gueriguian.Leo@epa.gov>	Required
Ames, George <Ames.George@epa.gov>	Required
Jernberg, Jorianne <jernberg.jorianne@epa.gov>	Required
Gebhardt, Jim <Gebhardt.Jim@epa.gov>	Required
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Mclain, Jennifer <Mclain.Jennifer@epa.gov>	Required
Thompkins, Anita <Thompkins.Anita@epa.gov>	Required
Fort, Felecia <Fort.Felecia@epa.gov>	Required
Askew, Wendel <Askew.Wendel@epa.gov>	Required
Hogan, Joanne <Hogan.Joanne@epa.gov>	Required
Dennis, Allison <Dennis.Allison@epa.gov>	Required

Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Kohutiak, George <kohutiak.george@epa.gov>	Optional

Time 10:00 AM – 11:00 AM
Subject 2016 ELG Program Plan Prebrief
Location 3233 WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Lape, Jeff <lape.jeff@epa.gov>	Required
Wood, Robert <Wood.Robert@epa.gov>	Required
Matuszko, Jan <Matuszko.Jan@epa.gov>	Required
Flanders, Phillip <Flanders.Phillip@epa.gov>	Required
Levine, MaryEllen <levine.maryellen@epa.gov>	Required
Zomer, Jessica <Zomer.Jessica@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Optional
Forsgren, Lee <Forsgren.Lee@epa.gov>	Optional
Scozzafava, MichaelE <Scozzafava.MichaelE@epa.gov>	Optional
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Optional
Parikh, Pooja <Parikh.Pooja@epa.gov>	Optional

Time 11:00 AM – 12:00 PM
Subject OR Temperature TMDLs and Columbia River TMDL Litigation
Location 3233 WJCE Call in [redacted] passcode [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Forsgren, Lee <Forsgren.Lee@epa.gov>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required

Goodin, John <Goodin.John@epa.gov>	Required
Wall, Tom <Wall.Tom@epa.gov>	Required
Havard, James <Havard.James@epa.gov>	Required
Nagle, Deborah <Nagle.Deborah@epa.gov>	Required
Hisel-Mccoy, Sara <Hisel-McCoy.Sara@epa.gov>	Required
Fotouhi, David <Fotouhi.David@epa.gov>	Required
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Required
Schroer, Lee <schroer.lee@epa.gov>	Required
Curtin, James <curtin.james@epa.gov>	Required
Sweeney, Stephen <Sweeney.Stephen@epa.gov>	Required
Opalski, Dan <Opalski.Dan@epa.gov>	Required
Croxton, David <Croxton.David@epa.gov>	Required
Byrne, Jennifer <Byrne.Jennifer@epa.gov>	Required
Dennis, Allison <Dennis.Allison@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Optional
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Monschein, Eric <Monschein.Eric@epa.gov>	Optional
Lewicki, Chris <Lewicki.Chris@epa.gov>	Optional
Connors, Sandra <Connors.Sandra@epa.gov>	Optional
Weiler, Katherine <Weiler.Katherine@epa.gov>	Optional
Hunter, Christopher <Hunter.Christopher@epa.gov>	Optional
Mann, Laurie <mann.laurie@epa.gov>	Optional

Schary, Claire <Schary.Claire@epa.gov>	Optional
Soscia, Mary Lou <Soscia.Marylou@epa.gov>	Optional
Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>	Optional
Stern, Allyn <Stern.Allyn@epa.gov>	Optional
Lape, Jeff <lape.jeff@epa.gov>	Optional
Hladick, Christopher <hladick.christopher@epa.gov>	Optional
Buffo, Corey <Buffo.Corey@epa.gov>	Optional
Glazer, Thomas <glazer.thomas@epa.gov>	Optional
Fleisig, Erica <Fleisig.Erica@epa.gov>	Optional
Smith, Candace <Smith.Candace@epa.gov>	Optional
Chung, Angela <Chung.Angela@epa.gov>	Optional
Reiley, Mary <Reiley.Mary@epa.gov>	Optional
Behl, Betsy <Behl.Betsy@epa.gov>	Optional
Gallagher, Kathryn <Gallagher.Kathryn@epa.gov>	Optional
Thomas, Dana <Thomas.Dana@epa.gov>	Optional

Time 12:00 PM – 1:00 PM
Subject National HQ & RG 1st Assistants VTC
Location DCRoomARN3330/DC-AR-OARM
Show Time As Tentative

National Headquarters and Regional 1st Assistants Video-Teleconference

Agenda: Please see attached.

Please contact Melissa Saddler by 11:00 AM EST for Audio Line if unable to attend by VTC, or if the listed VTC room needs to be changed.

HQ VTC Meeting Room: WJC-N 3346

HQ: OARM DC WJCN Room 3346 (3330 Mobile)

RG VTC Rooms:

R1: R01 Boston Mt Belknap

R2: Catherine McCabe

R3: R3 DRA Meeting Room

R4: R4 Boardroom 14T63

R5: R5 RA Conference Room

R6: R6 RA Conference Rm

R7: R7Mobile C60-1

R8: DRA Conference Room

R9: R9 SF Big Pine 19333

R10: R10 Seattle 21 RA Conference Room (Tahoma)

ORD: Jennifer Orme-Zavaleta

Categories Orange Category

Attendees

Name <E-mail>	**Attendance**
RegionalOperations <RegionalOperations@epa.gov>	Organizer
2017Regionfirstassistants <2017Regionfirstassistants@epa.gov>	Required
2017HQfirstassistants <2017HQfirstassistants@epa.gov>	Required
Shaw, Betsy <Shaw.Betsy@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Nitsch, Chad <Nitsch.Chad@epa.gov>	Required

Strauss, Alexis <Strauss.Alexis@epa.gov>	Optional
Vizian, Donna <Vizian.Donna@epa.gov>	Optional
Nishida, Jane <Nishida.Jane@epa.gov>	Optional
Rodrigues, Cecil <rodrigues.cecil@epa.gov>	Optional
Pirzadeh, Michelle <Pirzadeh.Michelle@epa.gov>	Optional
Wooden-Aguilar, Helena <Wooden-Aguilar.Helena@epa.gov>	Optional
Szaro, Deb <Szaro.Deb@epa.gov>	Optional
Bloom, David <Bloom.David@epa.gov>	Optional
Fine, Steven <fine.steven@epa.gov>	Optional
Simon, Harvey <Simon.Harvey@epa.gov>	Optional
Armstead, John A. <Armstead.John@epa.gov>	Optional
Breen, Barry <Breen.Barry@epa.gov>	Optional
Orme-Zavaleta, Jennifer <Orme-Zavaleta.Jennifer@epa.gov>	Optional
Chu, Ed <Chu.Ed@epa.gov>	Optional
Shapiro, Mike <Shapiro.Mike@epa.gov>	Optional
Robbins, Chris <Robbins.Chris@epa.gov>	Optional
Minoli, Kevin <Minoli.Kevin@epa.gov>	Optional
Mugdan, Walter <Mugdan.Walter@epa.gov>	Optional
Starfield, Lawrence <Starfield.Lawrence@epa.gov>	Optional
Flynn, Mike <Flynn.Mike@epa.gov>	Optional
Manna, Richard <Manna.Richard@epa.gov>	Optional
Ross, David P <ross.davidp@epa.gov>	Optional

Richardson, RobinH <Richardson.RobinH@epa.gov>	Optional
Heard, Anne <Heard.Anne@epa.gov>	Optional
Simon, Nigel <Simon.Nigel@epa.gov>	Optional
Grantham, Nancy <Grantham.Nancy@epa.gov>	Optional
Brennan, Thomas <Brennan.Thomas@epa.gov>	Optional
Blackburn, Elizabeth <Blackburn.Elizabeth@epa.gov>	Optional
Dunham, Sarah <Dunham.Sarah@epa.gov>	Optional
Roberts, Diana <roberts.diana@epa.gov>	Optional

Time 1:00 PM – 3:00 PM
Subject David's Planning time
Show Time As Busy
Categories Blue Category

Time 3:00 PM – 3:45 PM
Subject OW Weekly Staff Meeting
Location 3233 WICE Call in [redacted] passcode [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Spraul, Greg <Spraul.Greg@epa.gov>	Required
Simons, Vicki <Simons.Vicki@epa.gov>	Required
Bissonette, Eric <Bissonette.Eric@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Peck, Gregory <Peck.Gregory@epa.gov>	Required
Butler, Lael <Butler.Lael@epa.gov>	Required
Dennis, Allison <Dennis.Allison@epa.gov>	Required
Gorke, Roger <Gorke.Roger@epa.gov>	Required
Fontaine, Tim <Fontaine.Tim@epa.gov>	Required

Borum, Denis <Borum.Denis@epa.gov>	Required
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Evalenko, Sandy <Evalenko.Sandy@epa.gov>	Required
Stevens, Robert <Stevens.Robert@epa.gov>	Required
Orvin, Chris <Orvin.Chris@epa.gov>	Required
Levine, MaryEllen <levine.maryellen@epa.gov>	Required
Mclain, Jennifer <Mclain.Jennifer@epa.gov>	Required
Torrez, Alfredo <Torrez.Alfredo@epa.gov>	Required
Koo-Oshima, Sasha <Koo-Oshima.Sasha@epa.gov>	Required
Ruf, Christine <Ruf.Christine@epa.gov>	Required
Altieri, Sonia <Altieri.Sonia@epa.gov>	Required
Osbourne, Margaret <osbourne.margaret@epa.gov>	Required
Wehling, Carrie <Wehling.Carrie@epa.gov>	Required
Lape, Jeff <lape.jeff@epa.gov>	Required
Frace, Sheila <Frace.Sheila@epa.gov>	Required
Lousberg, Macara <Lousberg.Macara@epa.gov>	Required
Schroer, Lee <schroer.lee@epa.gov>	Required
Wall, Tom <Wall.Tom@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Klasen, Matthew <Klasen.Matthew@epa.gov>	Required
Johnson, Tara <Johnson.Tara@epa.gov>	Required
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Required

Moody, Christina <Moody.Christina@epa.gov>	Required
Threet, Derek <Threet.Derek@epa.gov>	Required
Gonder, Sharon <Gonder.Sharon@epa.gov>	Required
Southerland, Elizabeth <Southerland.Elizabeth@epa.gov>	Required
Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
Malloy, Daniel <Malloy.Daniel@epa.gov>	Required
Burneson, Eric <Burneson.Eric@epa.gov>	Required
vanDrunick, Suzanne <vanDrunick.Suzanne@epa.gov>	Required
Korleski, Christopher <korleski.christopher@epa.gov>	Required
Erickson, Amber <Erickson.Amber@epa.gov>	Required
Marcus, Pam <marcus.pam@epa.gov>	Required
Farris, Erika D. <Farris.Erika@epa.gov>	Required
Balasa, Kate <balasa.kate@epa.gov>	Required
Upton, Jennifer <Upton.Jennifer@epa.gov>	Required
Frazer, Brian <Frazer.Brian@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Christensen, Christina <Christensen.Christina@epa.gov>	Required
Kitamura, Louise <Kitamura.Louise@epa.gov>	Required
Kuhn, Kevin <Kuhn.Kevin@epa.gov>	Required
Thomas, Latosha <Thomas.Latosha@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

Kenny, Shannon <Kenny.Shannon@epa.gov>	Required
Chancey, Barbara <Chancey.Barbara@epa.gov>	Required
Rodgers-Jenkins, Crystal <Rodgers-Jenkins.Crystal@epa.gov>	Required
Connors, Sandra <Connors.Sandra@epa.gov>	Required
Klos, Caroline <Klos.caroline@epa.gov>	Required
Holst, Linda <holst.linda@epa.gov>	Required
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
Nagle, Deborah <Nagle.Deborah@epa.gov>	Required
Ziobro, Joseph <Ziobro.Joseph@epa.gov>	Required
Crawford, Tiffany <Crawford.Tiffany@epa.gov>	Required
Weiler, Katherine <Weiler.Katherine@epa.gov>	Required
'Osegueda, Carlos' <Osegueda.Carlos@epa.gov>	Required
'Henry, Timothy' <henry.timothy@epa.gov>	Required
'Joy Chiu' <joy.chiu@yale.edu>	Required

Time 4:00 PM – 4:45 PM
Subject Multi-Claim Water Quality Standards Litigation in Washington Call in # [redacted] Passcode [redacted]
Location 3223 WJC East
Show Time As Busy

POC: Sara Hisel-McCoy

Agenda: Tanja Crk

[redacted]

Briefing Material: Tiffany Crawford

Attendees	Name <E-mail>	Attendance
	Forsgren, Lee <Forsgren.Lee@epa.gov>	Organizer
	Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
	Nagle, Deborah <Nagle.Deborah@epa.gov>	Required
	Hisel-Mccoy, Sara <Hisel-McCoy.Sara@epa.gov>	Required
	Buffo, Corey <Buffo.Corey@epa.gov>	Required
	Fleisig, Erica <Fleisig.Erica@epa.gov>	Required
	Schroer, Lee <schroer.lee@epa.gov>	Required
	Glazer, Thomas <glazer.thomas@epa.gov>	Required
	Crk, Tanja <Crk.Tanja@epa.gov>	Required
	Barash, Shari <Barash.Shari@epa.gov>	Required
	Hladick, Christopher <hladick.christopher@epa.gov>	Required
	Vlcan, Manjali <Vlcan.Manjali@epa.gov>	Required
	Dreyfus, Melissa G. <Dreyfus.Melissa@epa.gov>	Required
	Fotouhi, David <Fotouhi.David@epa.gov>	Required
	Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Required
	Chung, Angela <Chung.Angela@epa.gov>	Required
	Szelag, Matthew <Szelag.Matthew@epa.gov>	Required
	Guzzo, Lindsay <Guzzo.Lindsay@epa.gov>	Required
	Fidis, Alexander <Fidis.Alexander@epa.gov>	Required
	Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>	Required
	Macchio, Lisa <Macchio.Lisa@epa.gov>	Required
	Ross, David P <ross.davidp@epa.gov>	Required

Crawford, Tiffany <Crawford.Tiffany@epa.gov>	Optional
Weber, Courtney <Weber.Courtney@epa.gov>	Optional
Stern, Allyn <Stern.Allyn@epa.gov>	Optional
Shaw, Hanh <Shaw.Hanh@epa.gov>	Optional
Martinez, Menchu <martinez.menchu-c@epa.gov>	Optional
Opalski, Dan <Opalski.Dan@epa.gov>	Optional
Wilcut, Lars <Wilcut.Lars@epa.gov>	Optional
Kesler, Karen <Kesler.Karen@epa.gov>	Optional

Wednesday, January 17, 2018

Time 8:30 AM – 9:00 AM
Subject Coffee w/ OGWDW
Location 2123 WJCE
Show Time As Busy

Time 9:00 AM – 9:30 AM
Subject David's planning time
Show Time As Busy
Categories Blue Category

Time 9:00 AM – 9:30 AM
Subject FW: EPA Water talk
Location Phone call--Can EPA provide a number call
Show Time As Tentative

Conference Number: [redacted]

Conference Code: [redacted]

-----Original Appointment-----
From: Herrgott, Alex H. [redacted]
[mailto [redacted]
Sent: Tuesday, January 16, 2018 4:02 PM
To: Herrgott, Alex H. [redacted] Brown, Byron; Szabo, Aaron L. [redacted]
Subject: EPA Water talk
When: Wednesday, January 17, 2018 9:00 AM-9:30 AM (UTC-05:00) Eastern Time (US & Canada).
Where: Phone call--Can EPA provide a number call

Attendees	Name <E-mail>	Attendance
	Herrgott, Alex H. [redacted] <[redacted]>	Organizer
	Ross, David P <ross.davidp@epa.gov>	Required
	Fotouhi, David <fotouhi.david@epa.gov>	Required
	Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
	Brown, Byron <brown.byron@epa.gov>	Required
	Szabo, Aaron L. [redacted] <[redacted]>	Required

Time 9:30 AM – 10:30 AM
Subject OWM Program Overview
Location 3233 WJCE Call in [redacted] passcode [redacted]
Show Time As Busy

Attendees	Name <E-mail>	Attendance
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
	Stein, Raffael <Stein.Raffael@epa.gov>	Required
	Gueriguian, Leo <Gueriguian.Leo@epa.gov>	Required
	Zobrist, Marcus <Zobrist.Marcus@epa.gov>	Required
	Simbanin, Cynthia <Simbanin.Cynthia@epa.gov>	Required
	Gilbertson, Sue <gilbertson.sue@epa.gov>	Required
	Malloy, Daniel <Malloy.Daniel@epa.gov>	Required
	Ziobro, Joseph <Ziobro.Joseph@epa.gov>	Optional
	Campbell, Ann <Campbell.Ann@epa.gov>	Optional
	Farris, Erika D. <Farris.Erika@epa.gov>	Optional
	Frace, Sheila <Frace.Sheila@epa.gov>	Optional

Time 10:30 AM – 11:30 AM

Subject FW: Dr. Martin Luther King Day 2018 Commemoration - "MLK50 Forward: Together We Win with Love for Humanity"

Location In person at HQ: WJC East, Room 1152; Remote viewing via EPAtv

Show Time As Tentative

-----Original Appointment-----
From: Allen, Tania
Sent: Tuesday, January 16, 2018 12:04 PM
To: Allen, Tania; DAA; 2017HQfirstassistants; OHR PMOs; OHR Everyone
Subject: Dr. Martin Luther King Day 2018 Commemoration - "MLK50 Forward: Together We Win with Love for Humanity"
When: Wednesday, January 17, 2018 10:30 AM-11:30 AM (UTC-05:00) Eastern Time (US & Canada).
Where: In person at HQ: WJC East, Room 1152; Remote viewing via EPAtv

Dr. Martin Luther King Day 2018 Commemoration - "MLK50 Forward: Together We Win with Love for Humanity"

We are honored to have EPA staff and management participate in a panel discussion on the life and legacy of Dr. King, Jr. on Wednesday, Jan. 17 at William Jefferson Clinton East, room 1152 from 10:30 -11:30 a.m. EST.

Broadcast information: The event will be broadcast live through EPAtv. Please remember that EPAtv is available at http://epatv.epa.gov using only Internet Explorer while on the EPA network and cannot be accessed remotely. Phone lines are not available for this event, but the video recording will be available on EPAtv On-Demand on Thursday Jan. 18(http://intranet.epa.gov/media/video/iptv-on-demand.html) for employees who are unable to participate live.

People needing reasonable accommodations should contact Kristin P. Tropp at [redacted] or tropp.kristin@epa.gov For more information on this event, please contact Dr. Lester C. Facey at [redacted] or facey.lester@epa.gov.

Attendees

Name <E-mail>	Attendance
Allen, Tania <Allen.Tania@epa.gov>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
DAA <DAA@epa.gov>	Required
2017HQfirstassistants <2017HQfirstassistants@epa.gov>	Required
OHR PMOs <OHR_PMOs@epa.gov>	Required
OHR Everyone <OHR_Everyone@epa.gov>	Required

Time	11:30 AM – 12:15 PM
Subject	Meeting with NM EMNRD
Location	3219A WJCE Call in [redacted] passcode [redacted]
Show Time As	Busy

Attendees	**Name <E-mail>**	**Attendance**
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Wagner, Kenneth <wagner.kenneth@epa.gov>	Required
	Jackson, Ryan <jackson.ryan@epa.gov>	Required
	'matthiasl.sayer@state.nm.us' <matthiasl.sayer@state.nm.us>	Required
	Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
	Strickland, Ann <Strickland.Ann@epa.gov>	Optional
	Willis, Sharnett <Willis.Sharnett@epa.gov>	Optional
	McQueen, Ken, EMNRD <Ken.McQueen@state.nm.us>	Optional
	Cheatham-Strickland, Latonia <Cheatham-Strickland.Latonia@epa.gov>	Optional

Time	1:00 PM – 2:30 PM
Subject	David's Planning time
Show Time As	Busy
Categories	Blue Category

Time	1:00 PM – 2:30 PM
Subject	E-Enterprise Leadership Council (EELC) Conference Call / [redacted] / Code [redacted]
Location	3412 WJC-N
Show Time As	Tentative

Internal Meeting/Briefing Request Form for
Chief of Operations Henry Darwin

Today's Date: December 20, 2017

Requesting Office: Office of the Chief Financial Officer (OCFO)/Office of E-Enterprise (OEE)

Title of the Meeting: E-Enterprise Leadership Council (EELC) Conference Call

Purpose: Henry Darwin, EELC Co-Chair, participates in these monthly EELC call.

Role of the Chief of Operations: EPA EELC Co-Chair

Background: Monthly EELC call in which Henry Darwin participates as the EPA EELC Co-Chair.

Last possible dates for the meeting: January 17, 2018, from 1:00 – 2:30 PM ET

Is the meeting urgent and if so, why: Regular meeting co-chaired by Henry Darwin, with state commissioners and tribal leaders.

Requested Time Length: 90 minutes (1:00 – 2:30 PM ET)

EPA Staff (Required): EPA EELC members and supporting staff: Henry Darwin; Betsy Shaw; David Bloom; Oscar Morales; Louise Wise; David Hindin; Steven Fine; Nigel Simon; Mike Shapiro; Deb Szaro; Ed Chu; Crystal Edwards; Richard (Chet) Wayland; Ron Evans; Knolyn Jones; Marc Houyoux; Andy Battin; Shana Harbour; Lisa Comer; Mary Curtis; Jessica Snyder; Belynda Roebuck; Venus Marshall; John [redacted] Patricia Thompson; Matt Leopard; Laura Letson; Mike Kenyon; Susan Jacks; Connie Dwyer; David Nicholas; Teresa Hill; Lisa Matthews; Amy Scheuer; Jerry Blancato; Sharon Gonder; Macara Lousberg; Sheryl Rosner; Paul Wintrob; Margaret Guerriero; Dana Peters; Doug Jones; Julia Cacho

EPA Staff (Optional): Sharnett Willis; Tamika Burton; Amir Ingram; Benson Sheila; Rita Wilson, Crystal Penman; Wendy Lubbe; Marilyn

StFleur

External Participants (Required): State and tribal EELC Members and supporting staff. gwagner@3rivers.net <mailto:gwagner@3rivers.net> ; lgover@campo-nsn.gov <mailto:lgover@campo-nsn.gov> ; keogh@adeq.state.ar.us <mailto:keogh@adeq.state.ar.us> ; billy@curyungtribe.com <mailto:billy@curyungtribe.com> ;

levib@lldrm.org <mailto:levib@lldrm.org> ; Casey.Thornbrugh@mwtribe.com <mailto:Casey.Thornbrugh@mwtribe.com> ; alisha.bartling@santeeoep.com <mailto:alisha.bartling@santeeoep.com> ;

memarthla@sctribe.com <mailto:memarthla@sctribe.com> ; bprintup@hetf.org <mailto:bprintup@hetf.org> ; andrew.putnam@state.co.us <mailto:andrew.putnam@state.co.us> ;

ben.grumbles@maryland.gov <mailto:ben.grumbles@maryland.gov> ; victoria.phillips@state.ma.us <mailto:victoria.phillips@state.ma.us> ; Jerry.cain@choctaw.org <mailto:Jerry.cain@choctaw.org> ;

jim.macy@nebraska.gov <mailto:jim.macy@nebraska.gov> ; scott.thompson@deq.ok.gov <mailto:scott.thompson@deq.ok.gov> ; reecemc@dhec.sc.gov <mailto:reecemc@dhec.sc.gov> ;

bryan.shaw@[redacted]texas.gov <mailto:bryan.shaw@[redacted]texas.gov> ; todd.parfitt@wyo.gov <mailto:todd.parfitt@wyo.gov> ; Kelley@adeq.state.ar.us <mailto:Kelley@adeq.state.ar.us> ;

thompsonb@adeq.state.ar.us <mailto:thompsonb@adeq.state.ar.us> ; brandy.valdezmurphy@state.co.us <mailto:brandy.valdezmurphy@state.co.us> ; bgraves@ecos.org <mailto:bgraves@ecos.org> ;

adunn@ecos.org <mailto:adunn@ecos.org> ; lynn@exchangenetwork.net <mailto:lynn@exchangenetwork.net> ; laura.williams@dnr.ga.gov <mailto:laura.williams@dnr.ga.gov> ;

mona.ingram@dnr.ga.gov <mailto:mona.ingram@dnr.ga.gov> ; james.purvis@maryland.gov <mailto:james.purvis@maryland.gov> ; kathy.bishop@maryland.gov <mailto:kathy.bishop@maryland.gov> ;

harry.hunsicker@maryland.gov <mailto:harry.hunsicker@maryland.gov> ; lydia.scheer@nau.edu <mailto:lydia.scheer@nau.edu> ; michele.clarizio@state.mn.us <mailto:michele.clarizio@state.mn.us> ;

michelle.beeman@state.mn.us <mailto:michelle.beeman@state.mn.us> ; Natasha.Fulton@nau.edu <mailto:Natasha.Fulton@nau.edu> ;

alicia.boss@nebraska.gov; <mailto:alicia.boss@nebraska.gov;%20%20>

chris.simmers@des.nh.gov <mailto:chris.simmers@des.nh.gov> ;
cindy.przekurat@deq.ok.gov <mailto:cindy.przekurat@deq.ok.gov> ;
kdurance@rossstrategic.com <mailto:kdurance@rossstrategic.com> ;

rwillis@rossstrategic.com <mailto:rwillis@rossstrategic.com> ;
sabramowitz@rossstrategic.com
<mailto:sabramowitz@rossstrategic.com> ; dstefan@rossstrategic.com
<mailto:dstefan@rossstrategic.com> ;

stephers@dhec.sc.gov <mailto:stephers@dhec.sc.gov> ;
erin.chancellor@[redacted]texas.gov <mailto:erin.chancellor@[redacted]texas.gov>
; grace.barr@[redacted]texas.gov <mailto:grace.barr@[redacted]texas.gov> ;
connie.osborne@wyo.gov <mailto:connie.osborne@wyo.gov> ;
pmcdonnell@pa.gov <mailto:pmcdonnell@pa.gov> ; hreim@pa.gov
<mailto:hreim@pa.gov>

Teleconference Required: Call-in logistics provided by Ross Strategic (environmental consultants supporting E-Enterprise), i.e., Phone: [redacted] / Code [redacted]

Video Conference Required: No

Point of Contact for the Meeting: Sheila Benson [redacted] Rita Wilson [redacted]

Categories Red Category

Attendees

Name <E-mail>	Attendance
Darwin, Henry <darwin.henry@epa.gov>	Organizer
Shaw, Betsy <Shaw.Betsy@epa.gov>	Required
Bloom, David <Bloom.David@epa.gov>	Required
Morales, Oscar <Morales.Oscar@epa.gov>	Required
Wise, Louise <Wise.Louise@epa.gov>	Required
Hindin, David <Hindin.David@epa.gov>	Required
Fine, Steven <fine.steven@epa.gov>	Required

Simon, Nigel <Simon.Nigel@epa.gov>	Required
Shapiro, Mike <Shapiro.Mike@epa.gov>	Required
Szaro, Deb <Szaro.Deb@epa.gov>	Required
Chu, Ed <Chu.Ed@epa.gov>	Required
Edwards, Crystal <Edwards.Crystal@epa.gov>	Required
Wayland, Richard <Wayland.Richard@epa.gov>	Required
Evans, Ron <Evans.Ron@epa.gov>	Required
Jones, Knolyn <Jones.Knolyn@epa.gov>	Required
Houyoux, Marc <Houyoux.Marc@epa.gov>	Required
Battin, Andrew <Battin.Andrew@epa.gov>	Required
Harbour, Shana <Harbour.Shana@epa.gov>	Required
Comer, Lisa <Comer.Lisa@epa.gov>	Required
Curtis, Mary <Curtis.Mary@epa.gov>	Required
Snyder, Jessica <Snyder.Jessica@epa.gov>	Required
Roebuck, Belynda <Roebuck.Belynda@epa.gov>	Required
Marshall, Venus <Marshall.Venus@epa.gov>	Required
[redacted] John <[redacted]John@epa.gov>	Required
Thompson, Patricia <thompson.patricia@epa.gov>	Required
Leopard, Matthew <Leopard.Matthew@epa.gov>	Required
Letson, Laura <letson.laura@epa.gov>	Required
Kenyon, Michael <Kenyon.Michael@epa.gov>	Required
Jacks, Susan <Jacks.Susan@epa.gov>	Required
Dwyer, Connie <Dwyer.Connie@epa.gov>	Required

Nicholas, David <Nicholas.David@epa.gov>	Required
Hill, Teresa <Hill.Teresa@epa.gov>	Required
Matthews, Lisa <Matthews.Lisa@epa.gov>	Required
Scheuer, Amy <Scheuer.Amy@epa.gov>	Required
Blancato, Jerry <Blancato.Jerry@epa.gov>	Required
Gonder, Sharon <Gonder.Sharon@epa.gov>	Required
Lousberg, Macara <Lousberg.Macara@epa.gov>	Required
Rosner, Sheryl <Rosner.Sheryl@epa.gov>	Required
Wintrob, Paul <Wintrob.Paul@epa.gov>	Required
Guerriero, Margaret <guerriero.margaret@epa.gov>	Required
Peters, Dana <Peters.Dana@epa.gov>	Required
Jones, Doug <jones.doug@epa.gov>	Required
Cacho, Julia <Cacho.Julia@epa.gov>	Required
gwagner@3rivers.net <gwagner@3rivers.net>	Required
lgover@campo-nsn.gov <lgover@campo-nsn.gov>	Required
keogh@adeq.state.ar.us <keogh@adeq.state.ar.us>	Required
billy@curyungtribe.com <billy@curyungtribe.com>	Required
levib@lldrm.org <levib@lldrm.org>	Required
Casey.Thornbrugh@mwtribe.com <Casey.Thornbrugh@mwtribe.com>	Required
Alisha.bartling@santeeoep.com <Alisha.bartling@santeeoep.com>	Required
memarthla@sctribe.com <memarthla@sctribe.com>	Required

bprintup@hetf.org <bprintup@hetf.org>	Required
andrew.putnam@state.co.us <andrew.putnam@state.co.us>	Required
Ben Grumbles <ben.grumbles@maryland.gov>	Required
victoria.phillips@state.ma.us <victoria.phillips@state.ma.us>	Required
jerry.cain@choctaw.org <jerry.cain@choctaw.org>	Required
jim.macy@nebraska.gov <jim.macy@nebraska.gov>	Required
scott.thompson@deq.ok.gov <scott.thompson@deq.ok.gov>	Required
reecemc@dhec.sc.gov <reecemc@dhec.sc.gov>	Required
bryan.shaw@[redacted]texas.gov <bryan.shaw@[redacted]texas.gov>	Required
todd.parfitt@wyo.gov <todd.parfitt@wyo.gov>	Required
Kelley@adeq.state.ar.us <Kelley@adeq.state.ar.us>	Required
thompsonb@adeq.state.ar.us <thompsonb@adeq.state.ar.us>	Required
brandy.valdezmurphy@state.co.us <brandy.valdezmurphy@state.co.us>	Required
bgraves@ecos.org <bgraves@ecos.org>	Required
Alexandra Dunn <adunn@ecos.org>	Required
Lynn Capuano <lynn@exchangenetwork.net>	Required
laura.williams@dnr.ga.gov <laura.williams@dnr.ga.gov>	Required
mona.ingram@dnr.ga.gov <mona.ingram@dnr.ga.gov>	Required
james.purvis@maryland.gov <james.purvis@maryland.gov>	Required
kathy.bishop@maryland.gov <kathy.bishop@maryland.gov>	Required

Harry Hunsicker <harry.hunsicker@maryland.gov>	Required
lydia.scheer@nau.edu <lydia.scheer@nau.edu>	Required
michele.clarizio@state.mn.us <michele.clarizio@state.mn.us>	Required
michelle.beeman@state.mn.us <michelle.beeman@state.mn.us>	Required
Natasha.Fulton@nau.edu <Natasha.Fulton@nau.edu>	Required
alicia.boss@nebraska.gov <alicia.boss@nebraska.gov>	Required
chris.simmers@des.nh.gov <chris.simmers@des.nh.gov>	Required
cindy.przekurat@deq.ok.gov <cindy.przekurat@deq.ok.gov>	Required
Dana Stefan <dstefan@rossstrategic.com>	Required
stephers@dhec.sc.gov <stephers@dhec.sc.gov>	Required
Erin Chancellor <erin.chancellor@[redacted]texas.gov>	Required
grace.barr@[redacted]texas.gov <grace.barr@[redacted]texas.gov>	Required
connie.osborne@wyo.gov <connie.osborne@wyo.gov>	Required
pmcdonnell@pa.gov <pmcdonnell@pa.gov>	Required
Reim, Heather <hreim@pa.gov>	Required
Kristen Durance <kdurance@rossstrategic.com>	Required
Burton, Tamika <burton.tamika@epa.gov>	Optional
Carroll, Carly <Carroll.Carly@epa.gov>	Optional
Ingram, Amir <Ingram.Amir@epa.gov>	Optional
Benson, Sheila <Benson.Sheila@epa.gov>	Optional
Wilson, Rita <Wilson.Rita@epa.gov>	Optional

Penman, Crystal <Penman.Crystal@epa.gov>	Optional
Lubbe, Wendy <Lubbe.Wendy@epa.gov>	Optional
St. Fleur, Marilyn <StFleur.Marilyn@epa.gov>	Optional
Flynn, Mike <Flynn.Mike@epa.gov>	Optional
Chris Simmers <chris.simmers@doit.nh.gov>	Optional
Tyler, Tom <Tyler.Tom@epa.gov>	Optional
Robert.Zimmerman@state.de.us <Robert.Zimmerman@state.de.us>	Optional
saba.tahmassebi@deq.ok.gov <saba.tahmassebi@deq.ok.gov>	Optional
DeBell, Kevin <debell.kevin@epa.gov>	Optional
krakouskas@ecos.org <krakouskas@ecos.org>	Optional
Flournoy, Karen <Flournoy.Karen@epa.gov>	Optional
tburack@sheehan.com <tburack@sheehan.com>	Optional
Ross, David P <ross.davidp@epa.gov>	Optional
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Optional
Barbery, Andrea <Barbery.Andrea@epa.gov>	Optional

Time 2:30 PM – 3:30 PM

Subject OGWDW - Program Overview Call in [redacted] passcode [redacted]

Location 3233 WJCE

Show Time As Busy

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Tiago, Joseph <Tiago.Joseph@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required

Mclain, Jennifer <Mclain.Jennifer@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Bissonette, Eric <Bissonette.Eric@epa.gov>	Required
Cooper, Tiffany <Cooper.Tiffany@epa.gov>	Required
Travers, David <Travers.David@epa.gov>	Required
Newberry, Debbie <Newberry.Debbie@epa.gov>	Required
Thompkins, Anita <Thompkins.Anita@epa.gov>	Required
Bergman, Lisa <Bergman.Lisa@epa.gov>	Required
Bergman, Ronald <Bergman.Ronald@epa.gov>	Required
Corr, Elizabeth <Corr.Elizabeth@epa.gov>	Required
Burneson, Eric <Burneson.Eric@epa.gov>	Required
Lopez-Carbo, Maria <Lopez-Carbo.Maria@epa.gov>	Required
Huff, Lisa <Huff.Lisa@epa.gov>	Optional
Christ, Lisa <Christ.Lisa@epa.gov>	Optional
Weisman, Richard <Weisman.Richard@epa.gov>	Optional
Carroll, Gregory <Carroll.Gregory@epa.gov>	Optional
Hautman, Dan <Hautman.Dan@epa.gov>	Optional

Time 3:30 PM – 4:15 PM
Subject David's Planning time
Show Time As Busy
Categories Blue Category

Time 4:15 PM – 5:15 PM
Subject US - Mexico Border Briefing Call in [redacted] passcode [redacted]
Location 3233 WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Fuentes, Awilda <Fuentes.Awilda@epa.gov>	Required
Frace, Sheila <Frace.Sheila@epa.gov>	Required
Eberhardt, Doug <Eberhardt.Doug@epa.gov>	Required
Liden, Douglas <Liden.Douglas@epa.gov>	Required
Allen, Catherine <Allen.Catherine@epa.gov>	Optional
Stein, Raffael <Stein.Raffael@epa.gov>	Optional
Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Optional
Torres, Tomas <Torres.Tomas@epa.gov>	Optional
Aguirre, Hector <Aguirre.Hector@epa.gov>	Optional
Almodovar, Lisa <Almodovar.Lisa@epa.gov>	Optional

Thursday, January 18, 2018

Time 10:00 AM – 11:00 AM

Subject WOTUS Briefing #2 Call in [redacted] passcode [redacted]

Location 3233 WJCE

Show Time As Busy

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
McDavit, Michael W. <Mcdavit.Michael@epa.gov>	Required

Downing, Donna <Downing.Donna@epa.gov>	Required
Christensen, Damaris <Christensen.Damaris@epa.gov>	Required
Chemerys, Ruth <Chemerys.Ruth@epa.gov>	Required
Kwok, Rose <Kwok.Rose@epa.gov>	Required
Wesson, Dolores <Wesson.Dolores@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Peck, Gregory <Peck.Gregory@epa.gov>	Optional
Weiler, Katherine <Weiler.Katherine@epa.gov>	Optional

Time 11:00 AM – 12:00 PM
Subject LCR Briefing #2 Call in [redacted] passcode [redacted]
Location 3233 WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Burneson, Eric <Burneson.Eric@epa.gov>	Required
Lopez-Carbo, Maria <Lopez-Carbo.Maria@epa.gov>	Required
Tiago, Joseph <Tiago.Joseph@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Wadlington, Christina <Wadlington.Christina@epa.gov>	Required
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Christ, Lisa <Christ.Lisa@epa.gov>	Optional
Huff, Lisa <Huff.Lisa@epa.gov>	Optional

	Penman, Crystal <Penman.Crystal@epa.gov>	Required
	Mclain, Jennifer <Mclain.Jennifer@epa.gov>	Optional

Time 1:00 PM – 2:00 PM
Subject PFAS briefing #2 Call in [redacted] passcode [redacted]
Location 3233 WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Tiago, Joseph <Tiago.Joseph@epa.gov>	Required
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Burneson, Eric <Burneson.Eric@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Holsinger, Hannah <Holsinger.Hannah@epa.gov>	Required
Behl, Betsy <Behl.Betsy@epa.gov>	Required
Mclain, Jennifer <Mclain.Jennifer@epa.gov>	Required
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required

Time 2:00 PM – 2:30 PM
Subject General Call Dave's polycom [redacted]
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Fotouhi, David <fotouhi.david@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Optional

Time 2:30 PM – 4:00 PM

Subject David's Planning time
Show Time As Busy
Categories Blue Category

Time 4:00 PM – 4:30 PM
Subject Meeting with Justin Maierhofer
Location 1201 Constitution Ave NW, Washington DC 20460 3233 WJCE Please call [redacted] for escort
Show Time As Busy
Attendees: David Ayliffe and Sherry Quirk, Justin Maierhofer
Categories Blue Category
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
jcmaierhofer@tva.gov <jcmaierhofer@tva.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required

Time 6:00 PM – 9:00 PM
Subject FW: Informal Happy Hour - Celebrating One Year
Location Blackfinn 1620 I Street NW, Washington, DC 20006
Show Time As Tentative

-----Original Appointment-----
From: Rateike, Bradley A. [redacted]
[mailto[redacted]
Sent: Friday, January 12, 2018 12:32 PM
To: Rateike, Bradley A. [redacted] Wilcox, Jahan; Konkus, John; Hewitt, James; Block, Molly; Daniell, Kelsi; Abboud, Michael; Ferguson, Lincoln; Bennett, Tate; Lyons, Troy; Ford, Hayley; Ross, Tyler E. [redacted] Kennedy, Adam R. [redacted] Parkinson, Andrew Z. [redacted] Dorr, Kaelan K. [redacted] Walters, Lindsay E. [redacted] LeHardy, Annie H. [redacted] Strom, Natalie M. [redacted] Schaffer, Ari B. [redacted] Cheung, Steven [redacted] Magyarits, Caroline S. [redacted] Barger, Lara R. [redacted] Mocarski, Ashley D. [redacted] MacInnis, Hannah F. [redacted] Hicks, Catherine F. [redacted] Raimondi, Marc; Oberg, Elizabeth A. [redacted] Agen, Jarrod P. [redacted] Hurley, Carolina L. [redacted] Love, Kelly A. [redacted] Anton, Michael N. [redacted] Henning, Alexa A. [redacted] Fetalvo, Ninio J. [redacted] Romano, Jenny C. [redacted] Rinat, Ory S. [redacted] Raffel, Joshua H. [redacted] Sims, Cliff D. [redacted] Hulse, Elliott Y. [redacted] Ferre, Helen A. [redacted] Sanders, Sarah H. [redacted] Boza-Holman, Sofia M. [redacted] Sadler, Kelly J. [redacted] El-Fakir, Alexander T. [redacted] Morrone, Vanessa M. [redacted] Walker, Evan J. [redacted] Karnes, Kate L. [redacted] Ditto, Jessica E. [redacted] Hicks, Hope C. [redacted] Coia, Giovanna T. [redacted] Gallegos, Jonathan S. [redacted] Hemming, Andrew J. [redacted] Shah, Raj S. [redacted] Shoemaker, Clay M. [redacted]

Meadows, Michelle M. [redacted] Scavino, Dan J. [redacted] Nasim, Laura F. [redacted] Propp, Rebeccah R. [redacted] Farah, Alyssa A. [redacted] Price, Katie R. [redacted] Purucker, Katherine M. [redacted] Wall, Kathryn E. [redacted] Bremberg, Andrew P. [redacted] Winfree, Paul L. [redacted] Goad, Robert T. [redacted] Griswold, Julia C. [redacted] Jack, Brian T. [redacted] Smith, Ja'Ron K. [redacted] Varsamis, Alecsandar J. [redacted] (Intern); Trainer, Nick A. [redacted] Leighton, Rosalyn A. [redacted] Clark, Justin R. [redacted] Kirkland, William H. [redacted] Hoelscher, Douglas L. [redacted] McBride, Emily J. [redacted] Gunn, Ashley L. [redacted] McCann, Meghan B. [redacted] Stepien, William [redacted] Sewell, Jack B. [redacted] Koenig, Andrew D. [redacted] Lai, Joseph G. [redacted] Rothschild, Amanda J. [redacted] Ken Nahigian; keith@nahigianstrategies.com <mailto:keith@nahigianstrategies.com> ; laura_rigas@ios.doi.gov <mailto:laura_rigas@ios.doi.gov> ; John.Ullyot@va.gov <mailto:John.Ullyot@va.gov> ; Lydia.Blaha@va.gov <mailto:Lydia.Blaha@va.gov> ; heather_swift@ios.doi.gov <mailto:heather_swift@ios.doi.gov> ; Brennan Hart - S; Emily Murphy - AC; Davis, Emily K. [redacted] Griffin, Payne P. [redacted] Doocey, Sean E. [redacted] Locetta, Jennifer R. [redacted] DeStefano, John J. [redacted] Henson, Clayton T. [redacted] Gribbin, DJ J. [redacted] Starling, Ray A. [redacted] Bash, Zina G. [redacted] Bash, John F. [redacted] Campau, Alexandra P. [redacted] Dearborn, Rick A. [redacted] Fisher, Daniel L. [redacted] Fisher, Mary-Kate [redacted] Hiler, Jonathan D. [redacted] McGinley, William J. [redacted] Mashburn, John K. [redacted] Lori Mashburn; Flynn, Matthew J. [redacted] Uli, Gabriella M. [redacted] Navarro, Peter K. [redacted] Gray, Alexander B. [redacted] Leinenkugel, Jake; Davis, May M. [redacted] Lyons, Derek S. [redacted] Butterfield, Nicholas W. [redacted] Rogers.Jillian.B@dol.gov <mailto:Rogers.Jillian.B@dol.gov> ; lineberger.timothy.l@dol.gov <mailto:lineberger.timothy.l@dol.gov> ; Bell, Kirk (OST); andy.post@dot.gov <mailto:andy.post@dot.gov> ; russell_newell@ios.doi.gov <mailto:russell_newell@ios.doi.gov> ; alex_hinson@ios.doi.gov <mailto:alex_hinson@ios.doi.gov> ; Chiokadze, David G.; Wiles, Caroline S. [redacted] Patenaude, Meghan C. [redacted] Pavlik, Jennifer L. [redacted] Peede, Bobby L. [redacted] Karem, Jordan J. [redacted] Clift, McKenzie C. [redacted] McLean, Jeffrey J. [redacted] Freeland, Jeff K. [redacted] Doyle, Brett W. [redacted] Doyle, Emma K. [redacted] sarah.habansky@hq.doe.gov <mailto:sarah.habansky@hq.doe.gov> ; Makin, Sarah E. [redacted] Clifton, Patrick A. [redacted] Haidet, Michael B. [redacted] Bueche, Conner F. [redacted] Morgan, Matthew E. [redacted] Morgen, Hunter M. [redacted] cora.mandy@hq.dhs.gov <mailto:cora.mandy@hq.dhs.gov> ; Roma.Daravi@sba.gov <mailto:Roma.Daravi@sba.gov> ; Duke, Hannah A. [redacted] jrockas@doc.gov <mailto:jrockas@doc.gov> ; Sayegh, Tony E. [redacted] jason.chung@treasury.gov <mailto:jason.chung@treasury.gov> ; Seth.Unger@treasury.gov <mailto:Seth.Unger@treasury.gov> ; Giuliani, Andrew H. [redacted] Weyeneth, Taylor P. [redacted] Eason, William J. [redacted] Haus, Bob; Lindsay Jancek - Communications/Research; Jarmula, Ryan L.

[redacted] Matt.Lloyd@hhs.gov <mailto:Matt.Lloyd@hhs.gov> ; Brady Brookes; Mullen, Courtney E. [redacted] Gillfillan, Ross T. [redacted] Kratsios, Michael J. [redacted] Paoletta, Mark R. [redacted] Tsaveras, Thomas J. [redacted] Andersen, Whitney N. [redacted] Block, Monica J. [redacted] Mahfouz, Michael D. [redacted] Holley, Michael Q. [redacted] Conklin, Hayley C. [redacted] Potter, Caroline J. [redacted] Michael, Molly A. [redacted] Pedersen, Brittany N. [redacted] Murrell, Baxter R. [redacted] Olmem, Andrew J. [redacted] Blase, Brian C. [redacted] Talento, Kathryn F. [redacted] Catanzaro, Michael J. [redacted] Walsh, Brian K. [redacted] Roscoe, John M. [redacted] Bell, Ashley; [redacted] <mailto [redacted] ; kamran.daravi@hhs.gov <mailto:kamran.daravi@hhs.gov> ; wellnerk@state.gov <mailto:wellnerk@state.gov> ; Scarlett, Brian L. [redacted] Braid, Duncan M. [redacted] Callaghan, Christine B. [redacted] Bucci, Kristine A. [redacted] Levin, Tyler S. [redacted] McDonald, Michael P. [redacted] Cabaniss, Anna Katherine K. [redacted] Davis, Natalie; Anthony Pugliese; Paranzino, Anthony M. [redacted] Rader, John N. [redacted] Williams, Thomas M CIV OSD OUSD POLICY (US); [redacted] <mailto [redacted] ; Letendre, Daisy; daniel.kowalski@treasury.gov <mailto:daniel.kowalski@treasury.gov> ; Alden.Wood@treasury.gov <mailto:Alden.Wood@treasury.gov> ; Stephen.Pavlick@treasury.gov <mailto:Stephen.Pavlick@treasury.gov> ; McGinley, Mike H. [redacted] Zachary.McEntee@treasury.gov <mailto:Zachary.McEntee@treasury.gov> ; Anderson, Jessica C. [redacted] Patel, Neal A. [redacted] Baker, Coalter; Harris, Jeffrey M. [redacted] John.Wolf.Wagner@va.gov <mailto:John.Wolf.Wagner@va.gov> ; Liggett, Haywood A. [redacted] Lucas, Kelsey R. [redacted] michael.downing@gsa.gov <mailto:michael.downing@gsa.gov> ; Martha Newton; Doty, George E. [redacted] Grieco, Christopher K. [redacted] Lataif, Emily P. [redacted] Zulauf, Mathew [redacted] Salvi, Mary E. [redacted] stmiles@themayfairgroupdc.com <mailto:stmiles@themayfairgroupdc.com> ; Lira, Mathew L. [redacted] Casey, Sean C. [redacted] Moorhead, Quellie U. [redacted] Georges, Liza B. [redacted] Moran, John S. [redacted] Passantino, Stefan C. [redacted] Schultz, James D. [redacted] McCommas, Stuart S. [redacted] Roman, Michael A. [redacted] danielle@nahigianstrategies.com <mailto:danielle@nahigianstrategies.com> ; Tom Carter; zacch.ashcraft@nasa.gov <mailto:zacch.ashcraft@nasa.gov> ; Wang, Jen Rae (HQ-NA000); Harmsen, Breanne M. [redacted] downey_magallanes@ios.doi.gov <mailto:downey_magallanes@ios.doi.gov> ; Johanna Persing - Communications/Research; sdollman@donaldtrump.com <mailto:sdollman@donaldtrump.com> ; McLaren, Moutray M. [redacted] Bowman, Liz

Subject: Fwd: Informal Happy Hour - Celebrating One Year

When: Thursday, January 18, 2018 6:00 PM-9:00 PM (UTC-05:00) Eastern Time (US & Canada).

Where: Blackfinn 1620 I Street NW, Washington, DC 20006

Hayley, Can you forward to team?

Sent from my iPhone

Begin forwarded message:

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Emily K. [redacted] <[redacted]
<mailto[redacted]>, "Griffin, Payne P. [redacted]
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[redacted] <
<mailto [redacted] >, "Eason, William J.
[redacted] <
<mailto [redacted] >, "Haus, Bob"
<Bob.Haus@hq.doe.gov <mailto:Bob.Haus@hq.doe.gov> >, "Lindsay
Jancek - Communications/Research" <LJancek@gop.com
<mailto:LJancek@gop.com> >, "Jarmula, Ryan L. [redacted]
<[redacted] <mailto [redacted]
>, "Matt.Lloyd@hhs.gov <mailto:Matt.Lloyd@hhs.gov> "
<Matt.Lloyd@hhs.gov <mailto:Matt.Lloyd@hhs.gov> >, "Brady Brookes"
<Brady.Brookes@cms.hhs.gov <mailto:Brady.Brookes@cms.hhs.gov> >,
"Mullen, Courtney E. [redacted] <
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[redacted] <

<mailto:[redacted]>, "Roscoe, John M. [redacted]
<[redacted] <mailto:[redacted]
>, "Bell, Ashley" <abell2@peacecorps.gov
<mailto:abell2@peacecorps.gov> >, [redacted]
<mailto:[redacted]" <[redacted]
<mailto:[redacted]>, "kamran.daravi@hhs.gov
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<[redacted] <mailto:[redacted]
>, "Braid, Duncan M. [redacted] <[redacted]
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<mailto:[redacted]>, "Cabaniss, Anna
Katherine K. [redacted] <[redacted]
<mailto:[redacted]>, "Wilcox, Jahan"
<wilcox.jahan@epa.gov <mailto:wilcox.jahan@epa.gov> >, "Davis,
Natalie" <natalie_davis@ios.doi.gov <mailto:natalie_davis@ios.doi.gov>
>, "Anthony Pugliese" <Anthony.Pugliese@ferc.gov
<mailto:Anthony.Pugliese@ferc.gov> >, "Paranzino, Anthony M.
[redacted] <[redacted]
<mailto:[redacted]>, "Rader, John N.
[redacted] <[redacted]
<mailto:[redacted]>, "Williams, Thomas M CIV OSD
OUSD POLICY (US)" <thomas.m.williams263.civ@mail.mil
<mailto:thomas.m.williams263.civ@mail.mil> >, '[redacted]
<mailto:[redacted]" <[redacted]
<mailto:[redacted]>, "Letendre, Daisy"
<letendre.daisy@epa.gov <mailto:letendre.daisy@epa.gov> >,
"daniel.kowalski@treasury.gov <mailto:daniel.kowalski@treasury.gov> "
<daniel.kowalski@treasury.gov <mailto:daniel.kowalski@treasury.gov>
>, "Alden.Wood@treasury.gov <mailto:Alden.Wood@treasury.gov> "
<Alden.Wood@treasury.gov <mailto:Alden.Wood@treasury.gov> >,
"Ferguson, Lincoln" <ferguson.lincoln@epa.gov
<mailto:ferguson.lincoln@epa.gov> >, "Stephen.Pavlick@treasury.gov
<mailto:Stephen.Pavlick@treasury.gov> "
<Stephen.Pavlick@treasury.gov <mailto:Stephen.Pavlick@treasury.gov>
>, "McGinley, Mike H. [redacted] <[redacted]
<mailto:[redacted]>,
"Zachary.McEntee@treasury.gov
<mailto:Zachary.McEntee@treasury.gov> "
<Zachary.McEntee@treasury.gov
<mailto:Zachary.McEntee@treasury.gov> >, "Anderson, Jessica C.
[redacted] <[redacted]

<mailto [redacted] >, "Patel, Neal A. [redacted]
<[redacted] <mailto [redacted] >,
"Baker, Coalter" <[redacted]
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<[redacted]
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<mailto:John.Wolf.Wagner@va.gov> " <John.Wolf.Wagner@va.gov
<mailto:John.Wolf.Wagner@va.gov> >, "Liggett, Haywood A. [redacted]
<[redacted]
<mailto [redacted] >, "Lucas, Kelsey R. [redacted]
<[redacted] <mailto [redacted] >,
"michael.downing@gsa.gov <mailto:michael.downing@gsa.gov> "
<michael.downing@gsa.gov <mailto:michael.downing@gsa.gov> >,
"Martha Newton" <[redacted]
<mailto [redacted] >, "Doty, George E. [redacted]
<[redacted] <mailto [redacted] >,
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<mailto [redacted] >, "Lataif, Emily P.
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<mailto [redacted] >,
"stmiles@themayfairgroupdc.com
<mailto:stmiles@themayfairgroupdc.com> "
<stmiles@themayfairgroupdc.com
<mailto:stmiles@themayfairgroupdc.com> >, "Lira, Mathew L.
[redacted] <[redacted]
<mailto [redacted] >, "Casey, Sean C. [redacted]
<[redacted] <mailto [redacted] >,
"Moorhead, Quellie U. [redacted] <[redacted]
<mailto [redacted] >, "Georges, Liza B.
[redacted] <[redacted]
<mailto [redacted] >, "Moran, John S. [redacted]
<[redacted] <mailto [redacted] >,
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[redacted] <[redacted]
<mailto [redacted] >,
"danielle@nahigianstrategies.com
<mailto:danielle@nahigianstrategies.com> "
<danielle@nahigianstrategies.com
<mailto:danielle@nahigianstrategies.com> >, "Tom Carter"
<tom@tlcarter.com <mailto:tom@tlcarter.com> >,
"zacch.ashcraft@nasa.gov <mailto:zacch.ashcraft@nasa.gov> "
<zacch.ashcraft@nasa.gov <mailto:zacch.ashcraft@nasa.gov> >, "Wang,

Jen Rae (HQ-NA000)" <jenrae.wang@nasa.gov
<mailto:jenrae.wang@nasa.gov> >, "Harmsen, Breanne M. [redacted]
<[redacted]
<mailto [redacted] >,
"downey_magallanes@ios.doi.gov
<mailto:downey_magallanes@ios.doi.gov> "
<downey_magallanes@ios.doi.gov
<mailto:downey_magallanes@ios.doi.gov> >, "Johanna Persing -
Communications/Research" <JPersing@gop.com
<mailto:JPersing@gop.com> >, "sdollman@donaldtrump.com
<mailto:sdollman@donaldtrump.com> " <sdollman@donaldtrump.com
<mailto:sdollman@donaldtrump.com> >, "McLaren, Moutray M.
[redacted] <[redacted]
<mailto [redacted] >, "Bowman, Liz"
<Bowman.Liz@epa.gov <mailto:Bowman.Liz@epa.gov> >
Subject: Informal Happy Hour - Celebrating One Year

Please join us for an informal happy hour to mark the completion of the first year of the Trump Administration. We have a large space reserved for our group in the back of Blackfinn Ameripub (near the White House). Please invite any friends of the Administration who would like to celebrate with us.

See you there!

Brad Rateike
Director of Cabinet Communications
White House Office of Communications
[redacted]
<mailto [redacted]
Desk: [redacted]
Mobile: [redacted]

Categories Blue Category

Attendees

Name <E-mail>	Attendance
Rateike, Bradley A. [redacted] <[redacted]	Organizer
Abboud, Michael <abboud.michael@epa.gov>	Required
Baptist, Erik <Baptist.Erik@epa.gov>	Required
Beck, Nancy <Beck.Nancy@epa.gov>	Required
Bennett, Tate <Bennett.Tate@epa.gov>	Required
Block, Molly <block.molly@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required

Bolen, Brittany <bolen.brittany@epa.gov>	Required
Bolen, Derrick <bolen.derrick@epa.gov>	Required
Bowman, Liz <Bowman.Liz@epa.gov>	Required
Brown, Byron <brown.byron@epa.gov>	Required
Burke, Marcella <burke.marcella@epa.gov>	Required
Cory, Preston (Katherine) <Cory.Preston@epa.gov>	Required
Daniell, Kelsi <daniell.kelsi@epa.gov>	Required
Darwin, Henry <darwin.henry@epa.gov>	Required
Darwin, Veronica <darwin.veronica@epa.gov>	Required
Dominguez, Alexander <dominguez.alexander@epa.gov>	Required
Dourson, Michael <dourson.michael@epa.gov>	Required
Dravis, Samantha <dravis.samantha@epa.gov>	Required
Falvo, Nicholas <falvo.nicholas@epa.gov>	Required
Feeley, Drew (Robert) <Feeley.Drew@epa.gov>	Required
Ferguson, Lincoln <ferguson.lincoln@epa.gov>	Required
Ford, Hayley <ford.hayley@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Fotouhi, David <Fotouhi.David@epa.gov>	Required
Frye, Tony (Robert) <frye.robert@epa.gov>	Required
Gordon, Stephen <gordon.stephen@epa.gov>	Required
Greaves, Holly <greaves.holly@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required

Gunasekara, Mandy <Gunasekara.Mandy@epa.gov>	Required
Hanson, Paige (Catherine) <hanson.catherine@epa.gov>	Required
Harlow, David <harlow.david@epa.gov>	Required
Hewitt, James <hewitt.james@epa.gov>	Required
Hupp, Millan <hupp.millan@epa.gov>	Required
Jackson, Ryan <jackson.ryan@epa.gov>	Required
Kelly, Albert <kelly.albert@epa.gov>	Required
Konkus, John <konkus.john@epa.gov>	Required
Kundinger, Kelly <kundinger.kelly@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Letendre, Daisy <letendre.daisy@epa.gov>	Required
Lovell, Will (William) <lovell.william@epa.gov>	Required
Lyons, Troy <lyons.troy@epa.gov>	Required
McMurray, Forrest <mcmurray.forrest@epa.gov>	Required
Munoz, Charles <munoz.charles@epa.gov>	Required
Palich, Christian <palich.christian@epa.gov>	Required
Ringel, Aaron <ringel.aaron@epa.gov>	Required
Rodrick, Christian <rodrick.christian@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Sands, Jeffrey <sands.jeffrey@epa.gov>	Required
Schwab, Justin <Schwab.Justin@epa.gov>	Required
Shimmin, Kaitlyn <shimmin.kaitlyn@epa.gov>	Required
Traylor, Patrick <traylor.patrick@epa.gov>	Required

Wagner, Kenneth <wagner.kenneth@epa.gov>	Required
Wehrum, Bill <Wehrum.Bill@epa.gov>	Required
White, Elizabeth <white.elizabeth@epa.gov>	Required
Wilcox, Jahan <wilcox.jahan@epa.gov>	Required
Woods, Clint <woods.clint@epa.gov>	Required
Yamada, Richard (Yujiro) <yamada.richard@epa.gov>	Required
Ross, Tyler E. [redacted]	Required
Kennedy, Adam R. [redacted]	Required
Parkinson, Andrew Z. [redacted]	Required
Dorr, Kaelan K. [redacted]	Required
Walters, Lindsay E. [redacted]	Required
LeHardy, Annie H. [redacted]	Required
Strom, Natalie M. [redacted]	Required
Schaffer, Ari B. [redacted]	Required
Cheung, Steven [redacted]	Required
Magyarits, Caroline S. [redacted]	Required
Barger, Lara R. [redacted]	Required
Mocarski, Ashley D. [redacted]	Required
MacInnis, Hannah F. [redacted]	Required

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Hicks, Catherine F. [redacted] Required
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Raimondi, Marc [redacted] Required

Oberg, Elizabeth A. [redacted] Required
[redacted]

Agen, Jarrod P. [redacted] Required

Hurley, Carolina L. [redacted] Required
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Love, Kelly A. [redacted] Required

Anton, Michael N. [redacted] Required
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Henning, Alexa A. [redacted] Required
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Fetalvo, Ninio J. [redacted] Required
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Romano, Jenny C. [redacted] Required
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Rinat, Ory S. [redacted] Required

Raffel, Joshua H. [redacted] Required
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Sims, Cliff D. [redacted] Required

Hulse, Elliott Y. [redacted] Required

Ferre, Helen A. [redacted] Required

Sanders, Sarah H. [redacted] Required
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Boza-Holman, Sofia M. [redacted] Required
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Sadler, Kelly J. [redacted] Required

El-Fakir, Alexander T. [redacted] Required

Morrone, Vanessa M. [redacted] Required

Walker, Evan J. [redacted] Required

Karnes, Kate L. [redacted] Required

Ditto, Jessica E. [redacted] Required

Hicks, Hope C. [redacted] Required

Coia, Giovanna T. [redacted] Required

Gallegos, Jonathan S. [redacted] Required

Hemming, Andrew J. [redacted] Required

Shah, Raj S. [redacted] Required

Shoemaker, Clay M. [redacted] Required

Meadows, Michelle M. [redacted] Required

Scavino, Dan J. [redacted] Required

Nasim, Laura F. [redacted] Required

Propp, Rebeccah R. [redacted] Required

Farah, Alyssa A. [redacted] Required

Price, Katie R. [redacted] Required

Purucker, Katherine M. [redacted] Required

Wall, Kathryn E. [redacted] Required

Bremberg, Andrew P. [redacted] Required

Winfree, Paul L. [redacted] Required

Goad, Robert T. [redacted] Required

Griswold, Julia C. [redacted] Required

Jack, Brian T. [redacted] Required

Smith, Ja'Ron K. [redacted] Required

Varsamis, Alecsandar J. [redacted] (Intern) Required

Trainer, Nick A. [redacted] Required

Leighton, Rosalyn A. [redacted] Required

Clark, Justin R. [redacted] Required

Kirkland, William H. [redacted] Required

Hoelscher, Douglas L. [redacted] Required

McBride, Emily J. [redacted] Required

Gunn, Ashley L. [redacted] Required

McCann, Meghan B. [redacted] Required

Stepien, William [redacted] Required

Sewell, Jack B. [redacted]	Required
Koenig, Andrew D. [redacted]	Required
Lai, Joseph G. [redacted]	Required
Rothschild, Amanda J. [redacted]	Required
Ken Nahigian <ken@nahigianstrategies.com>	Required
keith@nahigianstrategies.com <keith@nahigianstrategies.com>	Required
laura_rigas@ios.doi.gov <laura_rigas@ios.doi.gov>	Required
John.Ullyot@va.gov <John.Ullyot@va.gov>	Required
Lydia.Blaha@va.gov <Lydia.Blaha@va.gov>	Required
heather_swift@ios.doi.gov <heather_swift@ios.doi.gov>	Required
Brennan Hart - S <brennan.hart@gsa.gov>	Required
Emily Murphy - AC <emily.murphy@gsa.gov>	Required
Davis, Emily K. [redacted]	Required
Griffin, Payne P. [redacted]	Required
Doocey, Sean E. [redacted]	Required
Locetta, Jennifer R. [redacted]	Required
DeStefano, John J. [redacted]	Required
Henson, Clayton T. [redacted]	Required
Gribbin, DJ J. [redacted]	Required

Starling, Ray A. [redacted] Required

Bash, Zina G. [redacted] Required

Bash, John F. [redacted] Required

Campau, Alexandra P. [redacted] Required

Dearborn, Rick A. [redacted] Required

Fisher, Daniel L. [redacted] Required

Fisher, Mary-Kate [redacted] Required

Hiler, Jonathan D. [redacted] Required

McGinley, William J. [redacted] Required

Mashburn, John K. [redacted] Required

Lori Mashburn <lori_mashburn@ios.doi.gov> Required

Flynn, Matthew J. [redacted] Required

Uli, Gabriella M. [redacted] Required

Navarro, Peter K. [redacted] Required

Gray, Alexander B. [redacted] Required

Leinenkugel, Jake <Thomas.Leinenkugel@va.gov> Required

Davis, May M. [redacted] Required

Lyons, Derek S. [redacted] Required

Butterfield, Nicholas W. [redacted] <[redacted]	Required
Rogers.Jillian.B@dol.gov <Rogers.Jillian.B@dol.gov>	Required
lineberger.timothy.l@dol.gov <lineberger.timothy.l@dol.gov>	Required
Bell, Kirk (OST) <Kirk.Bell@dot.gov>	Required
andy.post@dot.gov <andy.post@dot.gov>	Required
russell_newell@ios.doi.gov <russell_newell@ios.doi.gov>	Required
alex_hinson@ios.doi.gov <alex_hinson@ios.doi.gov>	Required
Chiokadze, David G. <David.Chiokadze@sba.gov>	Required
Wiles, Caroline S. [redacted] <[redacted]	Required
Patenaude, Meghan C. [redacted] <[redacted]	Required
Pavlik, Jennifer L. [redacted] <[redacted]	Required
Peede, Bobby L. [redacted] <[redacted]	Required
Karem, Jordan J. [redacted] <[redacted]	Required
Clift, McKenzie C. [redacted] <[redacted]	Required
McLean, Jeffrey J. [redacted] <[redacted]	Required
Freeland, Jeff K. [redacted] <[redacted]	Required
Doyle, Brett W. [redacted] <[redacted]	Required
Doyle, Emma K. [redacted] <[redacted]	Required

sarah.habansky@hq.doe.gov <sarah.habansky@hq.doe.gov>	Required
Makin, Sarah E. [redacted]	Required
Clifton, Patrick A. [redacted]	Required
Haidet, Michael B. [redacted]	Required
Bueche, Conner F. [redacted]	Required
Morgan, Matthew E. [redacted]	Required
Morgen, Hunter M. [redacted]	Required
cora.mandy@hq.dhs.gov <cora.mandy@hq.dhs.gov>	Required
Roma.Daravi@sba.gov <Roma.Daravi@sba.gov>	Required
Duke, Hannah A. [redacted]	Required
jrockas@doc.gov <jrockas@doc.gov>	Required
Sayegh, Tony E. [redacted]	Required
jason.chung@treasury.gov <jason.chung@treasury.gov>	Required
Seth.Unger@treasury.gov <Seth.Unger@treasury.gov>	Required
Giuliani, Andrew H. [redacted]	Required
Weyeneth, Taylor P. [redacted]	Required
Eason, William J. [redacted]	Required
Haus, Bob <Bob.Haus@hq.doe.gov>	Required

Lindsay Jancek - Communications/Research <LJancek@gop.com>	Required
Jarmula, Ryan L. [redacted]	Required
Matt.Lloyd@hhs.gov <Matt.Lloyd@hhs.gov>	Required
Brady Brookes <Brady.Brookes@cms.hhs.gov>	Required
Mullen, Courtney E. [redacted]	Required
Gillfillan, Ross T. [redacted]	Required
Kratsios, Michael J. [redacted]	Required
Paoletta, Mark R. [redacted]	Required
Tsaveras, Thomas J. [redacted]	Required
Andersen, Whitney N. [redacted]	Required
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Talento, Kathryn F. [redacted] Required

Catanzaro, Michael J. [redacted] Required

Walsh, Brian K. [redacted] Required

Roscoe, John M. [redacted] Required

Bell, Ashley <abell2@peacecorps.gov> Required

[redacted] Required

kamran.daravi@hhs.gov <kamran.daravi@hhs.gov> Required

wellnerk@state.gov <wellnerk@state.gov> Required

Scarlett, Brian L. [redacted] Required

Braid, Duncan M. [redacted] Required

Callaghan, Christine B. [redacted] Required

Bucci, Kristine A. [redacted] Required

Levin, Tyler S. [redacted] Required

McDonald, Michael P. [redacted] Required

Cabaniss, Anna Katherine K. [redacted] <[redacted]>	Required
Davis, Natalie <natalie_davis@ios.doi.gov>	Required
Anthony Pugliese <Anthony.Pugliese@ferc.gov>	Required
Paranzino, Anthony M. [redacted] <[redacted]>	Required
Rader, John N. [redacted] <[redacted]>	Required
Williams, Thomas M CIV OSD OUSD POLICY (US) <thomas.m.williams263.civ@mail.mil>	Required
[redacted] <[redacted]>	Required
daniel.kowalski@treasury.gov <daniel.kowalski@treasury.gov>	Required
Alden.Wood@treasury.gov <Alden.Wood@treasury.gov>	Required
Stephen.Pavlick@treasury.gov <Stephen.Pavlick@treasury.gov>	Required
McGinley, Mike H. [redacted] <[redacted]>	Required
Zachary.McEntee@treasury.gov <Zachary.McEntee@treasury.gov>	Required
Anderson, Jessica C. [redacted] <[redacted]>	Required
Patel, Neal A. [redacted] <[redacted]>	Required
Baker, Coalter <[redacted]>	Required
Harris, Jeffrey M. [redacted] <[redacted]>	Required
John.Wolf.Wagner@va.gov <John.Wolf.Wagner@va.gov>	Required
Liggett, Haywood A. [redacted] <[redacted]>	Required

Lucas, Kelsey R. [redacted] Required

michael.downing@gsa.gov <michael.downing@gsa.gov> Required

Martha Newton [redacted] Required

Doty, George E. [redacted] Required

Grieco, Christopher K. [redacted] Required

Lataif, Emily P. [redacted] Required

Zulauf, Mathew [redacted] Required

Salvi, Mary E. [redacted] Required

stmiles@themayfairgroupdc.com Required
<stmiles@themayfairgroupdc.com>

Lira, Mathew L. [redacted] Required

Casey, Sean C. [redacted] Required

Moorhead, Quellie U. [redacted] Required

Georges, Liza B. [redacted] Required

Moran, John S. [redacted] Required

Passantino, Stefan C. [redacted] Required

Schultz, James D. [redacted] Required

McCommas, Stuart S. [redacted] Required

Roman, Michael A. [redacted] Required

danielle@nahigianstrategies.com <danielle@nahigianstrategies.com>	Required
Tom Carter <tom@ticarter.com>	Required
zacch.ashcraft@nasa.gov <zacch.ashcraft@nasa.gov>	Required
Wang, Jen Rae (HQ-NA000) <jenrae.wang@nasa.gov>	Required
Harmsen, Breanne M. [redacted] <[redacted]>	Required
downey_magallanes@ios.doi.gov <downey_magallanes@ios.doi.gov>	Required
Johanna Persing - Communications/Research <JPersing@gop.com>	Required
sdollman@donaldtrump.com <sdollman@donaldtrump.com>	Required
McLaren, Moutray M. [redacted] <[redacted]>	Required

Friday, January 19, 2018

Time All Day
Subject Crystal P - Telework
Show Time As Free

Time 10:00 AM – 10:45 AM
Subject OWOW Program Overview Call in [redacted] passcode [redacted]
Location 3233 WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Connors, Sandra <Connors.Sandra@epa.gov>	Required
Weiler, Katherine <Weiler.Katherine@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
Chancey, Barbara <Chancey.Barbara@epa.gov>	Required
Libertz, Catherine <Libertz.Catherine@epa.gov>	Required
Wall, Tom <Wall.Tom@epa.gov>	Required
Yusuf, Istanbul <Yusuf.Istanbul@epa.gov>	Required
Kaiser, Russell <Kaiser.Russell@epa.gov>	Required
Robiou, Grace <Robiou.Grace@epa.gov>	Required
Shah, Surabhi <Shah.Surabhi@epa.gov>	Required
Bonanno, Gale <Bonanno.Gale@epa.gov>	Required
Brown, Robert <Brown.Robert@epa.gov>	Required
McDavit, Michael W. <Mcdavit.Michael@epa.gov>	Required
Holdsworth, Susan <Holdsworth.Susan@epa.gov>	Required
Havard, James <Havard.James@epa.gov>	Required
Hall, Lynda <Hall.Lynda@epa.gov>	Required
Monschein, Eric <Monschein.Eric@epa.gov>	Required
Young, Dwane <Young.Dwane@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Optional

Time 11:00 AM – 12:00 PM
Subject Dave's Planning time
Show Time As Busy
Categories Blue Category

Monday, January 22, 2018

Time All Day
Subject Crystal P- OOO
Show Time As Free

Time 1:00 PM – 2:00 PM
Subject General

Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required
Fotouhi, David <Fotouhi.David@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Brown, Byron <brown.byron@epa.gov>	Required

Time 5:30 PM – 6:00 PM
Subject General
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required

Tuesday, January 23, 2018

Time All Day
Subject Ann Telework
Show Time As Free

Time 9:00 AM – 4:00 PM
Subject Do not schedule
Show Time As Busy
Categories Blue Category

Time 10:30 AM – 11:00 AM
Subject Sherry Howard using 3233
Show Time As Busy
Categories Blue Category
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Howard, Sherry <Howard.Sherry@epa.gov>	Required

Battle, Taylor <battle.taylor@epa.gov>	Optional
Voisin, Edward <Voisin.Edward@epa.gov>	Optional

Time 4:00 PM – 4:30 PM
Subject Briefing: WOTUS Step 1
Location Administrator's Office
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
[redacted] <[redacted]>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required

Time 4:00 PM – 4:45 PM
Subject Final Agency Review for Final 2016 Effluent Guidelines Program Plan
Location 3233 WJCE Call in [redacted] passcode [redacted]
Show Time As Tentative
Attendees

Name <E-mail>	Attendance
Forsgren, Lee <Forsgren.Lee@epa.gov>	Organizer
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Nagle, Deborah <Nagle.Deborah@epa.gov>	Required
Wood, Robert <Wood.Robert@epa.gov>	Required
Matuszko, Jan <Matuszko.Jan@epa.gov>	Required
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Required
Levine, MaryEllen <levine.maryellen@epa.gov>	Required
Szaro, Deb <Szaro.Deb@epa.gov>	Required
McCabe, Catherine <McCabe.Catherine@epa.gov>	Required
Lopez, Peter <lopez.peter@epa.gov>	Required
Rodrigues, Cecil <rodrigues.cecil@epa.gov>	Required
Servidio, Cosmo <servidio.cosmo@epa.gov>	Required
Heard, Anne <Heard.Anne@epa.gov>	Required

Glenn, Trey <Glenn.Trey@epa.gov>	Required
Kaplan, Robert <kaplan.robert@epa.gov>	Required
Coleman, Sam <Coleman.Sam@epa.gov>	Required
Chu, Ed <Chu.Ed@epa.gov>	Required
Gulliford, Jim <gulliford.jim@epa.gov>	Required
Thomas, Debra <Thomas.Debra@epa.gov>	Required
Benevento, Douglas <benevento.douglas@epa.gov>	Required
Strauss, Alexis <Strauss.Alexis@epa.gov>	Required
Pirzadeh, Michelle <Pirzadeh.Michelle@epa.gov>	Required
Hladick, Christopher <hladick.christopher@epa.gov>	Required
Breen, Barry <Breen.Barry@epa.gov>	Required
Dunham, Sarah <Dunham.Sarah@epa.gov>	Required
Dravis, Samantha <dravis.samantha@epa.gov>	Required
Minoli, Kevin <Minoli.Kevin@epa.gov>	Required
Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
Flanders, Phillip <Flanders.Phillip@epa.gov>	Required
Pickrel, Jan <Pickrel.Jan@epa.gov>	Required
Kazior, Kathryn <Kazior.Kathryn@epa.gov>	Required
Zomer, Jessica <Zomer.Jessica@epa.gov>	Required
Thundiyil, Karen <Thundiyil.Karen@epa.gov>	Required
Swanson, Nicholas <Swanson.Nicholas@epa.gov>	Required
Livnat, Alexander <Livnat.Alexander@epa.gov>	Required

Roberts, Cindy <Roberts.Cindy@epa.gov>	Required
Wen, Chen <Wen.Chen@epa.gov>	Required
Chadwick, Dan <Chadwick.Dan@epa.gov>	Required
Pimpare, Justin <Pimpare.Justin@epa.gov>	Required
Obrien, Karen <obrien.karen@epa.gov>	Required
Trulear, Brian <Trulear.Brian@epa.gov>	Required
Jones, Erica <Jones.Erica@epa.gov>	Required
Schweizer, Jonathan <schweizer.jonathan@epa.gov>	Required
Baskin, Kilty <Baskin.Kilty@epa.gov>	Required
Dunn, John <Dunn.John@epa.gov>	Required
Zhang, Qian <Zhang.Qian@epa.gov>	Required
Smith, DavidW <Smith.DavidW@epa.gov>	Required
Psyk, Christine <Psyk.Christine@epa.gov>	Required
Owens, Nicole <Owens.Nicole@epa.gov>	Required
Nurse, Leanne <Nurse.Leanne@epa.gov>	Required
Orme-Zavaleta, Jennifer <Orme-Zavaleta.Jennifer@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required
Messina, Edward <Messina.Edward@epa.gov>	Required
Evalenko, Sandy <Evalenko.Sandy@epa.gov>	Optional
Gerstein, Arielle <gerstein.arielle@epa.gov>	Optional
Pritts, Jesse <Pritts.Jesse@epa.gov>	Optional

Lewis, Samantha <Lewis.Samantha@epa.gov>	Optional
Siddiqui, Ahmar <Siddiqui.Ahmar@epa.gov>	Optional
Milam, Karen <Milam.Karen@epa.gov>	Optional
Scozzafava, MichaelE <Scozzafava.MichaelE@epa.gov>	Optional
Crawford, Tiffany <Crawford.Tiffany@epa.gov>	Optional
Zobrist, Marcus <Zobrist.Marcus@epa.gov>	Optional
Torres, Tomas <Torres.Tomas@epa.gov>	Optional
Robichaud, Jeffery <Robichaud.Jeffery@epa.gov>	Optional
Deener, Kathleen <Deener.Kathleen@epa.gov>	Optional
Thomas, Deb <thomas.debrah@epa.gov>	Optional
O'Connor, Darcy <oconnor.darcy@epa.gov>	Optional
Davis, Suea <davis.suea@epa.gov>	Optional
Shaikh, Taimur <Shaikh.Taimur@epa.gov>	Optional
Dwyer, Stacey <Dwyer.Stacey@epa.gov>	Optional
Elliott, Ross <Elliott.Ross@epa.gov>	Optional
Behan, Frank <Behan.Frank@epa.gov>	Optional
Cacho, Julia <Cacho.Julia@epa.gov>	Optional
Moraff, Kenneth <Moraff.Ken@epa.gov>	Optional
Hamjian, Lynne <Hamjian.Lynne@epa.gov>	Optional
Lindsay, Jane <lindsay.jane@epa.gov>	Optional
Webster, David <Webster.David@epa.gov>	Optional
Whitson, Amelia <Whitson.Amelia@epa.gov>	Optional
Opalski, Dan <Opalski.Dan@epa.gov>	Optional

Cogliano, Gerain <Cogliano.Gerain@epa.gov>	Optional
Chung, Angela <Chung.Angela@epa.gov>	Optional
Lidgard, Michael <Lidgard.Michael@epa.gov>	Optional
Schillo, Bruce <Schillo.Bruce@epa.gov>	Optional
Parikh, Pooja <Parikh.Pooja@epa.gov>	Optional
VanTil, Barbara <vantil.barbara@epa.gov>	Optional
Segall, Martha <Segall.Martha@epa.gov>	Optional
Spinale, Mark <Spinale.Mark@epa.gov>	Optional
Fields, Jenifer <fields.jenifer@epa.gov>	Optional
Lousberg, Macara <Lousberg.Macara@epa.gov>	Optional
Wooster, Richard <Wooster.Richard@epa.gov>	Optional

Time 4:30 PM – 5:30 PM
Subject Dessert/Champagne Baby Reception
Location greenroom
Show Time As Busy
Categories Red Category

Attendees	**Name <E-mail>**	**Attendance**
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

Wednesday, January 24, 2018

Time 9:30 AM – 10:00 AM
Subject Car confirmed
Show Time As Busy

Your transportation request has been Updated.

Reason for update : Pick Up Time changed
Confirmation Number: 77639
Passenger Information
* Name: DAVID ROSS/AA
* Number: [redacted]
* Pickup Time: 2018-01-24 09:30:00.0

* Pickup Location: EPA EAST 1201 CONSTITUTION AVE
* Drop-Off Location: CAPITAL HILTON HOTEL 1001 16TH ST NW
Vehicle Information
* Tag: [redacted]
* Vehicle Type: CAR
* Make : CHEVROLET
* Model : VOLT
* Color : BLACK

Categories Yellow Category

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Dennis, Allison <Dennis.Allison@epa.gov>	Required

Time 9:30 AM – 11:00 AM
Subject Mayors Water Council Meeting (USCM 86th Annual Winter Meeting)
Location Congressional Room/Capital Hilton Hotel (16th & K)
Show Time As Busy

Event: USCM Mayors Water Council Meeting

Wednesday, 1/24/18: 9:30 am – 11:00 am/Capital Hilton Hotel

EPA Presenter: David Ross, Assistant Administrator for Water (10:00 am – 10:30 am)

NOTE: Those appearing on the "Required" portion of this invite are the ONLY staff I am permitted to register for the conference. Two of the Intergovernmental Relations staff will operate on a "Day Pass," and not be formally registered, but can attend this meeting. I am only allowed to register 2 Intergovernmental staff persons. Please do NOT forward this invitation to anyone else (except as FYI, but be clear). They cannot get into the conference. Thanks for understanding.

EPA Representatives

David Ross-Speaker - OW

Allison Dennis-Guest – OW: accompanying Dave

Ann Campbell-Guest-OW: accompanying Dave

Preston Cory-Guest -OCIR - Intergovernmental

Demond Matthews* - OCIR - Intergovernmental

Jack Bowles* - OCIR - Intergovernmental

M. Arnita Hannon Christmon-Guest - Intergovernmental

-Lauren and Crystal copied as FYI-

Day Pass

Categories Blue Category

Attendees

Name <E-mail>	**Attendance**
Hannon, Arnita <Hannon.Arnita@epa.gov>	Organizer
Matthews, Demond <matthews.demond@epa.gov>	Required
Dennis, Allison <Dennis.Allison@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Bowles, Jack <Bowles.Jack@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Optional
Mayer, Lauren <mayer.lauren@epa.gov>	Optional

Time 10:00 AM – 10:30 AM

Subject US Conference of Mayors, Water Council

Location Capital Hilton hotel

Show Time As Busy

Re: Invitation to Assistant Administrator Ross/US Conference of Mayors – Mayors Water Council
Scope: Address Council on Wednesday, Jan 24, 2018 (30 minutes between 9:30 – 11:00 am); Remarks; Dialogue/Q&A
Focus: EPA's/David's Water Priorities, including Partnerships and Programs That Support Communities
Location: Capital Hilton Hotel/DC//Note: MWC Co-chairs: Mayors Joy Cooper (Hallandale Beach, FL); Jill Techel (Napa, CA)/attached: invitation letter; MWC Membership roster

This invitation is good news and a great opportunity for David to hear

from key mayors who support EPA's programs. They will appreciate updates on EPA's partnerships and programs, including WIFIA, Green Infrastructure. SRFs, Integrated Planning, and Water Infrastructure & Resiliency Finance Center tools, and any other priorities David chooses to share. The mayors will share some concerns but should also highlight some successful partnerships with EPA. Water Infrastructure (including financing, compliance, innovative tools) is MAJOR for this group - so great dialogue on how this all plays into economic stability and revitalization for communities.

Looking forward to working with you guys on this invitation – beginning with checking David's availability, and then fleshing out his participation. Appreciate deeply as always.

HAPPY HOLIDAYS!

Arnita

M. Arnita Hannon Christmon
Intergovernmental Liaison
Office of Congressional and Intergovernmental Relations
US EPA
1200 Pennsylvania Avenue, NW
Washington, D.C. 20460
[redacted] (O)
[redacted] (M)
[redacted] (C)
[redacted] (Fax)
hannon.arnita@epa.gov <mailto:hannon.arnita@epa.gov>

Categories Blue Category

Time 10:30 AM – 11:00 AM
Subject Car confirmed
Show Time As Busy

Your transportation request has been Updated.

Reason for update : Pick Up Time changed
Confirmation Number: 77640
Passenger Information
* Name: DAVID ROSS/AA
* Number: [redacted]
* Pickup Time: 2018-01-24 10:30:00.0
* Pickup Location: CAPITAL HILTON HOTEL 1001 16TH ST NW
* Drop-Off Location: EPA EAST 1201 CONSTITUTION AVE
Vehicle Information
* Tag: [redacted]
* Vehicle Type: CAR
* Make : CHEVROLET
* Model : VOLT

* Color : BLACK

Categories Yellow Category

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Dennis, Allison <Dennis.Allison@epa.gov>	Required

Time 1:00 PM – 1:30 PM

Subject Check-In with Dave Ross

Location 3402 WJC-N

Show Time As Busy

Categories Red Category

Attendees

Name <E-mail>	Attendance
Jackson, Ryan <jackson.ryan@epa.gov>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Optional
Edwards, Crystal <Edwards.Crystal@epa.gov>	Optional
Forsgren, Lee <Forsgren.Lee@epa.gov>	Optional

Time 1:45 PM – 2:30 PM

Subject Meeting: DHS/CBP on Tijuana Wastewater Initiative

Location Alm Room

Show Time As Busy

Attendees:

Elaine Duke, Deputy Secretary of DHS

Ronald Vitiello, Deputy Commissioner of Customs and Border Protection

Chad Gilchrist, Director Field Operations, Facilities Program Management Office

Nicholas Ramirez, Military Aide to Dep Sec Duke

Categories Red Category

Attendees

Name <E-mail>	Attendance
Jackson, Ryan <jackson.ryan@epa.gov>	Organizer
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required

Ross, David P <ross.davidp@epa.gov>	Required
Greaves, Holly <greaves.holly@epa.gov>	Required
Wagner, Kenneth <wagner.kenneth@epa.gov>	Required
Ford, Hayley <ford.hayley@epa.gov>	Optional

Time 3:00 PM – 4:00 PM
Subject Prebrief for Jan 31-Feb 1 Hypoxia Task Force (THF) Meeting
Location 3233 WJCE Call in [redacted] ext [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Gulliford, Jim <gulliford.jim@epa.gov>	Required
Flahive, Katie <Flahive.Katie@epa.gov>	Required
Bachle, Laura <Bachle.Laura@epa.gov>	Required
Wall, Tom <Wall.Tom@epa.gov>	Required
Hall, Lynda <Hall.Lynda@epa.gov>	Required
Reumann-Moore, Kyra <Reumann-Moore.Kyra@epa.gov>	Required
Wiitala, Megan <Wiitala.Megan@epa.gov>	Required
Nitsch, Chad <Nitsch.Chad@epa.gov>	Required
'barry.tonning@tetratech.com' <barry.tonning@tetratech.com>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Glenn, Trey <Glenn.Trey@epa.gov>	Required
Stepp, Cathy <stepp.cathy@epa.gov>	Required
Idsal, Anne <idsal.anne@epa.gov>	Required
Connors, Sandra <Connors.Sandra@epa.gov>	Required

Weiler, Katherine <Weiler.Katherine@epa.gov>	Optional
Williams, Felicia <Williams.Felicia@epa.gov>	Optional
Walker, Mary <walker.mary@epa.gov>	Optional
Lape, Jeff <lape.jeff@epa.gov>	Optional

Time 5:00 PM – 5:30 PM
Subject Meeting with L. Michael Bogert
Location 1201 Constitution Ave NW, Washington DC 20460 WJCE 3219A Call 202-[redacted] for escort
Show Time As Busy
Categories Blue Category
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
'pwoodies@parsonsbehle.com' <pwoodies@parsonsbehle.com>	Required
mbogert@parsonsbehle.com <mbogert@parsonsbehle.com>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Optional

Time 5:45 PM – 6:15 PM
Subject General
Location Sarah's Office
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Optional

Thursday, January 25, 2018

Time 9:00 AM – 9:30 AM
Subject Dave's planning time

Show Time As Busy
Categories Blue Category

Time 9:30 AM – 10:00 AM
Subject Meet and Greet: Samantha, Brittany and David
Location 3513A
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
Dravis, Samantha <dravis.samantha@epa.gov>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Required
Inge, Carolyn <Inge.Carolyn@epa.gov>	Required
Bolen, Brittany <bolen.brittany@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required

Time 10:00 AM – 11:00 AM
Subject Dave's Planning time
Show Time As Busy
Categories Blue Category

Time 11:15 AM – 12:00 PM
Subject EPA's Efforts to Work Collaboratively with States to Develop Numeric Nutrient Criteria
Location 3233 WJCE Call in [redacted] passcode [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Nagle, Deborah <Nagle.Deborah@epa.gov>	Required
Hisel-Mccoy, Sara <Hisel-McCoy.Sara@epa.gov>	Required
Behl, Betsy <Behl.Betsy@epa.gov>	Required
Buffo, Corey <Buffo.Corey@epa.gov>	Required

Keating, Jim <Keating.Jim@epa.gov>	Required
Anderson, Danielle <Anderson.Danielle@epa.gov>	Required
Thomas, Dana <Thomas.Dana@epa.gov>	Required
Sengco, Mario <Sengco.Mario@epa.gov>	Required
Oliver, Jacques <Oliver.Jacques@epa.gov>	Required
Yuan, Lester <Yuan.Lester@epa.gov>	Required
Robichaud, Jeffery <Robichaud.Jeffery@epa.gov>	Required
Nalven, Heidi <Nalven.Heidi@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Schroer, Lee <schroer.lee@epa.gov>	Required
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Required
Crawford, Tiffany <Crawford.Tiffany@epa.gov>	Optional
Cozad, David <Cozad.David@epa.gov>	Optional
Kaufman, Galen <Kaufman.Galen@epa.gov>	Optional

Time 2:00 PM – 3:00 PM

Subject ECOS Member Meeting

Location 3219A WJCE call-in number is [redacted] with conference ID [redacted]

Show Time As Busy

Carolyn Hanson
Acting Executive Director
Environmental Council of the States
[redacted] (p); [redacted] (f)
chanson@ecos.org <mailto:chanson@ecos.org>
Twitter: @ECOStates

Attendees

Name <E-mail>	**Attendance**
Ross, David P <ross.davidp@epa.gov>	Organizer
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

Time	3:00 PM – 3:45 PM
Subject	Gold King Mine Briefing (Call in number: [redacted] Code: [redacted]
Location	DCRoomARN4045/DC-Ariel-Rios-OGC
Show Time As	Busy
Categories	Red Category

Attendees	**Name <E-mail>**	**Attendance**
	Leopold, Matt <Leopold.Matt@epa.gov>	Organizer
	Fotouhi, David <fotouhi.david@epa.gov>	Required
	Ross, David P <ross.davidp@epa.gov>	Required
	Brown, Byron <brown.byron@epa.gov>	Required
	Darwin, Veronica <darwin.veronica@epa.gov>	Required
	Lewis, Jen <Lewis.Jen@epa.gov>	Optional
	Breen, Barry <Breen.Barry@epa.gov>	Optional
	Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Optional
	Michaud, John <Michaud.John@epa.gov>	Optional
	Packard, Elise <Packard.Elise@epa.gov>	Optional
	Sisson, Ann <Sisson.Ann@epa.gov>	Optional
	Wade, Alexis <Wade.Alexis@epa.gov>	Optional
	Berg, ElizabethG <Berg.ElizabethG@epa.gov>	Optional
	Levine, MaryEllen <levine.maryellen@epa.gov>	Optional
	Stalcup, Dana <Stalcup.Dana@epa.gov>	Optional
	Woolford, James <Woolford.James@epa.gov>	Optional
	Zobrist, Marcus <Zobrist.Marcus@epa.gov>	Optional
	Wall, Tom <Wall.Tom@epa.gov>	Optional
	Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Optional

	Schefski, Kenneth <Schefski.Kenneth@epa.gov>	Optional
	Payne, James <payne.james@epa.gov>	Optional
	Quast, Sylvia <Quast.Sylvia@epa.gov>	Optional

Time 4:00 PM – 5:00 PM
Subject Dave's Planning time
Show Time As Busy
Categories Blue Category

Friday, January 26, 2018

Time 9:00 AM – 9:30 AM
Subject Notification of Security Clearance Status
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Lasher, Diane <Lasher.Diane@epa.gov>	Required

Time 9:30 AM – 10:30 AM
Subject WWF Briefing Call in [redacted] passcode [redacted]
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Koo-Oshima, Sasha <Koo-Oshima.Sasha@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Optional
Nishida, Jane <Nishida.Jane@epa.gov>	Optional
Dennis, Allison <Dennis.Allison@epa.gov>	Optional

Time 10:30 AM – 11:00 AM
Subject SES Panel Prep

Location	3219A WJCE
Show Time As	Busy

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Vazquez, Sharon <Vazquez.Sharon@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Fontaine, Tim <Fontaine.Tim@epa.gov>	Optional
Gollan, Christopher <gollan.christopher@epa.gov>	Optional

Time	11:00 AM – 11:45 AM
Subject	Overview of EPA and Missouri's Proposed Rule for Nutrients for Lakes/Reservoirs
Location	3233 WJCE Call in [redacted] passcode [redacted]
Show Time As	Busy

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Nagle, Deborah <Nagle.Deborah@epa.gov>	Required
Hisel-Mccoy, Sara <Hisel-McCoy.Sara@epa.gov>	Required
Behl, Betsy <Behl.Betsy@epa.gov>	Required
Buffo, Corey <Buffo.Corey@epa.gov>	Required
Keating, Jim <Keating.Jim@epa.gov>	Required
Thomas, Dana <Thomas.Dana@epa.gov>	Required
Yuan, Lester <Yuan.Lester@epa.gov>	Required
Oliver, Jacques <Oliver.Jacques@epa.gov>	Required
Anderson, Danielle <Anderson.Danielle@epa.gov>	Required

Sengco, Mario <Sengco.Mario@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Required
Schroer, Lee <schroer.lee@epa.gov>	Required
Nalven, Heidi <Nalven.Heidi@epa.gov>	Required
Robichaud, Jeffery <Robichaud.Jeffery@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Crawford, Tiffany <Crawford.Tiffany@epa.gov>	Optional
Hewitt, Julie <Hewitt.Julie@epa.gov>	Optional
[redacted] Michael <[redacted]Michael@epa.gov>	Optional
Cozad, David <Cozad.David@epa.gov>	Optional
Bagley, Melissa <Bagley.Melissa@epa.gov>	Optional
Shepard, Larry <Shepard.Larry@epa.gov>	Optional

Time 11:45 AM – 12:00 PM
Subject NPDES LEAN Kaizen Event Wrap Up
Location WJCW 1426
Show Time As Busy

Time 1:00 PM – 1:30 PM
Subject General w/ Deborah Nagle (OST)
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Nagle, Deborah <Nagle.Deborah@epa.gov>	Required

Time 1:30 PM – 2:30 PM
Subject EPW Prebrief
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance

Ross, David P <ross.davidp@epa.gov>	Organizer
Fontaine, Tim <Fontaine.Tim@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Spraul, Greg <Spraul.Greg@epa.gov>	Required
Peck, Gregory <Peck.Gregory@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Orvin, Chris <Orvin.Chris@epa.gov>	Optional
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Optional

Time 3:00 PM – 4:00 PM
Subject UIC Permit Kaizen Event
Location WJCN 2513
Show Time As Busy

Anita Maria Thompkins
Director, Drinking Water Protection Division
Office of Ground Water and Drinking Water
U.S. Environmental Protection Agency
Washington, DC
Office Phone: [redacted]
EPA Cell: [redacted]

Monday, January 29, 2018

Time 7:30 AM – 7:00 PM
Subject 2017 National Executive Leadership Development Conference
Location Omni Shoreham Hotel, Regency Ballroom
Show Time As Busy
Categories Blue Category

Time 9:30 AM – 10:00 AM
Subject Car confirmed
Show Time As Busy

Your transportation request has been Updated.

Reason for update : Pick Up Time changed
Confirmation Number: 77835
Passenger Information
* Name: DAVID ROSS/AA
* Number: [redacted]
* Pickup Time: 2018-01-29 09:30:00.0
* Pickup Location: OMNI SHOREHAM HOTEL

* Drop-Off Location: COURTYARD
Vehicle Information
* Tag: [redacted]
* Vehicle Type: CAR
* Make : CHEVROLET
* Model : VOLT
* Color : BLACK

Categories Yellow Category

Time 10:00 AM – 11:00 AM
Subject Prep
Show Time As Busy

Time 11:00 AM – 12:00 PM
Subject EPW Testify Prep: Water Briefing
Location Administrator's Office
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
[redacted] <[redacted]>	Organizer
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Fotouhi, David <Fotouhi.David@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Jackson, Ryan <jackson.ryan@epa.gov>	Required
Bowman, Liz <Bowman.Liz@epa.gov>	Required
Palich, Christian <palich.christian@epa.gov>	Required
Lyons, Troy <lyons.troy@epa.gov>	Required
Greaves, Holly <greaves.holly@epa.gov>	Required
Bolen, Brittany <bolen.brittany@epa.gov>	Required
Sands, Jeffrey <sands.jeffrey@epa.gov>	Required
Dravis, Samantha <dravis.samantha@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

Time 2:30 PM – 3:00 PM
Subject Meeting with Jeffrey Sands
Location [redacted]
Show Time As Busy

Attendees	Name <E-mail>	Attendance
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Sands, Jeffrey <sands.jeffrey@epa.gov>	Required
	Campbell, Ann <Campbell.Ann@epa.gov>	Optional

Time 7:30 PM – 9:00 PM
Subject AA-RA Dinner
Show Time As Busy
Categories Blue Category

Tuesday, January 30, 2018

Time 8:40 AM – 9:00 AM
Subject Car confirmed
Show Time As Busy

Your transportation request has been confirmed.

Confirmation Number: 77840
Passenger Information
* Name: DAVID ROSS/AA
* Number: [redacted]
* Pickup Time: 2018-01-30 08:40:00.0
* Pickup Location: EPA EAST 1201 CONSTITUTION AVE
* Drop-Off Location: OMNI SHOREHAM HOTEL 2500 CALVERT ST NW
Vehicle Information
* Tag: [redacted]
* Vehicle Type: CAR
* Make : CHEVROLET
* Model : VOLT
* Color : BLACK

Categories Yellow Category

Attendees	Name <E-mail>	Attendance
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

Time 9:00 AM – 11:45 AM
Subject Panel Discussion - 2017 National Executive Leadership Development Conference
Location Omni Shoreham hotel, Regency Ballroom
Show Time As Busy

Categories Blue Category

Time 9:00 AM – 3:00 PM
Subject 2017 National Executive Leadership Development Conference
Location Omni Shoreham Hotel, Regency Ballroom
Show Time As Busy
Categories Blue Category

Time 12:00 PM – 12:30 PM
Subject Travel Time - UBER
Show Time As Busy
Categories Yellow Category

Time 1:00 PM – 1:30 PM
Subject Passport Photos for David P. Ross
Location WJCN 6330K
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Vance, Eric <Vance.Eric@epa.gov>	Required

Time 2:30 PM – 3:00 PM
Subject Car confirmed
Show Time As Busy

Your transportation request has been confirmed.

Confirmation Number: 77900
Passenger Information
* Name: DAVID ROSS/AA
* Number: [redacted]
* Pickup Time: 2018-01-30 14:30:00.0
* Pickup Location: EPA EAST 1201 CONSTITUTION AVE
* Drop-Off Location: OMNI SHOREHAM HOTEL
Vehicle Information
* Tag: [redacted]
* Vehicle Type: CAR
* Make : CHEVROLET
* Model : VOLT
* Color : BLACK

Categories Yellow Category

Time 3:00 PM – 5:00 PM
Subject Water Division Directors Meeting
Location Omni Shoreham Hotel - Hampton Ballroom
Show Time As Busy

Please do not delegate or forward this meeting to additional invitees.

Categories Blue Category

Attendees	Name <E-mail>	Attendance
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Campbell, Ann <Campbell.Ann@epa.gov>	Required
	Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
	Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
	Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
	Mclain, Jennifer <Mclain.Jennifer@epa.gov>	Required
	Nagle, Deborah <Nagle.Deborah@epa.gov>	Required
	Lape, Jeff <lape.jeff@epa.gov>	Required
	Lousberg, Macara <Lousberg.Macara@epa.gov>	Required
	Goodin, John <Goodin.John@epa.gov>	Required
	Connors, Sandra <Connors.Sandra@epa.gov>	Required
	Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
	Frace, Sheila <Frace.Sheila@epa.gov>	Required
	Moraff, Kenneth <Moraff.Ken@epa.gov>	Required
	Balasa, Kate <balasa.kate@epa.gov>	Required
	Laureano, Javier <laureano.javier@epa.gov>	Required
	Pomponio, John <Pomponio.John@epa.gov>	Required
	Walker, Mary <walker.mary@epa.gov>	Required
	McManus, Catharine <mcmanus.catharine@epa.gov>	Required
	Korleski, Christopher <korleski.christopher@epa.gov>	Required
	Garcia, David <Garcia.David@epa.gov>	Required
	Robichaud, Jeffery <Robichaud.Jeffery@epa.gov>	Required

O'Connor, Darcy <oconnor.darcy@epa.gov>	Required
Torres, Tomas <Torres.Tomas@epa.gov>	Required
Opalski, Dan <Opalski.Dan@epa.gov>	Required
Guerrero, Carmen <guerrero.carmen@epa.gov>	Optional
Bragan, Mary Jo <Bragan.Maryjo@epa.gov>	Optional
Zapata, Cesar <Zapata.Cesar@epa.gov>	Optional
Arcaya, Alyssa <arcaya.alyssa@epa.gov>	Optional
Balla, Richard <Balla.Richard@epa.gov>	Optional
Brandt, Peter <Brandt.Peter@epa.gov>	Optional
Pabst, Douglas <Pabst.Douglas@epa.gov>	Optional
Gratz, Jeff <Gratz.Jeff@epa.gov>	Optional

Time 5:00 PM – 5:30 PM
Subject Travel Time - UBER
Show Time As Busy
Categories Yellow Category

Wednesday, January 31, 2018

Time 9:00 AM – 10:00 AM
Subject Meeting with Chris Hladick R10
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Opalski, Dan <Opalski.Dan@epa.gov>	Required
Hladick, Christopher <hladick.christopher@epa.gov>	Required
Tyson, Linda <Tyson.Linda@epa.gov>	Required
Pirzadeh, Michelle <Pirzadeh.Michelle@epa.gov>	Optional

	Flynn, Mike <Flynn.Mike@epa.gov>	Optional
	Burton, Tamika <burton.tamika@epa.gov>	Optional
	Allnutt, David <Allnutt.David@epa.gov>	Optional
	Stern, Allyn <Stern.Allyn@epa.gov>	Optional

Time 10:00 AM – 10:30 AM
Subject Dave Ross
Location Office of David Ross
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Dunn, Alexandra <dunn.alexandra@epa.gov>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required

Time 10:30 AM – 11:00 AM
Subject Car confirmed
Show Time As Busy

Your transportation request has been Updated.

Reason for update : Location(Destination) changed
Confirmation Number: 77824
Passenger Information
* Name: DAVID ROSS/AA
* Number: [redacted]
* Pickup Time: 2018-01-31 10:30:00.0
* Pickup Location: EPA EAST 1201 CONSTITUTION AVE
* Drop-Off Location: 1000 H STREET NW.
Vehicle Information
* Tag: [redacted]
* Vehicle Type: CAR
* Make : CHEVROLET
* Model : VOLT
* Color : BLACK

Categories Yellow Category

Time 11:00 AM – 1:30 PM
Subject NASDA
Location Grand Hyatt Washington (Washington, District of Columbia, United States)
Show Time As Busy
Categories Blue Category

Time 12:30 PM – 2:30 PM
Subject Bob Rose using 3233

Show Time As Busy

Categories Blue Category

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Rose, Bob <Rose.Bob@epa.gov>	Required

Time 1:30 PM – 2:00 PM

Subject Car confirmed

Show Time As Busy

Your transportation request has been Updated.

Reason for update : Location(Destination) changed
Confirmation Number: 77825
Passenger Information
* Name: DAVID ROSS/AA
* Number: [redacted]
* Pickup Time: 2018-01-31 13:30:00.0
* Pickup Location: 1000 H STREET NW
* Drop-Off Location: MARRIOTT 1401 LEE HIGHWAY
Vehicle Information
* Tag: [redacted]
* Vehicle Type: CAR
* Make : CHEVROLET
* Model : VOLT
* Color : BLACK

Categories Yellow Category

Time 2:00 PM – 5:00 PM

Subject Hypoxia Task Force Meeting - HOLD

Location Arlington, VA

Show Time As Busy

Categories Blue Category

Attendees

Name <E-mail>	Attendance
Flahive, Katie <Flahive.Katie@epa.gov>	Organizer
Wiitala, Megan <Wiitala.Megan@epa.gov>	Required
Bachle, Laura <Bachle.Laura@epa.gov>	Required
Reumann-Moore, Kyra <Reumann-Moore.Kyra@epa.gov>	Required
Hall, Lynda <Hall.Lynda@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Wall, Tom <Wall.Tom@epa.gov>	Required

Forsgren, Lee <Forsgren.Lee@epa.gov>	Optional
Ross, David P <ross.davidp@epa.gov>	Optional
Connors, Sandra <Connors.Sandra@epa.gov>	Optional

Time 5:00 PM – 5:30 PM
Subject Car confirmed
Show Time As Busy

Your transportation request has been confirmed.

Confirmation Number: 77933
Passenger Information
* Name: DAVID ROSS/AA
* Number: [redacted]
* Pickup Time: 2018-01-31 17:00:00.0
* Pickup Location: KEY BRIDGE MARRIOTT, ARLINGTON VA
* Drop-Off Location: EPA EAST 1201 CONSTITUTION AVE
Vehicle Information
* Tag: [redacted]
* Vehicle Type: CAR
* Make : CHEVROLET
* Model : VOLT
* Color : BLACK

Categories Yellow Category

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required

Thursday, February 01, 2018

Time 8:00 AM – 8:30 AM
Subject CWA Defensive Litigation Discussion w/Region 10 (Call in number: [redacted] Code: [redacted]
Location WJC-N Room 4000
Show Time As Busy

Attendees

Name <E-mail>	Attendance
Leopold, Matt <Leopold.Matt@epa.gov>	Organizer
Stern, Allyn <Stern.Allyn@epa.gov>	Required
Pirzadeh, Michelle <Pirzadeh.Michelle@epa.gov>	Required
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Required

Fotouhi, David <Fotouhi.David@epa.gov>	Required
Opalski, Dan <Opalski.Dan@epa.gov>	Required
Hladick, Christopher <hladick.christopher@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Tyson, Linda <Tyson.Linda@epa.gov>	Optional
Schroer, Lee <schroer.lee@epa.gov>	Optional
Minoli, Kevin <Minoli.Kevin@epa.gov>	Optional

Time 8:40 AM – 9:00 AM
Subject Car confirmed
Show Time As Busy

Your transportation request has been confirmed.

Confirmation Number: 77883
Passenger Information
* Name: DAVID ROSS/AA
* Number: [redacted]
* Pickup Time: 2018-02-01 08:40:00.0
* Pickup Location: EPA EAST 1201 CONSTITUTION AVE
* Drop-Off Location: KEY BRIDGE MARRIOTT 1401 LEE HIGHWAY
Vehicle Information
* Tag: [redacted]
* Vehicle Type: CAR
* Make : CHEVROLET
* Model : VOLT
* Color : BLACK

Categories Yellow Category

Time 9:00 AM – 5:00 PM
Subject Hypoxia Task Force Meeting
Location Key Bridge Marriott, 1401 Lee Highway, Arlington, Virginia
Show Time As Busy
Categories Blue Category, Green Category

Time 10:30 AM – 11:00 AM
Subject Travel Time - UBER
Show Time As Busy
Categories Yellow Category

Time 11:00 AM – 11:30 AM
Subject TSCA OW Nexus
Show Time As Busy

Attendees	Name <E-mail>	Attendance
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Campbell, Ann <Campbell.Ann@epa.gov>	Required
	Beck, Nancy <beck.nancy@epa.gov>	Required
	Bolen, Derrick <bolen.derrick@epa.gov>	Required
	Bertrand, Charlotte <Bertrand.Charlotte@epa.gov>	Optional
	Grevatt, Peter <Grevatt.Peter@epa.gov>	Optional
	Baptist, Erik <baptist.erik@epa.gov>	Optional
	Schwab, Justin <schwab.justin@epa.gov>	Optional

Time 1:00 PM – 1:45 PM
Subject MA and NH Small MS4 General Permits
Location 3233 WJCE Call in [redacted] passcode [redacted]
Show Time As Busy

Attendees	Name <E-mail>	Attendance
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
	Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
	Fotouhi, David <fotouhi.david@epa.gov>	Required
	Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Required
	Levine, MaryEllen <levine.maryellen@epa.gov>	Required
	Ford, Peter <Ford.Peter@epa.gov>	Required
	Dierker, Carl <Dierker.Carl@epa.gov>	Required
	Williams, Ann <Williams.Ann@epa.gov>	Required
	Murphy, Thelma (Hamilton) <murphy.thelma@epa.gov>	Required
	Moraff, Kenneth <Moraff.Ken@epa.gov>	Required

Flannery-Keith, Erin <Flannery-Keith.Erin@epa.gov>	Required
Utting, George <Utting.George@epa.gov>	Required
Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
Zobrist, Marcus <Zobrist.Marcus@epa.gov>	Required
Kloss, Christopher <Kloss.Christopher@epa.gov>	Required
Clovis, Debora <Clovis.Debora@epa.gov>	Required
Urban, Rachel <Urban.Rachel@epa.gov>	Required
Dunn, Alexandra <dunn.alexandra@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Farris, Erika D. <Farris.Erika@epa.gov>	Optional
Schaner, Greg <Schaner.Greg@epa.gov>	Optional
Frace, Sheila <Frace.Sheila@epa.gov>	Optional
Warner, Suzanne <Warner.Suzanne@epa.gov>	Optional
Tedder, Newton <Tedder.Newton@epa.gov>	Optional
Lindsay, Jane <lindsay.jane@epa.gov>	Optional
Evalenko, Sandy <Evalenko.Sandy@epa.gov>	Optional
Bukhari, Samir <Bukhari.Samir@epa.gov>	Optional
Weitzler, Ellen <Weitzler.Ellen@epa.gov>	Optional
Schroer, Lee <schroer.lee@epa.gov>	Optional
Parikh, Pooja <Parikh.Pooja@epa.gov>	Optional

Time 2:00 PM – 2:30 PM
Subject Allison using 3233
Show Time As Busy
Categories Blue Category

Attendees	**Name <E-mail>**	**Attendance**

Ross, David P <ross.davidp@epa.gov>	Organizer
Dennis, Allison <Dennis.Allison@epa.gov>	Required

Time 2:00 PM – 2:30 PM
Subject Meeting with Brent Fewell
Location 1201 Constitution Ave NW, Washington DC 20460 3219A WJCe Please call[redacted] for escort
Show Time As Busy
Categories Blue Category
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Campbell, Ann <Campbell.Ann@epa.gov>	Required
'brent.fewell@earthandwatergroup.com' <brent.fewell@earthandwatergroup.com>	Required
Wagner, Kenneth <wagner.kenneth@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required

Time 2:30 PM – 3:00 PM
Subject Car confirmed
Show Time As Busy

Your transportation request has been confirmed.

Confirmation Number: 77884
Passenger Information
* Name: DAVID ROSS/AA
* Number:[redacted]
* Pickup Time: 2018-02-01 14:30:00.0
* Pickup Location: EPA EAST 1201 CONSTITUTION AVE
* Drop-Off Location: KEY BRIDGE MARRIOTT 1401 LEE HIGHWAY
Vehicle Information
* Tag:[redacted]
* Vehicle Type: CAR
* Make : CHEVROLET
* Model : VOLT
* Color : BLACK

Categories Yellow Category

Time 5:00 PM – 5:30 PM
Subject TRAVEL TIME - UBER
Show Time As Busy
Categories Yellow Category

Friday, February 02, 2018

Time All Day
Subject Ann Compressed
Show Time As Free

Time 9:30 AM – 10:00 AM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 11:00 AM – 11:45 AM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 11:45 AM – 12:30 PM
Subject General
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Optional

Time 7:15 PM – 8:20 PM
Subject Southwest flight 6934 departs DCA @ 7:15pm arrives MKE @ 8:20pm
Show Time As Busy

AIR Confirmation: PT3V9B
Confirmation Date: 01/21/2018

Passenger(s)
Rapid Rewards #
Ticket #
Expiration
Est. Points Earned

ROSS/DAVID PATR

ICK
Join <https://www.southwest.com/account/enroll/enroll-member?f=zEMLAIRCAC1307PNRzz> or Add # <https://www.southwest.com/flight/addRRNumPnrEntry .html?confirmationNumber=PT3V9B&firstName=DAVID%20PATRICK&lastName=ROSS>
5261405451745
Jan 22, 2019
1683

Rapid Rewards points earned are only estimates. Not a member - visit Southwest.com/rapidrewards <http://Southwest.com/rapidrewards> and sign up today!

<https://static.cdn.responsys.net/i2/responsysimages/swair/contentlibrary/PROD_RTMS/PROD_RTM_Purchase_V6/AirReservation.images/div_solid_480px.gif>

Date
Flight
Departure/Arrival

Fri Feb 2
6934
Depart WASHINGTON (REAGAN NATIONAL), DC (DCA) on Southwest Airlines at 07:15 PM
Arrive in MILWAUKEE, WI (MKE) at 08:20 PM
Travel Time 2 hrs 5 mins
Wanna Get Away <http://www.southwest.com/html/air/fare-information.html#discount>

<https://static.cdn.responsys.net/i2/responsysimages/swair/contentlibrary/PROD_RTMS/PROD_RTM_Purchase_V6/FlightDottedline.images/div_dotted_480px.gif>

Date
Flight
Departure/Arrival

Sun Feb 4
1863
Depart MILWAUKEE, WI (MKE) on Southwest Airlines at 02:05 PM
Arrive in WASHINGTON (REAGAN NATIONAL), DC (DCA) at 04:50 PM
Travel Time 1 hrs 45 mins
Wanna Get Away <http://www.southwest.com/html/air/fare-information.html#discount>

Categories Blue Category

Sunday, February 04, 2018

Time 2:05 PM – 4:40 PM
Subject Southwest flight 1863 departs MKE @ 2:05pm arrives DCA @ 4:50PM
Show Time As Busy
Categories Blue Category

Monday, February 05, 2018

Time 10:00 AM – 10:45 AM
Subject OST Program Overview
Location 3233 WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Crawford, Tiffany <Crawford.Tiffany@epa.gov>	Required
Nagle, Deborah <Nagle.Deborah@epa.gov>	Required
Lape, Jeff <lape.jeff@epa.gov>	Required
Behl, Betsy <Behl.Betsy@epa.gov>	Required
Hisel-Mccoy, Sara <Hisel-McCoy.Sara@epa.gov>	Required
Wood, Robert <Wood.Robert@epa.gov>	Required
Ortiz, Agnes <Ortiz.Agnes@epa.gov>	Required
Ohanian, Edward <Ohanian.Edward@epa.gov>	Required
Scozzafava, MichaelE <Scozzafava.MichaelE@epa.gov>	Required
Flaherty, Colleen <Flaherty.Colleen@epa.gov>	Required

Washington, Evelyn <Washington.Evelyn@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Lalley, Cara <Lalley.Cara@epa.gov>	Optional
Hewitt, Julie <Hewitt.Julie@epa.gov>	Optional
Matuszko, Jan <Matuszko.Jan@epa.gov>	Optional
Damico, Brian <Damico.Brian@epa.gov>	Optional
Thomas, Dana <Thomas.Dana@epa.gov>	Optional
Gallagher, Kathryn <Gallagher.Kathryn@epa.gov>	Optional
Strong, Jamie <Strong.Jamie@epa.gov>	Optional
Resek, Elizabeth <Resek.Elizabeth@epa.gov>	Optional
Elias, Mike <Elias.Mike@epa.gov>	Optional
Corey Buffo <Buffo.Corey@epa.gov>	Optional
Barash, Shari <barash.shari@epa.gov>	Optional

Time 11:00 AM – 11:45 AM

Subject Pre-Brief for Region 1 Visit Call in # [redacted] conference code [redacted]

Location 3233 WJC East

Show Time As Busy

Attendees

Name <E-mail>	Attendance
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Organizer
Spraul, Greg <Spraul.Greg@epa.gov>	Required
Fontaine, Tim <Fontaine.Tim@epa.gov>	Required
Vazquez, Sharon <Vazquez.Sharon@epa.gov>	Required
Drummond, Laura <Drummond.Laura@epa.gov>	Required

Gollan, Christopher <Gollan.Christopher@epa.gov>	Required
OW Office Directors <OWOfficeDirectors@epa.gov>	Required
Miller, Tracey <Miller.Tracey@epa.gov>	Required
Kuntz, Kerry <Kuntz.Kerry@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Wood, Robert <Wood.Robert@epa.gov>	Required
Hisel-Mccoy, Sara <Hisel-McCoy.Sara@epa.gov>	Required
OW Deputy Office Directors <OWDeputyOfficeDirectors@epa.gov>	Optional
Grevatt, Peter <Grevatt.Peter@epa.gov>	Optional
Goodin, John <Goodin.John@epa.gov>	Optional
Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Optional
Mclain, Jennifer <Mclain.Jennifer@epa.gov>	Optional
Zobrist, Marcus <Zobrist.Marcus@epa.gov>	Optional
Letnes, Amelia <Letnes.Amelia@epa.gov>	Optional
Frace, Sheila <Frace.Sheila@epa.gov>	Optional
Gueriguian, Leo <Gueriguian.Leo@epa.gov>	Optional
Nagle, Deborah <Nagle.Deborah@epa.gov>	Optional
Lape, Jeff <lape.jeff@epa.gov>	Optional
Connors, Sandra <Connors.Sandra@epa.gov>	Optional
Kitamura, Louise <Kitamura.Louise@epa.gov>	Optional

Time 12:00 PM – 1:00 PM
Subject Lunch
Location Del Friscos - 1201 Pennsylanaia Ave NW
Show Time As Busy

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agree to the OpenTable Terms of Use
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, you must not use the OpenTable Services.

5a735f2174bec9153c436740

Categories Orange Category

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Lyons, Troy <lyons.troy@epa.gov>	Required

Time 1:00 PM – 2:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 4:15 PM – 4:30 PM
Subject Car confirmed
Show Time As Busy

Your transportation request has been confirmed.

Confirmation Number: 77890
Passenger Information
* Name: DAVE ROSS/AA
* Number: [redacted]
* Pickup Time: 2018-02-05 16:15
* Pickup Location: EPA 14TH ST FOUNTAIN
* Drop-Off Location: RAYBURN HOUSE BLDG (RHOB)
Vehicle Information
* Tag: [redacted]
* Vehicle Type: CAR
* Make : CHEVROLET
* Model : VOLT
* Color : BLACK

Categories Yellow Category

Time 4:30 PM – 5:00 PM
Subject Courtesy Meeting with Cong. Paul Tonko for David Ross and Aaron Ringel
Location 2463 Rayburn House Office Building
Show Time As Busy

OCIR to coordinate travel—details to come.

Meeting request email below:

Hi Aaron,

As Ranking Member of the Energy & Commerce Subcommittee on Environment, Congressman Tonko would like to request a courtesy meeting with the Assistant Administrator at his convenience to discuss areas of mutual interest, including drinking water. I would be happy to work with you or the appropriate person to suggest some dates/times that might work.

Thank you,

David

David Mastrangelo

Director of Operations

Congressman Paul D. Tonko (NY-20)

2463 Rayburn HOB, Washington, DC 20515

t: [redacted] | f: [redacted]
<http://tonko.house.gov/> <http://www.facebook.com/reppaultonko>
<https://twitter.com/reppaultonko> <image005.png>
<http://www.youtube.com/reppaultonko>

Categories Blue Category

Attendees

Name <E-mail>	**Attendance**
Rodrick, Christian <rodrick.christian@epa.gov>	Organizer
Ringel, Aaron <ringel.aaron@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required

Penman, Crystal <Penman.Crystal@epa.gov>	Required
Peck, Gregory <Peck.Gregory@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Orvin, Chris <Orvin.Chris@epa.gov>	Optional

Time 5:00 PM – 5:30 PM
Subject Travel Time - UBER
Show Time As Busy
Categories Yellow Category

Time 5:30 PM – 6:00 PM
Subject Navajo TAS & Conduit Theory
Location 3219 A WJCE - Call in [redacted] - ID [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Forsgren, Lee <Forsgren.Lee@epa.gov>	Organizer
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Fotouhi, David <Fotouhi.David@epa.gov>	Optional

Tuesday, February 06, 2018

Time 9:00 AM – 6:00 PM
Subject Region 1 Visit - Boston
Show Time As Busy
Categories Blue Category

Time 10:00 AM – 11:00 AM
Subject Benita using 3233
Show Time As Busy
Categories Blue Category

Time 10:30 AM – 12:08 PM
Subject AA flight 2129 departs DCA 1030am arrives Boston @12:08pm
Show Time As Busy
Categories Blue Category

Time 11:00 AM – 1:00 PM
Subject Karen Gude using 3233
Show Time As Busy
Categories Blue Category

Attendees	**Name <E-mail>**	**Attendance**
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Gude, Karen <Gude.Karen@epa.gov>	Required
	Penman, Crystal <Penman.Crystal@epa.gov>	Optional

Time 3:00 PM – 4:00 PM
Subject Meeting with Great Bay Coalition
Location McConnell Center, 61 Locust Street, Dover, NH, Room 305
Show Time As Busy
Enter door #3, room 305 is on the third floor.
Categories Blue Category

Wednesday, February 07, 2018

Time 8:00 AM – 9:00 AM
Subject Breakfast with Dave Ross
Location TBD
Show Time As Busy

Attendees	**Name <E-mail>**	**Attendance**
	Dunn, Alexandra <dunn.alexandra@epa.gov>	Organizer
	Ross, David P <ross.davidp@epa.gov>	Required
	Campbell, Ann <Campbell.Ann@epa.gov>	Optional
	Penman, Crystal <Penman.Crystal@epa.gov>	Optional

Time 8:00 AM – 6:00 PM
Subject Regional Review Boston - R1 Boston, Mass.
Location 3233 WJC EAST
Show Time As Busy
Categories Blue Category, Green Category

Attendees	**Name <E-mail>**	**Attendance**
	Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Organizer
	Upton, Jennifer <Upton.Jennifer@epa.gov>	Required
	Vazquez, Sharon <Vazquez.Sharon@epa.gov>	Required
	Fontaine, Tim <Fontaine.Tim@epa.gov>	Required
	Spraul, Greg <Spraul.Greg@epa.gov>	Required

Drummond, Laura <Drummond.Laura@epa.gov>	Required
Gollan, Christopher <Gollan.Christopher@epa.gov>	Required
King, RyanM <King.RyanM@epa.gov>	Required
Kuntz, Kerry <Kuntz.Kerry@epa.gov>	Optional
Ross, David P <ross.davidp@epa.gov>	Optional
Lape, Jeff <lape.jeff@epa.gov>	Optional
Gueriguian, Leo <Gueriguian.Leo@epa.gov>	Optional
Frace, Sheila <Frace.Sheila@epa.gov>	Optional
Zobrist, Marcus <Zobrist.Marcus@epa.gov>	Optional
Grevatt, Peter <Grevatt.Peter@epa.gov>	Optional
Mclain, Jennifer <Mclain.Jennifer@epa.gov>	Optional
Nagle, Deborah <Nagle.Deborah@epa.gov>	Optional
Hisel-Mccoy, Sara <Hisel-McCoy.Sara@epa.gov>	Optional
Behl, Betsy <Behl.Betsy@epa.gov>	Optional
Goodin, John <Goodin.John@epa.gov>	Optional
Connors, Sandra <Connors.Sandra@epa.gov>	Optional
Wall, Tom <Wall.Tom@epa.gov>	Optional
Wood, Robert <Wood.Robert@epa.gov>	Optional
Campbell, Ann <Campbell.Ann@epa.gov>	Optional

Time 9:00 AM – 12:00 PM
Subject FYI Tour of the Mystic River Watersheds
Show Time As Busy
Categories Blue Category

Time 1:45 PM – 2:30 PM
Subject FYI - Region 1 All Hands Meetings

Show Time As Busy

Time 3:00 PM – 3:15 PM
Subject ANPC Call in [redacted] and passcode [redacted]
Show Time As Busy

Time 3:30 PM – 4:00 PM
Subject Sr Leaders call regarding potential Shutdown
Location WJCN 3346, VTC/Call in information below
Show Time As Tentative

AAs, RAs, DAAs, DRAs and ARAs –

We would like to have a National Senior Leadership call, tomorrow, Wednesday, 2/7, at 3:30pm EST regarding preparations for a potential government shutdown. The meeting will be held in WJCN 3346, with VTC capability. Please dial Conference Line: [redacted] Code: [redacted] to join the call. However, if possible, feel free to congregate in the following locations with a Tandberg.

RG VTC Rooms:

R1: R01 Boston Mt Belknap

R2: Catherine McCabe

R3: R3 DRA Meeting Room

R4: R4 Boardroom 14T63

R5: R5 RA Conference Room

R6: R6 RA Conference Rm

R7: R7RA-SX20

R8: DRA Conference Room

R9: R9 SF Big Pine 19333

R10: R10 Seattle 21 RA Conference Room (Tahoma)

ORD: Jennifer Orme-Zavaleta

HQ: OARM DC WJCN Room 3346 (3330 Mobile)

Please contact Melissa Saddler <mailto:Saddler,%20Melissa%20%3cSaddler.Melissa@ep a.gov%3e> at [redacted] if the listed VTC room needs to be changed. And feel free to contact me if you have any questions.

Thank you, Robin

Robin H Richardson

Principal Deputy Associate Administrator

Office of Congressional and Intergovernmental Relations

U.S. Environmental Protection Agency

[redacted] (desk)

[redacted] (cell)

richardson.robinh@epa.gov <mailto:richardson.robinh@epa.gov>

Attendees

Name <E-mail>	Attendance
Richardson, RobinH <Richardson.RobinH@epa.gov>	Organizer
Assistant Administrators <Assistant_Administrators@epa.gov>	Required
Associate Administrators <Associate_Administrators@epa.gov>	Required
Regional Administrators <Regional_Administrators@epa.gov>	Required
Bertrand, Charlotte <Bertrand.Charlotte@epa.gov>	Required
Breen, Barry <Breen.Barry@epa.gov>	Required
Fine, Steven <fine.steven@epa.gov>	Required
Minoli, Kevin <Minoli.Kevin@epa.gov>	Required
Nishida, Jane <Nishida.Jane@epa.gov>	Required
Sheehan, Charles <Sheehan.Charles@epa.gov>	Required

Simon, Harvey <Simon.Harvey@epa.gov>	Required
Starfield, Lawrence <Starfield.Lawrence@epa.gov>	Required
Vizian, Donna <Vizian.Donna@epa.gov>	Required
DAA-Non-Career <DAANonCareer@epa.gov>	Required
DRA <DRA@epa.gov>	Required
Flynn, Mike <Flynn.Mike@epa.gov>	Required
Darwin, Henry <darwin.henry@epa.gov>	Required
Greaves, Holly <greaves.holly@epa.gov>	Required
Jackson, Ryan <jackson.ryan@epa.gov>	Required
ARA <ARA@epa.gov>	Required
Bloom, David <Bloom.David@epa.gov>	Required
Showman, John <Showman.John@epa.gov>	Required
Orme-Zavaleta, Jennifer <Orme-Zavaleta.Jennifer@epa.gov>	Required
Robbins, Chris <Robbins.Chris@epa.gov>	Required
Wise, Louise <Wise.Louise@epa.gov>	Required
Shaw, Betsy <Shaw.Betsy@epa.gov>	Required
Wooden-Aguilar, Helena <Wooden-Aguilar.Helena@epa.gov>	Required
Grantham, Nancy <Grantham.Nancy@epa.gov>	Required
Gray, David <gray.david@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Pirzadeh, Michelle <Pirzadeh.Michelle@epa.gov>	Optional
Strauss, Alexis <Strauss.Alexis@epa.gov>	Optional

Bowman, Liz <Bowman.Liz@epa.gov>	Optional
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Optional
Manna, Richard <Manna.Richard@epa.gov>	Optional
Lapierre, Kenneth <Lapierre.Kenneth@epa.gov>	Optional
Hanson, Paige (Catherine) <hanson.catherine@epa.gov>	Optional
Simon, Nigel <Simon.Nigel@epa.gov>	Optional
Hladick, Christopher <hladick.christopher@epa.gov>	Optional
Forsgren, Lee <Forsgren.Lee@epa.gov>	Optional
Krakowiak, John <Krakowiak.John@epa.gov>	Optional
Gulliford, Jim <gulliford.jim@epa.gov>	Optional
Beck, Nancy <Beck.Nancy@epa.gov>	Optional
Bolen, Brittany <bolen.brittany@epa.gov>	Optional
Fotouhi, David <Fotouhi.David@epa.gov>	Optional
Dalrymple, Anne <Dalrymple.Anne@epa.gov>	Optional
Smith, Susan <Smith.Susan@epa.gov>	Optional
Wilbur, Jennifer <Wilbur.Jennifer@epa.gov>	Optional
Hilosky, Nick <Hilosky.Nick@epa.gov>	Optional
Brooks, Becky <Brooks.Becky@epa.gov>	Optional
Stepp, Cathy <stepp.cathy@epa.gov>	Optional
Lopez, Peter <lopez.peter@epa.gov>	Optional
Servidio, Cosmo <Servidio.Cosmo@epa.gov>	Optional
Esher, Diana <Esher.Diana@epa.gov>	Optional

Searfoss, Renee <searfoss.renee@epa.gov>	Optional
Correa, Laura <correa.laura@epa.gov>	Optional
Thomas, Deb <thomas.debrah@epa.gov>	Optional
Helm, Arron <Helm.Arron@epa.gov>	Optional
Drake, Kerry <Drake.Kerry@epa.gov>	Optional
Rodrigues, Cecil <rodrigues.cecil@epa.gov>	Optional
Chu, Ed <Chu.Ed@epa.gov>	Optional
Cherry, Katrina <Cherry.Katrina@epa.gov>	Optional
Mears, Mary <Mears.Mary@epa.gov>	Optional
Mugdan, Walter <Mugdan.Walter@epa.gov>	Optional
Pace, Donald <Pace.Donald@epa.gov>	Optional
Gunasekara, Mandy <Gunasekara.Mandy@epa.gov>	Optional
Leopold, Matt <Leopold.Matt@epa.gov>	Optional
Baptist, Erik <Baptist.Erik@epa.gov>	Optional
Traylor, Patrick <traylor.patrick@epa.gov>	Optional
Brennan, Thomas <Brennan.Thomas@epa.gov>	Optional
Carter, Rick <Carter.Rick@epa.gov>	Optional
McDonald, James <McDonald.James@epa.gov>	Optional
Blackburn, Elizabeth <Blackburn.Elizabeth@epa.gov>	Optional
Brown, Byron <brown.byron@epa.gov>	Optional
Carter, Donnell <Carter.Donnell@epa.gov>	Optional
OES Calendar <OES_Calendar@epa.gov>	Optional
Cromwell, Travis <Cromwell.Travis@epa.gov>	Optional

Lee, Pascale <Lee.Pascale@epa.gov> Optional

Time 7:00 PM – 8:54 PM
Subject AA fligh 2120 departs BOS @ 7:00pm arrives DCA @ 8:54pm
Show Time As Busy

Details

BOS

B

6:00p

DCA

C

7:54p

1h 54m

AA 2124

319

MTWTF*S

Details

BOS

B

7:00p

DCA

C

8:54p

1h 54m

AA 2120

319

MTWTF*S

Details

BOS

B

8:15p

DCA

C

10:01p

1h 46m

AA 2116

319

MTWTF*S

Categories Blue Category

Thursday, February 08, 2018

Time All Day
Subject Crystal E - Telework
Show Time As Free

Time 8:00 AM – 6:00 PM
Subject Hold - Regional Review Boston - R1 Boston, Mass.
Location 3233 WJC EAST
Show Time As Busy
Categories Blue Category
Attendees

Name <E-mail>	Attendance
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Organizer
Upton, Jennifer <Upton.Jennifer@epa.gov>	Required
Vazquez, Sharon <Vazquez.Sharon@epa.gov>	Required

Fontaine, Tim <Fontaine.Tim@epa.gov>	Required
Spraul, Greg <Spraul.Greg@epa.gov>	Required
Drummond, Laura <Drummond.Laura@epa.gov>	Required
Gollan, Christopher <Gollan.Christopher@epa.gov>	Required
King, RyanM <King.RyanM@epa.gov>	Required
Kuntz, Kerry <Kuntz.Kerry@epa.gov>	Optional
Shapiro, Mike <Shapiro.Mike@epa.gov>	Optional
Ross, David P <ross.davidp@epa.gov>	Optional
Lape, Jeff <lape.jeff@epa.gov>	Optional
Gueriguian, Leo <Gueriguian.Leo@epa.gov>	Optional
Frace, Sheila <Frace.Sheila@epa.gov>	Optional
Zobrist, Marcus <Zobrist.Marcus@epa.gov>	Optional
Grevatt, Peter <Grevatt.Peter@epa.gov>	Optional
Mclain, Jennifer <Mclain.Jennifer@epa.gov>	Optional
Nagle, Deborah <Nagle.Deborah@epa.gov>	Optional
Hisel-Mccoy, Sara <Hisel-McCoy.Sara@epa.gov>	Optional
Behl, Betsy <Behl.Betsy@epa.gov>	Optional
Goodin, John <Goodin.John@epa.gov>	Optional
Connors, Sandra <Connors.Sandra@epa.gov>	Optional
Wall, Tom <Wall.Tom@epa.gov>	Optional
Wood, Robert <Wood.Robert@epa.gov>	Optional
Campbell, Ann <Campbell.Ann@epa.gov>	Optional

Time 1:00 PM – 2:00 PM

Subject Longterm planning
Location 3219A WJCE
Show Time As Busy

Attendees	**Name <E-mail>**	**Attendance**
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
	Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
	Fotouhi, David <fotouhi.david@epa.gov>	Required

Time 2:45 PM – 3:15 PM
Subject Interview Prep
Location 3219A WJCE
Show Time As Busy

Attendees	**Name <E-mail>**	**Attendance**
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required
	Abboud, Michael <abboud.michael@epa.gov>	Required
	Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
	Block, Molly <block.molly@epa.gov>	Required
	Bowman, Liz <Bowman.Liz@epa.gov>	Required
	Campbell, Ann <Campbell.Ann@epa.gov>	Optional

Time 3:30 PM – 3:45 PM
Subject Politico Interview
Location TBD
Show Time As Busy

Attendees	**Name <E-mail>**	**Attendance**
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required
	Abboud, Michael <abboud.michael@epa.gov>	Required
	Block, Molly <block.molly@epa.gov>	Required

	Bowman, Liz <Bowman.Liz@epa.gov>	Required

Time 4:00 PM – 4:30 PM
Subject General Discussion with David
Location 3402 WJC-N
Show Time As Busy
Categories Red Category

Attendees	**Name <E-mail>**	**Attendance**
	Jackson, Ryan <jackson.ryan@epa.gov>	Organizer
	Ross, David P <ross.davidp@epa.gov>	Required

Time 5:00 PM – 5:30 PM
Subject Meeting with Sasha Koo Oshima
Location 3219A WJCE
Show Time As Busy

Attendees	**Name <E-mail>**	**Attendance**
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Koo-Oshima, Sasha <Koo-Oshima.Sasha@epa.gov>	Required

Friday, February 09, 2018

Time All Day
Subject Crystal P - Leaving @ 1:30pm
Show Time As Free

Time 8:45 AM – 9:00 AM
Subject Daily Check in
Location 3219A WJCE Call in [redacted] passcode [redacted]
Show Time As Busy

Attendees	**Name <E-mail>**	**Attendance**
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Campbell, Ann <Campbell.Ann@epa.gov>	Required
	Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
	Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
	Ruf, Christine <Ruf.Christine@epa.gov>	Required

Time 9:30 AM – 10:00 AM
Subject Meet and Greet with Bill Wehrum and David Ross

Location	WJC-N 5406 (Bill Wehrum's Office)
Show Time As	Busy
Categories	Red Category

Attendees

Name <E-mail>	Attendance
Wehrum, Bill <Wehrum.Bill@epa.gov>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required

Time	10:00 AM – 11:00 AM
Subject	Meet and Greet with Ryan Fisher
Location	1201 Constitution Ave NW, Washington DC 20460 WJCE 3219A Please call [redacted] for escort
Show Time As	Busy
Categories	Blue Category

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
'merle.e.weintraub.civ@mail.mil' <merle.e.weintraub.civ@mail.mil>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

Time	11:00 AM – 11:45 AM
Subject	Weekly Planning Call in [redacted] passcode [redacted]
Location	3219A WJCE
Show Time As	Busy

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Ruf, Christine <Ruf.Christine@epa.gov>	Required

Time	1:00 PM – 2:00 PM
Subject	General
Location	Dave's Office

Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
Fotouhi, David <fotouhi.david@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required

Time 2:00 PM – 2:30 PM
Subject Draft 2018 Spring Reg Agenda
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Lousberg, Macara <Lousberg.Macara@epa.gov>	Required
Evalenko, Sandy <Evalenko.Sandy@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Ruf, Christine <Ruf.Christine@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Nasir, Iqra <Nasir.Iqra@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

Time 3:00 PM – 3:45 PM
Subject General Call in [redacted] passcode [redacted]
Location 3219A WJCE
Show Time As Busy

David Ross and Lee Forsgren.

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Mason, Paula <Mason.Paula@epa.gov>	Optional

Time 5:30 PM – 6:00 PM
Subject Call with Senator Carper
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

Monday, February 12, 2018

Time 9:00 AM – 10:30 AM
Subject OW Monthly Business Review Call in [redacted] passcode [redacted]
Location 3233 WJC East
Show Time As Tentative

Please reference the Conference Id when inquiring about this call.

Conference Title: Pre-brief to OW Monthly Business Review
Conference Id: [redacted]
Numeric Id: 3562
Date: 2/12/2018 - 2/12/2018
Time: 8:45 AM - 1:45 PM, (UTC-05:00) Eastern Time (US & Canada)
Conference Type: Automatic Connect

Supplied Reference Information:

Reference Name: O365 Audio Only Add On [redacted]
Comment: If a site does not have access to a video unit, an audio bridge is available.

Audio Number: [redacted]

Code: [redacted]

Contact Information: Please monitor the use of your audio line. If you determine that audio only participants have not, or will not join your VTC, please contact National VTC support at [redacted] and have the audio line disconnected.

Participant(s):

OW DC WICE Rm 3225/3233 AA Office
(IP/H.323: 2025551111@epa.gov <mailto:2025551111@epa.gov> , SIP: 2025551111@epa.gov <mailto:2025551111@epa.gov>)
8:45 AM - 1:45 PM, (UTC-05:00) Eastern Time (US & Canada)

R5 Room 1941 GCI
(IP/H.323: 3125559999@epa.gov <mailto:3125559999@epa.gov> , SIP: r5.room1941@epa.gov <mailto:r5.room1941@epa.gov>)
7:45 AM - 12:45 PM, (UTC-06:00) Central Time (US & Canada)

Audio O365 - [redacted]

Attendees	Name <E-mail>	Attendance
	Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Organizer
	Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
	OW Office Directors <OWOfficeDirectors@epa.gov>	Required
	OW Deputy Office Directors <OWDeputyOfficeDirectors@epa.gov>	Required
	Chu, Ed <Chu.Ed@epa.gov>	Required
	Stepp, Cathy <stepp.cathy@epa.gov>	Required
	Balasa, Kate <balasa.kate@epa.gov>	Required
	Korleski, Christopher <korleski.christopher@epa.gov>	Required
	Vazquez, Sharon <Vazquez.Sharon@epa.gov>	Required
	Gollan, Christopher <Gollan.Christopher@epa.gov>	Required
	King, RyanM <King.RyanM@epa.gov>	Required
	Fontaine, Tim <Fontaine.Tim@epa.gov>	Required
	Spraul, Greg <Spraul.Greg@epa.gov>	Required
	Ross, David P <ross.davidp@epa.gov>	Required
	Kitamura, Louise <Kitamura.Louise@epa.gov>	Required
	Moore, Kristie <Moore.Kristie@epa.gov>	Optional
	Bissonette, Eric <Bissonette.Eric@epa.gov>	Optional

Cummings, Travis <Cummings.Travis@epa.gov>	Optional
Stabenfeldt, Lynn <Stabenfeldt.Lynn@epa.gov>	Optional
Farber, Kit <Farber.Kit@epa.gov>	Optional
Ortiz, Agnes <Ortiz.Agnes@epa.gov>	Optional
Crawford, Tiffany <Crawford.Tiffany@epa.gov>	Optional
Lape, Jeff <lape.jeff@epa.gov>	Optional
Mclain, Jennifer <Mclain.Jennifer@epa.gov>	Optional
Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Optional
Frace, Sheila <Frace.Sheila@epa.gov>	Optional
Goodin, John <Goodin.John@epa.gov>	Optional
Nagle, Deborah <Nagle.Deborah@epa.gov>	Optional
Jencius, Morgan <jencius.morgan@epa.gov>	Optional
Gilbertson, Sue <gilbertson.sue@epa.gov>	Optional
Guerriero, Margaret <guerriero.margaret@epa.gov>	Optional
Connors, Sandra <Connors.Sandra@epa.gov>	Optional

Time 10:30 AM – 11:00 AM
Subject Meet and Greet Timothy Petty -Dept of Interior
Location 1201 Constitution Ave NW, Washington DC 20460 WJCE 3219A
Show Time As Busy

Michelle R. Brown
Office of the Assistant Secretary,
Water & Science
Department of the Interior
[redacted]

Categories Blue Category

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
'michelle_brown@ios.doi.gov'	Required

	<michelle_brown@ios.doi.gov>	
	timothy_petty@ios.doi.gov <timothy_petty@ios.doi.gov>	Optional

Time 11:00 AM – 12:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 1:00 PM – 2:00 PM
Subject PCC Options Call in [redacted] passcode [redacted]
Location 1201 Constitution Ave NW Washington DC 20460 WJCe 3233 Please call [redacted] for escort
Show Time As Busy
Categories Blue Category
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Required
Wendelowski, Karyn <wendelowski.karyn@epa.gov>	Required
Wehling, Carrie <Wehling.Carrie@epa.gov>	Required
Peck, Gregory <Peck.Gregory@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
McGartland, Al <McGartland.Al@epa.gov>	Required
Downing, Donna <Downing.Donna@epa.gov>	Required
McDavit, Michael W. <Mcdavit.Michael@epa.gov>	Required

'merle.e.weintraub.civ@mail.mil' <merle.e.weintraub.civ@mail.mil>	Required
'colin.c.smalley@usace.army.mil' <colin.c.smalley@usace.army.mil>	Required
'jennifer.a.moyer@usace.army.mil' <jennifer.a.moyer@usace.army.mil>	Required
cindy.s.barger <cindy.s.barger.civ@mail.mil>	Required
'Witgenstein, Melinda M CIV USARMY CENWD (US' <Melinda.M.Witgenstein@usace.army.mil>	Required
'Lamont, Douglas W SES (US' <douglas.w.lamont2.civ@mail.mil>	Required
'Smith, Thomas Patrick SES USARMY USACE (US' <Thomas.P.Smith@usace.army.mil>	Required
'Schmauder, Craig R SES (US)' <craig.r.schmauder.civ@mail.mil>	Required
Bolen, Brittany <bolen.brittany@epa.gov>	Required
'colin.c.smalley@usace4army.mil' <colin.c.smalley@usace4army.mil>	Required
Knorr, Michele <Knorr.Michele@epa.gov>	Optional
Kupchan, Simma <Kupchan.Simma@epa.gov>	Optional
Fisher, Ryan A SES USARMY HQDA ASA CW (US) <ryan.a.fisher12.civ@mail.mil>	Optional

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Time 4:00 PM – 4:45 PM

Subject Regulatory Flexibility Act and WQS Program Position for Federal Rulemakings

Location 3233 WjCE; Call in [redacted] passcode [redacted]

Show Time As Busy

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

Nagle, Deborah <Nagle.Deborah@epa.gov>	Required
Hisel-Mccoy, Sara <Hisel-McCoy.Sara@epa.gov>	Required
Buffo, Corey <Buffo.Corey@epa.gov>	Required
Keating, Jim <Keating.Jim@epa.gov>	Required
Anderson, Danielle <Anderson.Danielle@epa.gov>	Required
Hewitt, James <hewitt.james@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Required
Schroer, Lee <schroer.lee@epa.gov>	Required
Wade, Alexis <Wade.Alexis@epa.gov>	Required
Nalven, Heidi <Nalven.Heidi@epa.gov>	Required
Flannery-Keith, Erin <Flannery-Keith.Erin@epa.gov>	Required
Dravis, Samantha <dravis.samantha@epa.gov>	Required
Bolen, Brittany <bolen.brittany@epa.gov>	Required
Nickerson, William <Nickerson.William@epa.gov>	Required
Muellerleile, Caryn <Muellerleile.Caryn@epa.gov>	Required
Cooperstein, Sharon <Cooperstein.Sharon@epa.gov>	Required
Wiggins, Lanelle <Wiggins.Lanelle@epa.gov>	Required
Adamson, Joseph <adamson.joseph@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Crawford, Tiffany <Crawford.Tiffany@epa.gov>	Optional
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Behl, Betsy <Behl.Betsy@epa.gov>	Optional

Thomas, Dana <Thomas.Dana@epa.gov>	Optional
Oliver, Jacques <Oliver.Jacques@epa.gov>	Optional
Goss, Heather <Goss.Heather@epa.gov>	Optional
Sengco, Mario <Sengco.Mario@epa.gov>	Optional
Siciliano, CarolAnn <Siciliano.CarolAnn@epa.gov>	Optional
Green, Noelle <Green.Noelle@epa.gov>	Optional
Simons, Andrew <Simons.Andrew@epa.gov>	Optional
Sasser, Erika <Sasser.Erika@epa.gov>	Optional
Weatherhead, Darryl <Weatherhead.Darryl@epa.gov>	Optional
McGartland, Al <McGartland.Al@epa.gov>	Optional
Evalenko, Sandy <Evalenko.Sandy@epa.gov>	Optional
Lousberg, Macara <Lousberg.Macara@epa.gov>	Optional
Smith, Kristi <Smith.Kristi@epa.gov>	Optional
Doster, Brian <Doster.Brian@epa.gov>	Optional
Srinivasan, Gautam <Srinivasan.Gautam@epa.gov>	Optional
Hewitt, Julie <Hewitt.Julie@epa.gov>	Optional
Leopold, Matt <Leopold.Matt@epa.gov>	Optional
Schwab, Justin <schwab.justin@epa.gov>	Optional
Owens, Nicole <Owens.Nicole@epa.gov>	Optional
Corrales, Mark <Corrales.Mark@epa.gov>	Optional

Time 5:00 PM – 5:30 PM
Subject Meet and Greet
Location 3219A WJCE
Show Time As Busy

Attendees	Name <E-mail>	Attendance
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Dravis, Samantha <dravis.samantha@epa.gov>	Required
	Bolen, Brittany <bolen.brittany@epa.gov>	Required
	Bolen, Bill <Bolen.Bill@epa.gov>	Required
	Campbell, Ann <Campbell.Ann@epa.gov>	Optional

Tuesday, February 13, 2018

Time All Day
Subject Ann Telework
Show Time As Free

Time All Day
Subject Crystal E - Telework
Show Time As Free

Time 9:00 AM – 9:45 AM
Subject Steam Electric Effluent Guidelines
Location 3233 WJCE Call in [redacted] passcode [redacted]
Show Time As Busy

Attendees	Name <E-mail>	Attendance
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
	Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
	Nagle, Deborah <Nagle.Deborah@epa.gov>	Required
	Lape, Jeff <lape.jeff@epa.gov>	Required
	Wood, Robert <Wood.Robert@epa.gov>	Required
	Matuszko, Jan <Matuszko.Jan@epa.gov>	Required
	Jordan, Ronald <Jordan.Ronald@epa.gov>	Required
	Benware, Richard <Benware.Richard@epa.gov>	Required
	Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Required

Levine, MaryEllen <levine.maryellen@epa.gov>	Required
Zomer, Jessica <Zomer.Jessica@epa.gov>	Required
Crawford, Brad <crawford.brad@epa.gov>	Optional
Covington, James <Covington.James@epa.gov>	Optional
Allen, Ashley <Allen.Ashley@epa.gov>	Optional
Chen, Jimmy <Chen.Jimmy@epa.gov>	Optional
Schnitker, Brian <Schnitker.Brian@epa.gov>	Optional
Scozzafava, MichaelE <Scozzafava.MichaelE@epa.gov>	Optional
Evalenko, Sandy <Evalenko.Sandy@epa.gov>	Optional
Campbell, Ann <Campbell.Ann@epa.gov>	Optional

Time 10:00 AM – 10:30 AM
Subject Meeting with the Michigan Council of Governments
Location 1201 Constitution Ave NW, Washington DC 20460 WJCE 3233 Please call [redacted] for escort
Show Time As Busy

Confirmed participants as of 2/8

- Bob Clark, Mayor of Monroe, MI and Chair of SEMCOG
- Chris Barnett, Supervisor, Orion Township, MI and Chair of the SEMCOG Water Task Force
- Amy Mangus, SEMCOG
- Mary Beth McGowan, Dykema

Kaitlyn Shimmin
Special Assistant Congressional and Intergovernmental Affairs
Office of the Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., N.W.
Washington, D.C. 20460
O: (202) [redacted]
C: (202) [redacted]
Shimmin.Kaitlyn@epa.gov <mailto:Shimmin.Kaitlyn@epa.gov>

Fyi. Group of 13

Categories Blue Category

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Shimmin, Kaitlyn <shimmin.kaitlyn@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Burneson, Eric <Burneson.Eric@epa.gov>	Required
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Optional

Time 10:45 AM – 11:15 AM

Subject Meeting with Marc Himmelstein

Location 1201 Constitution Ave NW, Washington DC 20640 3219A WJCE Please call [redacted] for escort

Show Time As Busy

Categories Blue Category

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
'marc_Himmelstein@nes-dc.com' <marc_Himmelstein@nes-dc.com>	Required

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Time 11:15 AM – 12:00 PM

Subject State and Tribal 404 Assumption

Location 3233 WJCE Call in [redacted] passcode [redacted]

Show Time As Busy

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
McDavit, Michael W. <Mcdavit.Michael@epa.gov>	Required
Libertz, Catherine <Libertz.Catherine@epa.gov>	Required

Hurld, Kathy <Hurld.Kathy@epa.gov>	Required
Glenn, Trey <Glenn.Trey@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Weiler, Katherine <Weiler.Katherine@epa.gov>	Optional
Groman, Hazel <Groman.Hazel@epa.gov>	Optional
Connors, Sandra <Connors.Sandra@epa.gov>	Optional
Kupchan, Simma <Kupchan.Simma@epa.gov>	Optional
Wehling, Carrie <Wehling.Carrie@epa.gov>	Optional
Speir, Jeffrey <speir.jeffrey@epa.gov>	Optional
Chemerys, Ruth <Chemerys.Ruth@epa.gov>	Optional
Szerlog, Michael <Szerlog.Michael@epa.gov>	Optional
Mcgill, Thomas <Mcgill.Thomas@epa.gov>	Optional
Walker, Mary <walker.mary@epa.gov>	Optional
Kaiser, Russell <Kaiser.Russell@epa.gov>	Optional
Calli, Rosemary <Calli.Rosemary@epa.gov>	Optional
Mancusi-Ungaro, Philip <Mancusi-Ungaro.Philip@epa.gov>	Optional
Hicks, Matt <Hicks.Matthew@epa.gov>	Optional
Penman, Crystal <Penman.Crystal@epa.gov>	Optional
Leopold, Matt <Leopold.Matt@epa.gov>	Optional
Fotouhi, David <fotouhi.david@epa.gov>	Optional
Gude, Karen <Gude.Karen@epa.gov>	Optional

Time 1:00 PM – 3:00 PM
Subject Office Hours

Show Time As Busy
Categories Blue Category

Time 2:00 PM – 2:30 PM
Subject General
Location 3219A WJCE
Show Time As Busy

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Goodin, John <Goodin.John@epa.gov>	Required
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required

Time 3:15 PM – 4:00 PM
Subject Potential Regulatory Options for Perchlorate
Location 3233 WJCE Call in [redacted] passcode [redacted]
Show Time As Busy

Poc: Joe Tiago

To discuss EPA's regulatory and litigation options based on the outcome of the second peer review panel.

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Burneson, Eric <Burneson.Eric@epa.gov>	Required
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Christ, Lisa <Christ.Lisa@epa.gov>	Required
Mclain, Jennifer <Mclain.Jennifer@epa.gov>	Required
Wehling, Carrie <Wehling.Carrie@epa.gov>	Required
Messier, Dawn <Messier.Dawn@epa.gov>	Required
Lopez-Carbo, Maria <Lopez-Carbo.Maria@epa.gov>	Required
Hernandez-Quinones, Samuel <Hernandez.Samuel@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required

Miller, Gregory <Miller.Gregory@epa.gov>	Required
Strong, Jamie <Strong.Jamie@epa.gov>	Required
Behl, Betsy <Behl.Betsy@epa.gov>	Required
Tiago, Joseph <Tiago.Joseph@epa.gov>	Optional
Evalenko, Sandy <Evalenko.Sandy@epa.gov>	Optional
Lousberg, Macara <Lousberg.Macara@epa.gov>	Optional
Campbell, Ann <Campbell.Ann@epa.gov>	Optional

Time 4:00 PM – 4:30 PM
Subject Transportation to EEOB
Location WJCN Courtyard
Show Time As Busy

Your transportation request has been confirmed.

Confirmation Number: 78082

Passenger Information

* Name: MATT LEOPOLD/AA
* Number: [redacted]
* Pickup Time: 2018-02-13 16:00:00.0
* Pickup Location: COURTYARD
* Drop-Off Location: EEOB

Vehicle Information

* Tag: [redacted]
* Vehicle Type: MINI VAN
* Make : DODGE
* Model : CARAVAN
* Color : SILVER

Categories Yellow Category

Attendees

Name <E-mail>	Attendance
Dravis, Samantha <dravis.samantha@epa.gov>	Organizer
Inge, Carolyn <Inge.Carolyn@epa.gov>	Required

Penman, Crystal <Penman.Crystal@epa.gov>	Required
Bolen, Brittany <bolen.brittany@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Veney, Carla <Veney.Carla@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required

Time 4:30 PM – 5:30 PM
Subject EPA/OW Environmental Discussion
Location EEOB 229
Show Time As Busy

Please submit your WAVES information by 5pm, February 9th using the following link: https://events.whitehouse.gov/?rid=CPYK9FPRK8 <https://events.whitehouse.gov/?rid=CPYK9FPRK8>

Categories Blue Category
Attendees

Name <E-mail>	Attendance
Szabo, Aaron L. [redacted] <[redacted]>	Organizer
Kime, Robin <Kime.Robin@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Required
Dravis, Samantha <dravis.samantha@epa.gov>	Required
Fotouhi, David <Fotouhi.David@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

Time 5:30 PM – 6:00 PM
Subject Return Transportation to WJCN is not available
Show Time As Busy
Categories Yellow Category
Attendees

Name <E-mail>	Attendance
Dravis, Samantha <dravis.samantha@epa.gov>	Organizer

Inge, Carolyn <Inge.Carolyn@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Required
Bolen, Brittany <bolen.brittany@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Veney, Carla <Veney.Carla@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Fotouhi, David <Fotouhi.David@epa.gov>	Required

Wednesday, February 14, 2018

Time 9:30 AM – 10:30 AM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 12:00 PM – 1:00 PM
Subject Lunch
Show Time As Busy
Categories Orange Category

Time 3:00 PM – 3:15 PM
Subject Car confirmed
Show Time As Busy

Your transportation request has been Updated.

Reason for update : Pick Up Time changed
Confirmation Number: 78100
Passenger Information
* Name: DAVID ROSS/AA
* Number: [redacted]
* Pickup Time: 2018-02-14 15:00:00.0
* Pickup Location: EPA EAST 1201 CONSTITUTION AVE
* Drop-Off Location: RUSSELL BUILDING
Vehicle Information
* Tag: [redacted]
* Vehicle Type: CAR
* Make : CHEVROLET
* Model : VOLT
* Color : BLACK

Categories Yellow Category
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

Time 3:15 PM – 3:45 PM
Subject Sen. Blunt and Members of Missouri Delegation Meeting w/ AA Ross
Location SR-260
Show Time As Busy

Select House Members to attend—Trey to send updated list shortly.

From: McKenzie, Trey (Blunt) [mailto:Trey_McKenzie@blunt.senate.gov]
Sent: Tuesday, January 16, 2018 3:36 PM
To: Palich, Christian <palich.christian@epa.gov
<mailto:palich.christian@epa.gov> >
Cc: Frye, Tony (Robert) <frye.robert@epa.gov
<mailto:frye.robert@epa.gov> >
Subject: Meeting Request - Asst. Adm. Ross

Hey Guys,

I hope everything is going well. I wanted to reach out and again express our appreciation for the direction the agency is going with the Missouri Water Quality Standard. In his conversation with Sen. Blunt, Adm. Pruitt had suggested following up with David Ross once he was sworn-in. To that end, Senator Blunt would like to request meeting with Mr. Ross in the next few weeks to discuss the rule and the path forward. I know there may be some interest from other MO members as well and we're happy to coordinate if it makes things easier on your end. Give me a call if you'd like to discuss. Direct: [redacted]

Thanks,
Trey

Trey McKenzie

Legislative Assistant

Senator Roy Blunt

260 Russell Senate Office Building

[redacted]

Categories Blue Category

Attendees

Name <E-mail>	Attendance
Rodrick, Christian <rodrick.christian@epa.gov>	Organizer
Shimmin, Kaitlyn <shimmin.kaitlyn@epa.gov>	Required
Frye, Tony (Robert) <frye.robert@epa.gov>	Required
Ringel, Aaron <ringel.aaron@epa.gov>	Required
Klasen, Matthew <Klasen.Matthew@epa.gov>	Required
Orvin, Chris <Orvin.Chris@epa.gov>	Required
Peck, Gregory <Peck.Gregory@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Palich, Christian <palich.christian@epa.gov>	Required
Borum, Denis <Borum.Denis@epa.gov>	Optional

Time 3:50 PM – 4:05 PM

Subject car confirmed

Show Time As Busy

Your transportation request has been Updated.

Reason for update : Pick Up Time changed
Confirmation Number: 78101
Passenger Information
* Name: DAVID ROSS/AA
* Number: [redacted]
* Pickup Time: 2018-02-14 15:50:00.0
* Pickup Location: RUSSELL BUILDING
* Drop-Off Location: EPA EAST 1201 CONSTITUTION AVE
Vehicle Information

* Tag: [redacted]
* Vehicle Type: CAR
* Make : CHEVROLET
* Model : VOLT
* Color : BLACK

Categories Yellow Category

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

Thursday, February 15, 2018

Time 11:00 AM – 11:30 AM
Subject Call with R2
Location Peter to call Dave directly [redacted]
Show Time As Busy

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Lopez, Peter <lopez.peter@epa.gov>	Required

Time 11:30 AM – 12:00 PM
Subject Puerto Rico
Location 3219A WJCE Call in [redacted] passcode [redacted]
Show Time As Busy

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Greaves, Holly <greaves.holly@epa.gov>	Optional
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Farris, Erika D. <Farris.Erika@epa.gov>	Optional

Time 12:00 PM – 1:00 PM
Subject Lunch
Show Time As Busy
Categories Orange Category

Time 1:00 PM – 1:30 PM

Subject WOTUS - Step 2 Rule Baseline
Location 3219A WJCE Call in [redacted] passcode [redacted]
Show Time As Busy

Attendees	**Name <E-mail>**	**Attendance**
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
	Goodin, John <Goodin.John@epa.gov>	Required
	Wehling, Carrie <Wehling.Carrie@epa.gov>	Required
	Fotouhi, David <fotouhi.david@epa.gov>	Required
	ryan.a.fisher12.civ@mail.mil <ryan.a.fisher12.civ@mail.mil>	Required
	jennifer.a.moyer@usace.army.mil <jennifer.a.moyer@usace.army.mil>	Required
	merle.e.weintraub.civ@mail.mil <merle.e.weintraub.civ@mail.mil>	Optional
	Hewitt, Julie <Hewitt.Julie@epa.gov>	Optional
	Kupchan, Simma <Kupchan.Simma@epa.gov>	Optional
	cindy.s.barger <cindy.s.barger.civ@mail.mil>	Optional
	McGartland, Al <McGartland.Al@epa.gov>	Optional
	Schmauder, Craig R SES (US) <craig.r.schmauder.civ@mail.mil>	Optional
	Wendelowski, Karyn <wendelowski.karyn@epa.gov>	Optional

Time 1:30 PM – 2:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 2:00 PM – 3:00 PM
Subject Principals Meeting on Reducing Childhood Lead Exposures
Location Green Room
Show Time As Busy
Categories Red Category

Attendees	Name <E-mail>	Attendance
	[redacted] <[redacted]>	Organizer
	Kelly, Albert <kelly.albert@epa.gov>	Required
	Fonseca, Silvina <Fonseca.Silvina@epa.gov>	Required
	Epp, Timothy <Epp.Timothy@epa.gov>	Required
	Flynn, Mike <Flynn.Mike@epa.gov>	Required
	Jackson, Ryan <jackson.ryan@epa.gov>	Required
	Wehrum, Bill <Wehrum.Bill@epa.gov>	Required
	Breen, Barry <breen.barry@epa.gov>	Required
	Beck, Nancy <Beck.Nancy@epa.gov>	Required
	Etzel, Ruth <Etzel.Ruth@epa.gov>	Required
	Lyons, Troy <lyons.troy@epa.gov>	Required
	Bennett, Tate <Bennett.Tate@epa.gov>	Required
	Bowman, Liz <Bowman.Liz@epa.gov>	Required
	Dravis, Samantha <dravis.samantha@epa.gov>	Required
	Bodine, Susan <bodine.susan@epa.gov>	Required
	Nishida, Jane <Nishida.Jane@epa.gov>	Required
	Orme-Zavaleta, Jennifer <Orme-Zavaleta.Jennifer@epa.gov>	Required
	Yamada, Richard (Yujiro) <yamada.richard@epa.gov>	Required
	Ross, David P <ross.davidp@epa.gov>	Required
	Brennan, Thomas <Brennan.Thomas@epa.gov>	Required

Time 3:30 PM – 4:00 PM
Subject Meeting with Pulp & Paperworkers' Resource Council
Location 1201 Constitution Ave NW, Washington DC 20460, WJCE 3233 Please call

[redacted] for escort

Show Time As Tentative

Rudolf
Dean
Georgia-Pacific LLC
PPRC National Vice Chairman

Arnold
Jim
Glatfelter
PPRC Northeast Region Director

Rowser
Rodney
WestRock
PPRC Southeast Region Director

Mauldin
Mike
Georgia-Pacific LLC
PPRC Special Projects Coordinator

Moyers
Bill
Georgia-Pacific LLC
PPRC Southern Pine Region Director

LAURA PICKARD
Manager, PAC & Grassroots
Laura_Pickard@afandpa.org <mailto:Laura_Pickard@afandpa.org>
(202) [redacted] (office)
(202) [redacted] (cell)
AMERICAN FOREST & PAPER ASSOCIATION
1101 K Street, N.W., Suite 700
Washington, D.C. 20005

Categories Blue Category

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Campbell, Ann <Campbell.Ann@epa.gov>	Required
laura_pickard@afandpa.org <laura_pickard@afandpa.org>	Required
Nagle, Deborah <Nagle.Deborah@epa.gov>	Required
Wood, Robert <Wood.Robert@epa.gov>	Required
Behl, Betsy <Behl.Betsy@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Optional

Time 4:00 PM – 5:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Friday, February 16, 2018

Time All Day
Subject Ann Compressed
Show Time As Free

Time 8:00 AM – 6:00 PM
Subject OOO
Show Time As Busy
Categories Blue Category

Time 11:00 AM – 11:45 AM
Subject Briefing: 404 Assumption and Army Corps
Location Administrator's Office / Dial-In for those traveling: [redacted]
Code [redacted]
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
[redacted] <[redacted]>	Organizer
Ferguson, Lincoln <ferguson.lincoln@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Glenn, Trey <Glenn.Trey@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Optional

Time 3:00 PM – 3:30 PM
Subject Conference Call with Craig Butler
Location Please call Mr. Butler @ [redacted]
Show Time As Busy
Poc Sherrie Thompson [redacted]
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
sherrie.thompson@epa.ohio.gov <sherrie.thompson@epa.ohio.gov>	Required
todd.anderson@epa.ohio.gov	Optional

	<todd.anderson@epa.ohio.gov>	
	Tiffani.Kavalec@epa.ohio.gov <Tiffani.Kavalec@epa.ohio.gov>	Optional
	Craig.Butler@epa.ohio.gov <Craig.Butler@epa.ohio.gov>	Optional
	William.Fischbein@epa.ohio.gov <William.Fischbein@epa.ohio.gov>	Optional
	Melinda.Harris@epa.ohio.gov <Melinda.Harris@epa.ohio.gov>	Optional

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Monday, February 19, 2018

Time 8:00 AM – 5:00 PM
Subject President's Day
Show Time As Busy
Categories EZ Record - Private, Yellow Category, Holiday, Blue Category, Purple Category, Business

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Tuesday, February 20, 2018

Time 9:15 AM – 9:30 AM
Subject Mini Van confirmed
Show Time As Busy

Your transportation request has been confirmed.

Confirmation Number: 78151
Passenger Information
* Name: DAVID ROSS/AA
* Number: [redacted]
* Pickup Time: 2018-02-20 09:00:00.0
* Pickup Location: EPA EAST 1201 CONSTITUTION AVE
* Drop-Off Location: 425 3RD STREET SW, WASHINGTON DC
Vehicle Information
* Tag: [redacted]
* Vehicle Type: MINI VAN
* Make : DODGE
* Model : CARAVAN
* Color : SILVER

Categories Yellow Category

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Wall, Tom <Wall.Tom@epa.gov>	Required

	Flahive, Katie <Flahive.Katie@epa.gov>	Required

Time 9:30 AM – 10:00 AM
Subject Conservation Technology Information Center
Location 425 3rd Street SW, Washington DC
Show Time As Tentative
Categories Blue Category
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required

Time 10:00 AM – 10:30 AM
Subject Mini Van confirmed
Show Time As Busy

Your transportation request has been confirmed.

Confirmation Number: 78152
Passenger Information
* Name: DAVID ROSS/AA
* Number: [redacted]
* Pickup Time: 2018-02-20 10:05:00.0
* Pickup Location: 425 3RD STREET SW, WASHINGTON DC
* Drop-Off Location: EPA EAST 1201 CONSTITUTION AVE
Vehicle Information
* Tag: [redacted]
* Vehicle Type: MINI VAN
* Make : DODGE
* Model : CARAVAN
* Color : SILVER

Categories Yellow Category
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Wall, Tom <Wall.Tom@epa.gov>	Required
Flahive, Katie <Flahive.Katie@epa.gov>	Required

Time 1:30 PM – 6:00 PM
Subject Damaris Christensen using 3233
Show Time As Busy
Categories Blue Category
Attendees

Name <E-mail>	Attendance

Ross, David P <ross.davidp@epa.gov>	Organizer
Christensen, Damaris <Christensen.Damaris@epa.gov>	Required

Time 2:00 PM – 3:00 PM
Subject Senior Staff
Show Time As Busy
Categories Red Category

Time 2:00 PM – 3:15 PM
Subject WOTUS Webinar for Tribes
Location 3233 WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Christensen, Damaris <Christensen.Damaris@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Downing, Donna <Downing.Donna@epa.gov>	Required
McDavit, Michael W. <Mcdavit.Michael@epa.gov>	Required
Kwok, Rose <Kwok.Rose@epa.gov>	Required
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
Warren, Nicholas <Warren.Nicholas@epa.gov>	Required
Schaefer-Gomez, Julia <Schaefer-Gomez.Julia@epa.gov>	Required
cindy.s.barger <cindy.s.barger.civ@mail.mil>	Required
nathan.r.menard.mil@mail.mil <nathan.r.menard.mil@mail.mil>	Required
melinda.m.witgenstein@usace.army.mil <melinda.m.witgenstein@usace.army.mil>	Required
ryan.a.fisher12.civ@mail.mil <ryan.a.fisher12.civ@mail.mil>	Required

Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Optional
ian.p.osullivan@usace.army.mil' <ian.p.osullivan@usace.army.mil'>	Optional
'jennifer.a.moyer@usace.army.mil' <'jennifer.a.moyer@usace.army.mil'>	Optional
'Donald.e.jackson@usace.army.mil' <'Donald.e.jackson@usace.army.mil'>	Optional
'Schmauder, Craig R SES (US' <craig.r.schmauder.civ@mail.mil>	Optional
Robert Davenport <robert.l.davenport4.civ@mail.mil>	Optional
Bodine, Susan <bodine.susan@epa.gov>	Optional
Cherry, Andrew <Cherry.Andrew@epa.gov>	Optional
Bahk, Benjamin <Bahk.Benjamin@epa.gov>	Optional
Pollins, Mark <Pollins.Mark@epa.gov>	Optional
Peck, Gregory <Peck.Gregory@epa.gov>	Optional
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Dennis, Allison <Dennis.Allison@epa.gov>	Optional
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Optional
Hewitt, Julie <Hewitt.Julie@epa.gov>	Optional
Penman, Crystal <Penman.Crystal@epa.gov>	Optional
Gude, Karen <Gude.Karen@epa.gov>	Optional
Chemerys, Ruth <Chemerys.Ruth@epa.gov>	Optional
Wesson, Dolores <Wesson.Dolores@epa.gov>	Optional
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Optional
Wehling, Carrie <Wehling.Carrie@epa.gov>	Optional

Kupchan, Simma <Kupchan.Simma@epa.gov>	Optional
Wendelowski, Karyn <wendelowski.karyn@epa.gov>	Optional
Fotouhi, David <fotouhi.david@epa.gov>	Optional
ODea, Elise <odea.elise@epa.gov>	Optional
Goodwin, Kara <goodwin.kara@epa.gov>	Optional
Bowles, Jack <Bowles.Jack@epa.gov>	Optional
Hanson, Andrew <Hanson.Andrew@epa.gov>	Optional
Barbery, Andrea <Barbery.Andrea@epa.gov>	Optional
Connors, Sandra <Connors.Sandra@epa.gov>	Optional
Macara Lousberg <Lousberg.Macara@epa.gov>	Optional

Time 3:30 PM – 4:45 PM
Subject WOTUS Webinar for States
Location 3233 WJCE
Show Time As Busy

Attendees	**Name <E-mail>**	**Attendance**
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
	Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
	cindy.s.barger <cindy.s.barger.civ@mail.mil>	Required
	nathan.r.menard.mil@mail.mil <nathan.r.menard.mil@mail.mil>	Required
	'melinda.m.witgenstein@usace.army.mil' <'melinda.m.witgenstein@usace.army.mil'>	Required
	'ryan.a.fisher12.civ@mail.mil' <'ryan.a.fisher12.civ@mail.mil'>	Required
	'joseph.c.goetz.mil@mail.mil' <'joseph.c.goetz.mil@mail.mil'>	Required

Scraig.r.schmauder.civ@mail.mil <Scraig.r.schmauder.civ@mail.mil>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Downing, Donna <Downing.Donna@epa.gov>	Required
Kwok, Rose <Kwok.Rose@epa.gov>	Required
McDavit, Michael W. <Mcdavit.Michael@epa.gov>	Required
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
Warren, Nicholas <Warren.Nicholas@epa.gov>	Required
Schaefer-Gomez, Julia <Schaefer-Gomez.Julia@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Optional
'ian.p.osullivan@usace.army.mil' <'ian.p.osullivan@usace.army.mil'>	Optional
'jennifer.a.moyer@usace.army.mil' <'jennifer.a.moyer@usace.army.mil'>	Optional
Robert Davenport <robert.l.davenport4.civ@mail.mil>	Optional
Bodine, Susan <bodine.susan@epa.gov>	Optional
Cherry, Andrew <Cherry.Andrew@epa.gov>	Optional
Bahk, Benjamin <Bahk.Benjamin@epa.gov>	Optional
Pollins, Mark <Pollins.Mark@epa.gov>	Optional
Peck, Gregory <Peck.Gregory@epa.gov>	Optional
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Dennis, Allison <Dennis.Allison@epa.gov>	Optional
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Optional
Hewitt, Julie <Hewitt.Julie@epa.gov>	Optional

Penman, Crystal <Penman.Crystal@epa.gov>	Optional
Chemerys, Ruth <Chemerys.Ruth@epa.gov>	Optional
Wesson, Dolores <Wesson.Dolores@epa.gov>	Optional
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Optional
Wehling, Carrie <Wehling.Carrie@epa.gov>	Optional
Kupchan, Simma <Kupchan.Simma@epa.gov>	Optional
Wendelowski, Karyn <wendelowski.karyn@epa.gov>	Optional
Fotouhi, David <fotouhi.david@epa.gov>	Optional
ODea, Elise <odea.elise@epa.gov>	Optional
Bowles, Jack <Bowles.Jack@epa.gov>	Optional
Hanson, Andrew <Hanson.Andrew@epa.gov>	Optional
Barbery, Andrea <Barbery.Andrea@epa.gov>	Optional
Goodwin, Kara <goodwin.kara@epa.gov>	Optional
Macara Lousberg <Lousberg.Macara@epa.gov>	Optional
Fisher, Ryan A SES USARMY HQDA ASA CW (US) <ryan.a.fisher12.civ@mail.mil>	Optional
Schmauder, Craig R SES (US) <craig.r.schmauder.civ@mail.mil>	Optional

Wednesday, February 21, 2018

Time 1:00 AM – 1:30 AM
Subject 2
Show Time As Busy

Time 9:00 AM – 12:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 9:30 AM – 10:00 AM
Subject Benita using 3233

Show Time As Busy
Categories Blue Category

Time 10:00 AM – 10:15 AM
Subject Filing
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Penman, Crystal <Penman.Crystal@epa.gov>	Required

Time 12:00 PM – 1:00 PM
Subject Lunch
Show Time As Busy
Categories Orange Category

Time 3:00 PM – 3:45 PM
Subject Overview of OW's Homeland Security Mission
Location 3233 WJCE Call in [redacted] passcode [redacted]
Show Time As Busy
Poc: Joe Tiago
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Tiago, Joseph <Tiago.Joseph@epa.gov>	Required
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Mclain, Jennifer <Mclain.Jennifer@epa.gov>	Required
Travers, David <Travers.David@epa.gov>	Required
Newberry, Debbie <Newberry.Debbie@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Dyson, Nushat <Dyson.Nushat@epa.gov>	Optional
Workman, Rosemary <Workman.Rosemary@epa.gov>	Optional

Time 3:45 PM – 4:30 PM
Subject WOTUS
Location 7129 WJCW
Show Time As Busy
OWOW booking a conference room with whiteboard.

Attendees	Name <E-mail>	Attendance
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Goodin, John <Goodin.John@epa.gov>	Required
	Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required

Thursday, February 22, 2018

Time 9:00 AM – 9:30 AM
Subject Conference Call with The Nature Conservancy Call in [redacted] passcode [redacted]
Location 1201 Constitution Ave NW, Washington DC 20004 3233 WJCe Please call [redacted] for escort
Show Time As Busy

Attendees

Craig Holland, Senior Director of Product Development at NatureVest
Kirsten Evans, Urban Water Project Director
Jessica Wilkinson, Sr. Policy Adviser for Mitigation
Sarah Murdock, Director of Resilience & Water Policy
Cat Bowler, Water Policy Associate

Categories Blue Category

Attendees	Name <E-mail>	Attendance
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Campbell, Ann <Campbell.Ann@epa.gov>	Required
	james.hague@tnc.org <james.hague@tnc.org>	Required

Time 1:00 PM – 1:30 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 2:00 PM – 2:30 PM
Subject Meeting with the Perchlorate Study Group (PSG)
Location 1201 Constitution Ave NW, Washington DC 20460 WJCE 3219 Please call [redacted] for escort
Show Time As Tentative
Categories Blue Category

Attendees	Name <E-mail>	Attendance
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Campbell, Ann <Campbell.Ann@epa.gov>	Required
	tcr@vnf.com <tcr@vnf.com>	Required

	Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

Time	3:00 PM – 3:45 PM
Subject	Overview of EPA's Proposed Rule to establish Aluminum Criteria for Oregon
Location	3233 WJCE Call in [redacted] passcode [redacted]
Show Time As	Busy

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Nagle, Deborah <Nagle.Deborah@epa.gov>	Required
Hisel-Mccoy, Sara <Hisel-McCoy.Sara@epa.gov>	Required
Behl, Betsy <Behl.Betsy@epa.gov>	Required
Buffo, Corey <Buffo.Corey@epa.gov>	Required
Keating, Jim <Keating.Jim@epa.gov>	Required
Gallagher, Kathryn <Gallagher.Kathryn@epa.gov>	Required
Eignor, Diana <Eignor.Diana@epa.gov>	Required
Anderson, Danielle <Anderson.Danielle@epa.gov>	Required
Goss, Heather <Goss.Heather@epa.gov>	Required
Hewitt, James <hewitt.james@epa.gov>	Required
Hoffman, Wendy <Hoffman.Wendy@epa.gov>	Required
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Required
Schroer, Lee <schroer.lee@epa.gov>	Required
Wade, Alexis <Wade.Alexis@epa.gov>	Required
Flannery-Keith, Erin <Flannery-Keith.Erin@epa.gov>	Required
Chung, Angela <Chung.Angela@epa.gov>	Required
Shaw, Hanh <Shaw.Hanh@epa.gov>	Required

Tritt, Maja <Tritt.Maja@epa.gov>	Required
Adamson, Joseph <adamson.joseph@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Fidis, Alexander <Fidis.Alexander@epa.gov>	Optional
Jankowski, Mark <jankowski.mark@epa.gov>	Optional
Evalenko, Sandy <Evalenko.Sandy@epa.gov>	Optional
Hewitt, Julie <Hewitt.Julie@epa.gov>	Optional
Corrales, Mark <Corrales.Mark@epa.gov>	Optional
Curry, Bridgid <Curry.Bridgid@epa.gov>	Optional
Nurse, Leanne <Nurse.Leanne@epa.gov>	Optional
Macara Lousberg <Lousberg.Macara@epa.gov>	Optional
Bolen, Brittany <bolen.brittany@epa.gov>	Optional
Nickerson, William <Nickerson.William@epa.gov>	Optional
Allnutt, David <Allnutt.David@epa.gov>	Optional
Bachman, Brenda <bachman.brenda@epa.gov>	Optional

Time 4:00 PM – 4:30 PM
Subject Meeting with National Association of Home Builders (NAHB)
Location 1201 Constitution Ave NW, Washington Dc 20460 3233 WJCE Please call [redacted] for escort
Show Time As Busy
Attendees Owen McDonough
Tom Ward
Categories Blue Category

Attendees	**Name <E-mail>**	**Attendance**
	Ross, David P <ross.davidp@epa.gov>	Organizer
	OMcDonough@nahb.org <OMcDonough@nahb.org>	Required
	Campbell, Ann <Campbell.Ann@epa.gov>	Required

	Goodin, John <Goodin.John@epa.gov>	Required
	Ward, Thomas <TWard@nahb.org>	Optional

Time 4:30 PM – 5:15 PM
Subject Hells Canyon and Site-Specific Temp Criteria
Location 3233 WICE Call in [redacted] passcode [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Nagle, Deborah <Nagle.Deborah@epa.gov>	Required
Hisel-Mccoy, Sara <Hisel-McCoy.Sara@epa.gov>	Required
Buffo, Corey <Buffo.Corey@epa.gov>	Required
Fleisig, Erica <Fleisig.Erica@epa.gov>	Required
Crk, Tanja <Crk.Tanja@epa.gov>	Required
Hladick, Christopher <hladick.christopher@epa.gov>	Required
Opalski, Dan <Opalski.Dan@epa.gov>	Required
Chung, Angela <Chung.Angela@epa.gov>	Required
Palmer, Angela <Palmer.Angela@epa.gov>	Required
Szelag, Matthew <Szelag.Matthew@epa.gov>	Required
Labiosa, Rochelle <labiosa.rochelle@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Palmer, John <Palmer.John@epa.gov>	Required
Crawford, Tiffany <Crawford.Tiffany@epa.gov>	Optional
Schroer, Lee <schroer.lee@epa.gov>	Optional
Byrne, Jennifer <Byrne.Jennifer@epa.gov>	Optional

Shaw, Hanh <Shaw.Hanh@epa.gov>	Optional
Sweeney, Stephen <Sweeney.Stephen@epa.gov>	Optional
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Optional
Ludwig-Monty, Sarah <ludwig-monty.sarah@epa.gov>	Optional
Patheal, Bella <Patheal.Bella@epa.gov>	Optional
Fotouhi, David <fotouhi.david@epa.gov>	Optional
Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>	Optional
Stern, Allyn <Stern.Allyn@epa.gov>	Optional

Time 5:30 PM – 7:30 PM
Subject Staff Gathering
Location Proper 21, 1319 F St NW
Show Time As Tentative

Colleagues,

Since we haven't done one of these in a while and have lots of new staff, I thought it'd be nice to schedule some time to all get together. Please forward along to anyone I missed and hope to see many of you there.

Thanks!
Preston

Categories Blue Category

Attendees

Name <E-mail>	Attendance
Cory, Preston (Katherine) <Cory.Preston@epa.gov>	Organizer
Gunasekara, Mandy <Gunasekara.Mandy@epa.gov>	Required
Wehrum, Bill <Wehrum.Bill@epa.gov>	Required
Greaves, Holly <greaves.holly@epa.gov>	Required
Frye, Tony (Robert) <frye.robert@epa.gov>	Required
Wagner, Kenneth <wagner.kenneth@epa.gov>	Required
Traylor, Patrick <traylor.patrick@epa.gov>	Required
Bolen, Brittany <bolen.brittany@epa.gov>	Required

Bennett, Tate <Bennett.Tate@epa.gov>	Required
Abboud, Michael <abboud.michael@epa.gov>	Required
Yamada, Richard (Yujiro) <yamada.richard@epa.gov>	Required
Palich, Christian <palich.christian@epa.gov>	Required
Konkus, John <konkus.john@epa.gov>	Required
Beck, Nancy <beck.nancy@epa.gov>	Required
White, Elizabeth <white.elizabeth@epa.gov>	Required
Ferguson, Lincoln <ferguson.lincoln@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required
Schwab, Justin <schwab.justin@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Hewitt, James <hewitt.james@epa.gov>	Required
Hanson, Paige (Catherine) <hanson.catherine@epa.gov>	Required
Woods, Clint <woods.Clint@epa.gov>	Required
Munoz, Charles <munoz.charles@epa.gov>	Required
Daniell, Kelsi <daniell.kelsi@epa.gov>	Required
Letendre, Daisy <letendre.daisy@epa.gov>	Required
Bowman, Liz <Bowman.Liz@epa.gov>	Required
Hupp, Millan <hupp.millan@epa.gov>	Required
Ringel, Aaron <ringel.aaron@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Beach, Christopher <beach.christopher@epa.gov>	Required
Ford, Hayley <ford.hayley@epa.gov>	Required

Falvo, Nicholas <falvo.nicholas@epa.gov>	Required
Wilcox, Jahan <wilcox.jahan@epa.gov>	Required
Block, Molly <block.molly@epa.gov>	Required
Lyons, Troy <lyons.troy@epa.gov>	Required
Brown, Byron <brown.byron@epa.gov>	Required
Shimmin, Kaitlyn <shimmin.kaitlyn@epa.gov>	Required
Rodrick, Christian <rodrick.christian@epa.gov>	Required
Baptist, Erik <baptist.erik@epa.gov>	Required
Darwin, Veronica <darwin.veronica@epa.gov>	Required
Erin Chancellor <erin.chancellor@[redacted]texas.gov>	Required
Lovell, Will (William) <lovell.william@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Jackson, Ryan <jackson.ryan@epa.gov>	Required
Gordon, Stephen <gordon.stephen@epa.gov>	Required
Dravis, Samantha <dravis.samantha@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
McMurray, Forrest <mcmurray.forrest@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Kelly, Albert <kelly.albert@epa.gov>	Required
Dominguez, Alexander <dominguez.alexander@epa.gov>	Required
Feeley, Drew (Robert) <Feeley.Drew@epa.gov>	Required
Sands, Jeffrey <sands.jeffrey@epa.gov>	Required

Burke, Marcella <burke.marcella@epa.gov>	Required
Darwin, Henry <darwin.henry@epa.gov>	Required
Harlow, David <harlow.david@epa.gov>	Required
Bolen, Derrick <bolen.derrick@epa.gov>	Required
Kundinger, Kelly <kundinger.kelly@epa.gov>	Required

Friday, February 23, 2018

Time All Day
Subject Ann OOO
Show Time As Free

Time 9:00 AM – 9:30 AM
Subject Discussion of Florida 404 Assumption
Location Call in # [redacted] - pass [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Forsgren, Lee <Forsgren.Lee@epa.gov>	Organizer
Fisher, Ryan A SES USARMY HQDA ASA CW (US) <ryan.a.fisher12.civ@mail.mil>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Fotouhi, David <Fotouhi.David@epa.gov>	Required

Time 9:30 AM – 10:00 AM
Subject External speaking engagements
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Penman, Crystal <Penman.Crystal@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required

Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required
Dennis, Allison <Dennis.Allison@epa.gov>	Required

Time 10:00 AM – 10:30 AM
Subject Meeting with AFPM
Location 1201 Constitution Ave NW, Washington DC 20460 WJCE 3233 Please call [redacted] for escort
Show Time As Busy

David Friedman-AFPM
Jeff Gunnulfsen-AFPM
Mark Williamson-FHR
Matt Hodges-Valero
Roger Claff-API
Hillary Moffett-API
Dale Thanjan-API
Venkat Venkatraghavan-Marathon
Robert Nolan-Exxon
Geetha Kothandaraman-Exxon
Dave Dunlap-Koch
Jeff Longsworth-Barnes & Thornburg

Categories Blue Category
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Jgunnulfsen@afpm.org <Jgunnulfsen@afpm.org>	Required

Time 10:30 AM – 12:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Sunday, February 25, 2018

Time 7:00 AM – 9:20 AM
Subject Western Governors Association Breakfast / DC Fly-In
Location Green Room
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
[redacted] <[redacted]>	Organizer
Jackson, Ryan <jackson.ryan@epa.gov>	Required

Hupp, Millan <hupp.millan@epa.gov>	Required
Lyons, Troy <lyons.troy@epa.gov>	Required
Cory, Preston (Katherine) <Cory.Preston@epa.gov>	Required
Bennett, Tate <Bennett.Tate@epa.gov>	Required
Dravis, Samantha <dravis.samantha@epa.gov>	Required
Bolen, Brittany <bolen.brittany@epa.gov>	Required
Ferguson, Lincoln <ferguson.lincoln@epa.gov>	Required
Bowman, Liz <Bowman.Liz@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Wehrum, Bill <Wehrum.Bill@epa.gov>	Required
Brown, Byron <brown.byron@epa.gov>	Required
Kelly, Albert <kelly.albert@epa.gov>	Required
Gunasekara, Mandy <Gunasekara.Mandy@epa.gov>	Required
Block, Molly <block.molly@epa.gov>	Optional

Monday, February 26, 2018

Time 2/26/2018 12:00 AM – 3/3/2018 12:00 AM
Subject Ann OOO
Show Time As Free

Time 11:30 AM – 12:00 PM
Subject Meeting with Jeff Little John
Location 3219A; William Jefferson Building EAST
Show Time As Busy

[redacted]

Categories Blue Category
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer

jeff@littlejohnmann.com <jeff@littlejohnmann.com> Required

Time 12:00 PM – 1:30 PM
Subject FW: Ceremonial Swearing-In for Matt Leopold as EPA's General Counsel
Location EPA Headquarters, U.S. EPA Rachel Carson Green Room (1200 Pennsylvania Avenue NW)
Show Time As Busy

-----Original Appointment-----
From: Leopold, Matt
Sent: Wednesday, February 7, 2018 3:20 PM
To: Leopold, Matt; Patrick, Monique; Mills, Derek; Albores, Richard; Monson, Mahri; Askew, Wendel; Blake, Wendy; Briskin, Jeanne; Dolph, Becky; Dorka, Lilian; Fugh, Justina; Grant, Brian; Koslow, Karin; Lattimore, Kraig; Lee, Terry; Lewis, Jen; Mclean, Kevin; Michaud, John; Neugeboren, Steven; Packard, Elise; Redden, Kenneth; Rhines, Dale; Schmidt, Lorie; Siciliano, CarolAnn; Srinivasan, Gautam; Youngblood, Charlotte; Mancusi-Ungaro, Philip; Baschon, Carol; robert.luther@who.eop.gov; Moran, John S. [redacted] pedro.m [redacted] charles.trippe@faa.gov; [redacted] craig.schmauder@us.army.mil; jpanuccio@foley.com; [redacted] jeffrey.wood@usdoj.gov; bruce.gelber@usdoj.gov; jonathan.brightbill@usdoj.gov; steve.o'rourke@usdoj.gov; karen.wardzinski@usdoj.gov; justin.smith@usdoj.gov; [redacted] judith.harvey@usdoj.gov; [redacted] sstoller@enrd.usdoj.gov; Scott Fulton; Garbow, Avi; Blaha, Amber; [redacted] fturner@enrd.usdoj.gov; kbowers@enrd.usdoj.gov; aberlowe@enrd.usdoj.gov; scott.cernich@usdoj.gov; deanna.chang@usdoj.gov; jason.hill@usdoj.gov; wmiller@enrd.usdoj.gov; andy.mergen@usdoj.gov; teri_donaldson@epw.senate.gov; Kim Leopold; [redacted] tim@realestateindc.com; erin [redacted] jvakerics@ovationevents.com; [redacted] robs@championtitle.com; [redacted] jbroggi@wileyrein.com; [redacted] saaron@mercuryllc.com; [redacted] jeffrrey.clarke@kirkland.com; kvonschaumburg@clarkhill.com; rtenpass@morganlewis.com; tmikol-p@hunton.com; david.m [redacted] dpowers@clarkhill.com; reginald.brown@wilmerhale.com; rich.gold@hklaw.com; michael.sole@nexteraenergy.com; peter.cocotos@fpl.com; eileen.stuart@mosaicco.com; Michael Formica; sfried@ofwlaw.com; brent.fewell@earthandwatergroup.com; john [redacted] nlinnan@cfjblaw.com; [redacted] hvinyard@foley.com; ckise@foley.com; jml@wsourcegroup.com;

[redacted] jonathan.bunch@fed-soc.org; chad.r.stevens@dep.state.fl.us; [redacted] jasongonzalez@shutts.com; dnordby@shutts.com; baccardo@sfwmd.gov; brian.accardo@dep.state.fl.us; peter.antonacci@gray-robinson.com; adam_[redacted] jack@enerynamerica.com; jason.knox@mail.house.gov; edwartau@sfwmd.gov; [redacted] stephen.vaden@ogc.usda.gov; george.fibbe@hq.doe.gov; ecomstock@doc.gov; stuart.levenbach@noaa.gov; marigrace.caminiti@sol.doi.gov; gareth_rees@ios.doi.gov; Ford, Hayley; Jackson, Ryan; Greenwalt, Sarah; Brown, Byron; Darwin, Henry; Munoz, Charles; Baptist, Erik; Fotouhi, David; Schwab, Justin; Burke, Marcella; Bowman, Liz; Bennett, Tate; Lyons, Troy; Dravis, Samantha; White, Elizabeth; Wehrum, Bill; Bodine, Susan; Ross, David P; Hupp, Millan; Gunasekara, Mandy; Nancy Flickinger; Kelly, Albert; Minoli, Kevin; rachel.brand2@usdoj.gov; jesse.panuccio@usdoj.gov; jean.williams@usdoj.gov; andrew.goldfrank@usdoj.gov; tom.mariani@usdoj.gov; Swegle, Thomas (ENRD); ragu-jara.gregg@usdoj.gov; ethan.shenkman@apks.com; brett.shumate@usdoj.gov; nwiley@ducks.org
Subject: Ceremonial Swearing-In for Matt Leopold as EPA's General Counsel
When: Monday, February 26, 2018 12:00 PM-1:30 PM (UTC-05:00) Eastern Time (US & Canada).
Where: EPA Headquarters, U.S. EPA Rachel Carson Green Room (1200 Pennsylvania Avenue NW)

Guests,

Please be advised of a slight time change for the Ceremonial Swearing-in of Matt Leopold as EPA's General Counsel on Monday, February 26, 2018. The ceremony is now scheduled for 12:00pm. in the EPA Headquarters, U.S. EPA Rachel Carson Green Room (1200 Pennsylvania Avenue NW). There will be a reception to follow.

Directions for Guests: EPA's address is 1200 Pennsylvania Avenue, NW. Please enter through the William Jefferson Clinton South building. If you are coming by taxi/vehicle, you want to be dropped off on 12th Street NW, between Pennsylvania and Constitution Avenue. The entrance is almost exactly halfway between the two avenues next to the Federal Triangle Metro sign and with the Trump Hotel across the street. From 12th Street, facing the building with the EPA and American flags, walk

toward the building (under the flags) and take the glass door on your left hand side with the escalators going down to the metro on your right. This is the South Lobby entrance to the William Jefferson Clinton building. If you are coming by Metro, exit at the Federal Triangle Metro station, go up the escalators and the South Lobby entrance will be on your left as you exit at the top of the escalators.

Once inside the building, security will prompt you to scan all items such as bags, coats etc.. Please let the guards know that you were instructed to call Carla Veney or Monique Patrick on [redacted] or [redacted] to escort you to Matt Leopold's swearing in ceremony. Security will have the visitors passes for everyone.

Allow for 10-15 minutes to get through the process.

EPA Employees: Please bring your ID to show to security at the entrance to the Green Room.

Please rsvp to Carla Veney via veney.carla@epa.gov <mailto:veney.carla@epa.gov> by Feb. 22.

Thank you!

Categories Red Category

Attendees

Name <E-mail>	**Attendance**
Leopold, Matt <Leopold.Matt@epa.gov>	Organizer
Abboud, Michael <abboud.michael@epa.gov>	Required
Baptist, Erik <baptist.erik@epa.gov>	Required
Beach, Christopher <beach.christopher@epa.gov>	Required
Beck, Nancy <Beck.Nancy@epa.gov>	Required
Bennett, Tate <Bennett.Tate@epa.gov>	Required
Block, Molly <block.molly@epa.gov>	Required

Bodine, Susan <bodine.susan@epa.gov>	Required
Bolen, Brittany <bolen.brittany@epa.gov>	Required
Bolen, Derrick <bolen.derrick@epa.gov>	Required
Bowman, Liz <Bowman.Liz@epa.gov>	Required
Brown, Byron <brown.byron@epa.gov>	Required
Burke, Marcella <burke.marcella@epa.gov>	Required
Chancellor, Erin <chancellor.erin@epa.gov>	Required
Cory, Preston (Katherine) <Cory.Preston@epa.gov>	Required
Daniell, Kelsi <daniell.kelsi@epa.gov>	Required
Darwin, Henry <darwin.henry@epa.gov>	Required
Darwin, Veronica <darwin.veronica@epa.gov>	Required
Dominguez, Alexander <dominguez.alexander@epa.gov>	Required
Dravis, Samantha <dravis.samantha@epa.gov>	Required
Falvo, Nicholas <falvo.nicholas@epa.gov>	Required
Feeley, Drew (Robert) <Feeley.Drew@epa.gov>	Required
Ferguson, Lincoln <ferguson.lincoln@epa.gov>	Required
Ford, Hayley <ford.hayley@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Frye, Tony (Robert) <frye.robert@epa.gov>	Required
Gordon, Stephen <gordon.stephen@epa.gov>	Required
Greaves, Holly <greaves.holly@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required

Gunasekara, Mandy <Gunasekara.Mandy@epa.gov>	Required
Hanson, Paige (Catherine) <hanson.catherine@epa.gov>	Required
Harlow, David <harlow.david@epa.gov>	Required
Hewitt, James <hewitt.james@epa.gov>	Required
Hupp, Millan <hupp.millan@epa.gov>	Required
Jackson, Ryan <jackson.ryan@epa.gov>	Required
Kelly, Albert <kelly.albert@epa.gov>	Required
Konkus, John <konkus.john@epa.gov>	Required
Kundinger, Kelly <kundinger.kelly@epa.gov>	Required
Letendre, Daisy <letendre.daisy@epa.gov>	Required
Lovell, Will (William) <lovell.william@epa.gov>	Required
Lyons, Troy <lyons.troy@epa.gov>	Required
McMurray, Forrest <mcmurray.forrest@epa.gov>	Required
Munoz, Charles <munoz.charles@epa.gov>	Required
Palich, Christian <palich.christian@epa.gov>	Required
Ringel, Aaron <ringel.aaron@epa.gov>	Required
Rodrick, Christian <rodrick.christian@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Sands, Jeffrey <sands.jeffrey@epa.gov>	Required
Schwab, Justin <schwab.justin@epa.gov>	Required
Shimmin, Kaitlyn <shimmin.kaitlyn@epa.gov>	Required
Traylor, Patrick <traylor.patrick@epa.gov>	Required

Wagner, Kenneth <wagner.kenneth@epa.gov>	Required
Wehrum, Bill <Wehrum.Bill@epa.gov>	Required
White, Elizabeth <white.elizabeth@epa.gov>	Required
Wilcox, Jahan <wilcox.jahan@epa.gov>	Required
Woods, Clint <woods.clint@epa.gov>	Required
Yamada, Richard (Yujiro) <yamada.richard@epa.gov>	Required
Patrick, Monique <Patrick.Monique@epa.gov>	Required
Mills, Derek <Mills.Derek@epa.gov>	Required
Albores, Richard <Albores.Richard@epa.gov>	Required
Monson, Mahri <Monson.Mahri@epa.gov>	Required
Askew, Wendel <Askew.Wendel@epa.gov>	Required
Blake, Wendy <Blake.Wendy@epa.gov>	Required
Briskin, Jeanne <Briskin.Jeanne@epa.gov>	Required
Dolph, Becky <Dolph.Becky@epa.gov>	Required
Dorka, Lilian <Dorka.Lilian@epa.gov>	Required
Fugh, Justina <Fugh.Justina@epa.gov>	Required
Grant, Brian <Grant.Brian@epa.gov>	Required
Koslow, Karin <Koslow.Karin@epa.gov>	Required
Lattimore, Kraig <lattimore.kraig@epa.gov>	Required
Lee, Terry <lee.terry@epa.gov>	Required
Lewis, Jen <Lewis.Jen@epa.gov>	Required
Mclean, Kevin <Mclean.Kevin@epa.gov>	Required
Michaud, John <Michaud.John@epa.gov>	Required

Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Required
Packard, Elise <Packard.Elise@epa.gov>	Required
Redden, Kenneth <Redden.Kenneth@epa.gov>	Required
Rhines, Dale <rhines.dale@epa.gov>	Required
Schmidt, Lorie <Schmidt.Lorie@epa.gov>	Required
Siciliano, CarolAnn <Siciliano.CarolAnn@epa.gov>	Required
Srinivasan, Gautam <Srinivasan.Gautam@epa.gov>	Required
Youngblood, Charlotte <Youngblood.Charlotte@epa.gov>	Required
Mancusi-Ungaro, Philip <Mancusi-Ungaro.Philip@epa.gov>	Required
Baschon, Carol <Baschon.Carol@epa.gov>	Required
robert.luther@who.eop.gov <robert.luther@who.eop.gov>	Required
Moran, John S. [redacted]	Required
pedro.m [redacted] <pedro.m [redacted]	Required
[redacted]	Required
[redacted]	Required
charles.trippe@faa.gov <charles.trippe@faa.gov>	Required
[redacted]	Required
craig.schmauder@us.army.mil <craig.schmauder@us.army.mil>	Required
jpanuccio@foley.com <jpanuccio@foley.com>	Required
[redacted]	Required
[redacted]	Required

jeffrey.wood@usdoj.gov <jeffrey.wood@usdoj.gov>	Required
bruce.gelber@usdoj.gov <bruce.gelber@usdoj.gov>	Required
jonathan.brightbill@usdoj.gov <jonathan.brightbill@usdoj.gov>	Required
steve.o'rourke@usdoj.gov <steve.o'rourke@usdoj.gov>	Required
karen.wardzinski@usdoj.gov <karen.wardzinski@usdoj.gov>	Required
justin.smith@usdoj.gov <justin.smith@usdoj.gov>	Required
[redacted] <[redacted]	Required
judith.harvey@usdoj.gov <judith.harvey@usdoj.gov>	Required
[redacted] <[redacted]	Required
sstoller@enrd.usdoj.gov <sstoller@enrd.usdoj.gov>	Required
Scott Fulton <fulton@eli.org>	Required
Garbow, Avi <AGarbow@gibsondunn.com>	Required
Blaha, Amber <amber.blaha@usdoj.gov>	Required
[redacted] <[redacted]	Required
fturner@enrd.usdoj.gov <fturner@enrd.usdoj.gov>	Required
kbowers@enrd.usdoj.gov <kbowers@enrd.usdoj.gov>	Required
aberlowe@enrd.usdoj.gov <aberlowe@enrd.usdoj.gov>	Required
scott.cernich@usdoj.gov <scott.cernich@usdoj.gov>	Required
deanna.chang@usdoj.gov <deanna.chang@usdoj.gov>	Required
jason.hill@usdoj.gov <jason.hill@usdoj.gov>	Required
wmiller@enrd.usdoj.gov <wmiller@enrd.usdoj.gov>	Required
andy.mergen@usdoj.gov <andy.mergen@usdoj.gov>	Required

teri_donaldson@epw.senate.gov <teri_donaldson@epw.senate.gov>	Required
Kim Leopold <kim[redacted]	Required
[redacted]	Required
[redacted]	Required
[redacted]	Required
tim@realestateindc.com <tim@realestateindc.com>	Required
erin[redacted] <erin[redacted]	Required
[redacted]	Required
jvakerics@ovationevents.com <jvakerics@ovationevents.com>	Required
[redacted]	Required
robs@championtitle.com <robs@championtitle.com>	Required
[redacted]	Required
[redacted]	Required
jbroggi@wileyrein.com <jbroggi@wileyrein.com>	Required
[redacted]	Required
saaron@mercuryllc.com <saaron@mercuryllc.com>	Required
roger[redacted] <roger[redacted]	Required
jeffrrey.clarke@kirkland.com <jeffrrey.clarke@kirkland.com>	Required
kvonschaumburg@clarkhill.com <kvonschaumburg@clarkhill.com>	Required

rtenpass@morganlewis.com <rtenpass@morganlewis.com>	Required
tmikol-p@hunton.com <tmikol-p@hunton.com>	Required
david.m [redacted] <david.m [redacted]	Required
dpowers@clarkhill.com <dpowers@clarkhill.com>	Required
reginald.brown@wilmerhale.com <reginald.brown@wilmerhale.com>	Required
rich.gold@hklaw.com <rich.gold@hklaw.com>	Required
michael.sole@nexteraenergy.com <michael.sole@nexteraenergy.com>	Required
peter.cocotos@fpl.com <peter.cocotos@fpl.com>	Required
eileen.stuart@mosaicco.com <eileen.stuart@mosaicco.com>	Required
Michael Formica <formicam@nppc.org>	Required
sfried@ofwlaw.com <sfried@ofwlaw.com>	Required
brent.fewell@earthandwatergroup.com <brent.fewell@earthandwatergroup.com>	Required
john [redacted] <john [redacted]	Required
nlinnan@cfjblaw.com <nlinnan@cfjblaw.com>	Required
[redacted] <[redacted]	Required
[redacted] <[redacted]	Required
hvinyard@foley.com <hvinyard@foley.com>	Required
ckise@foley.com <ckise@foley.com>	Required
jml@wsourcegroup.com <jml@wsourcegroup.com>	Required
[redacted] <[redacted]	Required

jonathan.bunch@fed-soc.org <jonathan.bunch@fed-soc.org>	Required
chad.r.stevens@dep.state.fl.us <chad.r.stevens@dep.state.fl.us>	Required
[redacted]	Required
jasongonzalez@shutts.com <jasongonzalez@shutts.com>	Required
dnordby@shutts.com <dnordby@shutts.com>	Required
baccardo@sfwmd.gov <baccardo@sfwmd.gov>	Required
brian.accardo@dep.state.fl.us <brian.accardo@dep.state.fl.us>	Required
peter.antonacci@gray-robinson.com <peter.antonacci@gray-robinson.com>	Required
adam_[redacted] <adam_[redacted]	Required
jack@enerynamerica.com <jack@enerynamerica.com>	Required
jason.knox@mail.house.gov <jason.knox@mail.house.gov>	Required
edwartau@sfwmd.gov <edwartau@sfwmd.gov>	Required
[redacted]	Required
[redacted] <[redacted]	Required
stephen.vaden@ogc.usda.gov <stephen.vaden@ogc.usda.gov>	Required
george.fibbe@hq.doe.gov <george.fibbe@hq.doe.gov>	Required
ecomstock@doc.gov <ecomstock@doc.gov>	Required
stuart.levenbach@noaa.gov <stuart.levenbach@noaa.gov>	Required
marigrace.caminiti@sol.doi.gov <marigrace.caminiti@sol.doi.gov>	Required

gareth_rees@ios.doi.gov <gareth_rees@ios.doi.gov>	Required
Nancy Flickinger <Nancy.Flickinger@usdoj.gov>	Required
Minoli, Kevin <Minoli.Kevin@epa.gov>	Required
rachel.brand2@usdoj.gov <rachel.brand2@usdoj.gov>	Required
jesse.panuccio@usdoj.gov <jesse.panuccio@usdoj.gov>	Required
jean.williams@usdoj.gov <jean.williams@usdoj.gov>	Required
andrew.goldfrank@usdoj.gov <andrew.goldfrank@usdoj.gov>	Required
tom.mariani@usdoj.gov <tom.mariani@usdoj.gov>	Required
Swegle, Thomas (ENRD) <Thomas.Swegle@usdoj.gov>	Required
ragu-jara.gregg@usdoj.gov <ragu-jara.gregg@usdoj.gov>	Required
ethan.shenkman@apks.com <ethan.shenkman@apks.com>	Required
brett.shumate@usdoj.gov <brett.shumate@usdoj.gov>	Required
nwiley@ducks.org <nwiley@ducks.org>	Required

Time 1:00 PM – 1:45 PM
Subject WOTUS Tribal Consultation Meeting
Location 3233 WJCE [redacted] code [redacted]
Show Time As Tentative
http://epawebconferencing.acms.com/wus/

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Idsal, Anne <idsal.anne@epa.gov>	Required
Smith, Rhonda <smith.rhonda@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required

Goodin, John <Goodin.John@epa.gov>	Required
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
McDavit, Michael W. <Mcdavit.Michael@epa.gov>	Required
Downing, Donna <Downing.Donna@epa.gov>	Required
Kwok, Rose <Kwok.Rose@epa.gov>	Required
Gude, Karen <Gude.Karen@epa.gov>	Required
Kupchan, Simma <Kupchan.Simma@epa.gov>	Required
Garcia, David <Garcia.David@epa.gov>	Required
Martinez, Maria <Martinez.Maria@epa.gov>	Required
Fontenot, Alison <Fontenot.Alison@epa.gov>	Required
cindy.s.barger <cindy.s.barger.civ@mail.mil>	Required
melinda.m.witgenstein@usace.army.mil <melinda.m.witgenstein@usace.army.mil>	Required
Stacey.M.Jensen@usace.army.mil <Stacey.M.Jensen@usace.army.mil>	Required
Amy.S.Klein@usace.army.mil <Amy.S.Klein@usace.army.mil>	Required
Jennifer.A.Moyer@usace.army.mil <Jennifer.A.Moyer@usace.army.mil>	Required
ryan.a.fisher12.civ@mail.mil <ryan.a.fisher12.civ@mail.mil>	Required
merle.e.weintraub.civ@mail.mil <merle.e.weintraub.civ@mail.mil>	Optional
regena.l.townsend-treleaven.civ@mail.mil <regena.l.townsend-treleaven.civ@mail.mil>	Optional
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Schmauder, Craig R SES (US)	Optional

<craig.r.schmauder.civ@mail.mil>	
Dwyer, Stacey <Dwyer.Stacey@epa.gov>	Optional
Gee, Randy <Gee.Randy@epa.gov>	Optional
Gray, David <gray.david@epa.gov>	Optional
Wright, Felicia <Wright.Felicia@epa.gov>	Optional

Time 4:15 PM – 5:00 PM
Subject Idaho Program Authorization and Criminal Intent Standard
Location 3233 WJCE Call in [redacted] passcode [redacted]
Show Time As Busy

Attendees **Name <E-mail>**	**Attendance**
Ross, David P <ross.davidp@epa.gov>	Organizer
Fotouhi, David <fotouhi.david@epa.gov>	Required
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Required
Nalven, Heidi <Nalven.Heidi@epa.gov>	Required
Wehling, Carrie <Wehling.Carrie@epa.gov>	Required
Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
Zobrist, Marcus <Zobrist.Marcus@epa.gov>	Required
Weiss, Kevin <Weiss.Kevin@epa.gov>	Required
Bathersfield, Nizanna <Bathersfield.Nizanna@epa.gov>	Required
Fisher, Mike <Fisher.Mike@epa.gov>	Required
Morgan, James <Morgan.James@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required
Hladick, Christopher <hladick.christopher@epa.gov>	Required
Burgess, Karen <Burgess.Karen@epa.gov>	Required
Weber, Courtney <Weber.Courtney@epa.gov>	Required

Opalski, Dan <Opalski.Dan@epa.gov>	Required
Lidgard, Michael <Lidgard.Michael@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Farris, Erika D. <Farris.Erika@epa.gov>	Optional
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>	Optional
Stern, Allyn <Stern.Allyn@epa.gov>	Optional
Frace, Sheila <Frace.Sheila@epa.gov>	Optional
Martich, Tara <Martich.Tara@epa.gov>	Optional

Tuesday, February 27, 2018

Time 8:00 AM – 8:45 AM
Subject General
Location 3204 WJC-South
Show Time As Busy

Please call [redacted] or [redacted] for and escort upon entry into the building.

Thanks!

Attendees

Name <E-mail>	Attendance
Bodine, Susan <bodine.susan@epa.gov>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Nephi.Cole@wyo.gov <Nephi.Cole@wyo.gov>	Required

Time 9:00 AM – 9:30 AM
Subject Meeting UWAG
Location 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call [redacted] for escort
Show Time As Busy

Donna B. Hill
Principal Environmental Scientist
Southern Company Services, Inc.
Chair of Effluent Guidelines Committee of the Utility Water Act Group

(UWAG)

Alan R. Wood
Manager, Water & Ecological Resource Services American Electric Power Corp.
Chairperson of UWAG

Kristy A. N. Bulleit
Hunton & Williams LLP
Counsel to UWAG
[redacted]

Elizabeth E. Aldridge
Hunton & Williams LLP
Counsel to UWAG

Categories Blue Category

Attendees

Name <E-mail>	**Attendance**
Ross, David P <ross.davidp@epa.gov>	Organizer
Bulleit, Kristy <kbulleit@hunton.com>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Levine, MaryEllen <levine.maryellen@epa.gov>	Optional
Zomer, Jessica <Zomer.Jessica@epa.gov>	Optional

Time 9:30 AM – 10:00 AM
Subject Van departs for EEOB
Location WJCN Courtyard
Show Time As Busy

From: shields.kendrick@epa.gov <mailto:shields.kendrick@epa.gov> [mailto:shields.kendrick@epa.gov]
Sent: Thursday, February 22, 2018 1:39 PM
To: Kime, Robin <Kime.Robin@epa.gov <mailto:Kime.Robin@epa.gov> >
Subject: Transportation Request

Your transportation request has been confirmed.

Confirmation Number: 78292

Passenger Information

* Name: MATT LEOPOLD/AA

* Number: [redacted]
* Pickup Time: 2018-02-27 09:30:00.0
* Pickup Location: COURTYARD
* Drop-Off Location: EEOB

Vehicle Information

* Tag: [redacted]
* Vehicle Type: 15 PASS VAN
* Make : CHEVROLET
* Model : G3500
* Color : WHITE

Categories Yellow Category

Attendees	**Name <E-mail>**	**Attendance**
	Dravis, Samantha <dravis.samantha@epa.gov>	Organizer
	Patrick, Monique <Patrick.Monique@epa.gov>	Required
	Penman, Crystal <Penman.Crystal@epa.gov>	Required
	Ross, David P <ross.davidp@epa.gov>	Required
	Leopold, Matt <Leopold.Matt@epa.gov>	Required
	Fotouhi, David <Fotouhi.David@epa.gov>	Required
	Schwab, Justin <Schwab.Justin@epa.gov>	Required
	Inge, Carolyn <Inge.Carolyn@epa.gov>	Required
	Bolen, Brittany <bolen.brittany@epa.gov>	Required
	Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required

Time 10:00 AM – 11:00 AM
Subject EPA/OW/OGC/RFA Meeting - WAVES Link attached
Location EEOB 248
Show Time As Busy

OW/OGC RFA - WAVES for 2/27 10:00am – 11:00am
https://events.whitehouse.gov/?rid=WDF7DH2X7F
<https://events.whitehouse.gov/?rid=WDF7DH2X7F>

Thank you.
We have received information for David.
If you have any questions, please reach out to your point of contact.
Continue to WhiteHouse.gov <https://www.whitehouse.gov/>

Click here to submit another RSVP
<https://events.whitehouse.gov/rsvpform?rid=WDF7DH 2X7F>

Note that this screen serves only as a confirmation that your security information was received. It does not guarantee entry into the White House

Categories Blue Category

Attendees

Name <E-mail>	Attendance
Dravis, Samantha <dravis.samantha@epa.gov>	Organizer
Bolen, Brittany <bolen.brittany@epa.gov>	Required
Inge, Carolyn <Inge.Carolyn@epa.gov>	Required
Palmieri, Rosario A. [redacted] <[redacted]>	Required
Patrick, Monique <Patrick.Monique@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Fotouhi, David <Fotouhi.David@epa.gov>	Required
Schwab, Justin <Schwab.Justin@epa.gov>	Optional
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

Time 11:00 AM – 11:30 AM
Subject Return Transportation
Location EEOB
Show Time As Busy

Your transportation request has been confirmed.

Confirmation Number: 78293

Passenger Information

* Name: MATT LEOPOLD/AA
* Number: [redacted]
* Pickup Time: 2018-02-27 11:00:00.0
* Pickup Location: EEOB
* Drop-Off Location: COURTYARD

Vehicle Information

* Tag: [redacted]
* Vehicle Type: 15 PASS VAN
* Make : CHEVROLET
* Model : G3500
* Color : WHITE

Categories Yellow Category

Attendees

Name <E-mail>	Attendance
Dravis, Samantha <dravis.samantha@epa.gov>	Organizer
Penman, Crystal <Penman.Crystal@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Fotouhi, David <Fotouhi.David@epa.gov>	Required
Schwab, Justin <Schwab.Justin@epa.gov>	Required
Inge, Carolyn <Inge.Carolyn@epa.gov>	Required
Bolen, Brittany <bolen.brittany@epa.gov>	Required
Patrick, Monique <Patrick.Monique@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required

Time 3:30 PM – 4:00 PM
Subject Ohio
Location 3219A WJCE
Show Time As Busy

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer

	Goodin, John <Goodin.John@epa.gov>	Required

Time 4:30 PM – 5:15 PM
Subject General wth Sarah Greenwalt
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required

Wednesday, February 28, 2018

Time 9:00 AM – 9:30 AM
Subject Informational Briefing - Blending
Location 3233 WJCe Call in [redacted] passcode [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
Frace, Sheila <Frace.Sheila@epa.gov>	Required
Zobrist, Marcus <Zobrist.Marcus@epa.gov>	Required
Kloss, Christopher <Kloss.Christopher@epa.gov>	Required
Hill, Jenelle <Hill.Jenelle@epa.gov>	Required
Pollins, Mark <Pollins.Mark@epa.gov>	Required
Denton, Loren <Denton.Loren@epa.gov>	Required
Theis, Joseph <Theis.Joseph@epa.gov>	Required
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Required
Levine, MaryEllen <levine.maryellen@epa.gov>	Required
Witt, Richard <Witt.Richard@epa.gov>	Required
Farris, Erika D. <Farris.Erika@epa.gov>	Optional

Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Fotouhi, David <fotouhi.david@epa.gov>	Optional
OGC Immediate Office MGMT <OGC_Immediate_Office_MGMT@epa.gov>	Optional
Schwab, Justin <schwab.justin@epa.gov>	Optional
Baptist, Erik <baptist.erik@epa.gov>	Optional
Leopold, Matt <Leopold.Matt@epa.gov>	Optional
Albores, Richard <Albores.Richard@epa.gov>	Optional
Burke, Marcella <burke.marcella@epa.gov>	Optional
Evalenko, Sandy <Evalenko.Sandy@epa.gov>	Optional
Penman, Crystal <Penman.Crystal@epa.gov>	Optional
Dolph, Becky <Dolph.Becky@epa.gov>	Optional
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Optional

Time 9:30 AM – 10:00 AM
Subject Discussion: 404 Assumptions
Location David's Office (Room 3219A Bldg WJCE)
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Glenn, Trey <Glenn.Trey@epa.gov>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Jenkins, Brandi <Jenkins.Brandi@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Optional
Veney, Carla <Veney.Carla@epa.gov>	Optional

Time 10:30 AM – 11:15 AM
Subject WOTUS

Location	3233 WJCE Call in [redacted] code [redacted]
Show Time As	Busy

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Goodin, John <Goodin.John@epa.gov>	Required
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
Downing, Donna <Downing.Donna@epa.gov>	Required
Kupchan, Simma <Kupchan.Simma@epa.gov>	Required
Wendelowski, Karyn <wendelowski.karyn@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required
Peck, Gregory <Peck.Gregory@epa.gov>	Required
Wehling, Carrie <Wehling.Carrie@epa.gov>	Required
ryan.a.fisher12.civ@mail.mil <ryan.a.fisher12.civ@mail.mil>	Required
craig.r.schmauder.civ@mail.mil <craig.r.schmauder.civ@mail.mil>	Required
melinda.m.witgenstein@usace.army.mil <melinda.m.witgenstein@usace.army.mil>	Required
stacey.m.jensen@usace.army.mil <stacey.m.jensen@usace.army.mil>	Required
cindy.s.barger <cindy.s.barger.civ@mail.mil>	Optional
McGartland, Al <McGartland.Al@epa.gov>	Optional

Time 12:00 PM – 1:00 PM

Subject Lunch

Show Time As Busy
Categories Orange Category

Time 2:30 PM – 3:00 PM
Subject Car confirmed
Show Time As Busy

Your transportation request has been confirmed.

Confirmation Number: 78334

Passenger Information

* Name: DAVID ROSS/AA
* Number: [redacted]
* Pickup Time: 2018-02-28 14:30:00.0
* Pickup Location: EPA EAST 1201 CONSTITUTION AVE
* Drop-Off Location: DEPT OF INTERIOR, 1849 C STREET, NW.WASHINGTON, DC

Categories Yellow Category

Time 3:00 PM – 4:00 PM
Subject Meeting with Assistant Secretary Timothy Petty
Location Dept of Interior
Show Time As Busy
Categories Blue Category
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Brown, Michelle <michelle_brown@ios.doi.gov>	Required
timothy_petty@ios.doi.gov <timothy_petty@ios.doi.gov>	Required

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Time At 4:00 PM
Subject TRAVEL TIME ***UBER***
Show Time As Busy
Categories Yellow Category

Time 4:30 PM – 4:45 PM
Subject Prebrief on extending the classification of two water-related documents.
Location 3219A WJCe
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer

	Travers, David <Travers.David@epa.gov>	Required
	Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
	Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
	Allgeier, Steve <Allgeier.Steve@epa.gov>	Required

Thursday, March 01, 2018

Time 9:30 AM – 10:00 AM
Subject Meeting with Packaging Corporation of America (PCA)
Location 1201 Constitution Ave NW; 3219 WJCE; Please call [redacted] for escort
Show Time As Busy

Attendees:

John Piotrowski, PCA
Kristy Neumann, PCA
Denise Bode, Michael Best Strategies
Dave Crass, Michael Best & Friedrich LLP
Kevin Swanson, Michael Best Strategies

Categories Blue Category

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Campbell, Ann <Campbell.Ann@epa.gov>	Required
koswanson@michaelbeststrategies.com <koswanson@michaelbeststrategies.com>	Required
Crass, David A (22267) <DACrass@michaelbest.com>	Optional
Piotrowski, John <JPiotrowski@packagingcorp.com>	Optional
Bode, Denise A (53804) <dabode@michaelbeststrategies.com>	Optional
Macara Lousberg <Lousberg.Macara@epa.gov>	Optional

Time 1:00 PM – 2:00 PM
Subject WOTUS Rulemaking Analyses
Location 3233 WJCE Call in [redacted] passcode [redacted]
Show Time As Busy

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer

Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
McDavit, Michael W. <Mcdavit.Michael@epa.gov>	Required
Downing, Donna <Downing.Donna@epa.gov>	Required
Christensen, Damaris <Christensen.Damaris@epa.gov>	Required
Kwok, Rose <Kwok.Rose@epa.gov>	Required
Chemerys, Ruth <Chemerys.Ruth@epa.gov>	Required
Wesson, Dolores <Wesson.Dolores@epa.gov>	Required
Hewitt, Julie <Hewitt.Julie@epa.gov>	Required
Doley, Todd <Doley.Todd@epa.gov>	Required
cindy.s.barger <cindy.s.barger.civ@mail.mil>	Required
ryan.a.fisher12.civ@mail.mil <ryan.a.fisher12.civ@mail.mil>	Required
craig.r.schmauder.civ@mail.mil <craig.r.schmauder.civ@mail.mil>	Required
jennifer.a.moyer@usace.army.mil <jennifer.a.moyer@usace.army.mil>	Required
Massey, Matt <Massey.Matt@epa.gov>	Required
McGartland, Al <McGartland.Al@epa.gov>	Required
melinda.m.witgenstein@usace.army.mil <melinda.m.witgenstein@usace.army.mil>	Optional
Peck, Gregory <Peck.Gregory@epa.gov>	Optional
Sandy Evalenko <Evalenko.Sandy@epa.gov>	Optional

Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Weiler, Katherine <Weiler.Katherine@epa.gov>	Optional
Connors, Sandra <Connors.Sandra@epa.gov>	Optional
Penman, Crystal <Penman.Crystal@epa.gov>	Optional

Time 2:30 PM – 3:00 PM
Subject Meeting with National Mining Association
Location 1201 Constitution Ave NW, Washington DC 20460 WJCE 3233 Please call [redacted] for escort
Show Time As Busy

Amanda Aspatore
David Chung

Amanda E. Aspatore
Vice President, Water Law & Policy
National Mining Association
101 Constitution Ave. NW, Suite 500 East
Washington, D.C. 20001
Phone: (202) [redacted]
Direct: (202) [redacted]
aaspatore@nma.org <mailto:aaspatore@nma.org>

Categories Blue Category
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Campbell, Ann <Campbell.Ann@epa.gov>	Required
aaspatore@nma.org <aaspatore@nma.org>	Required
Goodin, John <Goodin.John@epa.gov>	Required

Time 3:00 PM – 3:30 PM
Subject Ohio/EPA Follow up
Location 3219A WJCE Call in [redacted] passcode [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Goodin, John <Goodin.John@epa.gov>	Required

	craig.butler@epa.ohio.gov <craig.butler@epa.ohio.gov>	Required
	Stepp, Cathy <stepp.cathy@epa.gov>	Optional
	Chu, Ed <Chu.Ed@epa.gov>	Optional

Time 3:00 PM – 4:00 PM
Subject Water Division Directors Monthly Call
Location [redacted] code: [redacted] HQ meet in room 3233E
Show Time As Tentative

Water Division Directors Monthly Call (Regions & OW)

Thursday, March 1, 2018 (3:00 - 4:00pm ET)

Call in [redacted] passcode [redacted]

1. Roll Call - Kate

2. Health Advisory Update – Betsy Behl

3. WOTUS Update – John Goodin

4. OW Mission Measures update – Benita Best-Wong

5. Round Robin - All

6. Adjourn

Attendees

Name <E-mail>	Attendance
Balasa, Kate <balasa.kate@epa.gov>	Organizer
Bragan, Mary Jo <Bragan.Maryjo@epa.gov>	Required
Garcia, David <Garcia.David@epa.gov>	Required
Korleski, Christopher <korleski.christopher@epa.gov>	Required
Laureano, Javier <laureano.javier@epa.gov>	Required
Lueckenhoff, Dominique <Lueckenhoff.Dominique@epa.gov>	Required

McManus, Catharine <mcmanus.catharine@epa.gov>	Required
Moraff, Kenneth <Moraff.Ken@epa.gov>	Required
O'Connor, Darcy <oconnor.darcy@epa.gov>	Required
Opalski, Dan <Opalski.Dan@epa.gov>	Required
Pomponio, John <Pomponio.John@epa.gov>	Required
Robichaud, Jeffery <Robichaud.Jeffery@epa.gov>	Required
Torres, Tomas <Torres.Tomas@epa.gov>	Required
Walker, Mary <walker.mary@epa.gov>	Required
Chung, Angela <Chung.Angela@epa.gov>	Required
Dwyer, Stacey <Dwyer.Stacey@epa.gov>	Required
Garcia, Bert <Garcia.Bert@epa.gov>	Required
Gratz, Jeff <Gratz.Jeff@epa.gov>	Required
Gullatt, Kristin <Gullatt.Kristin@epa.gov>	Required
Hamjian, Lynne <Hamjian.Lynne@epa.gov>	Required
Holst, Linda <holst.linda@epa.gov>	Required
Huffman, Diane <Huffman.Diane@epa.gov>	Required
Lapp, Jeffrey <lapp.jeffrey@epa.gov>	Required
Zapata, Cesar <Zapata.Cesar@epa.gov>	Required
Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Nagle, Deborah <Nagle.Deborah@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Connors, Sandra <Connors.Sandra@epa.gov>	Required

Lape, Jeff <lape.jeff@epa.gov>	Required
Frace, Sheila <Frace.Sheila@epa.gov>	Required
Mclain, Jennifer <Mclain.Jennifer@epa.gov>	Required
Crawford, Tiffany <Crawford.Tiffany@epa.gov>	Required
Farris, Erika D. <Farris.Erika@epa.gov>	Required
Tiago, Joseph <Tiago.Joseph@epa.gov>	Required
Weiler, Katherine <Weiler.Katherine@epa.gov>	Required
Lousberg, Macara <Lousberg.Macara@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Fontaine, Tim <Fontaine.Tim@epa.gov>	Required
Vazquez, Sharon <Vazquez.Sharon@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Spraul, Greg <Spraul.Greg@epa.gov>	Required
Behl, Betsy <Behl.Betsy@epa.gov>	Optional
Lambert, Wesley <Lambert.Wesley@epa.gov>	Optional
Brown, Christopher <brown.christopher@epa.gov>	Optional
Hewell, Timothy <Hewell.Timothy@epa.gov>	Optional
Allenbach, Becky <Allenbach.Becky@epa.gov>	Optional

Time 3:00 PM – 4:00 PM
Subject WDD meeting in 3233
Show Time As Tentative
Categories Blue Category

Attendees	Name <E-mail>	Attendance
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Lousberg, Macara <Lousberg.Macara@epa.gov>	Required

Time 3:30 PM – 4:15 PM
Subject Briefing: CWA Groundwater Conduit Issue
Location Administrator's Office
Show Time As Busy
Categories Red Category

Attendees	Name <E-mail>	Attendance
	[redacted] <[redacted]>	Organizer
	Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
	Fotouhi, David <fotouhi.david@epa.gov>	Required
	Ross, David P <ross.davidp@epa.gov>	Required
	Leopold, Matt <Leopold.Matt@epa.gov>	Required
	Jackson, Ryan <jackson.ryan@epa.gov>	Required
	Dravis, Samantha <dravis.samantha@epa.gov>	Required
	Bolen, Brittany <bolen.brittany@epa.gov>	Required
	Brown, Byron <brown.byron@epa.gov>	Required

Time 4:15 PM – 4:45 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 5:00 PM – 6:00 PM
Subject Shellfish Aquaculture/NWP 48 Materials
Location 32198 WJCE Call in [redacted] passcode [redacted]
Show Time As Tentative

Attendees	Name <E-mail>	Attendance
	Forsgren, Lee <Forsgren.Lee@epa.gov>	Organizer
	Goodin, John <Goodin.John@epa.gov>	Required
	Idsal, Anne <idsal.anne@epa.gov>	Required

Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
Zobrist, Marcus <Zobrist.Marcus@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Optional
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Optional
Frazer, Brian <Frazer.Brian@epa.gov>	Optional
Kaiser, Russell <Kaiser.Russell@epa.gov>	Optional
Weiler, Katherine <Weiler.Katherine@epa.gov>	Optional
Connors, Sandra <Connors.Sandra@epa.gov>	Optional
Brennan, Ross <Brennan.Ross@epa.gov>	Optional
Molloy, Jennifer <molloy.jennifer@epa.gov>	Optional

Friday, March 02, 2018

Time 10:00 AM – 10:30 AM
Subject Meeting with Tracy Mehan
Location 1201 Constitution Ave NW, Washington DC 20460 WJCE 3219A Please call [redacted] for escort
Show Time As Busy
Categories Blue Category
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
'pchism@awwa.org' <pchism@awwa.org>	Required
Tracy Mehan <tmehan@awwa.org>	Optional

Time 1:30 PM – 3:10 PM
Subject Leave for airport
Show Time As Busy
Categories Yellow Category

Time 3:10 PM – 4:31 PM
Subject Delta flight 6117 departs DCA @ 3:10PM arrives MSN @ 4:31PM
Show Time As Busy

Categories Blue Category

Sunday, March 04, 2018

Time 5:15 PM – 8:13 PM
Subject Delta flight 5998 departs MSN @ 5:15pm arrives DCA @ 8:13PM
Show Time As Busy
Categories Blue Category

Monday, March 05, 2018

Time 9:00 AM – 10:00 AM
Subject Louise Kitamura using 3233
Show Time As Busy
Categories Blue Category
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Kitamura, Louise <Kitamura.Louise@epa.gov>	Required

Time 9:10 AM – 9:40 AM
Subject Pre-Brief: Cabinet Cyber Meeting
Location Administrator's Office
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
[redacted] <[redacted]>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required

Time 10:00 AM – 12:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 10:30 AM – 10:45 AM
Subject Benefits
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Lopez-Alvarado, Melinda <Lopez-Alvarado.Melinda@epa.gov>	Required

Time 12:00 PM – 12:30 PM
Subject Meet and Greet with Ted Stanich

Location	3219A WJCE
Show Time As	Busy
Categories	Orange Category

Attendees	**Name <E-mail>**	**Attendance**
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Stanich, Ted <Stanich.Ted@epa.gov>	Required

Time	12:30 PM – 1:00 PM
Subject	Lunch
Show Time As	Busy
Categories	Orange Category

Time	1:00 PM – 1:45 PM
Subject	Pre-brief for WOTUS State and Tribal in person meetings
Location	3233 WJCe Call in [redacted] passcode [redacted]
Show Time As	Busy

Attendees	**Name <E-mail>**	**Attendance**
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
	Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
	Goodin, John <Goodin.John@epa.gov>	Required
	Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
	McDavit, Michael W. <Mcdavit.Michael@epa.gov>	Required
	Downing, Donna <Downing.Donna@epa.gov>	Required
	Christensen, Damaris <Christensen.Damaris@epa.gov>	Required
	Kwok, Rose <Kwok.Rose@epa.gov>	Required
	Wehling, Carrie <Wehling.Carrie@epa.gov>	Required
	Kupchan, Simma <Kupchan.Simma@epa.gov>	Required
	Gude, Karen <Gude.Karen@epa.gov>	Required
	Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
	cindy.s.barger <cindy.s.barger.civ@mail.mil>	Required

ryan.a.fisher12.civ@mail.mil <ryan.a.fisher12.civ@mail.mil>	Required
craig.r.schmauder.civ@mail.mil <craig.r.schmauder.civ@mail.mil>	Required
jennifer.a.moyer@usace.army.mil <jennifer.a.moyer@usace.army.mil>	Required
meliinda.m.witgenstein@usace.army.mil <meliinda.m.witgenstein@usace.army.mil>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Weiler, Katherine <Weiler.Katherine@epa.gov>	Optional
Connors, Sandra <Connors.Sandra@epa.gov>	Optional
Bowles, Jack <Bowles.Jack@epa.gov>	Optional

Time 4:45 PM – 5:15 PM
Subject General with Peter Grevatt
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Tiago, Joseph <Tiago.Joseph@epa.gov>	Optional
Mason, Paula <Mason.Paula@epa.gov>	Optional

Tuesday, March 06, 2018

Time 9:00 AM – 10:30 AM
Subject WOTUS Tribal Workshop
Location 1153 WJCE
Show Time As Tentative

Time 10:30 AM – 11:00 AM
Subject Briefing: WOTUS
Location Administrator's Office
Show Time As Busy
Categories Red Category

Attendees	Name <E-mail>	Attendance
	[redacted] <[redacted]>	Organizer
	Ross, David P <ross.davidp@epa.gov>	Required
	Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
	Dravis, Samantha <dravis.samantha@epa.gov>	Required
	Bodine, Susan <bodine.susan@epa.gov>	Required
	Jackson, Ryan <jackson.ryan@epa.gov>	Required
	Leopold, Matt <Leopold.Matt@epa.gov>	Required
	Fotouhi, David <Fotouhi.David@epa.gov>	Required
	Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

Time 11:00 AM – 12:00 PM
Subject WOTUS Tribal Workshop
Location 1153 WJCE
Show Time As Busy

Time 1:00 PM – 1:45 PM
Subject Background briefing for OW on ORD's Safe and Sustainable Water Resources Program
Location WJC-E 3233; via video to Joe; call-in: [redacted] code: [redacted]
Show Time As Busy

From: Orme-Zavaleta, Jennifer
Sent: Wednesday, January 10, 2018 7:03 AM
To: Ross, David P <ross.davidp@epa.gov <mailto:ross.davidp@epa.gov> >
Cc: Campbell, Ann <Campbell.Ann@epa.gov <mailto:Campbell.Ann@epa.gov> >; Gentry, Nathan <Gentry.Nathan@epa.gov <mailto:Gentry.Nathan@epa.gov> >; vanDrunick, Suzanne <vanDrunick.Suzanne@epa.gov <mailto:vanDrunick.Suzanne@epa.gov> >; Yamada, Richard (Yujiro) <yamada.richard@epa.gov <mailto:yamada.richard@epa.gov> >
Subject: Great talk with you yesterday

I am cc'ing Ann and Nathan to see if we can get a time for giving you a background briefing on ORD's water program. I'd like to also introduce you to Suzanne vanDrunick who is our National Program Director for Safe and Sustainable Water Resources Research Program.

Have a good day and we look forward to talking with you!

Attendees	Name <E-mail>	Attendance
	Orme-Zavaleta, Jennifer <Orme-Zavaleta.Jennifer@epa.gov>	Organizer
	Ross, David P <ross.davidp@epa.gov>	Required
	Campbell, Ann <Campbell.Ann@epa.gov>	Required
	vanDrunick, Suzanne <vanDrunick.Suzanne@epa.gov>	Required
	Williams, Joe <Williams.Joe@epa.gov>	Required
	Yamada, Richard (Yujiro) <yamada.richard@epa.gov>	Required
	Christian, Megan <Christian.Megan@epa.gov>	Required
	Kuhn, Kevin <Kuhn.Kevin@epa.gov>	Required
	Rodan, Bruce <rodan.bruce@epa.gov>	Required
	Ohanian, Edward <Ohanian.Edward@epa.gov>	Required
	Reiley, Mary <Reiley.Mary@epa.gov>	Required
	Nagle, Deborah <Nagle.Deborah@epa.gov>	Required
	Hewitt, Julie <Hewitt.Julie@epa.gov>	Required
	Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Optional
	Emerson, Vanessa <emerson.vanessa@epa.gov>	Optional

Time 2:00 PM – 2:30 PM
Subject Car Confirmed
Show Time As Busy

Your transportation request has been confirmed.

Confirmation Number: 78425
Passenger Information
* Name: DAVID ROSS/AA
* Number: [redacted]
* Pickup Time: 2018-03-06 14:00:00.0

* Pickup Location: EPA EAST 1201 CONSTITUTION AVE
* Drop-Off Location: 2401 E STREET NW
Vehicle Information
* Tag: [redacted]
* Vehicle Type: CAR
* Make : CHEVROLET
* Model : VOLT
* Color : BLACK

Categories Yellow Category

Time 2:30 PM – 3:15 PM

Subject Ross, David (09-14) **NEW* TDY-EPA Brazil x 5 days, leaving on 03/16, # [redacted] *See body of INVITE*

Location 2401 E St., NW, Washington D.C. 20521

Show Time As Busy

PLEASE BRING IMMUNIZATIONS RECORDS
Please fill out attachments
Please fill out and bring along with your travel orders (HARD COPY/ MUST PRINT & BRING) and yellow book and/or Immunization records. Please have everything completed and filled out prior to coming in for appointment.
Clinics appointment hours are Monday, Tuesday, Wednesday & Friday 8:15am- *3:30pm
Thursdays 10:00am- *3:30pm
(*last appointment time)
Directions to SA-1:
SA-1 Columbia Plaza, Rm L-201, 2401 E. Street, NW Washington, DC 20520 [redacted]
Metro: Foggy Bottom ----> Travel right down 23rd Street passing the green Columbia Plaza banner until you reach the corner.
Turn right at the corner down E. Street. Turn right under the overlay into the black doors on the left.
Thank you,
SvetLana Matvyeyeva
Department of State
Bureau of Medical Services
Travel, Health & Immunization Clinic
2401 E St NW (SA1)
Washington DC 20520
Office: (202 [redacted]
Fax: (202 [redacted]
MatvyeyevaS@state.gov <mailto:MatvyeyevaS@state.gov>

Categories Blue Category

Attendees

Name <E-mail>	Attendance
Calendar MED HU Domestic <Calendar_Med_HU_DOM@state.gov>	Organizer
penmen.crystal@epa.gov <penmen.crystal@epa.gov>	Required

	Ross, David P <ross.davidp@epa.gov>	Required

Time 3:15 PM – 3:45 PM
Subject Car confirmed
Show Time As Busy

Your transportation request has been confirmed.

Confirmation Number: 78426
Passenger Information
* Name: DAVID ROSS/AA
* Number: [redacted]
* Pickup Time: 2018-03-06 15:15:00.0
* Pickup Location: 2401 E STREET NW
* Drop-Off Location: EPA EAST 1201 CONSTITUTION AVE
Vehicle Information
* Tag: [redacted]
* Vehicle Type: CAR
* Make : CHEVROLET
* Model : VOLT
* Color : BLACK

Categories Yellow Category

Wednesday, March 07, 2018

Time 9:00 AM – 10:30 AM
Subject WOTUS Tribal Workshop
Show Time As Busy

Time 10:30 AM – 12:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 3:15 PM – 5:00 PM
Subject WOTUS Tribal Workshop
Location 1153 WJCE
Show Time As Busy

Time 4:00 PM – 5:00 PM
Subject Lee using 3233
Show Time As Busy
Categories Blue Category

Thursday, March 08, 2018

Time 8:45 AM – 9:00 AM
Subject Daily Check in
Location 3219A WJCE
Show Time As Busy

Attendees	**Name <E-mail>**	**Attendance**
	Ross, David P <ross.davidp@epa.gov>	Organizer

Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required
Lousberg, Macara <Lousberg.Macara@epa.gov>	Required

Time 9:00 AM – 12:00 PM
Subject WOTUS
Location 1153 WJCE
Show Time As Busy

Time 1:00 PM – 2:30 PM
Subject Benita Using 3233
Show Time As Busy
Categories Blue Category

Time 1:15 PM – 2:30 PM
Subject WOTUS
Location 1153 WJCE
Show Time As Busy

Time 2:30 PM – 3:15 PM
Subject Meeting w/ OH EPA
Location 1201 Constitution Ave NW, Washington DC 20004 WJCE 3219A Please call [redacted] for escort
Show Time As Busy
Categories Blue Category
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
sherrie.thompson@epa.ohio.gov <sherrie.thompson@epa.ohio.gov>	Required
Palich, Christian <palich.christian@epa.gov>	Required
craig.butler@epa.ohio.gov <craig.butler@epa.ohio.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Laura.Factor@epa.ohio.gov <Laura.Factor@epa.ohio.gov>	Optional

	Forsgren, Lee <Forsgren.Lee@epa.gov>	Optional

Time 3:15 PM – 3:30 PM
Subject General
Location Call Brittany Bolen direct [redacted]
Show Time As Busy

Attendees	**Name <E-mail>**	**Attendance**
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Bolen, Brittany <bolen.brittany@epa.gov>	Required
	Kime, Robin <Kime.Robin@epa.gov>	Optional

Time 3:30 PM – 5:00 PM
Subject WOTUS
Location 1153 WJCE
Show Time As Busy

Friday, March 09, 2018

Time 9:30 AM – 11:15 AM
Subject WOTUS
Location 1153 WJCE
Show Time As Busy

Attendees	**Name <E-mail>**	**Attendance**
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Christensen, Damaris <Christensen.Damaris@epa.gov>	Required
	Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
	Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

Time 11:15 AM – 11:45 AM
Subject WOTUS
Location 1153 WJCE
Show Time As Tentative

Time 12:00 PM – 1:00 PM
Subject Lunch with Provi Spina
Location TBD
Show Time As Busy
Categories Orange Category

Attendees	**Name <E-mail>**	**Attendance**

Ross, David P <ross.davidp@epa.gov>	Organizer
Spina, Providence <Spina.Providence@epa.gov>	Required

Time 3:15 PM – 5:00 PM
Subject WOTUS
Location 1153 WICE
Show Time As Busy

Monday, March 12, 2018

Time 1:00 PM – 1:45 PM
Subject Water Infrastructure and Resiliency Finance Center Overview
Location 3233 WICE Call in [redacted] passcode [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Gebhardt, Jim <Gebhardt.Jim@epa.gov>	Required
Brubaker, Sonia <Brubaker.Sonia@epa.gov>	Required
Crichlow, Alecia <Crichlow.Alecia@epa.gov>	Required
Abhold, Kristyn <abhold.kristyn@epa.gov>	Required
Williams, Sandra <Williams.Sandra@epa.gov>	Required
Covington, John <covington.john@epa.gov>	Required
McQuaid, John <Mcquaid.John@epa.gov>	Required
McProuty, Timothy <McProuty.Timothy@epa.gov>	Required
Scott, Pamela <Scott.Pamela@epa.gov>	Required
Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
Frace, Sheila <Frace.Sheila@epa.gov>	Required
Stein, Raffael <Stein.Raffael@epa.gov>	Required
Gueriguian, Leo <Gueriguian.Leo@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Optional

Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Optional
Farris, Erika D. <Farris.Erika@epa.gov>	Optional
Fisher, Mark <Fisher.Mark@epa.gov>	Optional

Time 4:00 PM – 4:30 PM
Subject Meeting with Al McGartland
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
McGartland, Al <McGartland.Al@epa.gov>	Required

Tuesday, March 13, 2018

Time 9:15 AM – 9:45 AM
Subject General with Brittany Bolen
Location 3219A WJCE or call Dave direct [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Bolen, Brittany <bolen.brittany@epa.gov>	Required
Kime, Robin <Kime.Robin@epa.gov>	Optional

Time 10:00 AM – 10:30 AM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 10:30 AM – 11:00 AM
Subject Meeting: Lead Vision
Location Alm Room; Call-In (use only if out of town): [redacted]
Code [redacted] Media Office to Initiate: Pin [redacted]
Show Time As Busy

Agenda

1. Introduction

Administrator Scott Pruitt

2. Update on Federal Lead Strategy

Timothy Epp and Ruth Etzel

3. Discussion of EPA's Input to the Federal Lead Strategy

Categories Red Category

Attendees

Name <E-mail>	**Attendance**
[redacted] <[redacted]>	Organizer
Kelly, Albert <kelly.albert@epa.gov>	Required
Epp, Timothy <Epp.Timothy@epa.gov>	Required
Fonseca, Silvina <Fonseca.Silvina@epa.gov>	Required
Beck, Nancy <Beck.Nancy@epa.gov>	Required
Bertrand, Charlotte <Bertrand.Charlotte@epa.gov>	Required
Breen, Barry <breen.barry@epa.gov>	Required
Cook, Steven <cook.steven@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Wehrum, Bill <Wehrum.Bill@epa.gov>	Required
Shaw, Betsy <Shaw.Betsy@epa.gov>	Required
Gunasekara, Mandy <Gunasekara.Mandy@epa.gov>	Required
Orme-Zavaleta, Jennifer <Orme-Zavaleta.Jennifer@epa.gov>	Required
Yamada, Richard (Yujiro) <yamada.richard@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required

Starfield, Lawrence <Starfield.Lawrence@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Minoli, Kevin <Minoli.Kevin@epa.gov>	Required
Dravis, Samantha <dravis.samantha@epa.gov>	Required
Bolen, Brittany <bolen.brittany@epa.gov>	Required
Lyons, Troy <lyons.troy@epa.gov>	Required
Richardson, RobinH <Richardson.RobinH@epa.gov>	Required
Etzel, Ruth <Etzel.Ruth@epa.gov>	Required
Flynn, Mike <Flynn.Mike@epa.gov>	Required
Jackson, Ryan <jackson.ryan@epa.gov>	Required
Nishida, Jane <Nishida.Jane@epa.gov>	Required
Rodan, Bruce <rodan.bruce@epa.gov>	Optional
Forsgren, Lee <Forsgren.Lee@epa.gov>	Optional

Time 11:00 AM – 12:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 12:00 PM – 1:30 PM
Subject Benita using 3233
Show Time As Busy
Categories Blue Category

Time 6:30 PM – 7:00 PM
Subject Dinner
Location Acqua al 2 - 212 7th Street SE, Washington DC 20003
Show Time As Busy
Categories Blue Category
Attendees

Name <E-mail>	Attendance
Wagner, Kenneth <wagner.kenneth@epa.gov>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required

	Kelly, Albert <kelly.albert@epa.gov>	Required
	Lyons, Troy <lyons.troy@epa.gov>	Required
	Leopold, Matt <Leopold.Matt@epa.gov>	Required

Wednesday, March 14, 2018

Time 9:00 AM – 10:00 AM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 10:00 AM – 10:30 AM
Subject Briefing: Steam Electric ELG Revisions
Location Administrator's Office
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
[redacted] <[redacted]>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Fotouhi, David <Fotouhi.David@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Jackson, Ryan <jackson.ryan@epa.gov>	Required
Dravis, Samantha <dravis.samantha@epa.gov>	Required
Bolen, Brittany <bolen.brittany@epa.gov>	Required

Time 10:30 AM – 12:00 PM
Subject Exclusions and Ditches
Location 3233 WJCE Call in [redacted] code [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

Peck, Gregory <Peck.Gregory@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Downing, Donna <Downing.Donna@epa.gov>	Required
Wehling, Carrie <Wehling.Carrie@epa.gov>	Required
Wendelowski, Karyn <wendelowski.karyn@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
Kupchan, Simma <Kupchan.Simma@epa.gov>	Required
McGartland, Al <McGartland.Al@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Weiler, Katherine <Weiler.Katherine@epa.gov>	Required
ryan.a.fisher12.civ@mail.mil <ryan.a.fisher12.civ@mail.mil>	Required
cindy.s.barger <cindy.s.barger.civ@mail.mil>	Required
melinda.m.witgenstein@usace.army.mil <melinda.m.witgenstein@usace.army.mil>	Required
jennifer.a.moyer@usace.army.mil <jennifer.a.moyer@usace.army.mil>	Required
craig.r.schmauder.civ@mail.mil <craig.r.schmauder.civ@mail.mil>	Required
merle.e.weintraub.civ@mail.mil	Optional

	<merle.e.weintraub.civ@mail.mil>	
	Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Optional
	ODea, Elise <odea.elise@epa.gov>	Optional
	Flannery-Keith, Erin <Flannery-Keith.Erin@epa.gov>	Optional
	Leopold, Matt <Leopold.Matt@epa.gov>	Optional

Time 12:00 PM – 1:00 PM
Subject Lunch
Show Time As Busy
Categories Orange Category

Time 1:00 PM – 1:10 PM
Subject Meeting with Henry Darwin
Location 3402 WJCN
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Darwin, Henry <darwin.henry@epa.gov>	Required

Time 1:10 PM – 1:30 PM
Subject Meeting with Henry Darwin
Location 3402 WJCN
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Vazquez, Sharon <Vazquez.Sharon@epa.gov>	Required
Darwin, Henry <darwin.henry@epa.gov>	Required

Time 2:00 PM – 2:45 PM
Subject EPA/OIRA Conference Call: Step 2 - Call in: [redacted] Participant ID: [redacted]

Location 3219 EPA East

Show Time As Busy

Please contact kime.robin@epa.gov <mailto:kime.robin@epa.gov> with any questions. Thank you.

Categories Red Category

Attendees

Name <E-mail>	Attendance
Dravis, Samantha <dravis.samantha@epa.gov>	Organizer
Palmieri, Rosario A. [redacted] <[redacted]>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required
Bolen, Brittany <bolen.brittany@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Fotouhi, David <Fotouhi.David@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Inge, Carolyn <Inge.Carolyn@epa.gov>	Required
Loving, Shanita <Loving.Shanita@epa.gov>	Required
Veney, Carla <Veney.Carla@epa.gov>	Required
Patrick, Monique <Patrick.Monique@epa.gov>	Required
Dorjets, Vlad [redacted] <[redacted]>	Optional
Laity, Jim A. [redacted] <[redacted]>	Optional

Time 3:30 PM – 5:00 PM

Subject Office Hours

Show Time As Busy

Categories Blue Category

Time 5:00 PM – 5:45 PM

Subject WOTUS Call in [redacted] passcode [redacted]

Location 3219A WJCE

Show Time As Busy

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer

Bodine, Susan <bodine.susan@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Leopard, Matthew <Leopard.Matthew@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required

Thursday, March 15, 2018

Time 9:00 AM – 9:45 AM
Subject Lead and Copper Rule
Location 3233 WJCE Call in [redacted] passcode [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Kelly, Albert <kelly.albert@epa.gov>	Required
Epp, Timothy <Epp.Timothy@epa.gov>	Required
Dravis, Samantha <dravis.samantha@epa.gov>	Required
Bolen, Brittany <bolen.brittany@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Lyons, Troy <lyons.troy@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Mclain, Jennifer <Mclain.Jennifer@epa.gov>	Required

	Burneson, Eric <Burneson.Eric@epa.gov>	Required
	Bodine, Susan <bodine.susan@epa.gov>	Required
	Fonseca, Silvina <Fonseca.Silvina@epa.gov>	Optional
	Chancellor, Erin <chancellor.erin@epa.gov>	Optional
	Kime, Robin <Kime.Robin@epa.gov>	Optional

Time 12:00 PM – 12:30 PM
Subject Car confirmed
Show Time As Busy

Your transportation request has been Updated.

Reason for update : Pick Up Time changed
Confirmation Number: 78403

Passenger Information

* Name: DAVID ROSS/AA
* Number: [redacted]
* Pickup Time: 2018-03-15 12:00:00.0
* Pickup Location: EPA EAST 1201 CONSTITUTION AVE
* Drop-Off Location: CRYSTAL GATEWAY MARRIOTT 1700 JEFFERSON DAVIS HIGHWAY

Vehicle Information

* Tag: [redacted]
* Vehicle Type: CAR
* Make : CHEVROLET
* Model : VOLT
* Color : BLACK

Categories Yellow Category

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Dennis, Allison <Dennis.Allison@epa.gov>	Required
Gorke, Roger <Gorke.Roger@epa.gov>	Required

Time 12:30 PM – 1:00 PM
Subject ICWP- WSWC Washington DC Roundtable
Location Crystal Gateway Marriott 1700 Jefferson Davis Highway, Arlington VA 22202

Show Time As Busy
Categories Orange Category

Time 1:00 PM – 1:30 PM
Subject Car confirmed
Show Time As Busy

Your transportation request has been Updated.

Reason for update : Pick Up Time changed
Confirmation Number: 78404

Passenger Information

* Name: DAVID ROSS/AA
* Number: [redacted]
* Pickup Time: 2018-03-15 13:00:00.0
* Pickup Location: CRYSTAL GATEWAY MARRIOTT 1700 JEFFERSON DAVIS HIGHWAY
* Drop-Off Location: EPA EAST 1201 CONSTITUTION AVE

Vehicle Information

* Tag: [redacted]
* Vehicle Type: CAR
* Make : CHEVROLET
* Model : VOLT
* Color : BLACK

Categories Yellow Category

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Dennis, Allison <Dennis.Allison@epa.gov>	Required
Gorke, Roger <Gorke.Roger@epa.gov>	Required

Time 2:00 PM – 2:30 PM
Subject Blending
Location 3219A WJCE
Show Time As Busy

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Bolen, Brittany <bolen.brittany@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required

Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required
Kloss, Christopher <Kloss.Christopher@epa.gov>	Optional

Time 2:30 PM – 3:00 PM
Subject Meet and Greet (OW-OIG)
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Elkins, Arthur <Elkins.Arthur@epa.gov>	Required
Sheehan, Charles <Sheehan.Charles@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Mason, Darryl <Mason.Darryl@epa.gov>	Optional

Time 3:45 PM – 4:00 PM
Subject General w/ Peter Grevatt
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required

Time 4:30 PM – 5:00 PM
Subject WOTUS w/ Mindy
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required

Friday, March 16, 2018

Time All Day
Subject Ann Compressed
Show Time As Free

Time 9:15 AM – 9:45 AM
Subject Call: PFAS Letter
Location [redacted] Code [redacted] Lincoln to Initiate: Pin [redacted]
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
[redacted] <[redacted] Administrator's Email>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Jackson, Ryan <jackson.ryan@epa.gov>	Required
Bowman, Liz <Bowman.Liz@epa.gov>	Required
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Kelly, Albert <kelly.albert@epa.gov>	Required
Ferguson, Lincoln <ferguson.lincoln@epa.gov>	Required
McMurray, Forrest <mcmurray.forrest@epa.gov>	Required
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Lyons, Troy <lyons.troy@epa.gov>	Optional
Bennett, Tate <Bennett.Tate@epa.gov>	Optional

Time 10:00 AM – 12:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 11:00 AM – 11:30 AM
Subject WOTUS catch up
Location 3219A
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Organizer

Ross, David P <ross.davidp@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required

Time 11:00 AM – 12:00 PM
Subject Benita using 3233
Show Time As Busy
Categories Blue Category

Time 1:00 PM – 1:30 PM
Subject Call with Liz Bowman
Location Call David direct [redacted] or cell [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Bowman, Liz <Bowman.Liz@epa.gov>	Required

Time 2:30 PM – 3:00 PM
Subject General with Deborah Nagle
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Nagle, Deborah <Nagle.Deborah@epa.gov>	Required

Time 3:00 PM – 4:00 PM
Subject Benita using 3233
Show Time As Busy
Categories Blue Category

Monday, March 19, 2018

Time 8:45 AM – 9:00 AM
Subject Daily check in
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Lousberg, Macara <Lousberg.Macara@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required

Kitamura, Louise <Kitamura.Louise@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required
Dennis, Allison <Dennis.Allison@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

Time 9:00 AM – 9:30 AM
Subject Weekly Planning
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Lousberg, Macara <Lousberg.Macara@epa.gov>	Required
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required
Kitamura, Louise <Kitamura.Louise@epa.gov>	Required
Dennis, Allison <Dennis.Allison@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required

Time 9:00 AM – 5:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 12:00 PM – 1:00 PM
Subject Lunch
Show Time As Busy
Categories Orange Category

Time 1:30 PM – 1:45 PM
Subject 308 Letters
Location 3219A WJCE
Show Time As Busy

Attendees	Name <E-mail>	Attendance
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Lousberg, Macara <Lousberg.Macara@epa.gov>	Required
	Metchis, Karen <Metchis.Karen@epa.gov>	Required
	Campbell, Ann <Campbell.Ann@epa.gov>	Optional
	Forsgren, Lee <Forsgren.Lee@epa.gov>	Optional

Time 4:00 PM – 4:30 PM
Subject Pre-Brief: Media Roundtable
Location Administrator's Office
Show Time As Busy
Categories Red Category

Attendees	Name <E-mail>	Attendance
	[redacted] <[redacted]>	Organizer
	Bowman, Liz <Bowman.Liz@epa.gov>	Required
	Wilcox, Jahan <wilcox.jahan@epa.gov>	Required
	Ferguson, Lincoln <ferguson.lincoln@epa.gov>	Required
	Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
	Ross, David P <ross.davidp@epa.gov>	Required
	Mclain, Jennifer <Mclain.Jennifer@epa.gov>	Required
	Kelly, Albert <kelly.albert@epa.gov>	Required

Tuesday, March 20, 2018

Time 8:45 AM – 9:00 AM
Subject Daily check in Call in [redacted] passcode [redacted]
Location 3219A WJCE
Show Time As Busy

Attendees	Name <E-mail>	Attendance
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Campbell, Ann <Campbell.Ann@epa.gov>	Required
	Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Lousberg, Macara <Lousberg.Macara@epa.gov>	Required
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Required

Time 9:00 AM – 5:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 9:30 AM – 10:00 AM
Subject Briefing: WIFIA Loan Program
Location Administrator's Office
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
[redacted] <[redacted]>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required

Time 10:00 AM – 10:15 AM
Subject Meeting
Location Administrator's Office
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
[redacted] <[redacted]>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required

Time 10:15 AM – 11:00 AM
Subject Priorities for Finalizing Portions of the NPDES Update Rule
Location 3233 WJCE Call in [redacted] passcode [redacted]
Show Time As Tentative
Attendees

Name <E-mail>	Attendance
Forsgren, Lee <Forsgren.Lee@epa.gov>	Organizer

Ross, David P <ross.davidp@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
Zobrist, Marcus <Zobrist.Marcus@epa.gov>	Required
Weiss, Kevin <Weiss.Kevin@epa.gov>	Required
Aguirre, Janita <Aguirre.Janita@epa.gov>	Required
Sylvester, Francis <Sylvester.Francis@epa.gov>	Required
Fotouhi, David <Fotouhi.David@epa.gov>	Required
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Required
Messier, Dawn <Messier.Dawn@epa.gov>	Required
Flannery-Keith, Erin <Flannery-Keith.Erin@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Hill, Glynis <Hill.Glynis@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Hair, David <Hair.David@epa.gov>	Optional
Farris, Erika D. <Farris.Erika@epa.gov>	Optional
Frace, Sheila <Frace.Sheila@epa.gov>	Optional
Wehling, Carrie <Wehling.Carrie@epa.gov>	Optional
Evalenko, Sandy <Evalenko.Sandy@epa.gov>	Optional
Lousberg, Macara <Lousberg.Macara@epa.gov>	Optional
Levine, MaryEllen <levine.maryellen@epa.gov>	Required

Time 10:30 AM – 11:30 AM
Subject Dave's Planning time

Show Time As Busy
Categories Blue Category

Time 11:30 AM – 12:00 PM
Subject Illinois River Call
Location [redacted] code [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Gray, David <gray.david@epa.gov>	Organizer
Dwyer, Stacey <Dwyer.Stacey@epa.gov>	Required
Payne, James <payne.james@epa.gov>	Required
Idsal, Anne <idsal.anne@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Garcia, David <Garcia.David@epa.gov>	Required
Wooster, Richard <Wooster.Richard@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Optional
Harrison, Ben <Harrison.Ben@epa.gov>	Optional
Wagner, Kenneth <wagner.kenneth@epa.gov>	Required

Time 12:00 PM – 12:30 PM
Subject Brownbag: ECOS Prep call in [redacted] passcode [redacted]
Location 3219A WJCE
Show Time As Busy
Categories Orange Category
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Dennis, Allison <Dennis.Allison@epa.gov>	Optional

Time 12:30 PM – 1:00 PM

Subject Lunch
Show Time As Busy
Categories Orange Category

Time 2:00 PM – 3:00 PM
Subject Follow up on Tributaries and Ditches
Location 3233 WJCE Call in [redacted] passcode [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Downing, Donna <Downing.Donna@epa.gov>	Required
Wehling, Carrie <Wehling.Carrie@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
McGartland, Al <McGartland.Al@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Kupchan, Simma <Kupchan.Simma@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Peck, Gregory <Peck.Gregory@epa.gov>	Required
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
ryan.a.fisher12.civ@mail.mil <ryan.a.fisher12.civ@mail.mil>	Required
craig.r.schmauder.civ@mail.mil <craig.r.schmauder.civ@mail.mil>	Required

jennifer.a.moyer@usace.army.mil <jennifer.a.moyer@usace.army.mil>	Required
melinda.m.witgentein@usace.army.mil <melinda.m.witgentein@usace.army.mil>	Required
stacey.m.jensen@usace.army.mil <stacey.m.jensen@usace.army.mil>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Weiler, Katherine <Weiler.Katherine@epa.gov>	Optional
cindy.s.barger <cindy.s.barger.civ@mail.mil>	Optional
Witgenstein, Melinda M CIV USARMY CENWD (US) <Melinda.M.Witgenstein@usace.army.mil>	Optional
Davenport, Robert L Jr CIV USARMY HQDA OGC (US) <robert.l.davenport4.civ@mail.mil>	Optional

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Time 3:15 PM – 4:00 PM
Subject IO Overview Program
Location 3233 WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Peck, Gregory <Peck.Gregory@epa.gov>	Required
Fontaine, Tim <Fontaine.Tim@epa.gov>	Required
Stevens, Robert <Stevens.Robert@epa.gov>	Required
Kitamura, Louise <Kitamura.Louise@epa.gov>	Required
Simons, Vicki <Simons.Vicki@epa.gov>	Required

Koo-Oshima, Sasha <Koo-Oshima.Sasha@epa.gov>	Required
Lousberg, Macara <Lousberg.Macara@epa.gov>	Optional
Ruf, Christine <Ruf.Christine@epa.gov>	Optional
Gonder, Sharon <Gonder.Sharon@epa.gov>	Optional
Torrez, Alfredo <Torrez.Alfredo@epa.gov>	Optional
WigginsLewis, Miriam <WigginsLewis.Miriam@epa.gov>	Optional
Lieberman, Paige <Lieberman.Paige@epa.gov>	Optional
Dennis, Allison <Dennis.Allison@epa.gov>	Optional
Spraul, Greg <Spraul.Greg@epa.gov>	Optional

Time 4:15 PM – 5:00 PM
Subject Bi Weekly w/ OWOW
Location 3233 WJCE Call in [redacted] passcode [redacted]
Show Time As Tentative

Agenda Items for OW Bi-weekly w/OWOW, March 19 at 4:15

1. 404 Assumption

a. Reviewing Paper Capturing Path Forward

b. Update on FL

c. MI Permit

2. Regional Interactions with OW on Listings/TMDLs/404/Others

a. Listing/TMDL

i.Ohio, NH

ii.Others

b. 404

i.Letters In Process

ii.Prior Letter Follow-up

3. R5 Decisions on 401(a)(2) – Utac/Polymet

4. Note re: Approval of GA Coastal Nonpoint Pollution Control Program – AA Signature/FR Notice

5. New Federal Oceans Policy – Feedback from [redacted] Meeting/EPA Role

6. BB Control – HQ/R10 signature?

7. Upcoming Meetings Potential OW IO Involvement

a. Tim Petty (USDA Undersecretary) Request to AA to Attend National Water Center Showcase 3/27 - AL

b. River Rally 4/29 – 5/2 – CA - $15K Funding Request

c. ASWM 4/11

8. FY19 Budget – Multi-Purpose Grants

Attendees	**Name <E-mail>**	**Attendance**
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Wall, Tom <Wall.Tom@epa.gov>	Required
	Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
	Campbell, Ann <Campbell.Ann@epa.gov>	Required
	Goodin, John <Goodin.John@epa.gov>	Required
	Connors, Sandra <Connors.Sandra@epa.gov>	Required
	Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
	Weiler, Katherine <Weiler.Katherine@epa.gov>	Optional
	Holdsworth, Susan <Holdsworth.Susan@epa.gov>	Optional
	Young, Dwane <Young.Dwane@epa.gov>	Optional

Time 4:30 PM – 5:00 PM
Subject General w/OW
Location WJC-N 4000
Show Time As Busy
From: Fotouhi, David

Sent: Monday, March 12, 2018 5:38 PM
To: Veney, Carla <Veney.Carla@epa.gov <mailto:Veney.Carla@epa.gov>
>; Patrick, Monique <Patrick.Monique@epa.gov
<mailto:Patrick.Monique@epa.gov> >
Subject: General meeting with Dave Ross

Dave Ross would like to have a general meeting with Matt and me this week to discuss issues related to the WOTUS rule as well as Ohio and Minnesota actions. Could you please work with Crystal Penman in OW to set up a meeting? Thank you.

David Fotouhi

Deputy General Counsel

Office of General Counsel

U.S. Environmental Protection Agency

Tel: +[redacted]

fotouhi.david@epa.gov <mailto:fotouhi.david@epa.gov>

Categories Red Category

Attendees

Name <E-mail>	Attendance
Leopold, Matt <Leopold.Matt@epa.gov>	Organizer
Fotouhi, David <fotouhi.david@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required

Wednesday, March 21, 2018

Time 8:45 AM – 9:00 AM
Subject Daily check in Call in [redacted] passcode [redacted]
Location 3219A WJCE
Show Time As Busy

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required

Campbell, Ann <Campbell.Ann@epa.gov>	Required
Lousberg, Macara <Lousberg.Macara@epa.gov>	Required
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required
Kitamura, Louise <Kitamura.Louise@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Optional

Time 9:00 AM – 5:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 10:30 AM – 11:30 AM
Subject Follow up from States Discussion and Schedule
Location 3233 WJCE Call in [redacted] passcode [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Downing, Donna <Downing.Donna@epa.gov>	Required
Wehling, Carrie <Wehling.Carrie@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
McGartland, Al <McGartland.Al@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Kupchan, Simma <Kupchan.Simma@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required

Wendelowski, Karyn <wendelowski.karyn@epa.gov>	Required
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
cindy.s.barger <cindy.s.barger.civ@mail.mil>	Required
ryan.a.fisher12.civ@mail.mil <ryan.a.fisher12.civ@mail.mil>	Required
melinda.m.witgenstein@usace.army.mil <melinda.m.witgenstein@usace.army.mil>	Required
craig.r.schmauder.civ@mail.mil <craig.r.schmauder.civ@mail.mil>	Required
stacey.m.jensen@usace.army.mil <stacey.m.jensen@usace.army.mil>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Weiler, Katherine <Weiler.Katherine@epa.gov>	Optional
jennifer.a.moyer@usace.army.mil <jennifer.a.moyer@usace.army.mil>	Required
McDavit, Michael W. <Mcdavit.Michael@epa.gov>	Optional

Time 12:00 PM – 1:00 PM
Subject Lunch
Show Time As Busy
Categories Orange Category

Thursday, March 22, 2018

Time 9:00 AM – 9:30 AM
Subject Briefing: Delegation of CWA Authority
Location Administrator's Office / [redacted] Code [redacted]
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
[redacted] <[redacted]>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Fotouhi, David <Fotouhi.David@epa.gov>	Required

	Leopold, Matt <Leopold.Matt@epa.gov>	Required
	Wagner, Kenneth <wagner.kenneth@epa.gov>	Required

Time 12:00 PM – 1:00 PM
Subject Senior Leaders Contingency Planning for Potential Shutdown
Location EPA HQ WJC 3346 (OARM's Conference Room)
Show Time As Busy

Please note: The Senior Leaders Contingency Planning for Potential Shutdown has been arranged in place of the regularly scheduled DRA + DAA Business Operations Meeting.

Categories Orange Category

Attendees

Name <E-mail>	**Attendance**
RegionalOperations <RegionalOperations@epa.gov>	Organizer
DRA <DRA@epa.gov>	Required
DAA-Career <DAACareer@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Richardson, RobinH <Richardson.RobinH@epa.gov>	Required
Simon, Nigel <Simon.Nigel@epa.gov>	Required
Nitsch, Chad <Nitsch.Chad@epa.gov>	Required
Wooden-Aguilar, Helena <Wooden-Aguilar.Helena@epa.gov>	Required
Flynn, Mike <Flynn.Mike@epa.gov>	Required
Grantham, Nancy <Grantham.Nancy@epa.gov>	Required
Flournoy, Karen <Flournoy.Karen@epa.gov>	Required
Fine, Steven <fine.steven@epa.gov>	Required
Simon, Harvey <Simon.Harvey@epa.gov>	Required
Cacho, Julia <Cacho.Julia@epa.gov>	Required
Showman, John <Showman.John@epa.gov>	Required

Vizian, Donna <Vizian.Donna@epa.gov>	Required
Strauss, Alexis <Strauss.Alexis@epa.gov>	Required
Chu, Ed <Chu.Ed@epa.gov>	Required
Bloom, David <Bloom.David@epa.gov>	Required
Blackburn, Elizabeth <Blackburn.Elizabeth@epa.gov>	Required
Nishida, Jane <Nishida.Jane@epa.gov>	Required
Pirzadeh, Michelle <Pirzadeh.Michelle@epa.gov>	Required
Lucas, Debra <Lucas.Debra@epa.gov>	Required
Jordan, Deborah <Jordan.Deborah@epa.gov>	Required
Jenkins, Brandi <Jenkins.Brandi@epa.gov>	Required
Gray, David <gray.david@epa.gov>	Required
Starfield, Lawrence <Starfield.Lawrence@epa.gov>	Required
Rodrigues, Cecil <rodrigues.cecil@epa.gov>	Required
Bertrand, Charlotte <Bertrand.Charlotte@epa.gov>	Required
Cherry, Katrina <Cherry.Katrina@epa.gov>	Required
Wise, Louise <Wise.Louise@epa.gov>	Required
Minoli, Kevin <Minoli.Kevin@epa.gov>	Required
Heard, Anne <Heard.Anne@epa.gov>	Required
Szaro, Deb <Szaro.Deb@epa.gov>	Required
Thomas, Deb <thomas.debrah@epa.gov>	Required
Robbins, Chris <Robbins.Chris@epa.gov>	Required
Erikson, Linda <Erikson.Linda@epa.gov>	Required
St. Fleur, Marilyn <StFleur.Marilyn@epa.gov>	Required

Mugdan, Walter <Mugdan.Walter@epa.gov>	Required
Badalamente, Mark <Badalamente.Mark@epa.gov>	Required
Saddler, Melissa <Saddler.Melissa@epa.gov>	Required
Regional Administrators <Regional_Administrators@epa.gov>	Required
Assistant Administrators <Assistant_Administrators@epa.gov>	Required
Jackson, Ryan <jackson.ryan@epa.gov>	Required
DRA Assistants <DRA_Assistants@epa.gov>	Optional
Breen, Barry <Breen.Barry@epa.gov>	Optional
Shaw, Betsy <Shaw.Betsy@epa.gov>	Optional
Radzikowski, Mary Ellen <Radzikowski.Maryellen@epa.gov>	Optional

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Friday, March 23, 2018

Time 9:00 AM – 5:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 9:30 AM – 10:15 AM
Subject Briefing: Lead and Copper Rule
Location Administrator's Office
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
[redacted] <[redacted]>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Epp, Timothy <Epp.Timothy@epa.gov>	Required
Bolen, Brittany <bolen.brittany@epa.gov>	Required
Dravis, Samantha <dravis.samantha@epa.gov>	Required

Leopold, Matt <Leopold.Matt@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Fotouhi, David <Fotouhi.David@epa.gov>	Required
Kelly, Albert <kelly.albert@epa.gov>	Optional

Time 11:00 AM – 11:30 AM
Subject OIG Biosolids Review
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Nagle, Deborah <Nagle.Deborah@epa.gov>	Required
Behl, Betsy <Behl.Betsy@epa.gov>	Required
Resek, Elizabeth <Resek.Elizabeth@epa.gov>	Optional

Time 12:00 PM – 1:00 PM
Subject Lunch
Show Time As Busy
Categories Orange Category

Sunday, March 25, 2018

Time 6:25 PM – 9:57 PM
Subject DL flight 1187 departs MSP @ 6:25pm arrives DCA @ 9:57pm
Show Time As Busy
Categories Blue Category

Monday, March 26, 2018

Time 7:45 AM – 8:15 AM
Subject WIFIA
Location 3219A WJCE Call in [redacted] passcode [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer

Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Optional

Time 8:45 AM – 9:00 AM
Subject Daily Check in
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Lousberg, Macara <Lousberg.Macara@epa.gov>	Required
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required
Benita Best-Wong <[redacted]	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Kitamura, Louise <Kitamura.Louise@epa.gov>	Required

Time 1:30 PM – 2:00 PM
Subject General with Mindy Eisenberg
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required

Time 2:00 PM – 2:30 PM
Subject Meeting with Al McGartland
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance

Ross, David P <ross.davidp@epa.gov>	Organizer
McGartland, Al <McGartland.Al@epa.gov>	Required

Tuesday, March 27, 2018

Time 2:00 PM – 2:30 PM
Subject Catch Up w/Dave Ross
Location Dave to call the Under Secretary; [redacted]
Show Time As Busy

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Attendees

Name <E-mail>	Attendance
Northey, Bill - OSEC, Washington, DC <Bill.Northey@osec.usda.gov>	Organizer
Penman, Crystal <Penman.Crystal@epa.gov>	Required

Time 2:30 PM – 3:00 PM
Subject Meeting with Ducks Unlimited
Location 1201 Constitution Ave NW, Washington DC 20004 WJCE 3219B Please call [redacted] for escort
Show Time As Busy
Categories Blue Category

Attendees

Name <E-mail>	Attendance
Forsgren, Lee <Forsgren.Lee@epa.gov>	Organizer
wtawney@ducks.org <wtawney@ducks.org>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Required

Time 3:30 PM – 4:00 PM
Subject Five-Year Recreational Criteria Review
Location 3219A WJCE
Show Time As Busy

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Nagle, Deborah <Nagle.Deborah@epa.gov>	Required

Time 4:00 PM – 5:00 PM

Subject FY18 Operating Plan
Location EPA HQ WJC 3346 (OARM's Conference Room)
Show Time As Busy

Senior leadership to discuss FY18 Operating Plan.

Attendees

Name <E-mail>	Attendance
RegionalOperations <RegionalOperations@epa.gov>	Organizer
Regional Administrators <Regional_Administrators@epa.gov>	Required
Assistant Administrators <Assistant_Administrators@epa.gov>	Required
DRA <DRA@epa.gov>	Required
DAA-Career <DAACareer@epa.gov>	Required
Flynn, Mike <Flynn.Mike@epa.gov>	Required
Darwin, Henry <darwin.henry@epa.gov>	Required
Richardson, RobinH <Richardson.RobinH@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required

Wednesday, March 28, 2018

Time 3/28/2018 12:00 AM – 3/31/2018 12:00 AM
Subject Ann OOO
Show Time As Free

Time 9:30 AM – 10:30 AM
Subject WIFIA - NOFA
Location 3219A WJCE
Show Time As Busy

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
Jernberg, Jorianne <jernberg.jorianne@epa.gov>	Required
Dorfman, Jordan <Dorfman.Jordan@epa.gov>	Required

Time	10:30 AM – 11:30 AM
Subject	Wetlands
Location	3233 WJCE Call in [redacted] passcode [redacted]
Show Time As	Busy

Attendees	**Name <E-mail>**	**Attendance**
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
	Goodin, John <Goodin.John@epa.gov>	Required
	Downing, Donna <Downing.Donna@epa.gov>	Required
	Wehling, Carrie <Wehling.Carrie@epa.gov>	Required
	Fotouhi, David <fotouhi.david@epa.gov>	Required
	Bodine, Susan <bodine.susan@epa.gov>	Required
	Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
	McGartland, Al <McGartland.Al@epa.gov>	Required
	Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
	Kupchan, Simma <Kupchan.Simma@epa.gov>	Required
	Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
	Peck, Gregory <Peck.Gregory@epa.gov>	Required
	cindy.s.barger.civ@mail.com <cindy.s.barger.civ@mail.com>	Required
	ryan.a.fisher12.civ@mail.mil <ryan.a.fisher12.civ@mail.mil>	Required
	craig.r.schmauder.civ@mail.mil <craig.r.schmauder.civ@mail.mil>	Required
	jennifer.a.moyer@usace.army.mil <jennifer.a.moyer@usace.army.mil>	Required
	melinda.m.witgenstein@usace.army.mil <melinda.m.witgenstein@usace.army.mil>	Required

stacey.m.jensen@usace.army.mil <stacey.m.jensen@usace.army.mil>	Required
cindy.s.barger <cindy.s.barger.civ@mail.mil>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Weiler, Katherine <Weiler.Katherine@epa.gov>	Optional
Leopold, Matt <Leopold.Matt@epa.gov>	Optional

Time 11:45 AM – 12:00 PM
Subject General with Deborah Nagle
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Nagle, Deborah <Nagle.Deborah@epa.gov>	Required

Time 12:00 PM – 12:30 PM
Subject Lunch
Show Time As Busy
Categories Orange Category

Time 12:30 PM – 1:00 PM
Subject Car confirmed
Show Time As Busy

Your transportation request has been confirmed.

Confirmation Number: 78690
Passenger Information
* Name: DAVID ROSS/AA
* Number: [redacted]
* Pickup Time: 2018-03-28 12:30:00.0
* Pickup Location: EPA EAST 1201 CONSTITUTION AVE
* Drop-Off Location: 2600 INDEPENDENCE AVE SE
Vehicle Information
* Tag: [redacted]
* Vehicle Type: CAR
* Make : CHEVROLET
* Model : VOLT
* Color : BLACK

Categories Yellow Category

Time 1:00 PM – 2:00 PM
Subject DC Water's Anacostia River Tunnel System Grand Opening Celebration

Location 2600 Independence Ave SE (parking available in RFK Stadium's Lot 8)
Show Time As Busy
Categories Blue Category

Time 2:00 PM – 2:30 PM
Subject Car confirmed
Show Time As Busy

Your transportation request has been Updated.

Reason for update : Pick Up Time changed
Confirmation Number: 78691
Passenger Information
* Name: DAVID ROSS/AA
* Number: [redacted]
* Pickup Time: 2018-03-28 14:00:00.0
* Pickup Location: 2600 INDEPENDENCE AVE SE
* Drop-Off Location: EPA EAST 1201 CONSTITUTION AVE
Vehicle Information
* Tag: [redacted]
* Vehicle Type: CAR
* Make : CHEVROLET
* Model : VOLT
* Color : BLACK

Categories Yellow Category

Time 5:00 PM – 5:30 PM
Subject WIFIA
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Fotouhi, David <fotouhi.david@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
Jernberg, Jorianne <jernberg.jorianne@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Patrick, Monique <Patrick.Monique@epa.gov>	Optional
Askew, Wendel <Askew.Wendel@epa.gov>	Optional

Redden, Kenneth <Redden.Kenneth@epa.gov>	Optional
Kohutiak, George <kohutiak.george@epa.gov>	Optional

Thursday, March 29, 2018

Time 9:00 AM – 9:30 AM
Subject Update from Region 9
Location WJC East 3219A (enter from consitution ave)
Show Time As Busy

Alexis will provide update on water activities in Region 9.

Categories Blue Category

Attendees

Name <E-mail>	Attendance
Strauss, Alexis <Strauss.Alexis@epa.gov>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Required

Time 1:00 PM – 1:45 PM
Subject WOTUS - Economics
Location 3219A WJCE
Show Time As Busy

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Fotouhi, David <fotouhi.david@epa.gov>	Required
McGartland, Al <McGartland.Al@epa.gov>	Required
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
Hewitt, Julie <Hewitt.Julie@epa.gov>	Optional

Time 2:00 PM – 2:45 PM
Subject Meet and Greet Ross/Orme-Zavaleta
Location WJC-E 3219A
Show Time As Busy

Attendees

Name <E-mail>	Attendance
Orme-Zavaleta, Jennifer <Orme-Zavaleta.Jennifer@epa.gov>	Organizer
Robbins, Chris <Robbins.Chris@epa.gov>	Required

Yamada, Richard (Yujiro) <yamada.richard@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required

Time 3:00 PM – 3:45 PM
Subject The 2017 Campus Rain Works Challenge
Location 3233 WJCE Call in [redacted] passcode [redacted]
Show Time As Tentative
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
Frace, Sheila <Frace.Sheila@epa.gov>	Required
Zobrist, Marcus <Zobrist.Marcus@epa.gov>	Required
Kloss, Christopher <Kloss.Christopher@epa.gov>	Required
Piziali, Jamie <Piziali.Jamie@epa.gov>	Required
King, Matt <King.Matt@epa.gov>	Required
Farris, Erika D. <Farris.Erika@epa.gov>	Optional
Molloy, Jennifer <molloy.jennifer@epa.gov>	Optional
Wigginton, Mary <Wigginton.Mary@epa.gov>	Optional
Goo, Robert <Goo.Robert@epa.gov>	Optional
Wilson, Clark <Wilson.Clark@epa.gov>	Optional
Kramer, Melissa <Kramer.Melissa@epa.gov>	Optional
Forsgren, Lee <Forsgren.Lee@epa.gov>	Optional

Time 4:30 PM – 5:00 PM
Subject General w/ Peter Grevatt
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance

Ross, David P <ross.davidp@epa.gov>	Organizer
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Tiago, Joseph <Tiago.Joseph@epa.gov>	Optional

Friday, March 30, 2018

Time 8:00 AM – 5:00 PM
Subject OOO
Location Drive
Show Time As Busy
Categories Blue Category

Sunday, April 01, 2018

Time 5:15 PM – 8:13 PM
Subject Delta flight 5998 departs MSN @ 5:15pm arrives MSN @ 8:13pm
Show Time As Busy
Categories Blue Category

Monday, April 02, 2018

Time 4/2/2018 12:00 AM – 4/4/2018 12:00 AM
Subject Ann OOO
Show Time As Free

Time 1:00 PM – 1:45 PM
Subject OIG Biosolids Report
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Elkins, Arthur <Elkins.Arthur@epa.gov>	Required
Sheehan, Charles <Sheehan.Charles@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Mason, Darryl <Mason.Darryl@epa.gov>	Optional
El-Zoghbi, Christine (El-Zoghbi.Christine@epa.gov) <El-Zoghbi.Christine@epa.gov>	Optional
Lovingood, Christina <Lovingood.Tina@epa.gov>	Optional

Time 2:00 PM – 3:00 PM
Subject Senior Staff Meeting
Location Alm Room
Show Time As Busy
Categories Red Category

Attendees

Name <E-mail>	Attendance
Smith, Walker <Smith.Walker@epa.gov>	Organizer
Schwab, Justin <schwab.justin@epa.gov>	Required
Breen, Barry <Breen.Barry@epa.gov>	Required
Baptist, Erik <baptist.erik@epa.gov>	Required
Woods, Clint <woods.Clint@epa.gov>	Required
Lawrence, Tanya <Lawrence.Tanya@epa.gov>	Required
White, Elizabeth <white.elizabeth@epa.gov>	Required
Dravis, Samantha <dravis.samantha@epa.gov>	Required
Servidio, Cosmo <servidio.cosmo@epa.gov>	Required
Ford, Hayley <ford.hayley@epa.gov>	Required
Benevento, Douglas <benevento.douglas@epa.gov>	Required
Harlow, David <harlow.david@epa.gov>	Required
Hladick, Christopher <hladick.christopher@epa.gov>	Required
Burke, Marcella <burke.marcella@epa.gov>	Required
Yamada, Richard (Yujiro) <yamada.richard@epa.gov>	Required
Gulliford, Jim <gulliford.jim@epa.gov>	Required
Glenn, Trey <Glenn.Trey@epa.gov>	Required
Orme-Zavaleta, Jennifer <Orme-Zavaleta.Jennifer@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required

Fine, Steven <fine.steven@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Kelly, Albert <kelly.albert@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required
Simon, Harvey <Simon.Harvey@epa.gov>	Required
Wehrum, Bill <Wehrum.Bill@epa.gov>	Required
Gunasekara, Mandy <Gunasekara.Mandy@epa.gov>	Required
Williams, Odessa <Williams.Odessa@epa.gov>	Required
Darwin, Veronica <darwin.veronica@epa.gov>	Required
Benjamin-Sirmons, Denise <Benjamin-Sirmons.Denise@epa.gov>	Required
Idsal, Anne <idsal.anne@epa.gov>	Required
Gray, David <gray.david@epa.gov>	Required
Bertrand, Charlotte <Bertrand.Charlotte@epa.gov>	Required
Williams, Felicia <Williams.Felicia@epa.gov>	Required
Zarba, Christopher <Zarba.Christopher@epa.gov>	Required
Hanson, Paige (Catherine) <hanson.catherine@epa.gov>	Required
Brown, Byron <brown.byron@epa.gov>	Required
Jackson, Ryan <jackson.ryan@epa.gov>	Required
Ferguson, Lincoln <ferguson.lincoln@epa.gov>	Required
Lopez, Peter <lopez.peter@epa.gov>	Required
Wooden-Aguilar, Helena <Wooden-Aguilar.Helena@epa.gov>	Required
Grantham, Nancy <Grantham.Nancy@epa.gov>	Required

Bowman, Liz <Bowman.Liz@epa.gov>	Required
Etzel, Ruth <Etzel.Ruth@epa.gov>	Required
Wagner, Kenneth <wagner.kenneth@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Strauss, Alexis <Strauss.Alexis@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Rodgers, Ryan <Rodgers.Ryan@epa.gov>	Required
Bloom, David <Bloom.David@epa.gov>	Required
Munoz, Charles <munoz.charles@epa.gov>	Required
Pirzadeh, Michelle <Pirzadeh.Michelle@epa.gov>	Required
Greaves, Holly <greaves.holly@epa.gov>	Required
Elkins, Arthur <Elkins.Arthur@epa.gov>	Required
Stepp, Cathy <stepp.cathy@epa.gov>	Required
Hupp, Millan <hupp.millan@epa.gov>	Required
Slotkin, Ron <slotkin.ron@epa.gov>	Required
Bolen, Brittany <bolen.brittany@epa.gov>	Required
Reed, Khesha <Reed.Khesha@epa.gov>	Required
Flynn, Mike <Flynn.Mike@epa.gov>	Required
Lyons, Troy <lyons.troy@epa.gov>	Required
Dickerson, Aaron <dickerson.aaron@epa.gov>	Required
Beck, Nancy <beck.nancy@epa.gov>	Required
Nishida, Jane <Nishida.Jane@epa.gov>	Required
Bennett, Tate <Bennett.Tate@epa.gov>	Required

Traylor, Patrick <traylor.patrick@epa.gov>	Required
Fonseca, Silvina <Fonseca.Silvina@epa.gov>	Required
Vizian, Donna <Vizian.Donna@epa.gov>	Required
Sands, Jeffrey <sands.jeffrey@epa.gov>	Required
Dunn, Alexandra <dunn.alexandra@epa.gov>	Required
Woodward, Cheryl <Woodward.Cheryl@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Sheehan, Charles <Sheehan.Charles@epa.gov>	Required
Darwin, Henry <darwin.henry@epa.gov>	Required

Tuesday, April 03, 2018

Time 9:00 AM – 9:30 AM
Subject General with Mindy Eisenberg and John Goodin
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required

Time 1:00 PM – 2:00 PM
Subject WOTUS - Reg Texts Call in # [redacted] passcode [redacted]
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required

Leopold, Matt <Leopold.Matt@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

Time 2:00 PM – 2:45 PM
Subject Fish Consumption Rates -Washington, Idaho, Maine Call in [redacted] passcode [redacted]
Location 3233 WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Nagle, Deborah <Nagle.Deborah@epa.gov>	Required
Hisel-Mccoy, Sara <Hisel-McCoy.Sara@epa.gov>	Required
Behl, Betsy <Behl.Betsy@epa.gov>	Required
Buffo, Corey <Buffo.Corey@epa.gov>	Required
Higgs, Michele <higgs.michele@epa.gov>	Required
Crk, Tanja <Crk.Tanja@epa.gov>	Required
Fleisig, Erica <Fleisig.Erica@epa.gov>	Required
Flaherty, Colleen <Flaherty.Colleen@epa.gov>	Required
Strong, Jamie <Strong.Jamie@epa.gov>	Required
Greene, Sophie <Greene.Sophie@epa.gov>	Required
Healey, John <healey.john@epa.gov>	Required
Jacobs, Brittany <Jacobs.Brittany@epa.gov>	Required
Shaw, Hanh <Shaw.Hanh@epa.gov>	Required
Nickel, Brian <Nickel.Brian@epa.gov>	Required
Kissinger, Lon <Kissinger.Lon@epa.gov>	Required
Schroer, Lee <schroer.lee@epa.gov>	Required
Shephard, Burt <Shephard.Burt@epa.gov>	Required

Zomer, Jessica <Zomer.Jessica@epa.gov>	Required
Stern, Allyn <Stern.Allyn@epa.gov>	Required
Steiner-Riley, Cara <Steiner-Riley.Cara@epa.gov>	Required
Weber, Courtney <Weber.Courtney@epa.gov>	Required
Hewitt, Julie <Hewitt.Julie@epa.gov>	Required
Crawford, Tiffany <Crawford.Tiffany@epa.gov>	Required
Opalski, Dan <Opalski.Dan@epa.gov>	Required
McDonough, Owen <mcdonough.owen@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Optional
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Optional
Angela Chung <Chung.Angela@epa.gov>	Optional
Penman, Crystal <Penman.Crystal@epa.gov>	Optional
Maher, Lauren <Maher.Lauren@epa.gov>	Optional
Barash, Shari <Barash.Shari@epa.gov>	Required
Macchio, Lisa <Macchio.Lisa@epa.gov>	Optional
Sandy Evalenko <Evalenko.Sandy@epa.gov>	Optional

Time 2:55 PM – 3:15 PM
Subject Briefing: New WIFIA NOFA Announcements
Location Administrator's Office
Show Time As Busy
Categories Red Category

Attendees	**Name <E-mail>**	**Attendance**
	[redacted] <[redacted]>	Organizer
	Ross, David P <ross.davidp@epa.gov>	Required

Time 3:00 PM – 4:00 PM

Subject Mike Flynn Retirement celebration
Location WJCN Suite 3330
Show Time As Tentative
Categories Red Category

Time 4:15 PM – 4:30 PM
Subject Briefing: Illinois River
Location Alm Room / Video Conference with Region 6
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
[redacted] <[redacted]>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Idsal, Anne <idsal.anne@epa.gov>	Required
Wagner, Kenneth <wagner.kenneth@epa.gov>	Required
Bennett, Tate <Bennett.Tate@epa.gov>	Optional
Forsgren, Lee <Forsgren.Lee@epa.gov>	Optional

Wednesday, April 04, 2018

Time 10:30 AM – 11:30 AM
Subject WOTUS Exclusions
Location 3233 WJCE Call in [redacted] passcode [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Downing, Donna <Downing.Donna@epa.gov>	Required
Wehling, Carrie <Wehling.Carrie@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required

McGartland, Al <McGartland.Al@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Peck, Gregory <Peck.Gregory@epa.gov>	Required
Flannery-Keith, Erin <Flannery-Keith.Erin@epa.gov>	Required
ryan.a.fisher12.civ@mail.mil <ryan.a.fisher12.civ@mail.mil>	Required
craig.r.schmauder.civ@mail.mil <craig.r.schmauder.civ@mail.mil>	Required
nennifer.a.moyer@usace.army.mil <nennifer.a.moyer@usace.army.mil>	Required
stacey.m.jensen@usace.army.mil <stacey.m.jensen@usace.army.mil>	Required
cindy.s.barger <cindy.s.barger.civ@mail.mil>	Required
jennifer.a.moyer@usace.army.mil <jennifer.a.moyer@usace.army.mil>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Weiler, Katherine <Weiler.Katherine@epa.gov>	Optional
McDavit, Michael W. <Mcdavit.Michael@epa.gov>	Optional
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Optional
Kupchan, Simma <Kupchan.Simma@epa.gov>	Optional

Time 1:00 PM – 2:30 PM
Subject OW Bowling Chart
Location 3412 WJCN
Show Time As Busy
Categories Red Category

Attendees	**Name <E-mail>**	**Attendance**
	Ross, David P <ross.davidp@epa.gov>	Organizer

Darwin, Henry <darwin.henry@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Willis, Sharnett <Willis.Sharnett@epa.gov>	Optional
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Grevatt, Peter <Grevatt.Peter@epa.gov>	Optional
Mclain, Jennifer <Mclain.Jennifer@epa.gov>	Optional
Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Optional
Frace, Sheila <Frace.Sheila@epa.gov>	Optional
Connors, Sandra <Connors.Sandra@epa.gov>	Optional
Goodin, John <Goodin.John@epa.gov>	Optional
Nagle, Deborah <Nagle.Deborah@epa.gov>	Optional
Lape, Jeff <lape.jeff@epa.gov>	Optional
Vazquez, Sharon <Vazquez.Sharon@epa.gov>	Optional
Young, Dwane <Young.Dwane@epa.gov>	Optional
Weiss, Kevin <Weiss.Kevin@epa.gov>	Optional
Stein, Raffael <Stein.Raffael@epa.gov>	Optional
Lieberman, Judy <Lieberman.Judy@epa.gov>	Optional
DeBell, Kevin <debell.kevin@epa.gov>	Optional

Time 3:00 PM – 5:00 PM

Subject IWQS Meeting w/ R10

Location 1201 Constitution Ave NW, Washinigton DC 20640 WJCE 3233 Please call [redacted] for escort

Show Time As Busy

Categories Blue Category

Attendees

Name <E-mail>	Attendance

Ross, David P <ross.davidp@epa.gov>	Organizer
Hladick, Christopher <hladick.christopher@epa.gov>	Required
Opalski, Dan <Opalski.Dan@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Nagle, Deborah <Nagle.Deborah@epa.gov>	Required
Nishida, Jane <Nishida.Jane@epa.gov>	Required
Tyson, Linda <Tyson.Linda@epa.gov>	Optional
Angela Chung <Chung.Angela@epa.gov>	Optional
Felicia Wright (Wright.Felicia@epa.gov) <Wright.Felicia@epa.gov>	Optional
McDonough, Owen <mcdonough.owen@epa.gov>	Optional

Time 5:15 PM – 5:45 PM
Subject Update on Massachusetts and New Hampshire MS4 permits
Location Call [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Dunn, Alexandra <dunn.alexandra@epa.gov>	Required
Lindsay, Jane <lindsay.jane@epa.gov>	Optional

Time 4/4/2018 11:30 PM – 4/5/2018 12:00 AM
Subject \\\\\\\\-q2
Show Time As Busy

Thursday, April 05, 2018

Time 1:00 PM – 1:30 PM
Subject Meeting with Tom Brennan
Location 3219A WJCE
Show Time As Busy

Re: SAB

[redacted]

Attendees	Name <E-mail>	Attendance
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Brennan, Thomas <Brennan.Thomas@epa.gov>	Required
	McDonough, Owen <mcdonough.owen@epa.gov>	Required

Friday, April 06, 2018

Time 9:00 AM – 9:30 AM
Subject Coffee
Show Time As Busy
Categories Blue Category

Time 9:30 AM – 10:00 AM
Subject General with Mindy Eisenberg and John Goodin
Location 3219A WJCE
Show Time As Busy

Attendees	Name <E-mail>	Attendance
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
	Goodin, John <Goodin.John@epa.gov>	Required

Time 10:00 AM – 12:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Sunday, April 08, 2018

Time 5:15 PM – 8:13 PM
Subject Delta flight 5998 departs MSN @ 5:15pm arrives DCA @ 8:13pm
Show Time As Busy
Categories Blue Category

Monday, April 09, 2018

Time 10:00 AM – 10:30 AM
Subject Prep for EOP WOTUS Discussion
Location 3219A WJCE
Show Time As Busy

Attendees	Name <E-mail>	Attendance

Bolen, Brittany <bolen.brittany@epa.gov>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Required
Veney, Carla <Veney.Carla@epa.gov>	Required
Inge, Carolyn <Inge.Carolyn@epa.gov>	Required
Fotouhi, David <Fotouhi.David@epa.gov>	Optional
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Optional

Time 4:00 PM – 5:00 PM
Subject Reading/Review
Show Time As Busy
Categories Blue Category

Time 5:00 PM – 6:00 PM
Subject WOTUS
Location 3219A WJCE Call in [redacted] passcode [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required

Tuesday, April 10, 2018

Time 11:30 AM – 12:00 PM
Subject Briefing: WOTUS Step 1 & Step 2
Location Administrator's Office
Show Time As Busy

Categories	Red Category

Attendees	**Name <E-mail>**	**Attendance**
	[redacted] <[redacted]>	Organizer
	Ross, David P <ross.davidp@epa.gov>	Required
	Leopold, Matt <Leopold.Matt@epa.gov>	Required
	Fotouhi, David <Fotouhi.David@epa.gov>	Required
	Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
	Forsgren, Lee <Forsgren.Lee@epa.gov>	Optional

Time	4:00 PM – 4:30 PM
Subject	Transportation to EEOB
Location	WJCN Courtyard
Show Time As	Busy

From: aldridge.matthew@epa.gov <mailto:aldridge.matthew@epa.gov> [mailto:aldridge.matthew@epa.gov]
Sent: Monday, April 2, 2018 1:54 PM
To: Kime, Robin <Kime.Robin@epa.gov <mailto:Kime.Robin@epa.gov> >
Subject: Transportation Request

Your transportation request has been confirmed.

Confirmation Number: 78745

Passenger Information

* Name: MATT LEOPOLD/GC
* Number: [redacted]
* Pickup Time: 2018-04-10 16:00:00.0
* Pickup Location: COURTYARD
* Drop-Off Location: EEOB

Vehicle Information

* Tag: [redacted]
* Vehicle Type: MINI VAN
* Make : DODGE

* Model : CARAVAN
* Color : SILVER

Categories Yellow Category

Attendees

Name <E-mail>	Attendance
Bolen, Brittany <bolen.brittany@epa.gov>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Fotouhi, David <Fotouhi.David@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Veney, Carla <Veney.Carla@epa.gov>	Required

Time 4:30 PM – 5:30 PM

Subject EPA and EOP Meeting: WOTUS - WAVES Link in Notes

Location EEOB 229

Show Time As Busy

Link: https://events.whitehouse.gov/?rid=GD94JYHWV3
<https://events.whitehouse.gov/?rid=GD94JYHWV3>
U#: U83280
Appointment #: 1103684
Appointment Date/Time: 4/10/2018 4:00 PM
Security Specialist: OTIS TALLEY
Person Visited: Aaron Szabo
Event Name: AC - Aaron Szabo - 4/10/2018 4:00 PM
Room Number: 229
Appointment Status: COMPLETE
Number of Visitors: 5
Number of Cleared Visitors: 5
First Name
Last Name
Status
BRITTANY
BOLEN
CLEARED
DENNIS
FORSGREN
CLEARED
DAVID
FOTOUHI

CLEARED
MATTHEW
LEOPOLD
CLEARED
DAVID
ROSS
CLEARED

Aaron L. Szabo
Senior Counsel
(D) (6)
[redacted] (Desk)

Categories Blue Category

Attendees

Name <E-mail>	Attendance
Bolen, Brittany <bolen.brittany@epa.gov>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Fotouhi, David <Fotouhi.David@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Veney, Carla <Veney.Carla@epa.gov>	Required
Szabo, Aaron L. [redacted] <[redacted]>	Required

Time 5:30 PM – 6:00 PM
Subject Note: Return Transportation is Not Available
Show Time As Busy
Categories Yellow Category

Attendees

Name <E-mail>	Attendance
Bolen, Brittany <bolen.brittany@epa.gov>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Fotouhi, David <Fotouhi.David@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Veney, Carla <Veney.Carla@epa.gov>	Required

Wednesday, April 11, 2018

Time 10:00 AM – 10:30 AM
Subject Meeting with CEO of Suez North America
Location 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call [redacted] for escort
Show Time As Busy
Categories Blue Category
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Campbell, Ann <Campbell.Ann@epa.gov>	Required
jon.freedman@suez.com <jon.freedman@suez.com>	Required
Lape, Jeff <lape.jeff@epa.gov>	Required
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
Gutierrez, Sally <Gutierrez.Sally@epa.gov>	Optional
Penman, Crystal <Penman.Crystal@epa.gov>	Optional

Time 1:00 PM – 5:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 5:00 PM – 6:00 PM
Subject EPA's Incident Management and Communications for Executives (OW)
Location HQ EOC Ops Room (WJCN 433)
Show Time As Busy

Hello Folks,

This is the date and calendar invitation for the Office of Water's session on EPA's Incident Management and Communications for Executives.

Please be aware that the session is being held in the HQ Emergency Operations Center, which is located in the basement of WJC North (B433). Thank you.

Peter Oh

Office of Emergency Management

[redacted]

oh.peter@epa.gov <mailto:oh.peter@epa.gov>

Attendees

Name <E-mail>	Attendance
Eoc, Epahq <Eoc.Epahq@epa.gov>	Organizer
Cheatham, Reggie <cheatham.reggie@epa.gov>	Required
Irizarry, Gilberto <Irizarry.Gilberto@epa.gov>	Required
Lee, Eugene <Lee.Eugene@epa.gov>	Required
Woodyard, Josh <Woodyard.Joshua@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Clark, Becki <Clark.Becki@epa.gov>	Required
EOC_Scheduler <EOC_Scheduler@epa.gov>	Required
Indermark, Michele <Indermark.Michele@epa.gov>	Optional
Simon, Nigel <Simon.Nigel@epa.gov>	Optional
Breen, Barry <Breen.Barry@epa.gov>	Required

Thursday, April 12, 2018

Time 11:00 AM – 11:30 AM

Subject Briefing: Blending at Publicly Owned Treatment Plants
Location Administrator's Office
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
[redacted] <[redacted]>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Optional

Time 11:30 AM – 12:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 1:00 PM – 1:45 PM
Subject WIFIA Loan Docs Call in [redacted] passcode [redacted]
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
Jernberg, Jorianne <jernberg.jorianne@epa.gov>	Required
Stein, Carol <Stein.Carol@epa.gov>	Required
Dorfman, Jordan <Dorfman.Jordan@epa.gov>	Required
Kohutiak, George <kohutiak.george@epa.gov>	Required
McDonald, Kevin <mcdonald.kevin@epa.gov>	Optional

Time 3:00 PM – 3:30 PM

Subject Meeting with NACWA

Location 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call [redacted] for escort

Show Time As Busy

* Intros
* About NACWA/its members
* Priority Issues for AA Ross
* NACWA's Top Issues (to include infrastructure funding, affordability and integrated planning, nutrients)

Attendee's List

Adam Krantz

Nathan Gardner-Andrews

Chris Hornback

Categories Blue Category

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Campbell, Ann <Campbell.Ann@epa.gov>	Required
chornback@nacwa.org <chornback@nacwa.org>	Required
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
Nagle, Deborah <Nagle.Deborah@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Nathan Gardner-Andrews <NGardner-Andrews@nacwa.org>	Optional
Adam Krantz <AKrantz@nacwa.org>	Optional
Penman, Crystal <Penman.Crystal@epa.gov>	Optional
Gutierrez, Sally <Gutierrez.Sally@epa.gov>	Optional

Stein, Raffael <Stein.Raffael@epa.gov>	Optional

Time 4:00 PM – 4:30 PM
Subject General with Mindy Eisenberg and John Goodin
Location 3219A WJCE
Show Time As Busy

Attendees	**Name <E-mail>**	**Attendance**
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
	Goodin, John <Goodin.John@epa.gov>	Required

Friday, April 13, 2018

Time All Day
Subject AC Compressed
Show Time As Free

Time 10:00 AM – 11:45 AM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 11:45 AM – 12:15 PM
Subject HOLD: Briefing: King County WIFIA Loan
Location Administrator's Office
Show Time As Busy
Categories Red Category

Attendees	**Name <E-mail>**	**Attendance**
	[redacted] <[redacted]>	Organizer
	Ross, David P <ross.davidp@epa.gov>	Required
	Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
	Fotouhi, David <Fotouhi.David@epa.gov>	Required
	Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
	Leopold, Matt <Leopold.Matt@epa.gov>	Optional

Time 3:15 PM – 4:00 PM
Subject Meeting: RD James, Army Corps
Location Administrator's Office

Show Time As Busy

Categories Red Category

Attendees

Name <E-mail>	Attendance
[redacted] <[redacted]>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Optional

Monday, April 16, 2018

Time All Day

Subject Water Week

Show Time As Free

Time 10:00 AM – 10:30 AM

Subject Private

Show Time As Busy

(Anna Wildeman)
1201 Constitution Ave NW, Washington DC 20004 WJCE 3219A Please call[redacted] for escort

Categories Blue Category

Time 1:00 PM – 3:00 PM

Subject Office Hours

Show Time As Busy

Categories Blue Category

Time 4:00 PM – 4:30 PM

Subject CWA 404 Delegation

Location Call in #[redacted] Conference extention[redacted] Participant code [redacted]

Show Time As Busy

Latonia Cheatham Strickland
Special Assistant to the Senior Advisor
for Regional and State Affairs
Office of Congressional & Intergovernmental Relations
U.S. Environmental Protection Agency
Office Phone: (202)[redacted]
EPA Cellphone: (202)[redacted]
Cheatham-strickland.latonia@epa.gov <mailto:Cheatham-strickland.latonia@epa.gov>

Time 4:30 PM – 5:00 PM

Subject General with Mindy Eisenberg and John Goodin

Location 3219A WJCE

Show Time As Busy

Attendees	Name <E-mail>	Attendance
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
	Goodin, John <Goodin.John@epa.gov>	Required

Tuesday, April 17, 2018

Time All Day
Subject Water Week
Show Time As Free

Time 11:00 AM – 12:00 PM
Subject WOTUS TSD/ Econ
Location 3233 WJCE Call in [redacted] passcode [redacted]
Show Time As Busy

Attendees	Name <E-mail>	Attendance
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
	Goodin, John <Goodin.John@epa.gov>	Required
	Downing, Donna <Downing.Donna@epa.gov>	Required
	Wehling, Carrie <Wehling.Carrie@epa.gov>	Required
	Bodine, Susan <bodine.susan@epa.gov>	Required
	Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
	McGartland, Al <McGartland.Al@epa.gov>	Required
	Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
	Peck, Gregory <Peck.Gregory@epa.gov>	Required
	ryan.a.fisher12.civ@mail.mil <ryan.a.fisher12.civ@mail.mil>	Required
	craig.r.schmauder.civ@mail.mil <craig.r.schmauder.civ@mail.mil>	Required
	cindy.s.barger <cindy.s.barger.civ@mail.mil>	Required

jennifer.a.moyer@usace.army.mil <jennifer.a.moyer@usace.army.mil>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Weiler, Katherine <Weiler.Katherine@epa.gov>	Required
McDavit, Michael W. <Mcdavit.Michael@epa.gov>	Required
Kwok, Rose <Kwok.Rose@epa.gov>	Required
Christensen, Damaris <Christensen.Damaris@epa.gov>	Required
Hewitt, Julie <Hewitt.Julie@epa.gov>	Required
Doley, Todd <Doley.Todd@epa.gov>	Required
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Required
Massey, Matt <Massey.Matt@epa.gov>	Required
Kupchan, Simma <Kupchan.Simma@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Hughes, Thomas E CIV USARMY HQDA ASA CW (US) <thomas.e.hughes1.civ@mail.mil>	Optional
Penman, Crystal <Penman.Crystal@epa.gov>	Optional
Fotouhi, David <fotouhi.david@epa.gov>	Optional
Karyn Wendelowski <wendelowski.karyn@epa.gov>	Optional
Flannery-Keith, Erin <Flannery-Keith.Erin@epa.gov>	Optional
ODea, Elise <odea.elise@epa.gov>	Optional

Time 1:30 PM – 2:00 PM
Subject Car confirmed
Show Time As Busy

Your transportation request has been confirmed.

Confirmation Number: 78815

Passenger Information

* Name: DAVID ROSS/AA
* Number: [redacted]
* Pickup Time: 2018-04-17 13:30:00.0
* Pickup Location: EPA EAST 1201 CONSTITUTION AVE
* Drop-Off Location: 525 NEW JERSEY AVE, WASHINGTON DC

Vehicle Information

* Tag: [redacted]
* Vehicle Type: CAR
* Make : CHEVROLET
* Model : VOLT
* Color : BLACK

Categories Yellow Category

Time 2:00 PM – 3:00 PM
Subject National Water Policy Fly In (NACWA, WEF, WRF, WateReuse)
Show Time As Busy
Categories Blue Category

Time 3:00 PM – 3:30 PM
Subject Car confirmed
Show Time As Busy

Your transportation request has been Updated.

Reason for update : Pick Up Time changed
Confirmation Number: 78816
Passenger Information
* Name: DAVID ROSS/AA
* Number: [redacted]
* Pickup Time: 2018-04-17 15:00:00.0
* Pickup Location: 525 NEW JERSEY AVE, WASHINGTON DC
* Drop-Off Location: EPA EAST 1201 CONSTITUTION AVE
Vehicle Information
* Tag: [redacted]
* Vehicle Type: CAR
* Make : CHEVROLET
* Model : VOLT
* Color : BLACK

Categories Yellow Category

Wednesday, April 18, 2018

Time All Day
Subject Water Week
Show Time As Free

Time 10:30 AM – 11:30 AM
Subject WOTUS Check in
Location 3233 WJCE Call in [redacted] passcode [redacted]

Show Time As Busy

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Downing, Donna <Downing.Donna@epa.gov>	Required
Wehling, Carrie <Wehling.Carrie@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
McGartland, Al <McGartland.Al@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Peck, Gregory <Peck.Gregory@epa.gov>	Required
Flannery-Keith, Erin <Flannery-Keith.Erin@epa.gov>	Required
ryan.a.fisher12.civ@mail.mil <ryan.a.fisher12.civ@mail.mil>	Required
craig.r.schmauder.civ@mail.mil <craig.r.schmauder.civ@mail.mil>	Required
stacey.m.jensen@usace.army.mil <stacey.m.jensen@usace.army.mil>	Required
cindy.s.barger <cindy.s.barger.civ@mail.mil>	Required
jennifer.a.moyer@usace.army.mil <jennifer.a.moyer@usace.army.mil>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Weiler, Katherine <Weiler.Katherine@epa.gov>	Required
McDavit, Michael W. <Mcdavit.Michael@epa.gov>	Required

Penman, Crystal <Penman.Crystal@epa.gov>	Optional
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Optional
Wendelowski, Karyn <wendelowski.karyn@epa.gov>	Optional
Kupchan, Simma <Kupchan.Simma@epa.gov>	Optional
ODea, Elise <odea.elise@epa.gov>	Optional

Time 11:30 AM – 12:00 PM
Subject Ohio Options
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Goodin, John <Goodin.John@epa.gov>	Required
Wall, Tom <Wall.Tom@epa.gov>	Required
Havard, James <Havard.James@epa.gov>	Required
Connors, Sandra <Connors.Sandra@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Glazer, Thomas <glazer.thomas@epa.gov>	Optional
Schroer, Lee <schroer.lee@epa.gov>	Optional
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Optional
Fotouhi, David <fotouhi.david@epa.gov>	Optional

Time 1:00 PM – 2:45 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 2:00 PM – 3:00 PM
Subject Reading/Review
Show Time As Busy
Categories Blue Category

Time 2:45 PM – 3:00 PM
Subject Travel Time
Show Time As Busy
Categories Yellow Category

Time 3:00 PM – 4:00 PM
Subject Interagency Review of the WOTUS Supplemental Notice Discussion
Location Department of Justice, 950 Pennsylvania Ave., NW Room 2143
Show Time As Busy

In advance of the meeting, if any invitee intends to bring additional participants please provide me their name for the security list.

Visitor's entrance on Constitution Avenue, between 9th & 10th

Categories Blue Category
Attendees

Name <E-mail>	Attendance
Wood, Jeffrey (ENRD) <Jeffrey.Wood@usdoj.gov>	Organizer
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Brightbill, Jonathan (ENRD) <Jonathan.Brightbill@usdoj.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required

Time 4:00 PM – 4:30 PM
Subject Travel Time
Show Time As Busy
Categories Yellow Category

Time 4:30 PM – 5:00 PM
Subject Meet and Greet with ACWA Call in [redacted] passcode [redacted]
Location 1201 Constitution Ave NW, Washington DC 20004; WJCE 3219A; Please call [redacted] for escort
Show Time As Busy

The phone participants will be:

Jennifer Wigal, ACWA President, Oregon

Allison Woodall, ACWA Vice-President, Texas

Andy Gavin, ACWA Treasurer, Susquehanna River Basin Commission

Pete LaFlamme, ACWA Past President, Vermont

Sean Rolland, ACWA Deputy Director

Categories Blue Category

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
janastasio@acwa-us.org <janastasio@acwa-us.org>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
Nagle, Deborah <Nagle.Deborah@epa.gov>	Required
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Penman, Crystal <Penman.Crystal@epa.gov>	Optional
Frace, Sheila <Frace.Sheila@epa.gov>	Optional

Thursday, April 19, 2018

Time All Day
Subject Water Week
Show Time As Free

Time 10:00 AM – 10:45 AM
Subject MA and NH Small MS4 Geneal Permits: Effective Date
Location 3233 WJCE; Call in [redacted] passcode [redacted]
Show Time As Busy

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Fotouhi, David <fotouhi.david@epa.gov>	Required
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Required
Levine, MaryEllen <levine.maryellen@epa.gov>	Required

Dierker, Carl <Dierker.Carl@epa.gov>	Required
Ford, Peter <Ford.Peter@epa.gov>	Required
Murphy, Thelma (Hamilton) <murphy.thelma@epa.gov>	Required
Moraff, Kenneth <Moraff.Ken@epa.gov>	Required
Flannery-Keith, Erin <Flannery-Keith.Erin@epa.gov>	Required
Utting, George <Utting.George@epa.gov>	Required
Tedder, Newton <Tedder.Newton@epa.gov>	Required
Dunn, Alexandra <dunn.alexandra@epa.gov>	Required
Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
Gutierrez, Sally <Gutierrez.Sally@epa.gov>	Required
Klinger, Adam <Klinger.Adam@epa.gov>	Required
Kloss, Christopher <Kloss.Christopher@epa.gov>	Required
Clay Kane <claykane@umich.edu>	Required
Clovis, Debora <Clovis.Debora@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Required
Warner, Suzanne <Warner.Suzanne@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Urban, Rachel <Urban.Rachel@epa.gov>	Optional
Schaner, Greg <Schaner.Greg@epa.gov>	Optional
Farris, Erika D. <Farris.Erika@epa.gov>	Optional

Dixon, Sean <dixon.sean@epa.gov>	Optional
Hamjian, Lynne <Hamjian.Lynne@epa.gov>	Optional
McDonough, Owen <mcdonough.owen@epa.gov>	Optional
Talty, Mark <Talty.Mark@epa.gov>	Optional
Simons, Andrew <Simons.Andrew@epa.gov>	Optional

Time 1:00 PM – 4:30 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 4:30 PM – 5:30 PM
Subject WOTUS Legal Framework
Location 3233 WJCE Call in [redacted] passcode [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Downing, Donna <Downing.Donna@epa.gov>	Required
Wehling, Carrie <Wehling.Carrie@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
McGartland, Al <McGartland.Al@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Kupchan, Simma <Kupchan.Simma@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Required

Peck, Gregory <Peck.Gregory@epa.gov>	Required
Wendelowski, Karyn <wendelowski.karyn@epa.gov>	Required
cindy.s.barger <cindy.s.barger.civ@mail.mil>	Required
ryan.a.fisher12.civ@mail.mil <ryan.a.fisher12.civ@mail.mil>	Required
craig.r.schmauder.civ@mail.mil <craig.r.schmauder.civ@mail.mil>	Required
jennifer.a.moyer@usace.army.mil <jennifer.a.moyer@usace.army.mil>	Required
stacey.m.jensen@usace.army.mil <stacey.m.jensen@usace.army.mil>	Required
david.r.cooper@usace.army.mil <david.r.cooper@usace.army.mil>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Weiler, Katherine <Weiler.Katherine@epa.gov>	Optional
McDavit, Michael W. <Mcdavit.Michael@epa.gov>	Optional
Penman, Crystal <Penman.Crystal@epa.gov>	Optional

Friday, April 20, 2018

Time All Day
Subject Water Week
Show Time As Free

Time 9:00 AM – 9:30 AM
Subject WOTUS Small Group Discussion
Location 3219 A WJC East Building
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Forsgren, Lee <Forsgren.Lee@epa.gov>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required

Fotouhi, David <Fotouhi.David@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required

Time 9:00 AM – 12:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 9:45 AM – 10:00 AM
Subject Car confirmed
Show Time As Busy

Your transportation request has been confirmed.

Confirmation Number: 78862

Passenger Information

* Name: DAVID ROSS/AA
* Number: [redacted]
* Pickup Time: 2018-04-20 09:45:00.0
* Pickup Location: EPA EAST 1201 CONSTITUTION AVE
* Drop-Off Location: 1400 INDEPENDENCE AVE SW

Vehicle Information

* Tag: [redacted]
* Vehicle Type: CAR
* Make : CHEVROLET
* Model : VOLT
* Color : BLACK

Categories Yellow Category

Time 10:00 AM – 10:45 AM
Subject Office of Water
Location 1400 Independence Ave SW Room 227-E, Washington, DC 20250
Show Time As Busy

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Categories Blue Category

Attendees	Name <E-mail>	Attendance
	Northey, Bill - OSEC, Washington, DC <Bill.Northey@osec.usda.gov>	Organizer
	Penman, Crystal <Penman.Crystal@epa.gov>	Required

Time 10:50 AM – 11:00 AM
Subject Car confirmed
Show Time As Busy

Your transportation request has been confirmed.

Confirmation Number: 78863
Passenger Information
* Name: DAVID ROSS/AA
* Number: [redacted]
* Pickup Time: 2018-04-20 10:50:00.0
* Pickup Location: 1400 INDEPENDENCE AVE SW
* Drop-Off Location: EPA EAST 1201 CONSTITUTION AVE
Vehicle Information
* Tag: [redacted]
* Vehicle Type: CAR
* Make : CHEVROLET
* Model : VOLT
* Color : BLACK

Categories Yellow Category

Time 1:30 PM – 2:00 PM
Subject General w/ Mindy Eisenberg
Location 3219A WJCE
Show Time As Busy

Attendees	Name <E-mail>	Attendance
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required

Time 4:00 PM – 5:00 PM
Subject Reading/Review
Show Time As Busy
Categories Blue Category

Sunday, April 22, 2018

Time All Day
Subject Earth Day!
Show Time As Free

Monday, April 23, 2018

Time 1:00 PM – 5:00 PM

Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 3:00 PM – 3:30 PM
Subject Call w/ David Ross
Location Call David [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Stepp, Cathy <stepp.cathy@epa.gov>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required

Time 5:00 PM – 6:00 PM
Subject WOTUS
Location 3219A WJCE Call in [redacted] passcode [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required

Tuesday, April 24, 2018

Time 1:30 PM – 2:30 PM
Subject Reading/Review
Show Time As Busy
Categories Blue Category

Time 3:30 PM – 4:00 PM
Subject Hearing Prep: OW
Location Administrator's Office
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
[redacted] <[redacted]>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required

Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Jackson, Ryan <jackson.ryan@epa.gov>	Required
Lyons, Troy <lyons.troy@epa.gov>	Required
Palich, Christian <palich.christian@epa.gov>	Required
Ringel, Aaron <ringel.aaron@epa.gov>	Required
Bolen, Brittany <bolen.brittany@epa.gov>	Required
Greaves, Holly <greaves.holly@epa.gov>	Required
Hanson, Paige (Catherine) <hanson.catherine@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required

Time 4:30 PM – 5:00 PM
Subject Meet and Greet with David Ross (OW)
Location WJC-N 3412
Show Time As Busy
Sct: Carly Carroll, [redacted]
Categories Red Category

Attendees	**Name <E-mail>**	**Attendance**
	Wheeler, Andrew <wheeler.andrew@epa.gov>	Organizer
	Ross, David P <ross.davidp@epa.gov>	Required

Wednesday, April 25, 2018

Time All Day
Subject Administrative Professionals Day
Location United States
Show Time As Free
Categories EZ Record - Private, Holiday

Time 8:30 AM – 9:30 AM
Subject Migratory Bird Conservation Commission Meeting
Location Department of the Interior (Main Building) 1849 C Street, NW, Washington DC
Show Time As Busy
Categories Blue Category

Time 9:00 AM – 12:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 9:30 AM – 10:00 AM
Subject Travel time
Show Time As Busy
Categories Yellow Category

Time 10:30 AM – 11:30 AM
Subject WOTUS Preamble
Location 3233 WJCE Call in [redacted] passcode [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Downing, Donna <Downing.Donna@epa.gov>	Required
Wehling, Carrie <Wehling.Carrie@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
McGartland, Al <McGartland.Al@epa.gov>	Required
Kupchan, Simma <Kupchan.Simma@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Required
Wendelowski, Karyn <wendelowski.karyn@epa.gov>	Required
cindy.s.barger <cindy.s.barger.civ@mail.mil>	Required
ryan.a.fisher12.civ@mail.mil <ryan.a.fisher12.civ@mail.mil>	Required

craig.r.schmauder.civ@mail.mil <craig.r.schmauder.civ@mail.mil>	Required
jennifer.a.moyer@usace.army.mil <jennifer.a.moyer@usace.army.mil>	Required
stacey.m.jensen@usace.army.mil <stacey.m.jensen@usace.army.mil>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Weiler, Katherine <Weiler.Katherine@epa.gov>	Optional
McDavit, Michael W. <Mcdavit.Michael@epa.gov>	Optional
Penman, Crystal <Penman.Crystal@epa.gov>	Optional

Time 12:00 PM – 1:00 PM
Subject Lunch
Show Time As Busy
Categories Orange Category

Time 3:00 PM – 3:30 PM
Subject Reading/Review
Show Time As Busy
Categories Blue Category

Time 3:30 PM – 4:00 PM
Subject Ohio
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Goodin, John <Goodin.John@epa.gov>	Required
Wall, Tom <Wall.Tom@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Optional

Thursday, April 26, 2018

Time 9:30 AM – 12:00 PM

Subject OW 2016 Honor Awards

Location 1153 WJCE

Show Time As Busy

I invite you to attend the Annual OW Honor Awards Ceremony celebrating the exemplary work completed by your colleagues in 2016. The National and OW honor awards recognize the outstanding accomplishments of OW employees, as well as our partners in EPA and other federal agencies. Please join me in celebrating the incredible work that all of you do to protect our water resources and provide safe drinking water for all Americans

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
OW-EVERYONE-HQ_SG <OWEVERYONEHQ@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Optional
Forsgren, Lee <Forsgren.Lee@epa.gov>	Optional
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Optional
Scozzafava, MichaelE <Scozzafava.MichaelE@epa.gov>	Optional
Dennis, Allison <Dennis.Allison@epa.gov>	Optional
Fuld, John <Fuld.John@epa.gov>	Optional
Rodriguez, Jerrod <rodriguez.jerrod@epa.gov>	Optional
Dean, Jill <Dean.Jill@epa.gov>	Optional
Powell, Robert <Powell.Robert@epa.gov>	Optional
Urban, Rachel <Urban.Rachel@epa.gov>	Optional
Bates, William <bates.william@epa.gov>	Optional
Ames, George <Ames.George@epa.gov>	Optional
Chancey, Barbara <Chancey.Barbara@epa.gov>	Optional
Wall, Tom <Wall.Tom@epa.gov>	Optional
Biddle, Lisa <Biddle.Lisa@epa.gov>	Optional
Fontaine, Tim <Fontaine.Tim@epa.gov>	Optional

Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Optional
Gilbertson, Sue <gilbertson.sue@epa.gov>	Optional
Scott, Pamela <Scott.Pamela@epa.gov>	Optional
Syed, Sharmin <Syed.Sharmin@epa.gov>	Optional
Beaman, Joe <Beaman.Joe@epa.gov>	Optional
Escobar, Alejandro <escobar.alejandro@epa.gov>	Optional
Brown, Sineta <Brown.Sineta@epa.gov>	Optional
Grevatt, Peter <Grevatt.Peter@epa.gov>	Optional
Tiago, Joseph <Tiago.Joseph@epa.gov>	Optional
Heinrich, Austin <Heinrich.Austin@epa.gov>	Optional
Santell, Stephanie <Santell.Stephanie@epa.gov>	Optional
Richardson, Matthew <Richardson.Matthew@epa.gov>	Optional
Gude, Karen <Gude.Karen@epa.gov>	Optional
Woods, Terry <Woods.Terry@epa.gov>	Optional
Gonder, Sharon <Gonder.Sharon@epa.gov>	Optional
Spraul, Greg <Spraul.Greg@epa.gov>	Optional
Flannery-Keith, Erin <Flannery-Keith.Erin@epa.gov>	Optional
Bonanno, Gale <Bonanno.Gale@epa.gov>	Optional
Mclain, Jennifer <Mclain.Jennifer@epa.gov>	Optional
Donahoe, Emily <donahoe.emily@epa.gov>	Optional
Keating, Jim <Keating.Jim@epa.gov>	Optional
Kitamura, Louise <Kitamura.Louise@epa.gov>	Optional

Moriarty, Edward <Moriarty.EdwardJ@epa.gov>	Optional
Robiou, Grace <Robiou.Grace@epa.gov>	Optional
Harrison, Shirley <Harrison.Shirley@epa.gov>	Optional
Liguori, Krista <liguori.krista@epa.gov>	Optional
Phan, Lan-Anh <phan.lan-anh@epa.gov>	Optional
Horne, James <Horne.James@epa.gov>	Optional
Singh, Gajindar <Singh.Gajindar@epa.gov>	Optional
Temple, Leslie <temple.leslie@epa.gov>	Optional
Ortiz, Agnes <Ortiz.Agnes@epa.gov>	Optional
Rodgers-Jenkins, Crystal <Rodgers-Jenkins.Crystal@epa.gov>	Optional
Upton, Jennifer <Upton.Jennifer@epa.gov>	Optional
Albert, Ryan <Albert.Ryan@epa.gov>	Optional
Jernberg, Jorianne <jernberg.jorianne@epa.gov>	Optional
Zipf, Lynn <Zipf.Lynn@epa.gov>	Optional
Fournier, Thais <fournier.thais@epa.gov>	Optional
Ziobro, Joseph <Ziobro.Joseph@epa.gov>	Optional
Evalenko, Sandy <Evalenko.Sandy@epa.gov>	Optional
Mason, Paula <Mason.Paula@epa.gov>	Optional
Barash, Shari <Barash.Shari@epa.gov>	Optional
Torrez, Alfredo <Torrez.Alfredo@epa.gov>	Optional
Rogers, Emily <rogers.emily@epa.gov>	Optional
Mushkolaj, Iliriana <Mushkolaj.Iliriana@epa.gov>	Optional

Lopez-Carbo, Maria <Lopez-Carbo.Maria@epa.gov>	Optional
McDonough, Owen <mcdonough.owen@epa.gov>	Optional
Brundage, Jennifer <Brundage.Jennifer@epa.gov>	Optional
Hurld, Kathy <Hurld.Kathy@epa.gov>	Optional
Chamberlain, Nick <Chamberlain.Nick@epa.gov>	Optional
Cooper, Tangela <Cooper.Tangela@epa.gov>	Optional
Vlcan, Manjali <Vlcan.Manjali@epa.gov>	Optional
Lousberg, Macara <Lousberg.Macara@epa.gov>	Optional
Damico, Brian <Damico.Brian@epa.gov>	Optional
Vazquez, Sharon <Vazquez.Sharon@epa.gov>	Optional
Zobrist, Marcus <Zobrist.Marcus@epa.gov>	Optional
Wilcut, Lars <Wilcut.Lars@epa.gov>	Optional
Foreman, Katherine <Foreman.Katherine@epa.gov>	Optional
Goss, Heather <Goss.Heather@epa.gov>	Optional
Bravo, Antonio <Bravo.Antonio@epa.gov>	Optional
Klos, Caroline <Klos.caroline@epa.gov>	Optional
Barr, Janine <barr.janine@epa.gov>	Optional
Pickrel, Jan <Pickrel.Jan@epa.gov>	Optional
Simons, Vicki <Simons.Vicki@epa.gov>	Optional
Stephan, Danielle <Stephan.Danielle@epa.gov>	Optional
Parris, Brenda <Parris.Brenda@epa.gov>	Optional
Cooper, Ruby <Cooper.Ruby@epa.gov>	Optional
Ellenbogen, Victoria <Ellenbogen.Victoria@epa.gov>	Optional

Crk, Tanja <Crk.Tanja@epa.gov>	Optional
Hedrick, Elizabeth <Hedrick.Elizabeth@epa.gov>	Optional
Allen, Vince <Allen.Vince@epa.gov>	Optional
Klinger, Adam <Klinger.Adam@epa.gov>	Optional
Gutierrez, Sally <Gutierrez.Sally@epa.gov>	Optional
Mix, Nelson <Mix.Nelson@epa.gov>	Optional
Magruder, DeMara <Magruder.Demara@epa.gov>	Optional
Veney, April <Veney.April@epa.gov>	Optional
Rana, Pravin <Rana.Pravin@epa.gov>	Optional
Nappier, Sharon <Nappier.Sharon@epa.gov>	Optional
Hoffman, Wendy <Hoffman.Wendy@epa.gov>	Optional
Simon, Roy <Simon.Roy@epa.gov>	Optional
Gorke, Roger <Gorke.Roger@epa.gov>	Optional
Solloway, Chris <Solloway.Chris@epa.gov>	Optional
Parker, Robin <Parker.Robin@epa.gov>	Optional
Stebe, Katherine <Stebe.Katherine@epa.gov>	Optional
Laabs, Chris <Laabs.Chris@epa.gov>	Optional
Phillips, Laura <Phillips.Laura@epa.gov>	Optional
Allen, Ashley <Allen.Ashley@epa.gov>	Optional
Johnson, Laura-S <Johnson.Laura-S@epa.gov>	Optional
Howard, Sherry <Howard.Sherry@epa.gov>	Optional
Piziali, Jamie <Piziali.Jamie@epa.gov>	Optional

Christ, Lisa <Christ.Lisa@epa.gov>	Optional
Lalley, Cara <Lalley.Cara@epa.gov>	Optional
Bissonette, Eric <Bissonette.Eric@epa.gov>	Optional
McDavit, Michael W. <Mcdavit.Michael@epa.gov>	Optional
Chandy, Danusha <Chandy.Danusha@epa.gov>	Optional
Baldwin, Andrew <baldwin.andrew@epa.gov>	Optional
Regli, Stig <Regli.Stig@epa.gov>	Optional
Wisniewski, Lauren <Wisniewski.Lauren@epa.gov>	Optional
Davis, Ifeyinwa <Davis.Ifeyinwa@epa.gov>	Optional
Stevens, Robert <Stevens.Robert@epa.gov>	Optional
Young, Dwane <Young.Dwane@epa.gov>	Optional
Bayer, MaryRose <Bayer.MaryRose@epa.gov>	Optional
Koo-Oshima, Sasha <Koo-Oshima.Sasha@epa.gov>	Optional
Gebhardt, Jim <Gebhardt.Jim@epa.gov>	Optional
Fort, Felecia <Fort.Felecia@epa.gov>	Optional
Bowman, Will <Bowman.Will@epa.gov>	Optional
Fisher, Bill <Fisher.William@epa.gov>	Optional
Santavy, Debbie <Santavy.Debbie@epa.gov>	Optional
Cicchetti, Giancarlo <Cicchetti.Giancarlo@epa.gov>	Optional
Norton, Sue <Norton.Susan@epa.gov>	Optional
Pelletier, Peg <Pelletier.Peg@epa.gov>	Optional
Jackson, Susank <Jackson.Susank@epa.gov>	Optional
Price, Myra <Price.Myra@epa.gov>	Optional

Frebis, Chris <Frebis.Chris@epa.gov>	Optional
Bowlin, Rashida <bowlin.rashida@epa.gov>	Optional
Tricas, Marisa <tricas.marisa@epa.gov>	Optional
Hisel-Mccoy, Sara <Hisel-McCoy.Sara@epa.gov>	Optional
Chausson, Juliette <chausson.juliette@epa.gov>	Optional
Glenn, Barbara <Glenn.Barbara@epa.gov>	Optional
Todd, Jason <Todd.Jason@epa.gov>	Optional
Monschein, Eric <Monschein.Eric@epa.gov>	Optional
Havard, James <Havard.James@epa.gov>	Optional
Shih, Melissa <Shih.Melissa@epa.gov>	Optional
Stein, Raffael <Stein.Raffael@epa.gov>	Optional
Gueriguian, Leo <Gueriguian.Leo@epa.gov>	Optional
Yusuf, Istanbul <Yusuf.Istanbul@epa.gov>	Optional
Baranowski, Curt <Baranowski.Curt@epa.gov>	Optional
Hafez, Ahmed <Hafez.Ahmed@epa.gov>	Optional
Conde, Rosaura <Conde.Rosaura@epa.gov>	Optional
Thorpe-Porter, Connie <thorpe-porter.connie@epa.gov>	Optional
Rhodes, CharlesR <Rhodes.CharlesR@epa.gov>	Optional
Martinez, Menchu <martinez.menchu-c@epa.gov>	Optional
DAnglada, Lesley <DAnglada.Lesley@epa.gov>	Optional
Delehanty, Robyn <Delehanty.Robyn@epa.gov>	Optional
Ohanian, Edward <Ohanian.Edward@epa.gov>	Optional

Martin, Cassandra <martin.cassandra@epa.gov>	Optional
Shriner, Paul <Shriner.Paul@epa.gov>	Optional
Khoury, Samar <Khoury.Samar@epa.gov>	Optional
Orvin, Chris <Orvin.Chris@epa.gov>	Optional
Johnson, CynthiaN <Johnson.CynthiaN@epa.gov>	Optional
Christensen, Damaris <Christensen.Damaris@epa.gov>	Optional
Pickard, Brian <Pickard.Brian@epa.gov>	Optional
Larimer, Lisa <Larimer.Lisa@epa.gov>	Optional
Porteous, Alex <porteous.alex@epa.gov>	Optional
Finn, Michael <Finn.Michael@epa.gov>	Optional
Reiley, Mary <Reiley.Mary@epa.gov>	Optional
Mapp, Latisha <Mapp.Latisha@epa.gov>	Optional
Keyton, Lori <Keyton.Lori@epa.gov>	Optional
Zulick, Cheryl <zulick.cheryl@epa.gov>	Optional
Highsmith, Damon <Highsmith.Damon@epa.gov>	Optional
Townsend, Clifton <Townsend.Clifton@epa.gov>	Optional
Ramsey, Jody <Ramsey.Jody@epa.gov>	Optional
Knoppow, Brianna <Knoppow.Brianna@epa.gov>	Optional
Burneson, Eric <Burneson.Eric@epa.gov>	Optional
Schaner, Greg <Schaner.Greg@epa.gov>	Optional
Wesson, Dolores <Wesson.Dolores@epa.gov>	Optional
Schollhamer, Mary <Schollhamer.Mary@epa.gov>	Optional
Chien-Hale, Miranda <chien-hale.miranda@epa.gov>	Optional

Felix-Salgado, Adriana <Felix-Salgado.Adriana@epa.gov>	Optional
Workman, Rosemary <Workman.Rosemary@epa.gov>	Optional
Nandi, Romell <Nandi.Romell@epa.gov>	Optional
Bass, Nikki <Bass.Nikki@epa.gov>	Optional
Walker, Lemuel <Walker.Lemuel@epa.gov>	Optional
Schaefer-Gomez, Julia <Schaefer-Gomez.Julia@epa.gov>	Optional
Concha, Javier <concha.javier@epa.gov>	Optional
Gastner, Kristen <Gastner.Kristen@epa.gov>	Optional
Alicea, Jezebele <Alicea.Jezebele@epa.gov>	Optional
Roland, Kevin <Roland.Kevin@epa.gov>	Optional
Harper, Ashley <harper.ashley@epa.gov>	Optional
Brennan, Ross <Brennan.Ross@epa.gov>	Optional
Donohue, Joyce <Donohue.Joyce@epa.gov>	Optional
Karapondo, Michella <Karapondo.Michella@epa.gov>	Optional
Corr, Elizabeth <Corr.Elizabeth@epa.gov>	Optional
Molloy, Jennifer <molloy.jennifer@epa.gov>	Optional
Cordero, Cesar <Cordero.Cesar@epa.gov>	Optional
Mayer, Lauren <mayer.lauren@epa.gov>	Optional
Chen, Jimmy <Chen.Jimmy@epa.gov>	Optional
Schnitker, Brian <Schnitker.Brian@epa.gov>	Optional
Gardner, Thomas <Gardner.Thomas@epa.gov>	Optional
Dewald, Tommy <Dewald.Tommy@epa.gov>	Optional

Lewicki, Chris <Lewicki.Chris@epa.gov>	Optional
Adler, Jacob <adler.jacob@epa.gov>	Optional
Sengco, Mario <Sengco.Mario@epa.gov>	Optional
Milam, Karen <Milam.Karen@epa.gov>	Optional
Lehmann, Sarah <Lehmann.Sarah@epa.gov>	Optional
Topping, Brian <Topping.Brian@epa.gov>	Optional
[redacted] Michael <[redacted]Michael@epa.gov>	Optional
Emerson, Vanessa <emerson.vanessa@epa.gov>	Optional
Tingley, Kevin <Tingley.Kevin@epa.gov>	Optional
Kochis, Daniel <Kochis.daniel@epa.gov>	Optional
Flanders, Phillip <Flanders.Phillip@epa.gov>	Optional
Hollerbach, Kevin <hollerbach.kevin@epa.gov>	Optional
Frace, Sheila <Frace.Sheila@epa.gov>	Optional
Goldberg, Michael <Goldberg.Michael@epa.gov>	Optional
Harrington, Rachel <harrington.rachel@epa.gov>	Optional
Nguyen, Dan-Tam <Nguyen.Dan-Tam@epa.gov>	Optional
Simic, Melissa <Simic.Melissa@epa.gov>	Optional
Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Optional
Dangel, Chrissy <Dangel.Chrissy@epa.gov>	Optional
Harris, Kendall <harris.kendall@epa.gov>	Optional
Thompkins, Anita <Thompkins.Anita@epa.gov>	Optional
Eignor, Diana <Eignor.Diana@epa.gov>	Optional
Valente, Betsy <Valente.Betsy@epa.gov>	Optional

Waters, Tom <Waters.Tom@epa.gov>	Optional
Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>	Optional
Leutner, Fred <Leutner.Fred@epa.gov>	Optional
Dyroff, Colin <dyroff.colin@epa.gov>	Optional
Edwards, Karen <Edwards.Karen@epa.gov>	Optional
Akhter, Shamima <Akhter.Shamima@epa.gov>	Optional
Gilliand, Sarah <gilliand.sarah@epa.gov>	Optional
Maier, Michelle <Maier.Michelle@epa.gov>	Optional
Hall, Lynda <Hall.Lynda@epa.gov>	Optional
Metchis, Karen <Metchis.Karen@epa.gov>	Optional
Fligger, Karen <Fligger.Karen@epa.gov>	Optional
Hanley, Adrian <Hanley.Adrian@epa.gov>	Optional
Messner, Michael <Messner.Michael@epa.gov>	Optional
Shanaghan, Peter <Shanaghan.Peter@epa.gov>	Optional
Ravenscroft, John <Ravenscroft.John@epa.gov>	Optional
Hogan, James <hogan.james@epa.gov>	Optional
Curtis, Cynthia <Curtis.Cynthia@epa.gov>	Optional
Nelson, Tomeka <Nelson.Tomeka@epa.gov>	Optional
Johnson, Tara <Johnson.Tara@epa.gov>	Optional
Miller, Tracey <Miller.Tracey@epa.gov>	Optional
Long, Mike <Long.Mike@epa.gov>	Optional
Goodin, John <Goodin.John@epa.gov>	Optional

Larsen, Erika <Larsen.Erika@epa.gov>	Optional
Billah, Mohammed <Billah.Mohammed@epa.gov>	Optional
Duncan, Julius <Duncan.Julius@epa.gov>	Optional
Malloy, Daniel <Malloy.Daniel@epa.gov>	Optional
Kazior, Kathryn <Kazior.Kathryn@epa.gov>	Optional
Morris, Renee <Morris.Renee@epa.gov>	Optional
Wathen, John <Wathen.John@epa.gov>	Optional
King, RyanM <King.RyanM@epa.gov>	Optional
Fleisig, Erica <Fleisig.Erica@epa.gov>	Optional
Warren, Nicholas <Warren.Nicholas@epa.gov>	Optional
Schwartz, Sara <schwartz.sara@epa.gov>	Optional
Keith, Elinor <Keith.Elinor@epa.gov>	Optional
Kutschenreuter, Kathleen <Kutschenreuter.Kathleen@epa.gov>	Optional
Anderer, Kirsten <Anderer.Kirsten@epa.gov>	Optional
McLaughlin, Julianne <McLaughlin.Julianne@epa.gov>	Optional
Greene, Ashley <Greene.Ashley@epa.gov>	Optional
Atkinson, Dwight <Atkinson.Dwight@epa.gov>	Optional
Viveiros, Edward <Viveiros.Edward@epa.gov>	Optional
Kaiser, Russell <Kaiser.Russell@epa.gov>	Optional
Siddiqui, Ahmar <Siddiqui.Ahmar@epa.gov>	Optional
Moulta-Ali, Abu <Moulta-Ali.Abu@epa.gov>	Optional
Benware, Richard <Benware.Richard@epa.gov>	Optional

Carroll, Gregory <Carroll.Gregory@epa.gov>	Optional
Washington, Evelyn <Washington.Evelyn@epa.gov>	Optional
Bone, Tracy <Bone.Tracy@epa.gov>	Optional
Connors, Sandra <Connors.Sandra@epa.gov>	Optional
Blette, Veronica <Blette.Veronica@epa.gov>	Optional
Crawford, Tiffany <Crawford.Tiffany@epa.gov>	Optional
Dean, Britt <dean.britt@epa.gov>	Optional
Mercado, Noemi <Mercado.Noemi@epa.gov>	Optional
Hewitt, Julie <Hewitt.Julie@epa.gov>	Optional
Howard, Roger <Howard.Roger@epa.gov>	Optional
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Optional
FertikEdgerton, Rachel <FertikEdgerton.Rachel@epa.gov>	Optional
Lape, Jeff <lape.jeff@epa.gov>	Optional
Depew, Simone <depew.simone@epa.gov>	Optional
Whitlock, Steve <Whitlock.Steve@epa.gov>	Optional
Platt, Sheila <Platt.Sheila@epa.gov>	Optional
Anderson, Danielle <Anderson.Danielle@epa.gov>	Optional
Rose, Bob <Rose.Bob@epa.gov>	Optional
Smith, Lameka <Smith.Lameka@epa.gov>	Optional
Rotert, Kenneth <Rotert.Kenneth@epa.gov>	Optional
Frazer, Brian <Frazer.Brian@epa.gov>	Optional
Bailey, Tanyan <Bailey.Tanyan@epa.gov>	Optional
Hunter, Christopher <Hunter.Christopher@epa.gov>	Optional

Lewis, Samantha <Lewis.Samantha@epa.gov>	Optional
Mourant, Alex <Mourant.Alex@epa.gov>	Optional
Maschal, Emma <maschal.emma@epa.gov>	Optional
Nagle, Deborah <Nagle.Deborah@epa.gov>	Optional
Drummond, Laura <Drummond.Laura@epa.gov>	Optional
Snowden, Belinda <snowden.belinda@epa.gov>	Optional
Naylor, Jack <naylor.jack@epa.gov>	Optional
Wilson, Scott <Wilson.Js@epa.gov>	Optional
WigginsLewis, Miriam <WigginsLewis.Miriam@epa.gov>	Optional
Howard, Christine <howard.christine@epa.gov>	Optional
Thawley, Michelle <Thawley.Michelle@epa.gov>	Optional
Forde, Kendra <Forde.Kendra@epa.gov>	Optional
Bains, Susanna <Bains.Susanna@epa.gov>	Optional
Miller, Gregory <Miller.Gregory@epa.gov>	Optional
Waye, Don <Waye.Don@epa.gov>	Optional
Russo, Gary <Russo.Gary@epa.gov>	Optional
Harris, Adrienne <Harris.Adrienne@epa.gov>	Optional
Healey, John <healey.john@epa.gov>	Optional
Linn, Jennifer <Linn.Jennifer@epa.gov>	Optional
Murphy, Erin <murphy.erin@epa.gov>	Optional
Faulk, Jack <Faulk.Jack@epa.gov>	Optional
McCurdy, Alaina <McCurdy.Alaina@epa.gov>	Optional

Aguirre, Janita <Aguirre.Janita@epa.gov>	Optional
Platten, William <Platten.William@epa.gov>	Optional
Faller, Heidi <Faller.Heidi@epa.gov>	Optional
Cooper, Tiffany <Cooper.Tiffany@epa.gov>	Optional
Kaufman, Galen <Kaufman.Galen@epa.gov>	Optional
Shattuck, Dallas <shattuck.dallas@epa.gov>	Optional
Connor, Timothy <Connor.Timothy@epa.gov>	Optional
Davis, CatherineM <Davis.CatherineM@epa.gov>	Optional
Moore, Kristie <Moore.Kristie@epa.gov>	Optional
Allen, Catherine <Allen.Catherine@epa.gov>	Optional
Farris, Erika D. <Farris.Erika@epa.gov>	Optional
Fontenelle, Samantha <Fontenelle.Samantha@epa.gov>	Optional
Gossel, Arndt <Gossel.Arndt@epa.gov>	Optional
Rosenblum, Zoe <Rosenblum.Zoe@epa.gov>	Optional
Gollan, Christopher <Gollan.Christopher@epa.gov>	Optional
Weiss, Kevin <Weiss.Kevin@epa.gov>	Optional
Livingston, Beth <Livingston.Beth@epa.gov>	Optional
Fries, Steve <Fries.Steve@epa.gov>	Optional
McRae, Evelyn <McRae.Evelyn@epa.gov>	Optional
Serenbetz, Gregg <Serenbetz.Gregg@epa.gov>	Optional
Aponte-Morales, Veronica <aponte-morales.veronica@epa.gov>	Optional
Halter, Emily <Halter.Emily@epa.gov>	Optional

Lopez-Alvarado, Melinda <Lopez-Alvarado.Melinda@epa.gov>	Optional
Jacobs, Brittany <jacobs.brittany@epa.gov>	Optional
Chemerys, Ruth <Chemerys.Ruth@epa.gov>	Optional
Behl, Betsy <Behl.Betsy@epa.gov>	Optional
Thomas, Dana <Thomas.Dana@epa.gov>	Optional
Kovatch, Charles <Kovatch.Charles@epa.gov>	Optional
Cruz, Luis <Cruz.Luis@epa.gov>	Optional
Porter, Brooke <Porter.Brooke@epa.gov>	Optional
Perez, Jesus <Perez.Jesus@epa.gov>	Optional
Covington, James <Covington.James@epa.gov>	Optional
Higgs, Michele <higgs.michele@epa.gov>	Optional
Grunzke, Danielle <grunzke.danielle@epa.gov>	Optional
Flaherty, Colleen <Flaherty.Colleen@epa.gov>	Optional
Corona, Joel <Corona.Joel@epa.gov>	Optional
Dreyfus, Melissa G. <Dreyfus.Melissa@epa.gov>	Optional
Subramanian, Hema <Subramanian.Hema@epa.gov>	Optional
Bradbury, Sarah <bradbury.sarah@epa.gov>	Optional
Russell, Sam <russell.sam@epa.gov>	Optional
Kloss, Christopher <Kloss.Christopher@epa.gov>	Optional
Kearney, Renee <Kearney.Renee@epa.gov>	Optional
Rubin, Howard E <Rubin.HowardE@epa.gov>	Optional
Ragnauth, Elizabeth <Ragnauth.Elizabeth@epa.gov>	Optional

Laurson, Nancy <Laurson.Nancy@epa.gov>	Optional
Fencil, Jeffrey <Fencil.Jeffrey@epa.gov>	Optional
Hill, Jenelle <Hill.Jenelle@epa.gov>	Optional
Souders, Alison <Souders.Alison@epa.gov>	Optional
Stapleton, Gregory <Stapleton.Gregory@epa.gov>	Required
Elias, Mike <Elias.Mike@epa.gov>	Optional
Voisin, Edward <Voisin.Edward@epa.gov>	Optional
Wang, Lili <Wang.Lili@epa.gov>	Optional
Jorge, Adam <Jorge.Adam@epa.gov>	Optional
Furio, Brooke <furio.brooke@epa.gov>	Optional
Griffiths, Charles <Griffiths.Charles@epa.gov>	Optional
Guignet, Dennis <Guignet.Dennis@epa.gov>	Optional
Heberling, Matthew <Heberling.Matt@epa.gov>	Optional
Hiscock, Michael <Hiscock.Michael@epa.gov>	Optional
Massey, Matt <Massey.Matt@epa.gov>	Optional
Mazzotta, Marisa <Mazzotta.Marisa@epa.gov>	Optional
Merrill, Nathaniel <Merrill.Nathaniel@epa.gov>	Optional
Moore, Chris <Moore.Chris@epa.gov>	Optional
Newbold, Steve <Newbold.Steve@epa.gov>	Optional
Page, Angela <Page.AngelaD@epa.gov>	Optional
Papenfus, Michael <Papenfus.Michael@epa.gov>	Optional
Pauer, James <Pauer.James@epa.gov>	Optional
Power, Lucinda <power.lucinda@epa.gov>	Optional

Price, James <price.james@epa.gov>	Optional
Rashleigh, Brenda <Rashleigh.Brenda@epa.gov>	Optional
Thurston, Hale <Thurston.Hale@epa.gov>	Optional
Wheeler, William <Wheeler.William@epa.gov>	Optional
David Simpson <rdsimpson3@live.com>	Optional
[redacted] <[redacted]>	Optional
Watts-Fitzgerald, Kelsey <Watts-Fitzgerald.Kelsey@epa.gov>	Optional
Hessenauer, Meghan <Hessenauer.Meghan@epa.gov>	Optional
Gallagher, Kathryn <Gallagher.Kathryn@epa.gov>	Optional
Bijak, Alexandra <bijak.alexandra@epa.gov>	Optional
Weiler, Katherine <Weiler.Katherine@epa.gov>	Optional
Soo-Hoo, Mimi <Soo-Hoo.Mimi@epa.gov>	Optional
Wadlington, Christina <Wadlington.Christina@epa.gov>	Optional
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Carey, Kyle <Carey.Kyle@epa.gov>	Optional
Letnes, Amelia <Letnes.Amelia@epa.gov>	Optional
Kwok, Rose <Kwok.Rose@epa.gov>	Optional
Wiitala, Megan <Wiitala.Megan@epa.gov>	Optional
Wooten, Terqueasha <wooten.terqueasha@epa.gov>	Optional
Somerville, Karen <Somerville.Karen@epa.gov>	Optional
Dyson, Nushat <Dyson.Nushat@epa.gov>	Optional
Cruz, Denny <Cruz.Denny@epa.gov>	Optional

Time 1:00 PM – 5:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Friday, April 27, 2018

Time All Day
Subject AC Compressed
Show Time As Free

Time 9:00 AM – 12:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 10:30 AM – 11:00 AM
Subject General with Mindy Eisenberg and John Goodin
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required

Time 1:00 PM – 5:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 2:00 PM – 3:00 PM
Subject Reading/Review
Show Time As Busy
Categories Blue Category

Monday, April 30, 2018

Time 3:30 PM – 4:00 PM
Subject Conference call with Craig Butler
Location Call [redacted]
Show Time As Busy

1 on 1 call with Craig Butler.

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer

	sherrie.thompson@epa.ohio.gov <sherrie.thompson@epa.ohio.gov>	Required
	craig.butler@epa.ohio.gov <craig.butler@epa.ohio.gov>	Required

Tuesday, May 01, 2018

Time 1:00 PM – 5:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 3:00 PM – 4:00 PM
Subject Reading/Review
Show Time As Busy
Categories Blue Category

Wednesday, May 02, 2018

Time 9:00 AM – 12:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 12:00 PM – 1:00 PM
Subject Lunch
Show Time As Busy
Categories Orange Category

Time 1:00 PM – 1:40 PM
Subject PARS ***DO NOT MOVE**
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Required
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required

Time 1:30 PM – 2:30 PM
Subject Reading/Review
Show Time As Busy
Categories Blue Category

Time 4:30 PM – 5:00 PM
Subject General with Peter Grevatt
Location 3219A WJCE
Show Time As Busy

Attendees	**Name <E-mail>**	**Attendance**
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Grevatt, Peter <Grevatt.Peter@epa.gov>	Required

Thursday, May 03, 2018

Time 9:00 AM – 9:30 AM
Subject Reading/Review
Show Time As Busy
Categories Blue Category

Time 9:30 AM – 9:45 AM
Subject General with Caroline Wahlen
Location 3219A WJCE
Show Time As Busy
WPS- intern Last day of internship is 5/4/2018

Attendees	**Name <E-mail>**	**Attendance**
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Wahlen, Caroline <wahlen.caroline@epa.gov>	Required

Time 12:00 PM – 1:00 PM
Subject Lunch
Show Time As Busy
Categories Orange Category

Time 1:00 PM – 5:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 3:45 PM – 4:00 PM
Subject Chesapeake Bay Commission
Location 1153 WJCE
Show Time As Busy

Time 4:00 PM – 4:45 PM
Subject FW: Meeting with Hunton & Williams
Location Matt's office
Show Time As Busy

From: Leopold, Matt

Sent: Wednesday, May 2, 2018 1:23:34 PM UTC
To: Leopold, Matt; Fotouhi, David
Subject: Meeting with Hunton & Williams
When: Thursday, May 3, 2018 8:00 PM-8:45 PM.
Where: Matt's office

Kristy Bulleit

Categories Red Category

Attendees

Name <E-mail>	Attendance
Leopold, Matt <Leopold.Matt@epa.gov>	Organizer
Fotouhi, David <Fotouhi.David@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Optional

Friday, May 04, 2018

Time 9:00 AM – 12:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 9:30 AM – 10:00 AM
Subject General with Mindy Eisenberg and John Goodin
Location 3219A WJCE
Show Time As Busy

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required

Time 11:00 AM – 12:30 PM
Subject FW: Reminder: Please RSVP - EPA Deputy Administrator's Ceremonial Swearing-In
Location Green Room
Show Time As Busy

-----Original Appointment-----
From: Burton, Tamika On Behalf Of Wheeler, Andrew
Sent: Friday, April 20, 2018 1:43 PM
To: Wheeler, Andrew; [redacted] <mailto[redacted]; [redacted] <mailto[redacted]; Vmcwhorter@smithpachter.com <mailto:Vmcwhorter@smithpachter.com> ; lauren [redacted] <mailto:lauren[redacted]; [redacted] <mailto[redacted]; [redacted]

<mailto[redacted] ; Dave.Zook@faegrebd.com
<mailto:Dave.Zook@faegrebd.com> ; Mary.Bono@faegrebd.com
<mailto:Mary.Bono@faegrebd.com> ; Josh.Andrews@faegrebd.com
<mailto:Josh.Andrews@faegrebd.com> ; Darrin.Munoz@faegrebd.com
<mailto:Darrin.Munoz@faegrebd.com> ;
Brandon.Kirkham@faegrebd.com
<mailto:Brandon.Kirkham@faegrebd.com> ; Ted.Bristol@faegrebd.com
<mailto:Ted.Bristol@faegrebd.com> ; Frank.Swain@faegrebd.com
<mailto:Frank.Swain@faegrebd.com> ; Debra.Lappin@faegrebd.com
<mailto:Debra.Lappin@faegrebd.com> ; David.Gogol@faegrebd.com
<mailto:David.Gogol@faegrebd.com> ; Skip.Stitt@faegrebd.com
<mailto:Skip.Stitt@faegrebd.com> ; Michael.Adelberg@faegrebd.com
<mailto:Michael.Adelberg@faegrebd.com> ; Libby.Baney@faegrebd.com
<mailto:Libby.Baney@faegrebd.com> ; Kevin.Brennan@faegrebd.com
<mailto:Kevin.Brennan@faegrebd.com> ; Hope.Costa@faegrebd.com
<mailto:Hope.Costa@faegrebd.com> ; Beena.Patel@faegrebd.com
<mailto:Beena.Patel@faegrebd.com> ; Nicholas.Manetto@faegrebd.com
<mailto:Nicholas.Manetto@faegrebd.com> ; saaron@mercuryllc.com
<mailto:saaron@mercuryllc.com> ;[redacted]
<mailto[redacted] ; Angie.Giancarlo@mail.house.gov
<mailto:Angie.Giancarlo@mail.house.gov> ;
Annie_Caputo@epw.senate.gov
<mailto:Annie_Caputo@epw.senate.gov> ;
[redacted]
<mailto[redacted] ;
brian.c.mormino@Cummins.com
<mailto:brian.c.mormino@Cummins.com> ;[redacted]
<mailto[redacted] ; Dan.Barron@arlp.com
<mailto:Dan.Barron@arlp.com> ; Elizabeth.Fox@mail.house.gov
<mailto:Elizabeth.Fox@mail.house.gov> ; frank.r[redacted]
<mailto:frank.r[redacted] ;[redacted]
<mailto[redacted] ;[redacted]
<mailto[redacted] ; james@okeeffestrategies.com
<mailto:james@okeeffestrategies.com> ;[redacted]
<mailto[redacted] ;
MaryAnne.Dunlap@sanofipasteur.com
<mailto:MaryAnne.Dunlap@sanofipasteur.com> ; mhite@GPAglobal.org
<mailto:mhite@GPAglobal.org> ; Ference@S-3Group.com
<mailto:Ference@S-3Group.com> ; MNellenbach@bipartisanpolicy.org
<mailto:MNellenbach@bipartisanpolicy.org> ;
Nathan.Richmond@oig.dot.gov <mailto:Nathan.Richmond@oig.dot.gov>
; Neil.Naraine@ipaper.com <mailto:Neil.Naraine@ipaper.com> ;
[redacted] <mailto[redacted] ;
louis.renjel@duke-energy.com <mailto:louis.renjel@duke-energy.com> ;
sdhigley@marathonpetroleum.com
<mailto:sdhigley@marathonpetroleum.com> ;
[redacted] <mailto[redacted] ;
[redacted] <mailto[redacted] ;
dimitri.karakitsos@hklaw.com <mailto:dimitri.karakitsos@hklaw.com> ;
blu.hulsey@clr.com <mailto:blu.hulsey@clr.com> ;

Anna.Burhop@bracewell.com <mailto:Anna.Burhop@bracewell.com> ;
rick@cypressgroupdc.com <mailto:rick@cypressgroupdc.com> ;
[redacted] <mailto [redacted] ; Hanley,
Mary; Sherlock, Scott; Orr.kimberlie@Epa.gov
<mailto:Orr.kimberlie@Epa.gov> ; McLean, Sarsah; Huddleston, Don;
Anapolle, Kent; Cheatham, Tony; Funke.odelia@Epa.gov
<mailto:Funke.odelia@Epa.gov> ; Roepe, Wayne; Godwin, Dave;
mary_frances_repko@epw.senate.gov
<mailto:mary_frances_repko@epw.senate.gov> ;
Mary.Martin@mail.house.gov <mailto:Mary.Martin@mail.house.gov> ;
Rick.Kessler@mail.house.gov <mailto:Rick.Kessler@mail.house.gov> ;
Luke_Holland@inhofe.senate.gov
<mailto:Luke_Holland@inhofe.senate.gov> ;
Wendi_Price@inhofe.senate.gov
<mailto:Wendi_Price@inhofe.senate.gov> ;
richard_russell@epw.senate.gov
<mailto:richard_russell@epw.senate.gov> ;
Brian_Clifford@epw.senate.gov
<mailto:Brian_Clifford@epw.senate.gov> ;
Justin_Memmott@epw.senate.gov
<mailto:Justin_Memmott@epw.senate.gov> ; Ford, Hayley; Jenkins,
Donna; Vance, Eric; adaccurzio@neuropace.com
<mailto:adaccurzio@neuropace.com>
Cc: Block, Molly; Jackson, Ryan; Bolen, Brittany; Fotouhi, David; Ringel,
Aaron; Abboud, Michael; Bowman, Liz; Baptist, Erik; Beach, Christopher;
Beck, Nancy; Bennett, Tate; Bodine, Susan; Bolen, Derrick; Brown, Byron;
Burke, Marcella; Chancellor, Erin; Cook, Steven; Cory, Preston
(Katherine); Daniell, Kelsi; Darwin, Henry; Darwin, Veronica; Dominguez,
Alexander; Falvo, Nicholas; Feeley, Drew (Robert); Ferguson, Lincoln;
Forsgren, Lee; Frye, Tony (Robert); Gordon, Stephen; Greaves, Holly;
Greenwalt, Sarah; Gunasekara, Mandy; Hanson, Paige (Catherine);
Harlow, David; Hewitt, James; Hupp, Millan; Kelly, Albert; Konkus, John;
Kundinger, Kelly; Leopold, Matt; Letendre, Daisy; Lovell, Will (William);
Lyons, Troy; McMurray, Forrest; Munoz, Charles; Palich, Christian;
Rodrick, Christian; Ross, David P; Schwab, Justin; Seabaugh, Catherine;
Shimmin, Kaitlyn; Traylor, Patrick; Wagner, Kenneth; Wehrum, Bill;
White, Elizabeth; Wilcox, Jahan; Woods, Clint; Yamada, Richard (Yujiro);
[redacted] <mailto [redacted] ;
MaryAnne.Dunlap@sanofi.com <mailto:MaryAnne.Dunlap@sanofi.com>
; Michele Nellenbach; Andrews, Joshua L.; Matthew Hite
Subject: Reminder: Please RSVP - EPA Deputy Administrator's Ceremonial
Swearing-In
When: Friday, May 04, 2018 11:00 AM-12:30 PM (UTC-05:00) Eastern
Time (US & Canada).
Where: Green Room

EPA Guests and Colleagues,

You are invited to join for Andrew Wheeler's ceremonial swearing-in as Deputy Administrator. The swearing-in will take place Friday, May 4, 2018 at 11:00 am in the Green Room. Some light refreshments will follow.

In order to ensure access to the Green Room and an accurate head count, please RSVP by replying to this invitation by COB, Monday, April, 30.

Guests – please arrive 20mins before the ceremony to: 1200 Pennsylvania Avenue Northwest Washington DC 20460 – You will enter the William Jefferson Clinton North(WJC) building. You will check in and go through the security screening, please present your ID to the security officer and they will notify your guide of your arrival and we will escort you to the ceremonial suite.

Categories Red Category

Attendees

Name <E-mail>	**Attendance**
Wheeler, Andrew <wheeler.andrew@epa.gov>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
[redacted]	Required
[redacted]	Required
Vmcwhorter@smithpachter.com <Vmcwhorter@smithpachter.com>	Required
lauren[redacted] <lauren[redacted]	Required
[redacted]	Required
[redacted]	Required
Dave.Zook@faegrebd.com <Dave.Zook@faegrebd.com>	Required
Mary.Bono@faegrebd.com <Mary.Bono@faegrebd.com>	Required
Josh.Andrews@faegrebd.com <Josh.Andrews@faegrebd.com>	Required
Darrin.Munoz@faegrebd.com	Required

<Darrin.Munoz@faegrebd.com>

Brandon.Kirkham@faegrebd.com Required
<Brandon.Kirkham@faegrebd.com>

Ted.Bristol@faegrebd.com <Ted.Bristol@faegrebd.com> Required

Frank.Swain@faegrebd.com Required
<Frank.Swain@faegrebd.com>

Debra.Lappin@faegrebd.com Required
<Debra.Lappin@faegrebd.com>

David.Gogol@faegrebd.com Required
<David.Gogol@faegrebd.com>

Skip.Stitt@faegrebd.com <Skip.Stitt@faegrebd.com> Required

Michael.Adelberg@faegrebd.com Required
<Michael.Adelberg@faegrebd.com>

Libby.Baney@faegrebd.com <Libby.Baney@faegrebd.com> Required

Kevin.Brennan@faegrebd.com Required
<Kevin.Brennan@faegrebd.com>

Hope.Costa@faegrebd.com <Hope.Costa@faegrebd.com> Required

Beena.Patel@faegrebd.com <Beena.Patel@faegrebd.com> Required

Nicholas.Manetto@faegrebd.com Required
<Nicholas.Manetto@faegrebd.com>

saaron@mercuryllc.com <saaron@mercuryllc.com> Required

[redacted] Required

Angie.Giancarlo@mail.house.gov Required
<Angie.Giancarlo@mail.house.gov>

Annie_Caputo@epw.senate.gov Required
<Annie_Caputo@epw.senate.gov>

[redacted] Required

brian.c.mormino@Cummins.com <brian.c.mormino@Cummins.com>	Required
[redacted]	Required
Dan.Barron@arlp.com <Dan.Barron@arlp.com>	Required
Elizabeth.Fox@mail.house.gov <Elizabeth.Fox@mail.house.gov>	Required
frank.r[redacted] <frank.r[redacted]	Required
[redacted]	Required
[redacted]	Required
james@okeeffestrategies.com <james@okeeffestrategies.com>	Required
[redacted]	Required
MaryAnne.Dunlap@sanofipasteur.com <MaryAnne.Dunlap@sanofipasteur.com>	Required
mhite@GPAglobal.org <mhite@GPAglobal.org>	Required
Ference@S-3Group.com <Ference@S-3Group.com>	Required
MNellenbach@bipartisanpolicy.org <MNellenbach@bipartisanpolicy.org>	Required
Nathan.Richmond@oig.dot.gov <Nathan.Richmond@oig.dot.gov>	Required
Neil.Naraine@ipaper.com <Neil.Naraine@ipaper.com>	Required
[redacted]	Required
louis.renjel@duke-energy.com <louis.renjel@duke-energy.com>	Required
sdhigley@marathonpetroleum.com <sdhigley@marathonpetroleum.com>	Required
[redacted]	Required

[redacted] <[redacted]	Required
dimitri.karakitsos@hklaw.com <dimitri.karakitsos@hklaw.com>	Required
blu.hulsey@clr.com <blu.hulsey@clr.com>	Required
Anna.Burhop@bracewell.com <Anna.Burhop@bracewell.com>	Required
rick@cypressgroupdc.com <rick@cypressgroupdc.com>	Required
[redacted] <[redacted]	Required
Hanley, Mary <Hanley.Mary@epa.gov>	Required
Sherlock, Scott <Sherlock.Scott@epa.gov>	Required
Orr.kimberlie@Epa.gov <Orr.kimberlie@Epa.gov>	Required
McLean, Sarsah <McLean.Sarsah@epa.gov>	Required
Huddleston, Don <Huddleston.Don@epa.gov>	Required
Anapolle, Kent <Anapolle.Kent@epa.gov>	Required
Cheatham, Tony <Cheatham.Tony@epa.gov>	Required
Funke.odelia@Epa.gov <Funke.odelia@Epa.gov>	Required
Roepe, Wayne <Roepe.Wayne@epa.gov>	Required
Godwin, Dave <Godwin.Dave@epa.gov>	Required
mary_frances_repko@epw.senate.gov <mary_frances_repko@epw.senate.gov>	Required
Mary.Martin@mail.house.gov <Mary.Martin@mail.house.gov>	Required
Rick.Kessler@mail.house.gov <Rick.Kessler@mail.house.gov>	Required
Luke_Holland@inhofe.senate.gov <Luke_Holland@inhofe.senate.gov>	Required

Wendi_Price@inhofe.senate.gov <Wendi_Price@inhofe.senate.gov>	Required
richard_russell@epw.senate.gov <richard_russell@epw.senate.gov>	Required
Brian_Clifford@epw.senate.gov <Brian_Clifford@epw.senate.gov>	Required
Justin_Memmott@epw.senate.gov <Justin_Memmott@epw.senate.gov>	Required
Ford, Hayley <ford.hayley@epa.gov>	Required
Block, Molly <block.molly@epa.gov>	Optional
Jackson, Ryan <jackson.ryan@epa.gov>	Optional
Bolen, Brittany <bolen.brittany@epa.gov>	Optional
Fotouhi, David <fotouhi.david@epa.gov>	Optional
Ringel, Aaron <ringel.aaron@epa.gov>	Optional
Abboud, Michael <abboud.michael@epa.gov>	Optional
Bowman, Liz <Bowman.Liz@epa.gov>	Optional
Baptist, Erik <baptist.erik@epa.gov>	Optional
Beach, Christopher <beach.christopher@epa.gov>	Optional
Beck, Nancy <beck.nancy@epa.gov>	Optional
Bennett, Tate <Bennett.Tate@epa.gov>	Optional
Bodine, Susan <bodine.susan@epa.gov>	Optional
Bolen, Derrick <bolen.derrick@epa.gov>	Optional
Brown, Byron <brown.byron@epa.gov>	Optional
Burke, Marcella <burke.marcella@epa.gov>	Optional
Chancellor, Erin <chancellor.erin@epa.gov>	Optional

Cook, Steven <cook.steven@epa.gov>	Optional
Cory, Preston (Katherine) <Cory.Preston@epa.gov>	Optional
Daniell, Kelsi <daniell.kelsi@epa.gov>	Optional
Darwin, Henry <darwin.henry@epa.gov>	Optional
Darwin, Veronica <darwin.veronica@epa.gov>	Optional
Dominguez, Alexander <dominguez.alexander@epa.gov>	Optional
Falvo, Nicholas <falvo.nicholas@epa.gov>	Optional
Feeley, Drew (Robert) <Feeley.Drew@epa.gov>	Optional
Ferguson, Lincoln <ferguson.lincoln@epa.gov>	Optional
Forsgren, Lee <Forsgren.Lee@epa.gov>	Optional
Frye, Tony (Robert) <frye.robert@epa.gov>	Optional
Gordon, Stephen <gordon.stephen@epa.gov>	Optional
Greaves, Holly <greaves.holly@epa.gov>	Optional
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Optional
Gunasekara, Mandy <Gunasekara.Mandy@epa.gov>	Optional
Hanson, Paige (Catherine) <hanson.catherine@epa.gov>	Optional
Harlow, David <harlow.david@epa.gov>	Optional
Hewitt, James <hewitt.james@epa.gov>	Optional
Hupp, Millan <hupp.millan@epa.gov>	Optional
Kelly, Albert <kelly.albert@epa.gov>	Optional
Konkus, John <konkus.john@epa.gov>	Optional
Kundinger, Kelly <kundinger.kelly@epa.gov>	Optional
Leopold, Matt <Leopold.Matt@epa.gov>	Optional

Letendre, Daisy <letendre.daisy@epa.gov>	Optional
Lovell, Will (William) <lovell.william@epa.gov>	Optional
Lyons, Troy <lyons.troy@epa.gov>	Optional
McMurray, Forrest <mcmurray.forrest@epa.gov>	Optional
Munoz, Charles <munoz.charles@epa.gov>	Optional
Palich, Christian <palich.christian@epa.gov>	Optional
Rodrick, Christian <rodrick.christian@epa.gov>	Optional
Schwab, Justin <schwab.justin@epa.gov>	Optional
Seabaugh, Catherine <seabaugh.catherine@epa.gov>	Optional
Shimmin, Kaitlyn <shimmin.kaitlyn@epa.gov>	Optional
Traylor, Patrick <traylor.patrick@epa.gov>	Optional
Wagner, Kenneth <wagner.kenneth@epa.gov>	Optional
Wehrum, Bill <Wehrum.Bill@epa.gov>	Optional
White, Elizabeth <white.elizabeth@epa.gov>	Optional
Wilcox, Jahan <wilcox.jahan@epa.gov>	Optional
Woods, Clint <woods.Clint@epa.gov>	Optional
Yamada, Richard (Yujiro) <yamada.richard@epa.gov>	Optional
[redacted] <[redacted]>	Optional
MaryAnne.Dunlap@sanofi.com <MaryAnne.Dunlap@sanofi.com>	Optional
Michele Nellenbach <mnellenbach@bpcaction.org>	Optional
Andrews, Joshua L. <Joshua.Andrews@FaegreBD.com>	Optional
Jenkins, Donna <Jenkins.Donna@epa.gov>	Required

Vance, Eric <Vance.Eric@epa.gov>	Required
Matthew Hite <mhite@gpamidstream.org>	Optional
adaccurzio@neuropace.com <adaccurzio@neuropace.com>	Required

Time 12:30 PM – 1:00 PM
Subject Bill W - Lunch
Show Time As Busy
Categories Orange Category

Time 1:00 PM – 2:00 PM
Subject Reading/Review
Show Time As Busy
Categories Blue Category

Time 2:00 PM – 2:45 PM
Subject Direct Hydrological Connection Discussion w/EEI (Call in number: [redacted] Code: [redacted]
Location EPA Headquarters, 1200 Penn. Ave. NW, 4th Floor, Room 4045
Show Time As Busy
Room change
Categories Red Category
Attendees

Name <E-mail>	Attendance
Leopold, Matt <Leopold.Matt@epa.gov>	Organizer
'Bond, Alexander' <ABond@eei.org>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Fotouhi, David <Fotouhi.David@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Optional
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Optional
Wehling, Carrie <Wehling.Carrie@epa.gov>	Optional
Wendelowski, Karyn <wendelowski.karyn@epa.gov>	Optional
Maher, Lauren <Maher.Lauren@epa.gov>	Optional

Time 2:30 PM – 2:50 PM
Subject Briefing: OH 303(d) Update

Location Administrator's Office
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
[redacted] <[redacted]>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Fotouhi, David <Fotouhi.David@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required

Monday, May 07, 2018

Time 1:00 PM – 6:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Tuesday, May 08, 2018

Time 9:00 AM – 9:30 AM
Subject PARS w/ Lee
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

Time 10:30 AM – 11:00 AM
Subject General Discussion with David Ross
Location WJC-N 3412
Show Time As Busy
Discussion on WOTUS
Categories Red Category
Attendees

Name <E-mail>	Attendance
Wheeler, Andrew <wheeler.andrew@epa.gov>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required

Time 12:00 PM – 1:00 PM
Subject Lunch

Show Time As Busy
Categories Orange Category

Time 1:00 PM – 5:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 1:30 PM – 2:00 PM
Subject Draft PFAS Leadership Summit Messaging Meeting
Location WJC-N 3412
Show Time As Busy
Sct: Carly Carroll, [redacted]
Categories Red Category
Attendees

Name <E-mail>	Attendance
Wheeler, Andrew <wheeler.andrew@epa.gov>	Organizer
Jackson, Ryan <jackson.ryan@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Beck, Nancy <Beck.Nancy@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Wilcox, Jahan <wilcox.jahan@epa.gov>	Required
Ferguson, Lincoln <ferguson.lincoln@epa.gov>	Required
Lyons, Troy <lyons.troy@epa.gov>	Required
Bowman, Liz <Bowman.Liz@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required

Time 2:45 PM – 3:30 PM
Subject Reading/Review
Show Time As Busy
Categories Blue Category

Time 3:00 PM – 3:30 PM
Subject General with Mindy Eisenberg and John Goodin
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer

	Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
	Goodin, John <Goodin.John@epa.gov>	Required

Time 3:30 PM – 4:30 PM
Subject OW Briefing for the Deputy Administrator
Location 3233 WJCE (OW's Conference Room)
Show Time As Busy
Sct: Carly Carroll, [redacted]

Format and topics are at the AAs discretion but should include a high/senior level organization overview (about organization, priorities/major efforts, major concerns/issues, etc).

Categories Red Category

Attendees

Name <E-mail>	Attendance
Wheeler, Andrew <wheeler.andrew@epa.gov>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Mclain, Jennifer <Mclain.Jennifer@epa.gov>	Required
Nagle, Deborah <Nagle.Deborah@epa.gov>	Required
Lape, Jeff <lape.jeff@epa.gov>	Required
Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
Frace, Sheila <Frace.Sheila@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Connors, Sandra <Connors.Sandra@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
McDonough, Owen <mcdonough.owen@epa.gov>	Required
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required

Fontaine, Tim <Fontaine.Tim@epa.gov>	Required
Gonder, Sharon <Gonder.Sharon@epa.gov>	Required
WigginsLewis, Miriam <WigginsLewis.Miriam@epa.gov>	Required
Lousberg, Macara <Lousberg.Macara@epa.gov>	Required
Spraul, Greg <Spraul.Greg@epa.gov>	Required
Ruf, Christine <Ruf.Christine@epa.gov>	Required
Torrez, Alfredo <Torrez.Alfredo@epa.gov>	Required
Stevens, Robert <Stevens.Robert@epa.gov>	Required
Johnson, Laura-S <Johnson.Laura-S@epa.gov>	Required
Fonseca, Silvina <Fonseca.Silvina@epa.gov>	Required

Wednesday, May 09, 2018

Time 9:00 AM – 12:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 9:30 AM – 10:00 AM
Subject FL Assumption
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Frazer, Brian <Frazer.Brian@epa.gov>	Required
Hurld, Kathy <Hurld.Kathy@epa.gov>	Required
McDavit, Michael W. <Mcdavit.Michael@epa.gov>	Required

	Connors, Sandra <Connors.Sandra@epa.gov>	Optional
	Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Optional
	Penman, Crystal <Penman.Crystal@epa.gov>	Optional
	Carrie Wehling <Wehling.Carrie@epa.gov>	Optional
	Kupchan, Simma <Kupchan.Simma@epa.gov>	Optional

Time 12:00 PM – 1:00 PM
Subject Lunch
Show Time As Busy
Categories Orange Category

Time 2:15 PM – 2:30 PM
Subject Check in w/ Alexandra Dunn
Location 3219A Wjce
Show Time As Busy

Attendees	**Name <E-mail>**	**Attendance**
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Dunn, Alexandra <dunn.alexandra@epa.gov>	Required

Thursday, May 10, 2018

Time 1:00 PM – 5:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 3:45 PM – 4:30 PM
Subject Meeting with MBT (Millennial Bulk Terminal)
Location 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call [redacted] for escort
Show Time As Busy

Bill Chapman – CEO of MBT

Wendy Hutchison – VP Wendy Hutchison

Millennial bulk terminal

Categories Blue Category

Attendees	**Name <E-mail>**	**Attendance**
	Forsgren, Lee <Forsgren.Lee@epa.gov>	Organizer
	himmelstein@nes-dc.com <himmelstein@nes-dc.com>	Required

Downing, Donna <Downing.Donna@epa.gov>	Required
Frazer, Brian <Frazer.Brian@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Palich, Christian <palich.christian@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Optional
Fotouhi, David <fotouhi.david@epa.gov>	Required

Friday, May 11, 2018

Time All Day
Subject AC Compressed
Show Time As Free

Time 9:00 AM – 12:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 1:15 PM – 3:15 PM
Subject Leave for airport
Show Time As Busy
Categories Yellow Category

Time 2:30 PM – 3:15 PM
Subject Coast Guard Pre-brief (Call in number: [redacted] Code: [redacted]
Location 4045
Show Time As Tentative

Actual meeting with the Coast Guard has been scheduled on Wednesday, May 16.

Categories Red Category
Attendees

Name <E-mail>	Attendance
Leopold, Matt <Leopold.Matt@epa.gov>	Organizer
Fotouhi, David <Fotouhi.David@epa.gov>	Required
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Required
Wehling, Carrie <Wehling.Carrie@epa.gov>	Required

Stern, Allyn <Stern.Allyn@epa.gov>	Required
Messier, Dawn <Messier.Dawn@epa.gov>	Required
Frazer, Brian <Frazer.Brian@epa.gov>	Optional
Weiler, Katherine <Weiler.Katherine@epa.gov>	Optional
Robiou, Grace <Robiou.Grace@epa.gov>	Optional
Murchie, Peter <Murchie.Peter@epa.gov>	Optional
Gockel, Catherine <Gockel.Catherine@epa.gov>	Optional
Opalski, Dan <Opalski.Dan@epa.gov>	Optional
Ross, David P <ross.davidp@epa.gov>	Optional
Forsgren, Lee <Forsgren.Lee@epa.gov>	Optional
Hladick, Christopher <hladick.christopher@epa.gov>	Optional
Pirzadeh, Michelle <Pirzadeh.Michelle@epa.gov>	Optional
Sweeney, Stephen <Sweeney.Stephen@epa.gov>	Optional
Watts-Fitzgerald, Kelsey <Watts-Fitzgerald.Kelsey@epa.gov>	Optional

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Time 3:15 PM – 4:35 PM

Subject Delta 6117 departs DCA @ 3:15pm arrives MSN @ 4:35pm

Show Time As Busy

From: "Delta Air Lines" <DeltaAirLines@e.delta.com <mailto:DeltaAirLines@e.delta.com> >
Date: April 30, 2018 at 5:17:59 PM EDT
To: [redacted] <mailto [redacted]
Subject: Your Flight Receipt - DAVID PATRICK ROSS 11MAY18
Reply-To: "Delta Air Lines" <support-b2pbgjxbfpayqkauzqx8kqqw4286bq@e.delta.com <mailto:support-b2pbgjxbfpayqkauzqx8kqqw4286bq@e.delta.com> >
<http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8LP6IM4/column.gif>
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Hello, DAVID PATRICK
SkyMiles <http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8
LP6IM4/smnm>
® <http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8
LP6IM4/smnm>
#*******088 > <http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8
LP6IM4/smnm>

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Your Trip Confirmation #: H57AJX
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LP6IM4/confnum?ITINERARY.1.DL_REC_LOC=H57AJX&ITINE
RARY.1.PSNGR_INFO.1.FNAME=DAVID%20PATRICK&ITINERAR
Y.1.PSNGR_INFO.1.LNAME=ROSS>
<http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8
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INERARY.1.PSNGR_INFO.1.FNAME=DAVID%20PATRICK&ITINE
RARY.1.PSNGR_INFO.1.LNAME=ROSS>
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Fri, 11MAY
DEPART
ARRIVE
DELTA 6117*

Main Cabin (K)
WASHINGTON-REAGAN

3:15pm
MADISON, WI

4:35pm
Sun, 13MAY
DEPART
ARRIVE

DELTA 5998*

Main Cabin (K)
MADISON, WI

5:15pm
WASHINGTON-REAGAN

8:20pm

*Flight 6117 Operated by REPUBLIC AIRLINE DBA DELTA CONNECTION
*Flight 5998 Operated by REPUBLIC AIRLINE DBA DELTA CONNECTION

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Delta welcomes trained service animals, including psychiatric service and emotional support animals on our flights. Effective March 1, 2018 we are changing our requirements. For these requirements please go to: delta.com/animals
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RESTRICTED HAZARDOUS ITEMS
To ensure the safety of our customers and employees, Delta will no longer accept smart bags with non-removable lithium-ion batteries as carry-on or checked baggage on any Delta mainline or Connection flight. For more information, please visit our News Hub <http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8 LP6IM4/smartbags> .

Hoverboards or any lithium battery powered self-balancing personal transportation devices are also not permitted as both carry-on and checked baggage.

Spare batteries for other devices, fuel cells, and e-cigarettes are permitted in carry-on baggage only. If your carry-on bag contains these items and is gate checked, they must be removed and carried in the cabin. Further information and specific guidelines regarding restricted items can be found here <http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8 LP6IM4/hoverbrd> .

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<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
Passenger Info
NAME
DAVID PATRICK ROSS

SkyMiles #*******088

FLIGHT
SEAT

DELTA 6117
09C

DELTA 5998
15B

Visit delta.com <http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8 LP6IM4/dldotcom> or use the Fly Delta app <http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8 LP6IM4/dlapp> to view, select or change your seat.

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Flight Receipt
Ticket #: 0062323854432
<http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8LP6IM4/ticketno?ITINERARY.1.DL_REC_LOC=H57AJX&ITINERARY.1.PSNGR_INFO.1.FNAME=DAVID%20PATRICK&ITINERARY.1.PSNGR_INFO.1.LNAME=ROSS>

Place of Issue: Delta.com <http://Delta.com>

Ticket Issue Date: 30APR18

Ticket Expiration Date: 30APR19

METHOD OF PAYMENT
VI**********8863
$754.40 USD

CHARGES
Air Transportation Charges
Base Fare
$675.35 USD
Taxes, Fees and Charges
United States - September 11th Security Fee(Passenger Civil Aviation Security Service Fee) (AY)
$11.20 USD
United States - Transportation Tax (US)
$50.65 USD
United States - Passenger Facility Charge (XF)
$9.00 USD
United States - Flight Segment Tax (ZP)
$8.20 USD
TICKET AMOUNT
$754.40 USD

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Miscellaneous Service and Fees: RFIC: I
Document #: 0061506261184
Date of issue: 30APR18
This document expires: 01MAY19

MAIN CABIN PREFERRED SEAT
15.00 USD
TOTAL TAX

TOTAL
15.00 USD
Payment Method
VI**********8863
Routing
DCA-MSN

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The fees below are based on your original ticket purchase. If you qualify

for free or discounted checked baggage, this will be taken into account when you check in.
Fri 11 May 2018
DELTA: DCA <http://f.e.delta.com/i/5/2083323528/akqaarrow.png >
MSN
CARRY ON

FREE

FIRST

$25
USD
SECOND

$35
USD

Sun 13 May 2018
DELTA: MSN <http://f.e.delta.com/i/5/2083323528/akqaarrow.png >
DCA
CARRY ON

FREE

FIRST

$25
USD
SECOND

$35
USD

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Federal law forbids the carriage of hazardous materials aboard aircraft in your luggage or on your person. A violation can result in civil penalties. Examples include: Paints, aerosols, lighter fluid, fireworks, torch lighters, tear gases and compressed gas cartridges.

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<http://f.e.delta.com/i/5/2083323528/akqa_leaf.png > We have partnered with The Nature Conservancy to allow you to offset your carbon emissions from this trip. Go to delta.com/CO2 <http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8 LP6IM4/carbonoff#calc> to calculate your CO2 emissions and learn more about offsetting.

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• Our rights and limits of our liability for delay or failure to perform service <http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8 LP6IM4/delaysvc#INTLLMT> including schedule change, substitution of alternative air carriers or aircraft, and rerouting.
• Our policy on overbooking flights <http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8 LP6IM4/overbook#INTLLMT> , and your rights if we deny you boarding due to an oversold flight.

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LP6IM4/privacy> .

Categories Blue Category

Sunday, May 13, 2018

Time 5:15 PM – 8:20 PM

Subject Delta Flight 5998 departs MSN @ 5:15pm arrives DCA @ 8:20pm

Show Time As Busy

From: "Delta Air Lines" <DeltaAirLines@e.delta.com
<mailto:DeltaAirLines@e.delta.com> >
Date: April 30, 2018 at 5:17:59 PM EDT
To: [redacted] <mailto [redacted]
Subject: Your Flight Receipt - DAVID PATRICK ROSS 11MAY18
Reply-To: "Delta Air Lines" <support-
b2pbgjxbfpayqkauzqx8kqqw4286bq@e.delta.com <mailto:support-
b2pbgjxbfpayqkauzqx8kqqw4286bq@e.delta.com> >
<http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8
LP6IM4/column.gif>
<http://f.e.delta.com/i/5/2083323528/akqa_header_H 574x110.png>

<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
Hello, DAVID PATRICK
SkyMiles <http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8
LP6IM4/smnm>
® <http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8
LP6IM4/smnm>
#*******088 > <http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8
LP6IM4/smnm>

<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>

<http://f.e.delta.com/i/5/2083323528/akqa_body-gradient.png>

Your Trip Confirmation #: H57AJX
<http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8
LP6IM4/confnum?ITINERARY.1.DL_REC_LOC=H57AJX&ITINE
RARY.1.PSNGR_INFO.1.FNAME=DAVID%20PATRICK&ITINERAR
Y.1.PSNGR_INFO.1.LNAME=ROSS>
<http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8
LP6IM4/managetrip?ITINERARY.1.DL_REC_LOC=H57AJX&IT
INERARY.1.PSNGR_INFO.1.FNAME=DAVID%20PATRICK&ITINE
RARY.1.PSNGR_INFO.1.LNAME=ROSS>
<http://f.e.delta.com/i/5/2083323528/akqa_body-gradient.png>

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<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>

Fri, 11MAY
DEPART
ARRIVE
DELTA 6117*

Main Cabin (K)
WASHINGTON-REAGAN

3:15pm
MADISON, WI

4:35pm
Sun, 13MAY
DEPART
ARRIVE
DELTA 5998*

Main Cabin (K)
MADISON, WI

5:15pm
WASHINGTON-REAGAN

8:20pm

*Flight 6117 Operated by REPUBLIC AIRLINE DBA DELTA CONNECTION
*Flight 5998 Operated by REPUBLIC AIRLINE DBA DELTA CONNECTION

<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
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<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
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<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
NEW SERVICE & SUPPORT ANIMAL REQUIREMENTS
Delta welcomes trained service animals, including psychiatric service and emotional support animals on our flights. Effective March 1, 2018 we are changing our requirements. For these requirements please go to: delta.com/animals
<http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8 LP6IM4/dlanim> .

<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
AUTOMATIC CHECK-IN NOW AVAILABLE
We've added Automatic Check-In to the Fly Delta app to save you time and hassle. This means if you're traveling in the United States, Puerto Rico or the U.S Virgin Islands, we'll automatically check you in 24 hours prior to your scheduled departure. Just open the app and you'll be on your way. Don't have the app? Click here
<http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8 LP6IM4/downapp> to download. Learn more
<http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8 LP6IM4/learnchkin#app> about automatic check-in.

<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
RESTRICTED HAZARDOUS ITEMS
To ensure the safety of our customers and employees, Delta will no longer accept smart bags with non-removable lithium-ion batteries as carry-on or checked baggage on any Delta mainline or Connection flight. For more information, please visit our News Hub
<http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8 LP6IM4/smartbags> .

Hoverboards or any lithium battery powered self-balancing personal transportation devices are also not permitted as both carry-on and checked baggage.

Spare batteries for other devices, fuel cells, and e-cigarettes are permitted in carry-on baggage only. If your carry-on bag contains these items and is gate checked, they must be removed and carried in the cabin. Further information and specific guidelines regarding restricted

items can be found here
<http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8
LP6IM4/hoverbrd> .

<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
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<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
Passenger Info
NAME
DAVID PATRICK ROSS

SkyMiles #*******088

FLIGHT
SEAT

DELTA 6117
09C

DELTA 5998
15B

Visit delta.com <http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8
LP6IM4/dldotcom> or use the Fly Delta app
<http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8 LP6IM4/dlapp>
to view, select or change your seat.
If you purchased a Delta Comfort+™ seat or a Trip Extra, please visit My
Trips <http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8
LP6IM4/ticketno?ITINERARY.1.DL_REC_LOC=H57AJX&ITIN
ERARY.1.PSNGR_INFO.1.FNAME=DAVID%20PATRICK&ITINERA
RY.1.PSNGR_INFO.1.LNAME=ROSS> to access a receipt of your purchase.

Flight Receipt
Ticket #: 0062323854432
<http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8
LP6IM4/ticketno?ITINERARY.1.DL_REC_LOC=H57AJX&ITIN
ERARY.1.PSNGR_INFO.1.FNAME=DAVID%20PATRICK&ITINERA
RY.1.PSNGR_INFO.1.LNAME=ROSS>

Place of Issue: Delta.com <http://Delta.com>

Ticket Issue Date: 30APR18

Ticket Expiration Date: 30APR19

METHOD OF PAYMENT
VI**********8863
$754.40 USD

CHARGES
Air Transportation Charges
Base Fare
$675.35 USD
Taxes, Fees and Charges
United States - September 11th Security Fee(Passenger Civil Aviation Security Service Fee) (AY)
$11.20 USD
United States - Transportation Tax (US)
$50.65 USD
United States - Passenger Facility Charge (XF)
$9.00 USD
United States - Flight Segment Tax (ZP)
$8.20 USD
TICKET AMOUNT
$754.40 USD

NONREF/PENALTY APPLIES

This ticket is non-refundable unless the original ticket was issued at a fully refundable fare. Some fares may not allow changes. If allowed, any change to your itinerary may require payment of a change fee and increased fare. Failure to appear for any flight without notice to Delta will result in cancellation of your remaining reservation.

Note: When using certain vouchers to purchase tickets, remaining credits may not be refunded. Additional charges and/or credits may apply.

Fare Details: WAS DL MSN337.68KE0QA0MQ DL WAS337.67KE0QA0MQ USD675.35END ZP DCAMSN XF DCA4.5MSN4.5

<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
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<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>

Miscellaneous Service and Fees: RFIC: I
Document #: 0061506261184
Date of issue: 30APR18
This document expires: 01MAY19

MAIN CABIN PREFERRED SEAT
15.00 USD
TOTAL TAX

TOTAL
15.00 USD
Payment Method
VI**********8863
Routing
DCA-MSN

NON REFUNDABLE/NO CHANGES/NON TRANSFERABLE/NOT VALID FOR TRAVEL

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<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
Checked Bag Allowance

The fees below are based on your original ticket purchase. If you qualify for free or discounted checked baggage, this will be taken into account when you check in.
Fri 11 May 2018
DELTA: DCA <http://f.e.delta.com/i/5/2083323528/akqaarrow.png >
MSN
CARRY ON

FREE

FIRST

$25
USD
SECOND

$35
USD

Sun 13 May 2018
DELTA: MSN <http://f.e.delta.com/i/5/2083323528/akqaarrow.png >
DCA
CARRY ON

FREE

FIRST

$25
USD
SECOND

$35
USD

<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
<http://f.e.delta.com/i/5/2083323528/akqa_blank.gi f>
Transportation of Hazardous Materials
Federal law forbids the carriage of hazardous materials aboard aircraft in your luggage or on your person. A violation can result in civil penalties. Examples include: Paints, aerosols, lighter fluid, fireworks, torch lighters, tear gases and compressed gas cartridges.

There are special exceptions for small quantities (up to 70 ounces total). For further information visit delta.com Restricted Items <http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8 LP6IM4/restricted> Section.

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<http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8 LP6IM4/dlairbnb>
Book your Airbnb via deltaairbnb.com <http://deltaairbnb.com> and earn miles on all stays. Plus, new guests also get $25 toward first

qualifying booking. Terms Apply.
<http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8 LP6IM4/dlairbnb>

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<http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8 LP6IM4/airshop>
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<http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8 LP6IM4/airshop>

<http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8 LP6IM4/footer>

<http://f.e.delta.com/i/5/2083323528/akqa_leaf.png > We have partnered with The Nature Conservancy to allow you to offset your carbon emissions from this trip. Go to delta.com/CO2 <http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8 LP6IM4/carbonoff#calc> to calculate your CO2 emissions and learn more about offsetting.

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Delta One™/First/Business Class weight allowance reverts to 50 lbs for all checked bags beyond regular free allowance.

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<http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8LP6IM4/baggage> . Basic Cardmembers with a Gold, Platinum, or Reserve Delta SkyMiles Credit Card from American Express are eligible for the first bag fee waiver. More details on the program can be found at delta.com/firstbagfree <http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8LP6IM4/amex1stbag> .

A standard checked bag with Delta may be up to 50 lbs and 62 linear inches (per piece). Additional fees apply for oversize, overweight, and/or additional pieces of checked baggage. Please review Delta's baggage guidelines for details. Weight and size restrictions may vary when checking baggage on carriers other than Delta. Contact with the operating carrier for detailed checked baggage allowances. You must be checked in at the gate by the applicable check-in deadlines or your reservation may be cancelled. Please review Delta's check-in requirement guidelines for details. Check-in requirements vary by airline, so if your ticket includes travel on other airlines, please check with the operating carrier on your ticket.

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• Claim restrictions <http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8LP6IM4/claimrest#INTLLMT> including time periods within which you must file a claim or bring action against us.
• Our right to change terms <http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8LP6IM4/chngtrms#INTLLMT> of the contract.
• Check-in requirements <http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8LP6IM4/chckreq#INTLLMT> and other rules established when we may refuse carriage <http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8LP6IM4/carref#INTLLMT> .
• Our rights and limits of our liability for delay or failure to perform service <http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8LP6IM4/delaysvc#INTLLMT> including schedule change, substitution of

alternative air carriers or aircraft, and rerouting.
• Our policy on overbooking flights
<http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8
LP6IM4/overbook#INTLLMT> , and your rights if we deny you boarding due to an oversold flight.

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<http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8
LP6IM4/carrcond1#INTLLMT> on delta.com
<http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8
LP6IM4/dldotcmt> , or by requesting a copy from Delta.

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delta.com/emailprograms
<http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8
LP6IM4/emlprogram> or delta.com/notifications
<http://e.delta.com/a/hBa44$HB8LP6IB89PgrNxyP0D.B8
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LP6IM4/privacy> .

Categories Blue Category

Monday, May 14, 2018

Time All Day

Subject Elaine -OOO
Show Time As Free

Time 11:30 AM – 12:15 PM
Subject Briefing: PFAS
Location Administrator's Office
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
[redacted] <[redacted]>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required
Cook, Steven <cook.steven@epa.gov>	Required
Bolen, Brittany <bolen.brittany@epa.gov>	Required
Mclain, Jennifer <Mclain.Jennifer@epa.gov>	Optional

Time 1:00 PM – 2:00 PM
Subject Reading/Review
Show Time As Busy
Categories Blue Category

Time 1:00 PM – 5:30 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 2:00 PM – 3:00 PM
Subject Senior Staff Meeting
Location Alm Room
Show Time As Busy
NOTE: Due to space constraints, please contact Aaron Dickerson before forwarding or inviting additional meeting attendees.
Categories Red Category
Attendees

Name <E-mail>	Attendance
[redacted] <[redacted]>	Organizer
Baptist, Erik <baptist.erik@epa.gov>	Required

Beck, Nancy <beck.nancy@epa.gov>	Required
Benevento, Douglas <benevento.douglas@epa.gov>	Required
Benjamin-Sirmons, Denise <Benjamin-Sirmons.Denise@epa.gov>	Required
Bennett, Tate <Bennett.Tate@epa.gov>	Required
Bertrand, Charlotte <Bertrand.Charlotte@epa.gov>	Required
Bloom, David <Bloom.David@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required
Bolen, Brittany <bolen.brittany@epa.gov>	Required
Bowman, Liz <Bowman.Liz@epa.gov>	Required
Breen, Barry <Breen.Barry@epa.gov>	Required
Brown, Byron <brown.byron@epa.gov>	Required
Burke, Marcella <burke.marcella@epa.gov>	Required
Darwin, Henry <darwin.henry@epa.gov>	Required
Darwin, Veronica <darwin.veronica@epa.gov>	Required
Dravis, Samantha <dravis.samantha@epa.gov>	Required
Dunn, Alexandra <dunn.alexandra@epa.gov>	Required
Elkins, Arthur <Elkins.Arthur@epa.gov>	Required
Etzel, Ruth <Etzel.Ruth@epa.gov>	Required
Ferguson, Lincoln <ferguson.lincoln@epa.gov>	Required
Fine, Steven <fine.steven@epa.gov>	Required
Flynn, Mike <Flynn.Mike@epa.gov>	Required
Fonseca, Silvina <Fonseca.Silvina@epa.gov>	Required

Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Glenn, Trey <Glenn.Trey@epa.gov>	Required
Grantham, Nancy <Grantham.Nancy@epa.gov>	Required
Greaves, Holly <greaves.holly@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Gulliford, Jim <gulliford.jim@epa.gov>	Required
Gunasekara, Mandy <Gunasekara.Mandy@epa.gov>	Required
Hanson, Paige (Catherine) <hanson.catherine@epa.gov>	Required
Harlow, David <harlow.david@epa.gov>	Required
Hladick, Christopher <hladick.christopher@epa.gov>	Required
Hupp, Millan <hupp.millan@epa.gov>	Required
Idsal, Anne <idsal.anne@epa.gov>	Required
Jackson, Ryan <jackson.ryan@epa.gov>	Required
Kelly, Albert <kelly.albert@epa.gov>	Required
Lawrence, Tanya <Lawrence.Tanya@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Lopez, Peter <lopez.peter@epa.gov>	Required
Lyons, Troy <lyons.troy@epa.gov>	Required
Munoz, Charles <munoz.charles@epa.gov>	Required
Nishida, Jane <Nishida.Jane@epa.gov>	Required
Orme-Zavaleta, Jennifer <Orme-Zavaleta.Jennifer@epa.gov>	Required

Ross, David P <ross.davidp@epa.gov>	Required
Sands, Jeffrey <sands.jeffrey@epa.gov>	Required
Schwab, Justin <schwab.justin@epa.gov>	Required
Servidio, Cosmo <servidio.cosmo@epa.gov>	Required
Slotkin, Ron <slotkin.ron@epa.gov>	Required
Stepp, Cathy <stepp.cathy@epa.gov>	Required
Strauss, Alexis <Strauss.Alexis@epa.gov>	Required
Traylor, Patrick <traylor.patrick@epa.gov>	Required
Vizian, Donna <Vizian.Donna@epa.gov>	Required
Wagner, Kenneth <wagner.kenneth@epa.gov>	Required
Wehrum, Bill <Wehrum.Bill@epa.gov>	Required
White, Elizabeth <white.elizabeth@epa.gov>	Required
Wooden-Aguilar, Helena <Wooden-Aguilar.Helena@epa.gov>	Required
Woods, Clint <woods.Clint@epa.gov>	Required
Yamada, Richard (Yujiro) <yamada.richard@epa.gov>	Required
Zarba, Christopher <Zarba.Christopher@epa.gov>	Required
Dickerson, Aaron <dickerson.aaron@epa.gov>	Required
Ford, Hayley <ford.hayley@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Required

Time 3:45 PM – 4:15 PM
Subject Briefing: Idaho NPDES Delegation
Location Administrator's Office
Show Time As Busy
Categories Red Category

Attendees	Name <E-mail>	Attendance
	[redacted] <[redacted]>	Organizer
	Ross, David P <ross.davidp@epa.gov>	Required
	Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
	Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
	Hladick, Christopher <hladick.christopher@epa.gov>	Required
	Cory, Preston (Katherine) <Cory.Preston@epa.gov>	Required
	Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
	Fotouhi, David <Fotouhi.David@epa.gov>	Required
	Leopold, Matt <Leopold.Matt@epa.gov>	Required

Time 4:45 PM – 5:00 PM
Subject WIFIA Outreach
Location Room 3402 WJC North
Show Time As Busy
Categories Red Category

Attendees	Name <E-mail>	Attendance
	Jackson, Ryan <jackson.ryan@epa.gov>	Organizer
	Lyons, Troy <lyons.troy@epa.gov>	Required
	Cory, Preston (Katherine) <Cory.Preston@epa.gov>	Required
	Wagner, Kenneth <wagner.kenneth@epa.gov>	Required
	Gordon, Stephen <gordon.stephen@epa.gov>	Required
	Ross, David P <ross.davidp@epa.gov>	Required

Tuesday, May 15, 2018

Time 9:00 AM – 10:30 AM
Subject Water Associations Engagement Meeting
Location 1200 Pennsylvania Ave NW, Washington DC 20004 (South Lobby) ALM Room Please call [redacted] for escort
Show Time As Busy

Please check in no later 8:45am to allow ample time for Security Check in

processing.

Hello all,

I'm pleased to see that so many of you are able to attend the meeting next week. As you prepare for the meeting, I wanted to share a few discussion questions that we plan to cover. I look forward to meeting with you!

Sincerely,

Lee Forsgren

Discussion questions:

1. Affordability – What are the most important issues that need to change surrounding water infrastructure affordability? How would your sector characterize these issues?
2. Governance – What incentives are valuable for the water sector to consider in supporting less connected utilities in your watershed? (e.g. peer to peer assistance, regionalization?)
3. Financing – What are the biggest barriers for utilities when seeking financing through WIFIA and the SRFs? What information, tools, and/or resources can EPA provide to help address these?

Categories Blue Category

Attendees

Name <E-mail>	**Attendance**
Forsgren, Lee <Forsgren.Lee@epa.gov>	Organizer
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Stein, Raffael <Stein.Raffael@epa.gov>	Required

Thompkins, Anita <Thompkins.Anita@epa.gov>	Required
Gueriguian, Leo <Gueriguian.Leo@epa.gov>	Required
Brubaker, Sonia <Brubaker.Sonia@epa.gov>	Required
Abhold, Kristyn <abhold.kristyn@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Required
AKrantz@nacwa.org <AKrantz@nacwa.org>	Required
vandehei@amwa.net <vandehei@amwa.net>	Required
cternieden@wef.org <cternieden@wef.org>	Required
tmehan@awwa.org <tmehan@awwa.org>	Required
RFox@uswateralliance.org <RFox@uswateralliance.org>	Required
teich4@ejwatercoop.com <teich4@ejwatercoop.com>	Required
Matt@nrwa.org <Matt@nrwa.org>	Required
nohle@rcap.org <nohle@rcap.org>	Required
Julia Anastasio <janastasio@acwa-us.org>	Required
aroberson@asdwa.org <aroberson@asdwa.org>	Required
tstiger@rcap.org <tstiger@rcap.org>	Required
colleen@nawc.com <colleen@nawc.com>	Required
ngardner-andrews@nacwa.org <ngardner-andrews@nacwa.org>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Lieberman, Paige <Lieberman.Paige@epa.gov>	Optional
Tanner, Lee <Tanner.Lee@epa.gov>	Optional
Steve Dye <sdye@wef.org>	Optional

Ken Maynard <kmaynard@awwa.org>	Optional
Sam Wade <sam@nrwa.org>	Optional
Scott Berry <sberry@uswateralliance.org>	Optional
Bowles, Jack <Bowles.Jack@epa.gov>	Optional
Klasen, Matthew <Klasen.Matthew@epa.gov>	Optional
Mclain, Jennifer <Mclain.Jennifer@epa.gov>	Optional
Tim Williams <TWilliams@wef.org>	Optional
Thomas, John V. <Thomas.John@epa.gov>	Optional
Wilson, Clark <Wilson.Clark@epa.gov>	Optional
Chris Hornback <CHornback@nacwa.org>	Optional
Chaitovitz, Chuck <CChaitovitz@USChamber.com>	Optional

Time 10:45 AM – 11:30 AM
Subject Hearing Prep: OW
Location Administrator's Office
Show Time As Busy
Categories Red Category

Attendees	**Name <E-mail>**	**Attendance**
	[redacted] <[redacted]>	Organizer
	Ross, David P <ross.davidp@epa.gov>	Required
	Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
	Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
	Bolen, Brittany <bolen.brittany@epa.gov>	Required
	Leopold, Matt <Leopold.Matt@epa.gov>	Required
	Fotouhi, David <Fotouhi.David@epa.gov>	Required
	Lyons, Troy <lyons.troy@epa.gov>	Required
	Palich, Christian <palich.christian@epa.gov>	Required

	Jackson, Ryan <jackson.ryan@epa.gov>	Required
	Greaves, Holly <greaves.holly@epa.gov>	Required

Time 11:30 AM – 12:00 PM
Subject Reading/Review
Show Time As Busy
Categories Blue Category

Time 1:00 PM – 5:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 2:00 PM – 2:30 PM
Subject Staff Briefing
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

Wednesday, May 16, 2018

Time 9:00 AM – 12:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 12:00 PM – 1:00 PM
Subject Lunch
Show Time As Busy
Categories Orange Category

Time 2:00 PM – 2:15 PM
Subject Car confirmed
Show Time As Busy

Your transportation request has been confirmed.

Confirmation Number: 79178
Passenger Information
* Name: DAVID ROSS/AA
* Number: [redacted]
* Pickup Time: 2018-05-16 14:00:00.0
* Pickup Location: EPA EAST 1201 CONSTITUTION AVE

* Drop-Off Location: DEPT OF INTERIOR, 1849 C STREET, NW.WASHINGTON, DC
Vehicle Information
* Tag: [redacted]
* Vehicle Type: CAR
* Make : CHEVROLET
* Model : VOLT
* Color : BLACK

Categories Yellow Category

Time 2:15 PM – 3:00 PM

Subject Invitation: Water Cabinet Meeting @ Wed May 16, 2018 2:15pm - 3pm (EDT) (penman.crystal@epa.gov)

Location U.S. Department of the Interior, 1849 C St NW, WDC, ROOM 6641

Show Time As Busy

more details » <https://www.google.com/calendar/event?action=VIEW&eid=N3A3OGJwM21ndTEzcGxtdjNqazUyNWNyOHAgcGVubWFuLmNyeXN0YWxAZXBhLmdvdg&tok=MjcjbWljaGVsbGVfbWViYW5lQGlvcy5kb2kuZ292NGE4MTRiY2NiN2MzOWZmMzU4OThkNGZjNGM5NDNhMTIxM2RiZmU4NA&ctz=America%2FNew_York&hl=en& es=0>

Water Cabinet Meeting

When
Wed May 16, 2018 2:15pm – 3pm Eastern Time
Where
U.S. Department of the Interior, 1849 C St NW, WDC, ROOM 6641 (map <https://maps.google.com/maps?q=U.S.+Department+of+the+Interior,+1849+C+St+NW,+WDC,+ROOM+6641&hl=en>)
Video call
https://hangouts.google.com/hangouts/_/doi.gov/mic helle-mebane <https://hangouts.google.com/hangouts/_/doi.gov/mi chelle-mebane?hceid=bWljaGVsbGVfbWViYW5lQGlvcy5kb2kuZ292.7p78bp3mgu13plrnv3jk525cr8p>
Calendar
penman.crystal@epa.gov <mailto:penman.crystal@epa.gov>
Who

* michelle_mebane@ios.doi.gov <mailto:michelle_mebane@ios.doi.gov> - organizer
* amanda.finley@rma.usda.gov <mailto:amanda.finley@rma.usda.gov>
* pat.a.simms@noaa.gov <mailto:pat.a.simms@noaa.gov>
* timothy_petty@ios.doi.gov <mailto:timothy_petty@ios.doi.gov>
* penman.crystal@epa.gov <mailto:penman.crystal@epa.gov>
* regena.l.townsend-treleaven.civ@mail.mil <mailto:regena.l.townsend-

treleaven.civ@mail.mil>
•
kerry_rae@ios.doi.gov <mailto:kerry_rae@ios.doi.gov>
POC: Michelle Mebane, [redacted]
Going? Yes <https://www.google.com/calendar/event?action=RESP
OND&eid=N3A3OGJwM21ndTEzcGxtdjNqazUyNWNyOHAgcGVubW
FuLmNyeXN0YWxAZXBhLmdvdg&rst=1&tok=MjcjbWljaGVsbGV
fbWViYW5lQGlvcy5kb2kuZ292NGE4MTRiY2NiN2MzOWZmMzU4O
ThkNGZjNGM5NDNhMTIxM2RiZmU4NA&ctz=America%2FNew_Yo
rk&hl=en&es=0> - Maybe <https://www.google.com/calendar/event?
action=RESP
OND&eid=N3A3OGJwM21ndTEzcGxtdjNqazUyNWNyOHAgcGVubW
FuLmNyeXN0YWxAZXBhLmdvdg&rst=3&tok=MjcjbWljaGVsbGV
fbWViYW5lQGlvcy5kb2kuZ292NGE4MTRiY2NiN2MzOWZmMzU4O
ThkNGZjNGM5NDNhMTIxM2RiZmU4NA&ctz=America%2FNew_Yo
rk&hl=en&es=0> - No <https://www.google.com/calendar/event?
action=RESP
OND&eid=N3A3OGJwM21ndTEzcGxtdjNqazUyNWNyOHAgcGVubW
FuLmNyeXN0YWxAZXBhLmdvdg&rst=2&tok=MjcjbWljaGVsbGV
fbWViYW5lQGlvcy5kb2kuZ292NGE4MTRiY2NiN2MzOWZmMzU4O
ThkNGZjNGM5NDNhMTIxM2RiZmU4NA&ctz=America%2FNew_Yo
rk&hl=en&es=0> more options »
<https://www.google.com/calendar/event?action=VIEW
&eid=N3A3OGJwM21ndTEzcGxtdjNqazUyNWNyOHAgcGVubWFuL
mNyeXN0YWxAZXBhLmdvdg&tok=MjcjbWljaGVsbGVfbWViYW5l
QGlvcy5kb2kuZ292NGE4MTRiY2NiN2MzOWZmMzU4OThkNGZjNG
M5NDNhMTIxM2RiZmU4NA&ctz=America%2FNew_York&hl=en& es=0>
Invitation from Google Calendar <https://www.google.com/calendar/>
You are receiving this courtesy email at the account
penman.crystal@epa.gov <mailto:penman.crystal@epa.gov> because
you are an attendee of this event.
To stop receiving future updates for this event, decline this event.
Alternatively you can sign up for a Google account at
https://www.google.com/calendar/ and control your notification settings
for your entire calendar.
Forwarding this invitation could allow any recipient to modify your RSVP
response. Learn More
<https://support.google.com/calendar/answer/37135# forwarding> .
Dept of the Interior
1849 C Street NW
Room 6641
WDC 20240

There are 2 entrances, please enter on "E" Street, have security contact
our office @ [redacted] take the 1st bank of elevators to the 6th fl, follow
signs to Water & Science, then to conference room 6641.
Please feel free to call me if you have any questions and thanks again.

Michelle Mebane
Office of the Assistant Secretary

for Water & Science
Department of the Interior
[redacted]

Categories Blue Category

Attendees

Name <E-mail>	Attendance
michelle_mebane@ios.doi.gov <michelle_mebane@ios.doi.gov>	Organizer
amanda.finley@rma.usda.gov <amanda.finley@rma.usda.gov>	Required
pat.a.simms@noaa.gov <pat.a.simms@noaa.gov>	Required
ASWS Conference Room <doi.gov_g0h9id6n9pkmu25ilv77249hkg@group.calendar.google.com>	Required
timothy_petty@ios.doi.gov <timothy_petty@ios.doi.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Required
regena.l.townsend-treleaven.civ@mail.mil <regena.l.townsend-treleaven.civ@mail.mil>	Required
kerry_rae@ios.doi.gov <karen_rae@ios.doi.gov>	Required

Time 3:00 PM – 3:30 PM

Subject car confirmed

Show Time As Busy

Your transportation request has been confirmed.

Confirmation Number: 79179
Passenger Information
* Name: DAVID ROSS/AA
* Number: [redacted]
* Pickup Time: 2018-05-16 15:00:00.0
* Pickup Location: DEPT OF INTERIOR, 1849 C STREET, NW.WASHINGTON, DC
* Drop-Off Location: EPA EAST 1201 CONSTITUTION AVE
Vehicle Information
* Tag: [redacted]
* Vehicle Type: CAR
* Make : CHEVROLET
* Model : VOLT
* Color : BLACK

Categories Yellow Category

Time 5:45 PM – 6:15 PM

Subject General
Location Matt's office
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
Fotouhi, David <fotouhi.david@epa.gov>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required

Thursday, May 17, 2018

Time 1:00 PM – 5:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 5:00 PM – 5:30 PM
Subject WOTUS Rulemaking
Location 4000 WJCN
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
Leopold, Matt <Leopold.Matt@epa.gov>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Fotouhi, David <Fotouhi.David@epa.gov>	Required

Friday, May 18, 2018

Time All Day
Subject Crystal P - Telework
Show Time As Free

Time 9:00 AM – 9:45 AM
Subject Budget
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

	Fontaine, Tim <Fontaine.Tim@epa.gov>	Required

Time 9:00 AM – 12:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 11:00 AM – 11:30 AM
Subject NDMA discussion with HQ OW AA (9:00 MT // 11:00 ET)
Location Conf. Call [redacted] code [redacted] (R8 RA PIN) - Region 8 attendees in RA Office
Show Time As Busy

17 May 2018: Read-Ahead added. –SMK-E

Requested by Doug Benevento

Scheduled by Diane Moon [redacted]

Region 8 attendees please meet in the RA Office

This meeting is set for 9:00 MT // 11:00 ET

Attendees	**Name <E-mail>**	**Attendance**
	Benevento, Douglas <benevento.douglas@epa.gov>	Organizer
	Ross, David P <ross.davidp@epa.gov>	Required
	Thomas, Deb <thomas.debrah@epa.gov>	Required
	O'Connor, Darcy <oconnor.darcy@epa.gov>	Required
	Garcia, Bert <Garcia.Bert@epa.gov>	Required
	Bahrman, Sarah <Bahrman.Sarah@epa.gov>	Required
	Penman, Crystal <Penman.Crystal@epa.gov>	Optional

Time 4:15 PM – 5:00 PM
Subject Briefing: Proposed Lead-Based Paint Hazard Standards
Location Administrator's Office
Show Time As Busy
Categories Red Category

Attendees	**Name <E-mail>**	**Attendance**

[redacted] <[redacted]>	Organizer
Bolen, Brittany <bolen.brittany@epa.gov>	Required
Beck, Nancy <Beck.Nancy@epa.gov>	Required
Wehrum, Bill <Wehrum.Bill@epa.gov>	Required
Baptist, Erik <Baptist.Erik@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Cook, Steven <cook.steven@epa.gov>	Required
Traylor, Patrick <traylor.patrick@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Jackson, Ryan <jackson.ryan@epa.gov>	Required
Fotouhi, David <Fotouhi.David@epa.gov>	Required
Wheeler, Andrew <wheeler.andrew@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required

Monday, May 21, 2018

Time 9:45 AM – 10:30 AM
Subject Briefing: PFAS National Dialogue Meeting
Location Administrator's Office
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
[redacted] <[redacted]>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required
Beach, Christopher <beach.christopher@epa.gov>	Required

Konkus, John <konkus.john@epa.gov>	Required
Wilcox, Jahan <wilcox.jahan@epa.gov>	Required
Block, Molly <block.molly@epa.gov>	Required
Jackson, Ryan <jackson.ryan@epa.gov>	Required
Bolen, Brittany <bolen.brittany@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required
Ferguson, Lincoln <ferguson.lincoln@epa.gov>	Required
Cook, Steven <cook.steven@epa.gov>	Required
Wheeler, Andrew <wheeler.andrew@epa.gov>	Required
Mclain, Jennifer <Mclain.Jennifer@epa.gov>	Optional

Time 1:00 PM – 5:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 3:00 PM – 3:30 PM
Subject WOTUS Supplement/Call-in # [redacted] Code: [redacted]
Location 4000 WJCN
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Leopold, Matt <Leopold.Matt@epa.gov>	Organizer
Jeffrey.Wood@usdoj.gov <Jeffrey.Wood@usdoj.gov>	Required
Brightbill, Jonathan (ENRD) <Jonathan.Brightbill@usdoj.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Fotouhi, David <Fotouhi.David@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Optional
Patrick, Monique <Patrick.Monique@epa.gov>	Optional

Time 4:00 PM – 4:30 PM
Subject Region 7 Check in
Location 3219A WJCE Call [redacted] passcode [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
McDonough, Owen <mcdonough.owen@epa.gov>	Required
Gulliford, Jim <gulliford.jim@epa.gov>	Required
Cacho, Julia <Cacho.Julia@epa.gov>	Optional

Time 4:30 PM – 5:00 PM
Subject WOTUS
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Required

Tuesday, May 22, 2018

Time 8:30 AM – 9:30 AM
Subject PFAS National Dialogue Meeting
Location WJC East, Map Room
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
[redacted] <[redacted]>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

Time 8:30 AM – 5:30 PM
Subject PFAS National Leadership Summit
Location 1153 WJCE
Show Time As Busy

https://www.epa.gov/sites/production/files/2018-05/documents/draft_agenda_pfas_national_leadership_summit_5.4.18_508.pdf <https://www.epa.gov/sites/production/files/2018-05/documents/draft_agenda_pfas_national_leadership

_summit_5.4.18_508.pdf>

Time 12:00 PM – 1:00 PM
Subject Lunch
Show Time As Busy
Categories Orange Category

Time 4:30 PM – 5:30 PM
Subject PFAS Summit Closing Remarks
Show Time As Busy

Wednesday, May 23, 2018

Time 8:00 AM – 12:30 PM
Subject PFAS National Leadership Summit
Location 1153 WJCE
Show Time As Busy

Time 12:30 PM – 1:00 PM
Subject General with Ann
Location 3219A WJCE
Show Time As Busy
Categories Orange Category

Time 1:15 PM – 1:30 PM
Subject Call with Tim Petty
Location [redacted]
Show Time As Busy

Re: Waterreuse

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
michelle_mebane@ios.doi.gov <michelle_mebane@ios.doi.gov>	Required

---

Time 2:10 PM – 2:30 PM
Subject Car confirmed
Show Time As Busy

Your transportation request has been Updated.

Reason for update : Pick Up Time changed
Confirmation Number: 79231

Passenger Information

* Name: DAVID ROSS/AA
* Number: [redacted]
* Pickup Time: 2018-05-23 14:10:00.0
* Pickup Location: COURTYARD
* Drop-Off Location: 441 G STREET NW - GAO

Vehicle Information

* Tag: [redacted]
* Vehicle Type: MINI VAN
* Make : DODGE
* Model : CARAVAN
* Color : SILVER

Categories Yellow Category

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

Time 2:30 PM – 4:00 PM

Subject (NFE) 404(g) and Section 10 Waters between USEPA, HQDA, and USACE (UNCLASSIFIED)

Location 441 G St. NW, Washington, D.C. 20314, Room 3K10

Show Time As Busy

CLASSIFICATION: UNCLASSIFIED

CLASSIFICATION: UNCLASSIFIED

Categories Blue Category

Attendees

Name <E-mail>	Attendance
Semonite, Todd T LTG USARMY HQDA OCE (US) <Todd.T.Semonite@usace.army.mil>	Organizer
CECG Conference Room 3K10 HQ02 <CECGConferenceRm3K10HQ02@usace.army.mil>	Required
Dalton, James C SES USARMY USACE (US) <James.C.Dalton@usace.army.mil>	Required
Spellmon, Scott A MG USARMY CENWD (US) <Scott.A.Spellmon2@usace.army.mil>	Required
Cooper, David R SES USARMY CEHQ (US) <David.R.Cooper@usace.army.mil>	Required
'craig.r.schmauder.civ@mail.mil' <craig.r.schmauder.civ@mail.mil>	Required

cindy.s.barger <cindy.s.barger.civ@mail.mil>	Required
Ryan A. Fisher <Ryan.A.Fisher12.civ@mail.mil>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Wagner, Kenneth <wagner.kenneth@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Veney, Carla <Veney.Carla@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Required
JAMES, William L CIV USARMY CELRD (US) <William.L.James@usace.army.mil>	Required
Smith, Thomas Patrick SES USARMY USACE (US) <Thomas.P.Smith@usace.army.mil>	Required
Moyer, Jennifer A CIV USARMY CEHQ (US) <Jennifer.A.Moyer@usace.army.mil>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Optional
Forsgren, Lee <Forsgren.Lee@epa.gov>	Optional
Thoennes, Brandon J CPT USARMY CENWD (US) <Brandon.J.Thoennes@usace.army.mil>	Optional
Mitchell, Anthony P COL US ARMY CEMVD <anthony.p.mitchell.mil@mail.mil>	Optional

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Time 4:00 PM – 4:30 PM
Subject Car confirmed
Show Time As Busy

Your transportation request has been Updated.

Reason for update : Location(Destination) changed
Confirmation Number: 79232

Passenger Information

* Name: DAVID ROSS/AA
* Number: [redacted]

* Pickup Time: 2018-05-23 16:00:00.0
* Pickup Location: 441 G STREET NW - GAO
* Drop-Off Location: COURTYARD

Vehicle Information

* Tag: [redacted]
* Vehicle Type: MINI VAN
* Make : DODGE
* Model : CARAVAN
* Color : SILVER

Categories Yellow Category

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required

Time 4:30 PM – 5:00 PM
Subject WOTUS Supplemental
Location Conference Call-in Number [redacted] Conference code: [redacted]
Show Time As Busy

Attendees

Name <E-mail>	Attendance
Wood, Jeffrey (ENRD) <Jeffrey.Wood@usdoj.gov>	Organizer
Brightbill, Jonathan (ENRD) <Jonathan.Brightbill@usdoj.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Fotouhi, David <Fotouhi.David@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required

Thursday, May 24, 2018

Time 2:00 PM – 2:30 PM
Subject WOTUS Check in
Location 3219A WJCE
Show Time As Busy

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer

	Goodin, John <Goodin.John@epa.gov>	Required
	Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required

Time 3:00 PM – 3:30 PM
Subject Prebrief - PFAS
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Tiago, Joseph <Tiago.Joseph@epa.gov>	Optional

Time 4:30 PM – 5:00 PM
Subject Debrief: PFAS Summit
Location Administrator's Office
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
[redacted] <[redacted]>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Wheeler, Andrew <wheeler.andrew@epa.gov>	Required
Jackson, Ryan <jackson.ryan@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

Friday, May 25, 2018

Time All Day
Subject AC Compressed
Show Time As Free

Time 9:00 AM – 12:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 12:00 PM – 1:00 PM
Subject Lunch
Show Time As Busy
Categories Orange Category

Time 1:00 PM – 5:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Monday, May 28, 2018

Time 8:00 AM – 5:00 PM
Subject Memorial Day
Show Time As Busy
Categories EZ Record - Private, Blue Category, Business, Holiday

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Tuesday, May 29, 2018

Time 11:30 AM – 11:45 AM
Subject WOTUS Check in
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required

Time 11:45 AM – 12:00 PM
Subject Lunch
Show Time As Busy
Categories Orange Category

Time 12:00 PM – 1:00 PM
Subject Working Lunch
Location 4000
Show Time As Busy
Categories Orange Category
Attendees

Name <E-mail>	Attendance
Leopold, Matt <Leopold.Matt@epa.gov>	Organizer
Fotouhi, David <Fotouhi.David@epa.gov>	Required

	Ross, David P <ross.davidp@epa.gov>	Required

Time 1:00 PM – 1:30 PM
Subject Planning for American Water Works Association Annual Conference
Location 3219A Call in # [redacted] passcode [redacted]
Show Time As Busy

Keli Jackson

Executive Administrator, AWWA | Direct [redacted]

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required
dlafrance@awwa.org <dlafrance@awwa.org>	Required
kjackson@awwa.org <kjackson@awwa.org>	Optional
Lieberman, Paige <Lieberman.Paige@epa.gov>	Optional
Tracy Mehan <tmehan@awwa.org>	Optional

Time 1:00 PM – 6:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 4:30 PM – 5:30 PM
Subject Bimonthly AA Check-In
Location WJC-N 3530 / Teleconference
Show Time As Busy

[redacted]

Conference ID: [redacted]

Sct: Carly Carroll, [redacted]
Categories Red Category

Attendees

Name <E-mail>	Attendance
Wheeler, Andrew <wheeler.andrew@epa.gov>	Organizer
Wehrum, Bill <Wehrum.Bill@epa.gov>	Required

Yamada, Richard (Yujiro) <yamada.richard@epa.gov>	Required
Beck, Nancy <Beck.Nancy@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Bolen, Brittany <bolen.brittany@epa.gov>	Required
Jackson, Ryan <jackson.ryan@epa.gov>	Required
Greaves, Holly <greaves.holly@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Cook, Steven <cook.steven@epa.gov>	Required
Molina, Michael <molina.michael@epa.gov>	Required
Darwin, Henry <darwin.henry@epa.gov>	Required
McIntosh, William <mcintosh.william@epa.gov>	Required
Baptist, Erik <Baptist.Erik@epa.gov>	Optional
Wildeman, Anna <wildeman.anna@epa.gov>	Optional
Wright, Peter <wright.peter@epa.gov>	Optional

Wednesday, May 30, 2018

Time 11:15 AM – 12:00 PM
Subject Meeting: Army Corps
Location Administrator's Office
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
[redacted] <[redacted]>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Fotouhi, David <Fotouhi.David@epa.gov>	Required

	Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
	Bolen, Brittany <bolen.brittany@epa.gov>	Required

Time 12:00 PM – 1:00 PM
Subject Lunch
Show Time As Busy
Categories Orange Category

Time 1:00 PM – 6:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 1:30 PM – 2:00 PM
Subject NHAB Case
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Baptist, Erik <baptist.erik@epa.gov>	Required

Thursday, May 31, 2018

Time 9:00 AM – 9:30 AM
Subject General with John Goodin
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Goodin, John <Goodin.John@epa.gov>	Required

Time 9:45 AM – 10:00 AM
Subject General w/ Anna
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Wildeman, Anna <wildeman.anna@epa.gov>	Required

Time 11:00 AM – 12:00 PM
Subject Hearing Prep Call in # [redacted] passcode [redacted]

Location	3219A WJCE
Show Time As	Busy

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Frazer, Brian <Frazer.Brian@epa.gov>	Required
Downing, Donna <Downing.Donna@epa.gov>	Required
Kaiser, Sven-Erik <Kaiser.Sven-Erik@epa.gov>	Required
Borum, Denis <Borum.Denis@epa.gov>	Required
Ringel, Aaron <ringel.aaron@epa.gov>	Required
Skane, Elizabeth <Skane.Elizabeth@epa.gov>	Required
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Optional
Penman, Crystal <Penman.Crystal@epa.gov>	Optional
Rodrick, Christian <rodrick.christian@epa.gov>	Optional
Klasen, Matthew <Klasen.Matthew@epa.gov>	Optional

Time	12:00 PM – 1:00 PM
Subject	Lunch
Show Time As	Busy
Categories	Orange Category

Time	1:00 PM – 2:00 PM
Subject	Reading/Review
Show Time As	Busy
Categories	Blue Category

Time	1:00 PM – 5:00 PM
Subject	Office Hours
Show Time As	Busy
Categories	Blue Category

Friday, June 01, 2018

Time 8:00 AM – 12:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 11:30 AM – 12:00 PM
Subject Call with Army
Location 3219A
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Wildeman, Anna <wildeman.anna@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required

Time 12:00 PM – 1:00 PM
Subject Lunch
Show Time As Busy
Categories Orange Category

Time 1:00 PM – 5:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 2:00 PM – 3:00 PM
Subject Nutrients
Location 3233 WJCE Call in #[redacted] passcode [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
McDonough, Owen <mcdonough.owen@epa.gov>	Organizer
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
Klinger, Adam <Klinger.Adam@epa.gov>	Required
Weiss, Kevin <Weiss.Kevin@epa.gov>	Required
Bathersfield, Nizanna <Bathersfield.Nizanna@epa.gov>	Required
Burneson, Eric <Burneson.Eric@epa.gov>	Required

Foreman, Katherine <Foreman.Katherine@epa.gov>	Required
Albert, Ryan <Albert.Ryan@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Wall, Tom <Wall.Tom@epa.gov>	Required
Hall, Lynda <Hall.Lynda@epa.gov>	Required
Holdsworth, Susan <Holdsworth.Susan@epa.gov>	Required
Havard, James <Havard.James@epa.gov>	Required
Nagle, Deborah <Nagle.Deborah@epa.gov>	Required
Lape, Jeff <lape.jeff@epa.gov>	Required
Hisel-Mccoy, Sara <Hisel-McCoy.Sara@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Wildeman, Anna <wildeman.anna@epa.gov>	Required
Ruf, Christine <Ruf.Christine@epa.gov>	Required
Rose, Bob <Rose.Bob@epa.gov>	Required
Molloy, Jennifer <molloy.jennifer@epa.gov>	Required
Thompkins, Anita <Thompkins.Anita@epa.gov>	Optional
Penman, Crystal <Penman.Crystal@epa.gov>	Optional
Lousberg, Macara <Lousberg.Macara@epa.gov>	Optional
Letnes, Amelia <Letnes.Amelia@epa.gov>	Optional
Behl, Betsy <Behl.Betsy@epa.gov>	Optional
Bergman, Ronald <Bergman.Ronald@epa.gov>	Optional
Gutierrez, Sally <Gutierrez.Sally@epa.gov>	Required

Monday, June 04, 2018

Time All Day
Subject Crystal - OOO
Show Time As Free

Time 8:45 AM – 9:00 AM
Subject Staff Meeting
Location 3219A WJCE Call in [redacted] passcode [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Lousberg, Macara <Lousberg.Macara@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required
Kitamura, Louise <Kitamura.Louise@epa.gov>	Required
McDonough, Owen <mcdonough.owen@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Required
Wildeman, Anna <wildeman.anna@epa.gov>	Required

Time 12:00 PM – 1:00 PM
Subject Lunch
Show Time As Busy
Categories Orange Category

Time 1:00 PM – 2:00 PM
Subject Reading/Review
Show Time As Busy
Categories Blue Category

Time 1:00 PM – 5:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Tuesday, June 05, 2018

Time 12:00 PM – 1:00 PM
Subject Lunch

Show Time As Busy
Categories Orange Category

Time 1:00 PM – 5:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 3:00 PM – 3:45 PM
Subject Missouri lakes Nutrient Criteria
Location 3233 WJCE Call in [redacted] passcode [redacted]
Show Time As Tentative
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
McDonough, Owen <mcdonough.owen@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Nagle, Deborah <Nagle.Deborah@epa.gov>	Required
Keating, Jim <Keating.Jim@epa.gov>	Required
Thomas, Dana <Thomas.Dana@epa.gov>	Required
Schroer, Lee <schroer.lee@epa.gov>	Required
Gulliford, Jim <gulliford.jim@epa.gov>	Required
Wildeman, Anna <wildeman.anna@epa.gov>	Required
Crawford, Tiffany <Crawford.Tiffany@epa.gov>	Optional
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Penman, Crystal <Penman.Crystal@epa.gov>	Optional
Fotouhi, David <fotouhi.david@epa.gov>	Optional
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Optional
Nalven, Heidi <Nalven.Heidi@epa.gov>	Optional
Chu, Ed <Chu.Ed@epa.gov>	Optional
Robichaud, Jeffery <Robichaud.Jeffery@epa.gov>	Optional

Time	4:00 PM – 4:45 PM
Subject	Mapping Section
Location	3233 WJCE Call in [redacted] passcode [redacted]
Show Time As	Busy

Attendees	**Name <E-mail>**	**Attendance**
	Ross, David P <ross.davidp@epa.gov>	Organizer
	Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
	Goodin, John <Goodin.John@epa.gov>	Required
	McDavit, Michael W. <Mcdavit.Michael@epa.gov>	Required
	Fotouhi, David <fotouhi.david@epa.gov>	Required
	Wehling, Carrie <Wehling.Carrie@epa.gov>	Required
	Downing, Donna <Downing.Donna@epa.gov>	Required
	stacey_m_jensen@usace.army.mil <stacey_m_jensen@usace.army.mil>	Required
	ryan.a.fisher12.civ@mail.mil <ryan.a.fisher12.civ@mail.mil>	Required
	stacey.m.jensen@usace.army.mil <stacey.m.jensen@usace.army.mil>	Required
	Penman, Crystal <Penman.Crystal@epa.gov>	Optional
	Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Optional
	Kupchan, Simma <Kupchan.Simma@epa.gov>	Optional
	Schmauder, Craig R SES (US) <craig.r.schmauder.civ@mail.mil>	Optional

Time	4:30 PM – 5:30 PM
Subject	Regional Office Structure
Location	4045 WJC-N
Show Time As	Busy
Categories	Red Category

Attendees	**Name <E-mail>**	**Attendance**

Darwin, Henry <darwin.henry@epa.gov>	Organizer
Wehrum, Bill <Wehrum.Bill@epa.gov>	Required
Greaves, Holly <greaves.holly@epa.gov>	Required
Beck, Nancy <Beck.Nancy@epa.gov>	Required
Leopold, Matt (OGC) <Leopold.Matt@epa.gov>	Required
Cook, Steven <cook.steven@epa.gov>	Required
Yamada, Richard (Yujiro) <yamada.richard@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Wheeler, Andrew <wheeler.andrew@epa.gov>	Optional
Jackson, Ryan <jackson.ryan@epa.gov>	Optional
McIlwain, Serena <McIlwain.Serena@epa.gov>	Optional
Bodine, Susan <bodine.susan@epa.gov>	Required

Time 5:00 PM – 6:00 PM
Subject Reading/Review
Show Time As Busy
Categories Blue Category

Wednesday, June 06, 2018

Time All Day
Subject Crystal P - Telework
Show Time As Free

Time 8:00 AM – 12:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 10:50 AM – 11:20 AM
Subject Briefing: Alaska Mitigation Memo
Location Administrator's Office
Show Time As Tentative
Categories Red Category
Attendees

Name <E-mail>	Attendance
[redacted] <[redacted]>	Organizer

	Ross, David P <ross.davidp@epa.gov>	Required
	Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
	Goodin, John <Goodin.John@epa.gov>	Required
	Bolen, Brittany <bolen.brittany@epa.gov>	Required

Time 12:00 PM – 1:00 PM
Subject Lunch
Show Time As Busy
Categories Orange Category

Time 1:30 PM – 2:00 PM
Subject WOTUS Check in
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required

Time 4:00 PM – 5:00 PM
Subject Reading/Review
Show Time As Busy
Categories Blue Category

Thursday, June 07, 2018

Time 10:30 AM – 11:00 AM
Subject Puerto Rico
Location 3219A WJCE
Show Time As Tentative
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

Time 1:00 PM – 5:00 PM
Subject Office Hours
Show Time As Busy

Categories Blue Category

Friday, June 08, 2018

Time All Day
Subject AC Compressed
Show Time As Free

Time 12:00 PM – 1:00 PM
Subject Working Lunch
Location 4000 WJC-N
Show Time As Busy
Categories Orange Category, EZ Record - Private
Attendees

Name <E-mail>	Attendance
Leopold, Matt (OGC) <Leopold.Matt@epa.gov>	Organizer
Fotouhi, David <Fotouhi.David@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required

Time 2:00 PM – 2:30 PM
Subject Pre brief - LCR Call in [redacted] passcode [redacted]
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Burneson, Eric <Burneson.Eric@epa.gov>	Required
Christ, Lisa <Christ.Lisa@epa.gov>	Required
Helm, Erik <Helm.Erik@epa.gov>	Required
Wehling, Carrie <Wehling.Carrie@epa.gov>	Required
Mclain, Jennifer <Mclain.Jennifer@epa.gov>	Required
Tiago, Joseph <Tiago.Joseph@epa.gov>	Optional
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Optional
Darman, Leslie <Darman.Leslie@epa.gov>	Optional

	Forsgren, Lee <Forsgren.Lee@epa.gov>	Optional
	Fotouhi, David <fotouhi.david@epa.gov>	Optional

Time 4:30 PM – 5:30 PM
Subject WOTUS
Location EPA-Room 4045
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Wood, Jeffrey (ENRD) <Jeffrey.Wood@usdoj.gov>	Organizer
Brightbill, Jonathan (ENRD) <Jonathan.Brightbill@usdoj.gov>	Required
Leopold, Matt (OGC) <Leopold.Matt@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Optional
Schwab, Justin <schwab.justin@epa.gov>	Optional

Monday, June 11, 2018

Time 8:45 AM – 9:00 AM
Subject Staff Meeting
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Wildeman, Anna <wildeman.anna@epa.gov>	Required
Lousberg, Macara <Lousberg.Macara@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Required
McDonough, Owen <mcdonough.owen@epa.gov>	Required

	Best-Wong, Benita <Best-Wong.Benita@epa.gov> Required

Time 12:00 PM – 1:00 PM
Subject Lunch
Show Time As Busy
Categories Orange Category

Time 1:00 PM – 5:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 1:30 PM – 2:00 PM
Subject Briefing: WOTUS Step 2
Location Administrator's Office
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
[redacted] <[redacted]>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Wheeler, Andrew <wheeler.andrew@epa.gov>	Required
Leopold, Matt (OGC) <Leopold.Matt@epa.gov>	Required
Fotouhi, David <Fotouhi.David@epa.gov>	Required
Bolen, Brittany <bolen.brittany@epa.gov>	Required

Time 5:30 PM – 6:30 PM
Subject Reading/Review
Show Time As Busy
Categories Blue Category

Tuesday, June 12, 2018

Time 12:00 PM – 1:00 PM
Subject Lunch
Show Time As Busy
Categories Orange Category

Time 1:00 PM – 2:00 PM
Subject Reading/Review
Show Time As Busy
Categories Blue Category

Time 1:00 PM – 5:00 PM

Subject Office Hours
Show Time As Busy
Categories Blue Category

Wednesday, June 13, 2018

Time 8:00 AM – 12:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 12:00 PM – 1:00 PM
Subject Lunch
Show Time As Busy
Categories Orange Category

Time 1:00 PM – 5:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 4:00 PM – 4:30 PM
Subject Reading/Review
Show Time As Busy
Categories Blue Category

Time 5:30 PM – 6:00 PM
Subject Follow-up call
Location Call: [redacted] ID: [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Bolen, Brittany <bolen.brittany@epa.gov>	Organizer
Fotouhi, David <fotouhi.david@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Rosario A. [redacted] Palmieri <[redacted]	Required
Leopold, Matt (OGC) <Leopold.Matt@epa.gov>	Required

Thursday, June 14, 2018

Time 12:00 PM – 1:00 PM
Subject Lunch
Show Time As Busy
Categories Orange Category

Time 1:00 PM – 1:30 PM
Subject International Meeting with Management Team and Water Cooperation

with Australia

Location 3233 WJCE Call in [redacted] passcode [redacted]

Show Time As Tentative

Detailed agenda to follow

US EPA – DAWR Water Cooperation Discussion:

1:00-1:15pm Introductions and Opening Remarks

1:15-1:30pm Advancing Collaboration under the MOU (Richard McLoughlin)

1:30-2:00pm Water Management Priorities Discussion

2:00-2:30pm Framing Cooperation under the MOU

2:30-2:45pm Other Business – Potential Future Australian Delegation Visit

2:45-3:00pm Conclusions and Agreement on Next Steps

Categories Blue Category

Attendees

Name <E-mail>	**Attendance**
Penman, Crystal <Penman.Crystal@epa.gov>	Organizer
Koo-Oshima, Sasha <Koo-Oshima.Sasha@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Stein, Raffael <Stein.Raffael@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Travers, David <Travers.David@epa.gov>	Required
Burneson, Eric <Burneson.Eric@epa.gov>	Required
Behl, Betsy <Behl.Betsy@epa.gov>	Required
Nagle, Deborah <Nagle.Deborah@epa.gov>	Required
vanDrunick, Suzanne <vanDrunick.Suzanne@epa.gov>	Required
Impellitteri, Christopher <Impellitteri.Christopher@epa.gov>	Required
Sayles, Gregory <Sayles.Gregory@epa.gov>	Required

Shaw, Denice <Shaw.Denice@epa.gov>	Required
Orme-Zavaleta, Jennifer <Orme-Zavaleta.Jennifer@epa.gov>	Required
Buckley, Katherine <Buckley.Katherine@epa.gov>	Required
Nishida, Jane <Nishida.Jane@epa.gov>	Required
Rodan, Bruce <rodan.bruce@epa.gov>	Optional
Lape, Jeff <lape.jeff@epa.gov>	Optional
Newberry, Debbie <Newberry.Debbie@epa.gov>	Optional
Kasman, Mark <Kasman.Mark@epa.gov>	Optional
Rodgers-Jenkins, Crystal <Rodgers-Jenkins.Crystal@epa.gov>	Optional

Time 1:00 PM – 5:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 4:30 PM – 5:00 PM
Subject Reading/Review
Show Time As Busy
Categories Blue Category

Friday, June 15, 2018

Time 8:00 AM – 12:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 9:30 AM – 10:00 AM
Subject Fw: Transportation
Location WJCN Courtyard
Show Time As Busy

Crystal M. Penman

Environmental Protection Agency

Office of Water

1201 Constitution Ave NW

Washington, DC 20004

[redacted]

From: Bolen, Brittany
Sent: Thursday, June 14, 2018 2:13 PM
To: Bolen, Brittany; Ross, David P; Fotouhi, David
Cc: Forsgren, Lee; Leopold, Matt (OGC)
Subject: Transportation
When: Friday, June 15, 2018 9:30 AM-10:00 AM.
Where: WJCN Courtyard

Your transportation request has been confirmed.

Confirmation Number: 79537

Passenger Information

* Name: BRITTANY BOLEN/AA
* Number: [redacted]
* Pickup Time: 2018-06-15 09:30:00.0
* Pickup Location: COURTYARD
* Drop-Off Location: EEOB

Vehicle Information

* Tag: [redacted]
* Vehicle Type: CAR
* Make : CHEVROLET
* Model : VOLT
* Color : BLACK

Categories Yellow Category

Attendees

Name <E-mail>	**Attendance**
Bolen, Brittany <bolen.brittany@epa.gov>	Organizer
Fotouhi, David <Fotouhi.David@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required

Leopold, Matt (OGC) <Leopold.Matt@epa.gov> Optional

Time 10:00 AM – 11:00 AM
Subject Fw: Pre-Brief
Location EEOB (TBD)
Show Time As Busy

Crystal M. Penman

Environmental Protection Agency

Office of Water

1201 Constitution Ave NW

Washington, DC 20004

[redacted]

From: Szabo, Aaron L. [redacted]
Sent: Thursday, June 14, 2018 1:00 PM
To: Szabo, Aaron L. [redacted] Bolen, Brittany; Ross, David P; Fotouhi, David; Brooke, Francis J. [redacted] Neumayr, Mary B. [redacted] Seale, Viktoria Z. [redacted] Penman, Crystal
Subject: Pre-Brief
When: Friday, June 15, 2018 10:00 AM-11:00 AM.
Where: EEOB (TBD)

If necessary, please use the following link for WAVES and fill out by 4pm today: https://events.whitehouse.gov/?rid=JR9TR77R7Y <https://events.whitehouse.gov/?rid=JR9TR77R7Y> .

Thank you.

We have received information for Dennis.
If you have any questions, please reach out to your point of contact.

Continue to WhiteHouse.gov <https://www.whitehouse.gov/>

Click here to submit another RSVP
<https://events.whitehouse.gov/rsvpform?rid=JR9TR7 7R7Y>

Categories Blue Category

Attendees

Name <E-mail>	Attendance
Szabo, Aaron L. [redacted] <[redacted]>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Bolen, Brittany <bolen.brittany@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Brooke, Francis J. [redacted] <[redacted]>	Required
Neumayr, Mary B. [redacted] <[redacted]>	Required
Seale, Viktoria Z. [redacted] <[redacted]>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Required

Time 11:00 AM – 11:30 AM
Subject Fw: Transportation
Location EEOB
Show Time As Busy

Crystal M. Penman

Environmental Protection Agency

Office of Water

1201 Constitution Ave NW

Washington, DC 20004

[redacted]

From: Bolen, Brittany

Sent: Thursday, June 14, 2018 2:14 PM
To: Bolen, Brittany; Ross, David P; Fotouhi, David
Cc: Forsgren, Lee; Leopold, Matt (OGC)
Subject: Transportation
When: Friday, June 15, 2018 11:00 AM-11:30 AM.
Where: EEOB

Reason for update : Pick Up Time changed
Confirmation Number: 79538

Passenger Information

* Name: BRITTANY BOLEN/AA
* Number: [redacted]
* Pickup Time: 2018-06-15 11:00:00.0
* Pickup Location: EEOB
* Drop-Off Location: COURTYARD

Vehicle Information

* Tag: [redacted]
* Vehicle Type: CAR
* Make : CHEVROLET
* Model : VOLT
* Color : BLACK

Categories Yellow Category

Attendees

Name <E-mail>	**Attendance**
Bolen, Brittany <bolen.brittany@epa.gov>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Fotouhi, David <Fotouhi.David@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Optional
Leopold, Matt (OGC) <Leopold.Matt@epa.gov>	Optional

Time 12:00 PM – 1:00 PM
Subject Lunch
Show Time As Busy

Categories Orange Category

Time 1:00 PM – 5:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 1:30 PM – 3:10 PM
Subject Depart for Airport
Show Time As Busy
Categories Yellow Category

Time 3:10 PM – 4:23 PM
Subject DL 6117 flight departs DCA @ 3:10pm arrives MSN @ 4:23pm
Show Time As Busy
Categories Blue Category

Monday, June 18, 2018

Time All Day
Subject Crystal P- OOO
Show Time As Free

Time 8:00 AM – 6:00 PM
Subject OOO
Show Time As Busy
Categories Blue Category

Time 5:00 PM – 5:30 PM
Subject FW: Briefing: Perchlorate
Location Teleconference
Show Time As Tentative

Meeting will be held in 3233WJC East Bldg. for OW and OGC Staff

-----Original Appointment-----
From: Wheeler, Andrew
Sent: Thursday, June 14, 2018 3:32 PM
To: Wheeler, Andrew; Molina, Michael; Ross, David; Grevatt, Peter; Mclain, Jennifer; Burneson, Eric; Fotouhi, David; Neugeboren, Steven; Bolen, Brittany; Campbell, Ann; Forsgren, Lee
Cc: Wehling, Carrie; Messier, Dawn; Leopold, Matt (OGC)
Subject: Briefing: Perchlorate
When: Monday, June 18, 2018 5:00 PM-5:30 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Teleconference

Sct: Tamika Burton, [redacted]

Topic: Perchlorate

Invitees/participants: Andrew Wheeler, Michael Molina, Dave Ross, Lee Forsgren, Peter Grevatt, Jennifer Mclain, Eric Burneson, David Fotouhi, Steve Neugeboren, Brittany Bolen.

Teleconference number: [redacted] code: [redacted]

POC: Laura Johnson

Categories Red Category

Attendees

Name <E-mail>	**Attendance**
Wheeler, Andrew <wheeler.andrew@epa.gov>	Organizer
Molina, Michael <molina.michael@epa.gov>	Required
Ross, David <Ross.David@epa.gov>	Required
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Mclain, Jennifer <Mclain.Jennifer@epa.gov>	Required
Burneson, Eric <Burneson.Eric@epa.gov>	Required
Fotouhi, David <Fotouhi.David@epa.gov>	Required
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Required
Bolen, Brittany <bolen.brittany@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Wehling, Carrie <Wehling.Carrie@epa.gov>	Optional
Messier, Dawn <Messier.Dawn@epa.gov>	Optional
Ross, David P <ross.davidp@epa.gov>	Optional
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Leopold, Matt (OGC) <Leopold.Matt@epa.gov>	Optional

Tuesday, June 19, 2018

Time All Day
Subject Crystal P - Telework
Show Time As Free

Time 9:30 AM – 10:00 AM
Subject Pre-Brief to Quarterly Performance Review
Location 3219A WJCE
Show Time As Busy

Purpose: To review meeting objectives and materials in advance of the first Quarterly Performance Review with the Administrator scheduled for June 19 from 3-5pm.

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Spraul, Greg <Spraul.Greg@epa.gov>	Required
Fontaine, Tim <Fontaine.Tim@epa.gov>	Required
Vazquez, Sharon <Vazquez.Sharon@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Gollan, Christopher <Gollan.Christopher@epa.gov>	Required
Frace, Sheila <Frace.Sheila@epa.gov>	Required

Time 10:00 AM – 11:00 AM
Subject OW PRIDE Month Event with Arli Christian, State Policy Director for the National Center for Transgender Equality
Location WJC-E 1117A
Show Time As Tentative

Dear OW Colleagues,

We are pleased to continue the celebration and observance of PRIDE Month with a discussion led by Arli Christian. Arli Christian serves as the State Policy Director for the National Center For Transgender Equality (NCTE), which is the nation's leading social justice advocacy organization winning life-saving change for transgender people. Arli partners with state and local advocates on a variety of policy goals, with a focus on efforts to modernize identity documents gender change policies and remove insurance exclusions for coverage of transition-related care. Arli is dedicated to improving and expanding access to legal services for trans communities through NCTE's Trans Legal Services Network.

Last year Arli worked with the DC government to add an "x" option to ID cards to allow non-binary individuals to accurately reflect their gender identify. She will discuss the process for how that happened, why it is important, how other states are doing on this topic, and answer any questions you may have. Please join us for this wonderful event! If you have any questions, please contact Laura Drummond, OW's LGBT program manager at [redacted]

Attendees	Name <E-mail>	Attendance
	Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Organizer
	OW-EVERYONE-HQ_SG <OWEVERYONEHQ@epa.gov>	Required

Time 11:00 AM – 11:30 AM
Subject Briefing: Perchlorate
Location Administrator's Office / Call-In: [redacted] Code [redacted]
Show Time As Busy
Categories Red Category

Attendees	Name <E-mail>	Attendance
	[redacted] <[redacted]>	Organizer
	Ross, David P <ross.davidp@epa.gov>	Required
	Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
	Fotouhi, David <Fotouhi.David@epa.gov>	Required
	Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
	Wheeler, Andrew <wheeler.andrew@epa.gov>	Required
	Bolen, Brittany <bolen.brittany@epa.gov>	Required
	Yamada, Richard (Yujiro) <yamada.richard@epa.gov>	Required
	Bodine, Susan <bodine.susan@epa.gov>	Required
	Cook, Steven <cook.steven@epa.gov>	Required
	Mclain, Jennifer <Mclain.Jennifer@epa.gov>	Optional
	Leopold, Matt (OGC) <Leopold.Matt@epa.gov>	Optional

Time 1:00 PM – 1:30 PM
Subject Conference Call with John Hall
Location Call in # [redacted] passcode [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
tscott@hall-associates.com <tscott@hall-associates.com>	Required

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Time 1:00 PM – 5:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 2:00 PM – 2:30 PM
Subject Meeting with Water Research Foundation
Location 1201 Constitution Ave NW, Washington DC 20460 WJCE 3233 Please call [redacted] for escort
Show Time As Busy

Attendees
Jessica Austin – Ferguson Group
John Albert – Water Research Foundation

Jessica Austin
[redacted] OFFICE
[redacted] MOBILE
1901 Pennsylvania Ave. NW, Suite 700, Washington, DC 20006
TheFergusonGroup.com

Categories Blue Category
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Mayer, Lauren <mayer.lauren@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Lape, Jeff <lape.jeff@epa.gov>	Required
jaustin@tfgnet.com <jaustin@tfgnet.com>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required

Nagle, Deborah <Nagle.Deborah@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Optional
Huber, Patrick <Huber.Patrick@epa.gov>	Optional
Sandra Connors (Connors.Sandra@epa.gov) <Connors.Sandra@epa.gov>	Optional

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Time 3:00 PM – 5:00 PM
Subject Quarterly Performance Review
Location Alm Room / Regions by Video Conference
Show Time As Busy
Note: Time changed from Henry's email due to western time zones.
Categories Red Category
Attendees

Name <E-mail>	Attendance
[redacted] <[redacted]>	Organizer
Darwin, Henry <darwin.henry@epa.gov>	Required
Wheeler, Andrew <wheeler.andrew@epa.gov>	Required
Jackson, Ryan <jackson.ryan@epa.gov>	Required
Vizian, Donna <Vizian.Donna@epa.gov>	Required
Showman, John <Showman.John@epa.gov>	Required
Wehrum, Bill <Wehrum.Bill@epa.gov>	Required
Shaw, Betsy <Shaw.Betsy@epa.gov>	Required
Beck, Nancy <Beck.Nancy@epa.gov>	Required
Bertrand, Charlotte <Bertrand.Charlotte@epa.gov>	Required
Greaves, Holly <greaves.holly@epa.gov>	Required
Bloom, David <Bloom.David@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required
Starfield, Lawrence <Starfield.Lawrence@epa.gov>	Required
Fine, Steven <fine.steven@epa.gov>	Required

Simon, Harvey <Simon.Harvey@epa.gov>	Required
Leopold, Matt (OGC) <Leopold.Matt@epa.gov>	Required
Minoli, Kevin <Minoli.Kevin@epa.gov>	Required
Nishida, Jane <Nishida.Jane@epa.gov>	Required
Cherry, Katrina <Cherry.Katrina@epa.gov>	Required
Orme-Zavaleta, Jennifer <Orme-Zavaleta.Jennifer@epa.gov>	Required
Robbins, Chris <Robbins.Chris@epa.gov>	Required
Cook, Steven <cook.steven@epa.gov>	Required
Breen, Barry <breen.barry@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Dunn, Alexandra <dunn.alexandra@epa.gov>	Required
Szaro, Deb <Szaro.Deb@epa.gov>	Required
Lopez, Peter <lopez.peter@epa.gov>	Required
Mugdan, Walter <Mugdan.Walter@epa.gov>	Required
Servidio, Cosmo <Servidio.Cosmo@epa.gov>	Required
Rodrigues, Cecil <rodrigues.cecil@epa.gov>	Required
Glenn, Trey <Glenn.Trey@epa.gov>	Required
Heard, Anne <Heard.Anne@epa.gov>	Required
Stepp, Cathy <stepp.cathy@epa.gov>	Required
Idsal, Anne <idsal.anne@epa.gov>	Required
Gray, David <gray.david@epa.gov>	Required

Gulliford, Jim <gulliford.jim@epa.gov>	Required
Chu, Ed <Chu.Ed@epa.gov>	Required
Benevento, Douglas <benevento.douglas@epa.gov>	Required
Thomas, Deb <thomas.debrah@epa.gov>	Required
Stoker, Michael B. <stoker.michael@epa.gov>	Required
Jordan, Deborah <Jordan.Deborah@epa.gov>	Required
Hladick, Christopher <hladick.christopher@epa.gov>	Required
Pirzadeh, Michelle <Pirzadeh.Michelle@epa.gov>	Required
Osborne, Howard <Osborne.Howard@epa.gov>	Optional
Lindsay, Jane <lindsay.jane@epa.gov>	Optional
Brincks, Mike <brincks.mike@epa.gov>	Optional
Sindt, Rachelle <Sindt.Rachelle@epa.gov>	Optional
Miller, Amy <Miller.Amy@epa.gov>	Optional

Time 5:45 PM – 6:00 PM
Subject MS4 Update - NH & MA
Location Alex will call Dave at [redacted]
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Dunn, Alexandra <dunn.alexandra@epa.gov>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Optional

Wednesday, June 20, 2018

Time All Day
Subject Crystal P - OOO
Show Time As Free

Time 8:00 AM – 12:00 PM
Subject Office Hours

Show Time As Busy
Categories Blue Category

Time 12:00 PM – 1:00 PM
Subject Lunch
Show Time As Busy
Categories Orange Category

Time 3:30 PM – 4:00 PM
Subject PFAS Discussion
Location Conference Call: [redacted] dial-in; [redacted] conf code)
Show Time As Busy

This will now be a conference call.

Dial-in: [redacted]

Conf Code: [redacted]

Categories Red Category
Attendees

Name <E-mail>	Attendance
Jackson, Ryan <jackson.ryan@epa.gov>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Cook, Steven <cook.steven@epa.gov>	Required
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required

Thursday, June 21, 2018

Time All Day
Subject Crystal P - Telework
Show Time As Free

Time 8:00 AM – 8:30 AM
Subject Fw: Lead and Copper Rule Briefing - updated*
Location WJC-N 3412
Show Time As Busy

David I was told to use this one time call in number for this meeting

[redacted] passcode [redacted] participant # [redacted]

Crystal M. Penman

Environmental Protection Agency

Office of Water

1201 Constitution Ave NW

Washington, DC 20004

[redacted]

From: Burton, Tamika on behalf of Wheeler, Andrew
Sent: Wednesday, June 20, 2018 12:05 PM
To: Penman, Crystal
Subject: Lead and Copper Rule Briefing - updated*
When: Thursday, June 21, 2018 8:00 AM-8:30 AM.
Where: WJC-N 3412

Sct: Tamika Burton, [redacted]

POC- Laura Johnson

The Deputy Administrator has requested a briefing on the Lead and Copper Ruling.

Teleconference number: [redacted] code: [redacted]

Categories Red Category

Attendees

Name <E-mail>	**Attendance**
Wheeler, Andrew <wheeler.andrew@epa.gov>	Organizer
Molina, Michael <molina.michael@epa.gov>	Required
Ross, David <Ross.David@epa.gov>	Required
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Mclain, Jennifer <Mclain.Jennifer@epa.gov>	Required

Burneson, Eric <Burneson.Eric@epa.gov>	Required
Fotouhi, David <Fotouhi.David@epa.gov>	Required
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Required
Bolen, Brittany <bolen.brittany@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Hughes, Hayley <hughes.hayley@epa.gov>	Required
Tiago, Joseph <Tiago.Joseph@epa.gov>	Optional
Mason, Paula <Mason.Paula@epa.gov>	Optional
Ross, David P <ross.davidp@epa.gov>	Optional
Wehling, Carrie <Wehling.Carrie@epa.gov>	Optional
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

Time 8:45 AM – 9:15 AM
Subject Briefing: NH PFAS Community Engagement
Location Administrator's Office / Conference Call (Region 1): [redacted]
Code [redacted]
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
[redacted] <[redacted]>	Organizer
Wheeler, Andrew <wheeler.andrew@epa.gov>	Required
Jackson, Ryan <jackson.ryan@epa.gov>	Required
Dunn, Alexandra <dunn.alexandra@epa.gov>	Required
Szaro, Deb <Szaro.Deb@epa.gov>	Required
Block, Molly <block.molly@epa.gov>	Required
Konkus, John <konkus.john@epa.gov>	Required
Grantham, Nancy <Grantham.Nancy@epa.gov>	Required

Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Wildeman, Anna <wildeman.anna@epa.gov>	Required

Time 11:00 AM – 11:30 AM
Subject WV 303d List Call [redacted] passcode [redacted]
Location 3233 WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Wildeman, Anna <wildeman.anna@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Wall, Tom <Wall.Tom@epa.gov>	Required
Havard, James <Havard.James@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Glazer, Thomas <glazer.thomas@epa.gov>	Required
Fields, Jenifer <fields.jenifer@epa.gov>	Required
Lueckenhoff, Dominique <Lueckenhoff.Dominique@epa.gov>	Required
McDonough, Owen <mcdonough.owen@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
McManus, Catharine <mcmanus.catharine@epa.gov>	Optional
Leopold, Matt (OGC) <Leopold.Matt@epa.gov>	Optional
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Optional
Penman, Crystal <Penman.Crystal@epa.gov>	Optional

Time 1:00 PM – 5:00 PM

Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 2:00 PM – 2:45 PM
Subject Pre-brief Steam Electric Call in [redacted] passcode [redacted]
Location 3233 WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Nagle, Deborah <Nagle.Deborah@epa.gov>	Required
Wood, Robert <Wood.Robert@epa.gov>	Required
Benware, Richard <Benware.Richard@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Required
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Wildeman, Anna <wildeman.anna@epa.gov>	Required
Crawford, Tiffany <Crawford.Tiffany@epa.gov>	Optional
Matuszko, Jan <Matuszko.Jan@epa.gov>	Optional
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Levine, MaryEllen <levine.maryellen@epa.gov>	Optional
Witt, Richard <Witt.Richard@epa.gov>	Optional
Jordan, Ronald <jordan.ronald@epa.gov>	Optional
Leopold, Matt (OGC) <Leopold.Matt@epa.gov>	Optional
Penman, Crystal <Penman.Crystal@epa.gov>	Optional
Evalenko, Sandy <Evalenko.Sandy@epa.gov>	Optional

Time 3:00 PM – 3:30 PM
Subject External Engagement Meeting Call in [redacted] passcode [redacted]

Location 3233 WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Lieberman, Paige <Lieberman.Paige@epa.gov>	Required
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Required
Wildeman, Anna <wildeman.anna@epa.gov>	Required

Time 3:00 PM – 5:00 PM
Subject <RESCHEDULE>OW's Celebrate Summer Gathering
Location 2123 WJCE
Show Time As Tentative
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Torrez, Alfredo <Torrez.Alfredo@epa.gov>	Required

Friday, June 22, 2018

Time All Day
Subject AC Compressed
Show Time As Free

Time All Day
Subject Crystal P - OOO
Show Time As Free

Time 9:00 AM – 9:45 AM
Subject Pre brief - National Water Division Director's Meeting Call in [redacted] [redacted] passcode [redacted]
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer

Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Lousberg, Macara <Lousberg.Macara@epa.gov>	Required
Wildeman, Anna <wildeman.anna@epa.gov>	Required
McDonough, Owen <mcdonough.owen@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Penman, Crystal <Penman.Crystal@epa.gov>	Required
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required

Time 10:15 AM – 11:00 AM
Subject Briefing: Lead and Copper Rule
Location Administrator's Office / Call-In: [redacted] Code [redacted]
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
[redacted] <[redacted]>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Bolen, Brittany <bolen.brittany@epa.gov>	Required
Beck, Nancy <Beck.Nancy@epa.gov>	Required
Wehrum, Bill <Wehrum.Bill@epa.gov>	Required
Leopold, Matt (OGC) <Leopold.Matt@epa.gov>	Required
Cook, Steven <cook.steven@epa.gov>	Required
Traylor, Patrick <traylor.patrick@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Jackson, Ryan <jackson.ryan@epa.gov>	Required
Yamada, Richard (Yujiro) <yamada.richard@epa.gov>	Required

Hughes, Hayley <hughes.hayley@epa.gov>	Required
Fonseca, Silvina <Fonseca.Silvina@epa.gov>	Required
Wheeler, Andrew <wheeler.andrew@epa.gov>	Required
Gunasekara, Mandy <Gunasekara.Mandy@epa.gov>	Required
Wildeman, Anna <wildeman.anna@epa.gov>	Required
Mclain, Jennifer <Mclain.Jennifer@epa.gov>	Optional
Harlow, David <harlow.david@epa.gov>	Optional
Bodine, Susan <bodine.susan@epa.gov>	Required

Time 11:15 AM – 11:45 AM
Subject Follow-up: Missouri Numeric Nutrient Criteria for Lakes and Reservoirs
Location Administrator's Office / Conference Call (Region 7): [redacted]
Code [redacted]
Show Time As Busy
Categories Red Category
Attendees

Name <E-mail>	Attendance
[redacted] <[redacted]>	Organizer
Gulliford, Jim <gulliford.jim@epa.gov>	Required
Lyons, Troy <lyons.troy@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Wildeman, Anna <wildeman.anna@epa.gov>	Required
McDonough, Owen <mcdonough.owen@epa.gov>	Required
Bolen, Brittany <bolen.brittany@epa.gov>	Required

Time 4:30 PM – 6:30 PM
Subject FW: Deputy Wheeler All Hands (4:30 PM)
Location 3412 WJC North - Wheeler's Office
Importance Low
Show Time As Tentative

From: Shimmin, Kaitlyn
Sent: Thursday, June 14, 2018 11:48:05 AM (UTC-05:00) Eastern Time (US & Canada)
To: Shimmin, Kaitlyn; Lyons, Troy; Abboud, Michael; Baptist, Erik; Beach, Christopher; Beck, Nancy; Bennett, Tate; Block, Molly; Bodine, Susan; Bolen, Brittany; Bolen, Derrick; Brown, Byron; Burke, Marcella; Chancellor, Erin; Cook, Steven; Cory, Preston (Katherine); Daniell, Kelsi; Darwin, Henry; Darwin, Veronica; Dominguez, Alexander; Falvo, Nicholas; Feeley, Drew (Robert); Ferguson, Lincoln; Forsgren, Lee; Fotouhi, David; Frye, Tony (Robert); Gordon, Stephen; Greaves, Holly; Greenwalt, Sarah; Gunasekara, Mandy; Hanson, Paige (Catherine); Harlow, David; Hewitt, James; Hupp, Millan; Jackson, Ryan; Konkus, John; Kundinger, Kelly; Leopold, Matt (OGC); Letendre, Daisy; Lovell, Will (William); McMurray, Forrest; Molina, Michael; Palich, Christian; Ringel, Aaron; Rodrick, Christian; Ross, David P; Schwab, Justin; Seabaugh, Catherine; Traylor, Patrick; Wagner, Kenneth; Wehrum, Bill; Wheeler, Andrew; White, Elizabeth; Wilcox, Jahan; Wildeman, Anna; Woods, Clint; Yamada, Richard (Yujiro); Ford, Hayley
Subject: Deputy Wheeler All Hands (4:30 PM)
When: Friday, June 22, 2018 4:30 PM-6:30 PM.
Where: 3412 WJC North - Wheeler's Office

Andrew Wheeler would like to invite all of the Political Appointees to an All Hands in his office on Friday, June 22nd starting at 4:30 PM. Stop by when you can!

WORKING CONTACT:
Michael D. Molina

Senior Advisor to the Deputy Administrator

U.S. Environmental Protection Agency

Molina.Michael@epa.gov <mailto:Molina.Michael@epa.gov>

(202) [redacted]

Kaitlyn Shimmin

White House Liaison

U.S. Environmental Protection Agency

O: (202) [redacted]

C: (202) [redacted]

Shimmin.Kaitlyn@epa.gov <mailto:Shimmin.Kaitlyn@epa.gov>

Categories Red Category

Attendees

Name <E-mail>	Attendance
Shimmin, Kaitlyn <shimmin.kaitlyn@epa.gov>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Lyons, Troy <lyons.troy@epa.gov>	Required
Abboud, Michael <abboud.michael@epa.gov>	Required
Baptist, Erik <baptist.erik@epa.gov>	Required
Beach, Christopher <beach.christopher@epa.gov>	Required
Beck, Nancy <Beck.Nancy@epa.gov>	Required
Bennett, Tate <Bennett.Tate@epa.gov>	Required
Block, Molly <block.molly@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required
Bolen, Brittany <bolen.brittany@epa.gov>	Required
Bolen, Derrick <bolen.derrick@epa.gov>	Required
Brown, Byron <brown.byron@epa.gov>	Required
Burke, Marcella <burke.marcella@epa.gov>	Required
Chancellor, Erin <chancellor.erin@epa.gov>	Required
Cook, Steven <cook.steven@epa.gov>	Required
Cory, Preston (Katherine) <Cory.Preston@epa.gov>	Required
Daniell, Kelsi <daniell.kelsi@epa.gov>	Required

Darwin, Henry <darwin.henry@epa.gov>	Required
Darwin, Veronica <darwin.veronica@epa.gov>	Required
Dominguez, Alexander <dominguez.alexander@epa.gov>	Required
Falvo, Nicholas <falvo.nicholas@epa.gov>	Required
Feeley, Drew (Robert) <Feeley.Drew@epa.gov>	Required
Ferguson, Lincoln <ferguson.lincoln@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Frye, Tony (Robert) <frye.robert@epa.gov>	Required
Gordon, Stephen <gordon.stephen@epa.gov>	Required
Greaves, Holly <greaves.holly@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required
Gunasekara, Mandy <Gunasekara.Mandy@epa.gov>	Required
Hanson, Paige (Catherine) <hanson.catherine@epa.gov>	Required
Harlow, David <harlow.david@epa.gov>	Required
Hewitt, James <hewitt.james@epa.gov>	Required
Hupp, Millan <hupp.millan@epa.gov>	Required
Jackson, Ryan <jackson.ryan@epa.gov>	Required
Konkus, John <konkus.john@epa.gov>	Required
Kundinger, Kelly <kundinger.kelly@epa.gov>	Required
Leopold, Matt (OGC) <Leopold.Matt@epa.gov>	Required
Letendre, Daisy <letendre.daisy@epa.gov>	Required
Lovell, Will (William) <lovell.william@epa.gov>	Required

McMurray, Forrest <mcmurray.forrest@epa.gov>	Required
Molina, Michael <molina.michael@epa.gov>	Required
Palich, Christian <palich.christian@epa.gov>	Required
Ringel, Aaron <ringel.aaron@epa.gov>	Required
Rodrick, Christian <rodrick.christian@epa.gov>	Required
Schwab, Justin <schwab.justin@epa.gov>	Required
Seabaugh, Catherine <seabaugh.catherine@epa.gov>	Required
Traylor, Patrick <traylor.patrick@epa.gov>	Required
Wagner, Kenneth <wagner.kenneth@epa.gov>	Required
Wehrum, Bill <Wehrum.Bill@epa.gov>	Required
Wheeler, Andrew <wheeler.andrew@epa.gov>	Required
White, Elizabeth <white.elizabeth@epa.gov>	Required
Wilcox, Jahan <wilcox.jahan@epa.gov>	Required
Wildeman, Anna <wildeman.anna@epa.gov>	Required
Woods, Clint <woods.Clint@epa.gov>	Required
Yamada, Richard (Yujiro) <yamada.richard@epa.gov>	Required
Ford, Hayley <ford.hayley@epa.gov>	Required

Monday, June 25, 2018

Time 8:45 AM – 9:00 AM
Subject Staff Meeting
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required

Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required
Lousberg, Macara <Lousberg.Macara@epa.gov>	Required
Wildeman, Anna <wildeman.anna@epa.gov>	Required
McDonough, Owen <mcdonough.owen@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Required

Time 9:00 AM – 10:00 AM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 10:00 AM – 11:00 AM
Subject Discussion: WOTUS Step 2
Location WJC-N 3412
Show Time As Busy

Sct: Tamika Burton, [redacted]

Carla Veney

Andrew,

As you know, we have begun the interagency process and are working hard to finalize the preamble to WOTUS Step 2. There are a few issues that have been raised that relate to our legal approach that we need to discuss. Given the schedule that [redacted] has given us, I think we need to assemble this group and agree on a final path forward. I will have my assistant work with yours to arrange a convenient time. I would recommend we do this as soon as possible. I will also try to get a more detailed agenda to tee up the questions for decision.

Thank you, Matt

Matthew Z. Leopold

General Counsel

U.S. Environmental Protection Agency

[redacted]

Categories Red Category

Attendees

Name <E-mail>	Attendance
Wheeler, Andrew <wheeler.andrew@epa.gov>	Organizer
Leopold, Matt (OGC) <Leopold.Matt@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required
Fotouhi, David <Fotouhi.David@epa.gov>	Required
Jackson, Ryan <jackson.ryan@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Optional
McDonough, Owen <mcdonough.owen@epa.gov>	Optional

Time 11:00 AM – 12:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 12:00 PM – 1:00 PM
Subject Lunch
Show Time As Busy
Categories Orange Category

Time 1:00 PM – 2:00 PM
Subject Pre Brief for NDRP Principals Meeting
Location Room 3233 WJCE Teleconference Call in # [redacted] Passcode [redacted]
Show Time As Busy

Roger Gorke

[redacted]

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer

Wildeman, Anna <wildeman.anna@epa.gov>	Required
Lousberg, Macara <Lousberg.Macara@epa.gov>	Required
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required
Dennis, Allison <Dennis.Allison@epa.gov>	Required
Gorke, Roger <Gorke.Roger@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Optional
Lieberman, Paige <Lieberman.Paige@epa.gov>	Optional
Jim Gebhardt (Gebhardt.Jim@epa.gov) <Gebhardt.Jim@epa.gov>	Optional
Penman, Crystal <Penman.Crystal@epa.gov>	Optional

Time 2:00 PM – 3:00 PM
Subject Senior Staff Meeting
Location Alm Room
Show Time As Tentative

NOTE: Due to space constraints, please contact Aaron Dickerson before forwarding or inviting additional meeting attendees.

Categories Red Category

Attendees

Name <E-mail>	**Attendance**
[redacted] <[redacted]>	Organizer
Baptist, Erik <baptist.erik@epa.gov>	Required
Beck, Nancy <beck.nancy@epa.gov>	Required
Benevento, Douglas <benevento.douglas@epa.gov>	Required
Benjamin-Sirmons, Denise <Benjamin-Sirmons.Denise@epa.gov>	Required
Bennett, Tate <Bennett.Tate@epa.gov>	Required
Bertrand, Charlotte <Bertrand.Charlotte@epa.gov>	Required

Bloom, David <Bloom.David@epa.gov>	Required
Bodine, Susan <bodine.susan@epa.gov>	Required
Bolen, Brittany <bolen.brittany@epa.gov>	Required
Bowman, Liz <Bowman.Liz@epa.gov>	Required
Breen, Barry <Breen.Barry@epa.gov>	Required
Brown, Byron <brown.byron@epa.gov>	Required
Burke, Marcella <burke.marcella@epa.gov>	Required
Darwin, Henry <darwin.henry@epa.gov>	Required
Darwin, Veronica <darwin.veronica@epa.gov>	Required
Dravis, Samantha <dravis.samantha@epa.gov>	Required
Dunn, Alexandra <dunn.alexandra@epa.gov>	Required
Elkins, Arthur <Elkins.Arthur@epa.gov>	Required
Etzel, Ruth <Etzel.Ruth@epa.gov>	Required
Ferguson, Lincoln <ferguson.lincoln@epa.gov>	Required
Fine, Steven <fine.steven@epa.gov>	Required
Flynn, Mike <Flynn.Mike@epa.gov>	Required
Fonseca, Silvina <Fonseca.Silvina@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Glenn, Trey <Glenn.Trey@epa.gov>	Required
Grantham, Nancy <Grantham.Nancy@epa.gov>	Required
Greaves, Holly <greaves.holly@epa.gov>	Required
Greenwalt, Sarah <greenwalt.sarah@epa.gov>	Required

Gulliford, Jim <gulliford.jim@epa.gov>	Required
Gunasekara, Mandy <Gunasekara.Mandy@epa.gov>	Required
Hanson, Paige (Catherine) <hanson.catherine@epa.gov>	Required
Harlow, David <harlow.david@epa.gov>	Required
Hladick, Christopher <hladick.christopher@epa.gov>	Required
Hupp, Millan <hupp.millan@epa.gov>	Required
Idsal, Anne <idsal.anne@epa.gov>	Required
Jackson, Ryan <jackson.ryan@epa.gov>	Required
Kelly, Albert <kelly.albert@epa.gov>	Required
Lawrence, Tanya <Lawrence.Tanya@epa.gov>	Required
Leopold, Matt <Leopold.Matt@epa.gov>	Required
Lopez, Peter <lopez.peter@epa.gov>	Required
Lyons, Troy <lyons.troy@epa.gov>	Required
Munoz, Charles <munoz.charles@epa.gov>	Required
Nishida, Jane <Nishida.Jane@epa.gov>	Required
Orme-Zavaleta, Jennifer <Orme-Zavaleta.Jennifer@epa.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Sands, Jeffrey <sands.jeffrey@epa.gov>	Required
Schwab, Justin <schwab.justin@epa.gov>	Required
Servidio, Cosmo <servidio.cosmo@epa.gov>	Required
Slotkin, Ron <slotkin.ron@epa.gov>	Required
Stepp, Cathy <stepp.cathy@epa.gov>	Required

Strauss, Alexis <Strauss.Alexis@epa.gov>	Required
Traylor, Patrick <traylor.patrick@epa.gov>	Required
Vizian, Donna <Vizian.Donna@epa.gov>	Required
Wagner, Kenneth <wagner.kenneth@epa.gov>	Required
Wehrum, Bill <Wehrum.Bill@epa.gov>	Required
White, Elizabeth <white.elizabeth@epa.gov>	Required
Wooden-Aguilar, Helena <Wooden-Aguilar.Helena@epa.gov>	Required
Woods, Clint <woods.Clint@epa.gov>	Required
Yamada, Richard (Yujiro) <yamada.richard@epa.gov>	Required
Zarba, Christopher <Zarba.Christopher@epa.gov>	Required
Dickerson, Aaron <dickerson.aaron@epa.gov>	Required
Ford, Hayley <ford.hayley@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Required

Tuesday, June 26, 2018

Time All Day
Subject PFAS @ R3- PHL
Location Willow Grove, PA
Show Time As Free

Time 8:45 AM – 9:00 AM
Subject Staff Meeting
Location 3219A
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required

Lousberg, Macara <Lousberg.Macara@epa.gov>	Required
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
McDonough, Owen <mcdonough.owen@epa.gov>	Required
Wildeman, Anna <wildeman.anna@epa.gov>	Required

Time 12:00 PM – 1:00 PM
Subject Lunch
Show Time As Busy
Categories Orange Category

Time 1:00 PM – 1:30 PM
Subject Meeting on ELGS
Location 1201 Constitution Ave NW, Washington DC 20004 WJCE 3233 Please call [redacted] for escort
Show Time As Tentative

Venu Ghanta

Federal Regulatory Affairs Director

325 7th Street NW, Suite 300, Washington, DC 20004

Office: [redacted]

Cell: [redacted]

Categories Blue Category

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
McDonough, Owen <mcdonough.owen@epa.gov>	Required
venu.ghanta@duke-energy.com <venu.ghanta@duke-energy.com>	Required
Wildeman, Anna <wildeman.anna@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Optional

Time 1:00 PM – 5:00 PM
Subject Office Hours
Show Time As Busy
Categories Blue Category

Time 2:30 PM – 3:00 PM
Subject Meeting with R9 Regional Administrator
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Stoker, Michael B. <stoker.michael@epa.gov>	Required
Correa, Laura <correa.laura@epa.gov>	Optional
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Forsgren, Lee <Forsgren.Lee@epa.gov>	Optional
Miller, Amy <Miller.Amy@epa.gov>	Optional
Wildeman, Anna <wildeman.anna@epa.gov>	Optional

Time 4:00 PM – 4:30 PM
Subject Meeting with ASDWA Conference call number [redacted]
Location 1201 Constitution Ave NW, Washington DC 20460; WJCE 3233; Please call [redacted] for escort
Show Time As Busy

1. Funding for the states
2. The revisions to the Lead and Copper Rule and our desire to have an ongoing dialogue with EPA (enclosed are our recent Cooperative Federalism comments)
3. PFAS and our desire to have EPA play a leadership role (enclosed is our earlier PFAS letter to EPA)

J. Alan Roberson, P.E.
Executive Director

Association of State Drinking Water Administrators (ASDWA)
1401 Wilson Blvd. - Suite 1225
Arlington, VA 22209

Office: (703) [redacted]

Categories Blue Category
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer

Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
aroberson@asdwa.org <aroberson@asdwa.org>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Penman, Crystal <Penman.Crystal@epa.gov>	Optional
Mclain, Jennifer <Mclain.Jennifer@epa.gov>	Required
Burneson, Eric <burneson.eric@epa.gov>	Required

Time 6:00 PM – 7:00 PM
Subject WOTUS Meeting
Location 3219A WJCE
Show Time As Busy
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Goodin, John <Goodin.John@epa.gov>	Required
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required

Wednesday, June 27, 2018

Time 8:30 AM – 6:00 PM
Subject Save the Date - National Water Division Director's Meeting
Location 1153 WJC East Balasa, Kate
Show Time As Busy

Time 6/27/2018 8:30 AM – 6/28/2018 6:00 PM
Subject National Water Division Directors Meeting
Location EPA HQ, Room 1153
Show Time As Busy

UPDATE as of 6/25/18

Agenda attached. Additional materials attached.

UPDATE as of 5/7/18
ALL TRAVELERS: USE CONF CODE –MS050503
Please note: It is an OCFO requirement that this code be used by all attendees who are traveling for the meeting.

Please enter this code, along with the name of the conference, in the description field on any travel authorizations.

UPDATE as of 4/20/18

A block of sleeping rooms is reserved at the Mandarin Oriental, Washington D.C. located at 1330 Maryland Avenue, SW, Washington, DC. The hotel is located just south of the National Mall, down 12th St (within a 20 minute walk or a short Metro ride of EPA HQ).

Please use the following link to make your reservations: https://book.passkey.com/go/EPAJune2018 <https://book.passkey.com/go/EPAJune2018>

Regional WDDS: Please plan to travel to DC on Tuesday, June 26th, as we will start the meeting at 8:30am on Wednesday, June 27th.

The reservations cut-off date is May 28th, 2018. Please book before that day to ensure you obtain the group rate. The room rate is $253/night, plus applicable taxes. The individual cancellation policy is 72 hours prior to arrival.

Attendees

Name <E-mail>	**Attendance**
Balasa, Kate <balasa.kate@epa.gov>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required
Weiler, Katherine <Weiler.Katherine@epa.gov>	Required
Pomponio, John <Pomponio.John@epa.gov>	Required
Sawyers, Andrew <Sawyers.Andrew@epa.gov>	Required
Thompkins, Anita <Thompkins.Anita@epa.gov>	Required
Fontaine, Tim <Fontaine.Tim@epa.gov>	Required
Klinger, Adam <Klinger.Adam@epa.gov>	Optional

Robichaud, Jeffery <Robichaud.Jeffery@epa.gov>	Required
O'Connor, Darcy <oconnor.darcy@epa.gov>	Required
Sharon Vazquez (Vazquez.Sharon@epa.gov) <Vazquez.Sharon@epa.gov>	Required
Forren, John <Forren.John@epa.gov>	Required
Frace, Sheila <Frace.Sheila@epa.gov>	Required
Wall, Tom <Wall.Tom@epa.gov>	Required
Davis, Suea <davis.suea@epa.gov>	Optional
Ruf, Christine <Ruf.Christine@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Stein, Raffael <Stein.Raffael@epa.gov>	Required
Guerrero, Carmen <guerrero.carmen@epa.gov>	Required
Lapp, Jeffrey <lapp.jeffrey@epa.gov>	Required
Garcia, David <Garcia.David@epa.gov>	Required
Moraff, Kenneth <Moraff.Ken@epa.gov>	Required
Farris, Erika D. <Farris.Erika@epa.gov>	Required
Scaggs, Ben <Scaggs.Ben@epa.gov>	Required
Edward, James <edward.james@epa.gov>	Required
Garcia, Bert <Garcia.Bert@epa.gov>	Required
Bragan, Mary Jo <Bragan.Maryjo@epa.gov>	Required
Torres, Tomas <Torres.Tomas@epa.gov>	Required
Opalski, Dan <Opalski.Dan@epa.gov>	Required
Lueckenhoff, Dominique <Lueckenhoff.Dominique@epa.gov>	Required

Gollan, Christopher <Gollan.Christopher@epa.gov>	Required
Allenbach, Becky <allenbach.becky@epa.gov>	Required
McManus, Catharine <mcmanus.catharine@epa.gov>	Required
Marcus, Pam <marcus.pam@epa.gov>	Optional
Behl, Betsy <Behl.Betsy@epa.gov>	Required
McDonough, Owen <mcdonough.owen@epa.gov>	Optional
Zapata, Cesar <Zapata.Cesar@epa.gov>	Required
Goodin, John <Goodin.John@epa.gov>	Required
Best-Wong, Benita <Best-Wong.Benita@epa.gov>	Required
Laureano, Javier <laureano.javier@epa.gov>	Required
Zuckerman, Katherine <Zuckerman.Katherine@epa.gov>	Optional
Penman, Crystal <Penman.Crystal@epa.gov>	Required
Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Gratz, Jeff <Gratz.Jeff@epa.gov>	Required
Nagle, Deborah <Nagle.Deborah@epa.gov>	Required
Lousberg, Macara <Lousberg.Macara@epa.gov>	Required
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Required
Tiago, Joseph <Tiago.Joseph@epa.gov>	Required
Burneson, Eric <Burneson.Eric@epa.gov>	Required
Mclain, Jennifer <Mclain.Jennifer@epa.gov>	Required
Spraul, Greg <Spraul.Greg@epa.gov>	Required
Bradford, Charlotte <Bradford.Charlotte@epa.gov>	Optional

Edwards, Crystal <Edwards.Crystal@epa.gov>	Required
Crawford, Tiffany <Crawford.Tiffany@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Blake, Ellen <Blake.Ellen@epa.gov>	Optional
Walker, Mary <walker.mary@epa.gov>	Required
Hisel-Mccoy, Sara <Hisel-McCoy.Sara@epa.gov>	Required
Connors, Sandra <Connors.Sandra@epa.gov>	Required
Gutierrez, Sally <Gutierrez.Sally@epa.gov>	Optional
Wood, Robert <Wood.Robert@epa.gov>	Required
Eisenberg, Mindy <Eisenberg.Mindy@epa.gov>	Required
Jeaneanne Gettle (Gettle.Jeaneanne@epa.gov) <Gettle.Jeaneanne@epa.gov>	Optional
Chung, Angela <Chung.Angela@epa.gov>	Required
Dwyer, Stacey <Dwyer.Stacey@epa.gov>	Required
Gullatt, Kristin <Gullatt.Kristin@epa.gov>	Required
Hamjian, Lynne <Hamjian.Lynne@epa.gov>	Required
Holst, Linda <holst.linda@epa.gov>	Required
Huffman, Diane <Huffman.Diane@epa.gov>	Required
Holliday, Janet <holliday.janet@epa.gov>	Optional
Robertson, Lakeshia <robertson.lakeshia@epa.gov>	Required
Fish, Tonya <Fish.Tonya@epa.gov>	Optional
Wildeman, Anna <wildeman.anna@epa.gov>	Optional
Delgrosso, Karen <Delgrosso.Karen@epa.gov>	Optional

Estornell, Paula <Estornell.Paula@epa.gov>	Optional
Baltazar, Debbie <baltazar.debbie@epa.gov>	Optional
Taylor, Jori <taylor.jori@epa.gov>	Optional
Beverly Ohara (Ohara.Beverly@epa.gov) <Ohara.Beverly@epa.gov>	Optional
Kirkpatrick, Catherine <kirkpatrick.catherine@epa.gov>	Optional
Amato, Paul <Amato.Paul@epa.gov>	Optional
DL <[redacted]	Optional
Patheal, Bella <Patheal.Bella@epa.gov>	Optional

Thursday, June 28, 2018

Time 5:30 PM – 6:15 PM
Subject Meeting with Waterboys Foundation
Location Entrance to EDGAR Bar & Kitchen at The Mayflower Hotel - 1127 Connecticut Ave NW, Washington DC 22036
Show Time As Busy

Chris Long

Jon Freeman

Categories Blue Category
Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
jon.freedman@suez.com <jon.freedman@suez.com>	Required

Friday, June 29, 2018

Time 9:30 AM – 10:00 AM
Subject Car confirmed
Show Time As Busy

Your transportation request has been confirmed.

Confirmation Number: 79617

Passenger Information

* Name: DAVE ROSS/AA
* Number: [redacted]
* Pickup Time: 2018-06-29 09:45:00.0
* Pickup Location: EPA EAST 1201 CONSTITUTION AVE

* Drop-Off Location: USDA

Vehicle Information

* Tag: [redacted]
* Vehicle Type: CAR
* Make : CHEVROLET
* Model : VOLT
* Color : BLACK

Categories Yellow Category

Attendees

Name <E-mail>	**Attendance**
Ross, David P <ross.davidp@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Gorke, Roger <Gorke.Roger@epa.gov>	Required

Time 10:00 AM – 11:30 AM

Subject National Drought Resilience Partnership Principals Meeting

Location The Pinchot Room (2SE-04) Yates Federal Building (USDA Forest Service Headquarters) 201 14th Street SW Washington DC

Show Time As Busy

Reminder and read-ahead information for the upcoming Principals meeting of the National Drought Resilience Partnership (NDRP.)

The goal of this meeting is to acquaint the new principals with the NDRP and begin

Items Included:

* Draft Agenda for Friday's Meeting
* NDRP talking points
* NDRP 2017 Year-End Report
* What is NIDIS?

Further items will be provided at the meeting.

The meeting will be in the Pinchot Room at the US Forest Service

Headquarter (Yates Building) 201 14th Street SW Washington DC.

For those unable to attend in person, the call in information is:

Conference Line #: [redacted]

Access Code: [redacted]

Thanks and please let me know if you have any questions,

Shelby

Shelby Callaway, Ph.D.

Historian, Natural Resources Conservation Service
<https://www.nrcs.usda.gov/wps/portal/nrcs/site/na tional/home/>

Executive Officer, National Drought Resilience Partnership
<https://www.drought.gov/drought/resources/nationa l-drought-resilience-partnership>

United States Department of Agriculture

Desk: [redacted] Cell: [redacted]

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sender and delete the email immediately.

Categories Blue Category

Attendees

Name <E-mail>	Attendance
Callaway, Shelby - NRCS, Washington, DC <Shelby.Callaway@wdc.usda.gov>	Organizer
maureen.sullivan18.civ@mail.mil <maureen.sullivan18.civ@mail.mil>	Required
McInnis, Marissa K CIV (US) <marissa.k.mcinnis.civ@mail.mil>	Required
Ryan.Fisher@usace.army.mil <Ryan.Fisher@usace.army.mil>	Required
Robyn Colosimo <robyn.s.colosimo.civ@mail.mil>	Required
Kathleen.D.White@usace.army.mil <Kathleen.D.White@usace.army.mil>	Required
timothy_petty@ios.doi.gov <timothy_petty@ios.doi.gov>	Required
Kerry Rae <kerry_rae@ios.doi.gov>	Required
andrea_travnicek@ios.doi.gov <andrea_travnicek@ios.doi.gov>	Required
Northey, Bill - OSEC, Washington, DC <Bill.Northey@osec.usda.gov>	Required
Brusberg, Mark - OCE <MBrusberg@oce.usda.gov>	Required
invites.undersecretary@noaa.gov <invites.undersecretary@noaa.gov>	Required
Peter Colohan - NOAA Federal <peter.colohan@noaa.gov>	Required
Kristine Cherry - NOAA Federal <kristine.cherry@noaa.gov>	Required
roger.pulwarty@noaa.gov <roger.pulwarty@noaa.gov>	Required
Veva Deheza <veva.deheza@noaa.gov>	Required
Steven.winberg@hq.doe.gov <Steven.winberg@hq.doe.gov>	Required

kyle.yunaska@hq.doe.gov <kyle.yunaska@hq.doe.gov>	Required
Zelek, Charles <Charles.Zelek@hq.doe.gov>	Required
Jarad.Daniels@hq.doe.gov <Jarad.Daniels@hq.doe.gov>	Required
Robie.Lewis@Hq.Doe.Gov <Robie.Lewis@Hq.Doe.Gov>	Required
goudarzi@onlocationinc.com <goudarzi@onlocationinc.com>	Required
Gollehon, Noel - NRCS, Beltsville, MD <Noel.Gollehon@wdc.usda.gov>	Required
Robert.Kolasky@hq.dhs.gov <Robert.Kolasky@hq.dhs.gov>	Required
Sandra Pinel <sandra.pinel@hq.dhs.gov>	Required
andrea.henshilwood@hq.dhs.gov <andrea.henshilwood@hq.dhs.gov>	Required
Ross, David P <ross.davidp@epa.gov>	Required
Penman, Crystal <Penman.Crystal@epa.gov>	Required
Gorke, Roger <Gorke.Roger@epa.gov>	Required
[redacted]	Required
Ray, Aaron D. [redacted]	Required
Montoni, Joe E. [redacted]	Required
PJB7@cdc.gov <PJB7@cdc.gov>	Required
Angela Salazar <aos9@cdc.gov>	Required
Decker, John A. (CDC/ONDIEH/NCEH) <jad4@cdc.gov>	Required
Barbara DeRosa-Joynt <derosabm@state.gov>	Required
Sarah Gourde - State <GourdeSM@state.gov>	Required
lfriedl@nasa.gov <lfriedl@nasa.gov>	Required

Bradley.Doorn@nasa.gov <Bradley.Doorn@nasa.gov>	Required
Elizabeth Ossowski <elizabeth.ossowski@noaa.gov>	Required
draff@usbr.gov <draff@usbr.gov>	Required
Gebhardt, Jim <Gebhardt.Jim@epa.gov>	Required

Time 11:30 AM – 12:00 PM
Subject Car confirmed
Show Time As Busy

Your transportation request has been confirmed.

Confirmation Number: 79618

Passenger Information

* Name: DAVE ROSS/AA
* Number: [redacted]
* Pickup Time: 2018-06-29 11:30:00.0
* Pickup Location: USDA
* Drop-Off Location: EPA EAST 1201 CONSTITUTION AVE

Vehicle Information

* Tag: [redacted]
* Vehicle Type: CAR
* Make : CHEVROLET
* Model : VOLT
* Color : BLACK

Categories Yellow Category

Attendees

Name <E-mail>	Attendance
Ross, David P <ross.davidp@epa.gov>	Organizer
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Gorke, Roger <Gorke.Roger@epa.gov>	Required

Time 12:00 PM – 1:00 PM
Subject American College of Environmental Lawyers Interview (ACOEL)
Location 1201 Constitution Ave NW, Washington DC 20004 3219A WJCE Please call [redacted] for escort
Show Time As Busy
Categories Orange Category, Blue Category
Attendees

Name <E-mail>	Attendance

Ross, David P <ross.davidp@epa.gov>	Organizer
lbenfield@foley.com <lbenfield@foley.com>	Required
Drinkard, Andrea <Drinkard.Andrea@epa.gov>	Optional
Campbell, Ann <Campbell.Ann@epa.gov>	Optional
Wildeman, Anna <wildeman.anna@epa.gov>	Required
Lieberman, Paige <Lieberman.Paige@epa.gov>	Optional

Time 1:00 PM – 2:00 PM

Subject Briefings Follow-Up: Perchlorate/LCR 30 minute each briefing POC: Will Lovell & Ann Campbell

Location 3412 WJCN Administrator's Office

Show Time As Busy

Briefing: Perchlorate Follow-up Completed ☑

Date: Week of 6/25

Duration: 30 minutes

Required Attendees: Wheeler, Andrew; Ross, David; Grevatt, Peter; Mclain, Jennifer; Burneson, Eric; Fotouhi, David; Neugeboren, Steven; Bolen, Brittany; Campbell, Ann; Forsgren, Lee

Optional Attendees: Wehling, Carrie; Messier, Dawn; Leopold, Matt (OGC)

Briefing: LCR Follow-up Completed ☑

Date: Week of 6/25

Duration: 30 minutes

Required Attendees: Wheeler, Andrew; Ross, David; Grevatt, Peter; Mclain, Jennifer; Burneson, Eric; Fotouhi, David; Neugeboren, Steven; Bolen, Brittany; Campbell, Ann; Forsgren, Lee

Optional Attendees: Wehling, Carrie; Messier, Dawn; Leopold, Matt (OGC)

Thank you!

Will

From: Campbell, Ann
Sent: Tuesday, June 26, 2018 10:38 AM
To: Lovell, Will (William) <lovell.william@epa.gov
<mailto:lovell.william@epa.gov> >
Subject: RE: Steam ELG Bfg

Thanks Will.

Perchlorate would be our top priority given the time sensitivity. Same folks who participated in the initial briefing should be included: Ross, David; Grevatt, Peter; Mclain, Jennifer; Burneson, Eric; Fotouhi, David; Neugeboren, Steven; Bolen, Brittany; Campbell, Ann; Forsgren, Lee; Cc: Wehling, Carrie; Messier, Dawn; Leopold, Matt (OGC)

For the LCR follow-up briefing please also include the same folks: Ross, David; Grevatt, Peter; Mclain, Jennifer; Burneson, Eric; Fotouhi, David; Neugeboren, Steven; Bolen, Brittany; Campbell, Ann; Forsgren, Lee; Anna Wildeman; Cc: Wehling, Carrie; Messier, Dawn; Leopold, Matt (OGC).

Dave and Lee will be reaching out to the Deputy on Idaho so I will follow-up with you on that one shortly.

Ann Campbell

Chief of Staff (acting)

Office of Water

Categories Red Category

Attendees

Name <E-mail>	**Attendance**
Wheeler, Andrew <wheeler.andrew@epa.gov>	Organizer
Ross, David P <ross.davidp@epa.gov>	Required

Grevatt, Peter <Grevatt.Peter@epa.gov>	Required
Mclain, Jennifer <Mclain.Jennifer@epa.gov>	Required
Burneson, Eric <Burneson.Eric@epa.gov>	Required
Fotouhi, David <fotouhi.david@epa.gov>	Required
Neugeboren, Steven <Neugeboren.Steven@epa.gov>	Required
Bolen, Brittany <bolen.brittany@epa.gov>	Required
Campbell, Ann <Campbell.Ann@epa.gov>	Required
Forsgren, Lee <Forsgren.Lee@epa.gov>	Required
Wildeman, Anna <wildeman.anna@epa.gov>	Required
Yamada, Richard (Yujiro) <yamada.richard@epa.gov>	Required
Kuhn, Kevin <Kuhn.Kevin@epa.gov>	Required
Hauchman, Fred <hauchman.fred@epa.gov>	Required
Wehling, Carrie <Wehling.Carrie@epa.gov>	Optional
Messier, Dawn <Messier.Dawn@epa.gov>	Optional
Leopold, Matt (OGC) <Leopold.Matt@epa.gov>	Optional

Saturday, June 30, 2018

Time 6:04 AM – 7:34 AM
Subject Delta 1291 departs DCA @ 6:04AM arrives DTW @ 7:34AM
Show Time As Busy
Categories Blue Category

Time 8:30 AM – 8:55 AM
Subject DL flight 4637 departs DTW @ 8:30AM arrives MSN @ 8:55AM
Show Time As Busy
Categories Blue Category

Monday, July 02, 2018

Time All Day
Subject Crystal - P OOO
Show Time As Free

Time 7/2/2018 12:00 AM – 7/5/2018 12:00 AM
Subject AC OOO
Show Time As Free

Time 8:00 AM – 6:00 PM
Subject OOO
Show Time As Busy
Categories Blue Category

Tuesday, July 03, 2018

Time All Day
Subject Crystal P - OOO
Show Time As Free

Time 8:00 AM – 6:00 PM
Subject OOO
Show Time As Busy
Categories Blue Category

Wednesday, July 04, 2018

Time 8:00 AM – 6:00 PM
Subject 4th of JULY
Show Time As Busy
Categories EZ Record - Private

Message

From: Grevatt, Peter [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=D3CAA0C39EBE44CB9D3AE44DA7543733-GREVATT, PETER]
Sent: 2/3/2017 12:55:59 PM
To: Burneson, Eric [burneson.eric@epa.gov]; Ronald Bergman (Bergman.Ronald@epa.gov) [Bergman.Ronald@epa.gov]; Thompkins, Anita [Thompkins.Anita@epa.gov]; Oshida, Phil [Oshida.Phil@epa.gov]; Eric Bissonette (Bissonette.Eric@epa.gov) [Bissonette.Eric@epa.gov]; Tiffany Cooper (Cooper.Tiffany@epa.gov) [Cooper.Tiffany@epa.gov]; Gonzalez, Yvonne V. [Gonzalez.Yvonne@epa.gov]
Subject: FW: Follow On Guidance on 2-for-1 Regulatory EO
Attachments: Interim guidance on Reducing Regulations EO.pdf; ATT00001.htm

Importance: High

We have until Tuesday noon to submit comments. One of those might relate to how we address regulatory actions that are being taken under court order, as well as those like 1417 that are being taken to codify statutory requirements in our regulations. I expect that the overall frame of this is unlikely to change significantly from what they have developed in the attachment. Let's discuss next week how we might go about addressing this in the context of LCR, perchlorate, 1417 and the DBP rules. Thanks.

From: Lousberg, Macara
Sent: Friday, February 03, 2017 7:37 AM
To: Sawyers, Andrew <Sawyers.Andrew@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Southerland, Elizabeth <Southerland.Elizabeth@epa.gov>; Goodin, John <Goodin.John@epa.gov>
Cc: Chancey, Barbara <Chancey.Barbara@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Lape, Jeff <lape.jeff@epa.gov>; Frace, Sheila <Frace.Sheila@epa.gov>; Conerly, Octavia <Conerly.Octavia@epa.gov>; Nandi, Romell <Nandi.Romell@epa.gov>; Farris, Erika D. <Farris.Erika@epa.gov>; Gonzalez, Yvonne V. <Gonzalez.Yvonne@epa.gov>; Flaharty, Stephanie <Flaharty.Stephanie@epa.gov>; Gerstein, Arielle <gerstein.arielle@epa.gov>; Nelson, Tomeka <Nelson.Tomeka@epa.gov>; Stebe, Katherine <Stebe.Katherine@epa.gov>; Evalenko, Sandy <Evalenko.Sandy@epa.gov>; Corona, Joel <Corona.Joel@epa.gov>; Trombley, Michael <Trombley.Michael@epa.gov>; Ruf, Christine <Ruf.Christine@epa.gov>; Campbell, Ann <Campbell.Ann@epa.gov>; Peck, Gregory <Peck.Gregory@epa.gov>; Shapiro, Mike <Shapiro.Mike@epa.gov>; Best-Wong, Benita <Best-Wong.Benita@epa.gov>
Subject: Follow On Guidance on 2-for-1 Regulatory EO
Importance: High

Per Mike's direction, I'm sharing OMB's follow on guidance for the 2 for 1 Regulatory EO. Please provide comments to me no later than **noon next Tuesday, February 7th** so that Mike and Benita have time to review them by OP's Tuesday's COB deadline. Thanks and if you have any questions please let me know.

Macara

From: Shapiro, Mike
Sent: Thursday, February 02, 2017 5:09 PM
To: Lousberg, Macara <Lousberg.Macara@epa.gov>; Ruf, Christine <Ruf.Christine@epa.gov>
Cc: Best-Wong, Benita <Best-Wong.Benita@epa.gov>
Subject: FW: Follow On Guidance on 2-for-1 Regulatory EO

Macara/Christine,

Please coordinate a review of this. Thanks.

Mike

Michael Shapiro
Acting Assistant Administrator, Office of Water
US EPA, 4101M
1200 Pennsylvania Ave., NW
Washington, DC 20460
202-564-5700

From: Kenny, Shannon
Sent: Thursday, February 02, 2017 3:59 PM
To: 2017HQfirstassistants <2017HQfirstassistants@epa.gov>
Cc: Rees, Sarah <rees.sarah@epa.gov>; Nickerson, William <Nickerson.William@epa.gov>; Owens, Nicole <Owens.Nicole@epa.gov>
Subject: Follow On Guidance on 2-for-1 Regulatory EO

All,
I'm attaching here the first draft guidance we have received related to the 2-for-1 regulatory EO ("Reducing Regulation and Controlling Regulatory Costs"). For this interim guidance, OIRA is focusing on implementation of Section 2 of the Executive Order, which covers Fiscal Year 2017.

There is some good news in here -- when counting costs, they have scoped this effort to include only costs of new significant actions taken after January 20, rather than including non-significant actions (e.g., SIPs) or actions taken under the Obama Administration during the first half of the FY17 fiscal year. When counting savings, however, we can include repeal of or modifications to any past regulation, regardless of whether it was deemed significant.

We have the opportunity to submit comments to OMB, but will need your comments by **Tuesday COB** in order to compile and prioritize them and run them through the many channels here. Please submit your comments to me with a cc to Nicole Owens.

Shannon

Sent from my iPad