



December 12, 2019

Office of Water
Environmental Protection Agency
1200 Pennsylvania Avenue NW
Washington, DC 20460

Re: EPA Water Reuse Action Plan

Dear Mr. David Ross:

The National Blue Ribbon Commission for Onsite Non-potable Water Systems would like to thank the US Environmental Protection Agency (USEPA) for the opportunity to comment on the Water Reuse Action Plan.

The National Blue Ribbon Commission for Onsite Non-potable Water Systems is the leading entity supporting the implementation of onsite non-potable water systems in communities. The National Blue Ribbon Commission is a collaborative of public health regulators and water and wastewater utilities, representing 14 states and the District of Columbia, as well as representatives from USEPA and US Army. This group brings together national leaders at the forefront of developing guidance and tools for state and local jurisdictions to adopt consistent management approaches for overseeing onsite non-potable water systems.

With support from WaterReuse Association, US Water Alliance, the San Francisco Public Utilities Commission, and the Water Research Foundation, the National Blue Ribbon Commission has addressed several challenges to widespread adoption of onsite water reuse through its participation in research to develop risk-based water quality standards, model regulations, and a training manual for engineers, operators, and regulators. These advancements have helped several states, including Colorado, Hawaii, Minnesota, California, Washington, and Oregon introduce policies and regulations for onsite water reuse.

Continuing to advance research to support onsite non-potable water systems remains the top priority for the National Blue Ribbon Commission. Currently, the National Blue Ribbon Commission, researchers from the USEPA Office of Research & Development, and an expert

panel assembled by California State Water Resources Control Board are working on research to refine and expand the fit-for-purpose treatment guidelines for a range of alternate water sources and non-potable end uses. In addition, the National Blue Ribbon Commission has identified the following items as research priorities and are seeking funding for:



**National Blue Ribbon Commission
for Onsite Non-potable Water Systems**

1. Developing an operator certificate program to verify that onsite non-potable water system operators are appropriately qualified.
2. Developing research to advance the quantification of bacterial inactivation and/or removal from commonly employed treatment processes associated with onsite non-potable water systems, including identifying appropriate surrogates that can be monitored online in real-time.
3. Developing research to define pathogen log removal credits for natural treatment systems such as wetland treatment systems.

We urge the USEPA to consider funding these research priorities that would further facilitate the widespread implementation of onsite non-potable water systems. Thank you for your consideration.

Sincerely,

A handwritten signature in blue ink that reads "Paula Kehoe". The signature is fluid and cursive, with a long horizontal stroke at the end.

Paula Kehoe
Chair, National Blue Ribbon Commission for Onsite Non-potable Water Systems

Director of Water Resources
San Francisco Public Utilities Commission
525 Golden Gate Avenue, 10th Floor
San Francisco, CA 94102

National Water Reuse Action Plan

Action Development Framework

This framework is the primary source document for actions included in the next iteration of the National Water Reuse Action Plan, which will exist both online and in print (slated for release in February 2020). This document is intended to help action leaders and partners transform a proposed action into an implementable action. This framework is a tool to help fulfill the following primary functions:

1. **Identify Context and Action Attributes:** *To document and communicate the context/background of an action; identify key organizations/contacts with equities and interests in the action; and identify specific steps, milestones/target dates, and responsibilities to complete the overall action.*
2. **Provide Information for Publication:** *To compile information that will feed the overall online action implementation platform slated for release in February 2020 [the online platform is currently under development]. At this time the exact information to be displayed online is not yet determined, but this framework includes key content that may be released on the web. The precise structure and content of the web platform is still undecided, but any or all of this information might potentially be made available publicly online.*

Following are several considerations for action development:

- ✓ *Scoping and upfront research is key to ensure the action context/background and entities with equities/interests are thorough and inclusive. These entities may include states, local agencies (i.e., utilities, municipalities), federal agencies, associations, etc. It is also important to consider whether it is appropriate for the action to be carried out across multiple source of water and reuse applications. For example, see Inset 1 from [draft Action Plan](#).*
- ✓ *Collaboration and iterative progress may be necessary to fully scope and develop an implementation approach that will have a meaningful impact. For example, an individual or organization may make an initial effort with scoping an action that will be a starting point for further refinement and input.*
- ✓ *Some actions may require a comprehensive deliverable that can only be developed by partners working collaboratively. Other actions may benefit from implementation steps by multiple organizations or entities that are less cohesive, but ultimately work towards achieving the overall action goal. In this case, these entities may work separately, but under an overarching framework.*

Action No. and Title: 2.6.5 Support Development of Research and Tools to Assist Effective Integration of Onsite Water Reuse Systems in Communities

Action Origin: Existing Action from draft Action Plan

Modified Action from draft Action Plan

Original Action Number: 2.6.5

How was this action modified?: *Modified title*

New Action

Strategic Objective: Develop research, training programs, planning approaches, and decision support tools to support the implementation of onsite non-potable water systems that are protective of public health.

Brief Description of the Action: The National Blue Ribbon Commission for Onsite Non-potable Water Systems is the leading entity for the development of research and tools to support the implementation of onsite non-potable water systems in communities. As an example, the National Blue Ribbon Commission is committed to developing research to refine and expand the risk-based water quality standards for onsite non-potable water systems.

Related Actions: 2.3.1; 2.3.2; 2.3.3

Contributor Name(s): Taylor Chang, San Francisco Public Utilities Commission
Paula Kehoe, San Francisco Public Utilities Commission

Background/Context/Framing

In the face of increasingly challenging water resources management needs related to water demand, greater water scarcity, and unpredictable and increasingly destructive wet weather events, communities are incorporating onsite non-potable water systems to increase the resiliency of their water and sanitation systems. Since 2016, the National Blue Ribbon Commission for Onsite Non-potable Water Systems, in partnership with the US Water Alliance, Water Research Foundation and WateReuse Association, has been the leading entity in developing research and tools for states and local jurisdictions across the country to adopt consistent water quality standards, governance approaches, and institutional frameworks. The Blue Ribbon Commission is a collaborative of public health regulators and water and wastewater utilities, representing 14 states and the District of Columbia, as well as representatives from USEPA and US Army.

The Blue Ribbon Commission has tackled one of the primary challenges to widespread implementation of onsite water reuse through its participation in research on water quality standards for onsite non-potable water systems. The research led to the Risk-Based Framework for the Development of Public Health Guidance for Decentralized Non-Potable Water Systems report, which established risk-based water quality standards for onsite water systems. Utilizing similar methodology as is employed in

potable reuse and drinking water regulations, the report developed performance-based log reduction targets for the treatment of pathogens that align with the Water Safety Plan approach promoted by the World Health Organization.

Assisted by the tools already produced by the Blue Ribbon Commission, including A Guidebook for Developing and Implementing Regulations for Onsite Non-potable Water Systems and Making the Utility Case for Onsite Non-potable Water Systems, several communities are advancing state legislation and policies to incorporate the risk-based water quality standards. States including Colorado, Hawaii, Minnesota, Washington, Oregon, and California are implementing either legislation or guidelines that provide oversight and management of onsite non-potable water systems.

Problems to be Solved/Opportunities to be Gained

Increasing water demands, greater water scarcity and unpredictable and increasingly destructive wet weather events resulting from climate change, population growth, and aging infrastructure are threatening water security in communities across the globe. Onsite non-potable water systems can assist communities in addressing these water management challenges as part of an integrated water management strategy. Additional benefits beyond enhancing water supply can be achieved, such as building resilient communities to address water-related challenges due to climate change.

Onsite non-potable water systems are one strategy that communities can use to conserve water and help manage overall water resources challenges. Buildings that collect and treat blackwater, graywater, stormwater, rainwater, and/or foundation drainage onsite for reuse for toilet flushing, clothes washing, cooling, and irrigation can reduce 25%-75% of the potable water demand in buildings, and reduce treatment pressures on overburdened centralized stormwater and wastewater treatment systems.

To facilitate the implementation of onsite non-potable water systems, public health barriers need to be addressed. Primarily, capacity building at the local level is needed to implement oversight and management programs so that onsite non-potable water systems are designed and operated in a manner that is protective of public health. The Blue Ribbon Commission's work to-date has sought to address this fundamental institutional barrier to onsite water reuse by establishing the appropriate water quality standards to be protective of public health and building consistent governance approaches from state-to-state.

Entities and Organizations with Equities and Interests

Entities and organizations with interest and equity in this action include:

- National Blue Ribbon Commission for Onsite Non-potable Water Systems
 - o Leading entity for the development of research and tools to support the implementation of onsite non-potable water systems in communities.
 - o Key Contact: Paula Kehoe, Chair of the Blue Ribbon Commission
- US Army Engineer Research and Development Center

- Martin Page, Researcher and Program Manager, is a National Blue Ribbon Commissioner and represents the US Army's interest in onsite water reuse, specifically graywater recycling in military settings.
 - Key Contact: Martin Page, Researcher and Program Manager, US Army Engineer Research and Development Center
- US Environmental Protection Agency (EPA) Office of Water (OW) and Office of Research and Development (ORD)
 - Staff from EPA OW and ORD participate as National Blue Ribbon Commissioners and have led the development of the risk-based water quality framework for onsite non-potable water systems.
 - Key Contacts: Jay Garland, EPA ORD
 - Sharon Nappier, EPA OW
- California State Water Resources Control Board, Division of Drinking Water (DDW)
 - Staff from DDW participate as National Blue Ribbon Commissioners and are actively developing regulations for onsite non-potable water systems based on the risk-based water quality standards.
 - Key Contact: Brian Bernados, Senior Engineer and Technical Specialist, CA DDW
- San Francisco Public Utilities Commission (SFPUC)
 - The SFPUC chairs the National Blue Ribbon Commission and has been implementing an oversight and management program of onsite non-potable water systems since 2012.
 - Key Contact: Paula Kehoe, Director of Water Resources, SFPUC
 - Taylor Chang, SFPUC
- Colorado Department of Public Health and Environment, Water Quality Control Division
 - Bret Icenogle, Engineering Section Manager, is a National Blue Ribbon Commissioner and spearheaded the incorporation of the risk-based water quality standards into the state's regulations for blackwater systems.
 - Key Contact: Bret Icenogle, Engineering Section Manager, Colorado Department of Public Health and Environment, Water Quality Control Division
- WateReuse Association
 - Leading entity for all forms of water recycling in the United States and partner of the National Blue Ribbon Commission
 - Key Contact: Pat Sinicropi, Executive Director, WateReuse Association
 - Carrie Capuco, Director of Strategic Operations, WateReuse Association
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- US Water Alliance
 - Founding partner of the National Blue Ribbon Commission
 - Key Contact: Radhika Fox, CEO, US Water Alliance
- Water Research Foundation (WRF)

- WRF has demonstrated a commitment to and interest in onsite non-potable water systems by providing funding for 5 reports and documents developed by the National Blue Ribbon Commission, and funding for the research to develop the risk-based water quality framework and a training manual.
- Peter Grevatt, CEO, WRF

Action Implementation

| Implementation Step/Action 1 | |
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| Implementation Step/Action | Develop a training manual for engineers, operators, and regulators on how to best design and permit onsite non-potable water systems that meet the risk-based water quality standards. |
| Lead | National Blue Ribbon Commission for Onsite Non-potable Water Systems |
| Partner(s) | WaterReuse Association Water Research Foundation |
| Output(s) | Examples include: <ul style="list-style-type: none"> • Guidance on the risk-based water quality standards and the importance of monitoring to verify treatment • Guidance on treatment and how it can be used for pathogen reduction and meeting water quality standards • Considerations for designing effective treatment trains using multiple and diverse treatment processes • Guidance on proper operations and maintenance (O&M) of onsite non-potable water systems and critical components of an O&M plan • Guidance on project permitting from a regulatory perspective |
| Target Milestone(s)/Timeline(s) | Present – 2020 |
| Implementation Step/Action 2 | |
| Implementation Step/Action | Refine and expand the fit-for-purpose treatment guidelines for a range of alternative sources waters and non-potable end uses. Work will include expanded approaches for stormwater, and end uses such as cooling tower make-up, vehicle washing, and decorative fountains. The action will be completed by an expert panel assembled by California Water Board in support of the state new non-potable reuse legislation, researchers from the USEPA Office of Research & Development, and the NBRC. |
| Lead | National Blue Ribbon Commission for Onsite Non-potable Water Systems |
| Partner(s) | WaterReuse Association, USEPA ORD, State of California Water Board |
| Output(s) | Examples include: <ul style="list-style-type: none"> • Peer-reviewed scientific publications describing key primary data sources and rationale • Expert panel report from the California Water Board. • An updated NRBC risk-based guidance document summarizing the new recommendations |

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| Target Milestone(s)/Timeline(s) | Present – 2022 |
| Implementation Step/Action 3 | |
| Implementation Step/Action | Develop and make available a decision support calculator tool to help communities evaluate strategies for onsite water reuse. The tool will quantify the relative availability of different alternative sources for building scale reuse throughout the US, and calculate the life cycle costs and impacts of alternative reuse scenarios. |
| Lead | National Blue Ribbon Commission for Onsite Non-potable Water Systems |
| Partner(s) | WaterReuse Association, US EPA ORD, Eastern Research Group |
| Output(s) | Examples include: <ul style="list-style-type: none"> • Peer-reviewed scientific publications describing key primary data sources and rationale • A web-based decision support calculator tool to help communities evaluate strategies for onsite water reuse |
| Target Milestone(s)/Timeline(s) | Present – 2021 |
| Implementation Step/Action 4 | |
| Implementation Step/Action | Develop operator certificate program to verify that onsite non-potable water system operators are appropriately qualified and promote workforce development by providing training and an assessment to verify specified learning objectives have been achieved. |
| Lead | National Blue Ribbon Commission for Onsite Non-potable Water Systems |
| Partner(s) | TBD |
| Output(s) | Examples include: <ul style="list-style-type: none"> • Training for operators • Curriculum for certificate program |
| Target Milestone(s)/Timeline(s) | TBD |
| Implementation Step/Action 5 | |
| Implementation Step/Action | Develop research to advance the quantification of bacterial inactivation and/or removal from commonly employed treatment processes associated with onsite non-potable water systems. |
| Lead | National Blue Ribbon Commission for Onsite Non-potable Water Systems |
| Partner(s) | TBD |
| Output(s) | Example includes: <ul style="list-style-type: none"> • Defining appropriate methods, including identifying appropriate surrogates that can be monitored online in real-time. |
| Target Milestone(s)/Timeline(s) | TBD |
| Implementation Step/Action 6 | |
| Implementation Step/Action | Develop research to define pathogen log removal credits for natural treatment systems. |
| Lead | National Blue Ribbon Commission for Onsite Non-potable Water Systems |
| Partner(s) | TBD |
| Output(s) | Example includes: |

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| | <ul style="list-style-type: none"> Defining pathogen crediting framework for natural treatment systems such as wetland treatment systems used in onsite water reuse |
| Target Milestone(s)/Timeline(s) | TBD |

Source(s) and Use(s) of Water for Reuse Relevant to this Action

This content may be provided online to allow users the ability to filter and search the action implementation plans in the online platform.

Applicable Source(s) of Water for Reuse

- Agriculture
- Industrial and commercial processes
- Municipal wastewater
- Oil & gas produced water
- Stormwater
- Onsite (black or greywater)

Applicable Use(s)

- Agriculture and/or irrigation
- Aquifer storage and recharge
- Drinking water supplies (i.e., potable reuse)
- Environmental restoration
- Industrial and commercial processes
- Onsite non-potable use
- Saltwater intrusion barriers

Notes and References

Insert any notes or references used for scoping and further developing the action.