

# National Water Reuse Action Plan

Improving the Security, Sustainability, and Resilience of  
Our Nation's Water Resources

ACWA 2020 Mid-Year Meeting

March 17, 2020

[waterreuse@epa.gov](mailto:waterreuse@epa.gov)



# The Vision



“ Our goal is to issue a[n]...Action Plan that includes clear commitments and accountability for actions that will further water reuse and help [ensure] the sustainability, security, and resilience of the nation’s water resources. Water quantity, supply, and quality decision-makers have historically worked through independent management regimes. Addressing future water resource challenges will require more holistic thinking that embraces the ‘convergence of water’ through more integrated action.<sup>1</sup> ”

–David Ross, Assistant Administrator for Water,  
U.S. EPA

# Opportunities and Key Terms

## Water Reuse Objectives:

- **Water security:** The capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socioeconomic development.
- **Water sustainability:** Ensuring an adequate, reliable, and continual supply of clean water for human uses and ecosystems.
- **Water resilience:** The ability of a water supply (e.g., a community water system or an asset of a community water system) to adapt to or withstand the effects of rapid hydrologic change or a natural disaster.

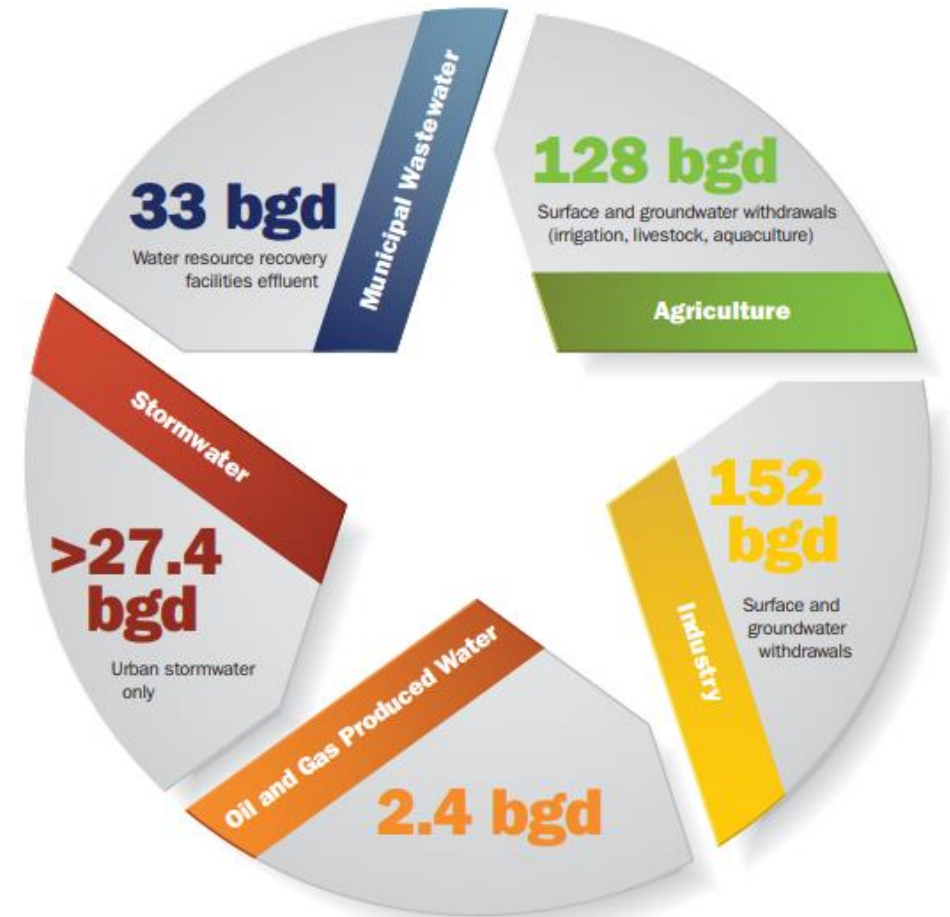


# Sources of Waters and Potential for Reuse

## Clear potential to reclaim more of the nation's water

- Nearly 350 BGD from various sources of water discharged
- Over 280 BGD potentially available for reuse

\* Estimates from draft Action Plan, page 6



Source: [www.epa.gov/sites/production/files/2019-09/documents/water-reuse-action-plan-draft-2019.pdf](https://www.epa.gov/sites/production/files/2019-09/documents/water-reuse-action-plan-draft-2019.pdf). Figure imagery by naihei/Shutterstock.com.

Image source: <https://awwa.onlinelibrary.wiley.com/doi/abs/10.1002/awwa.1426>

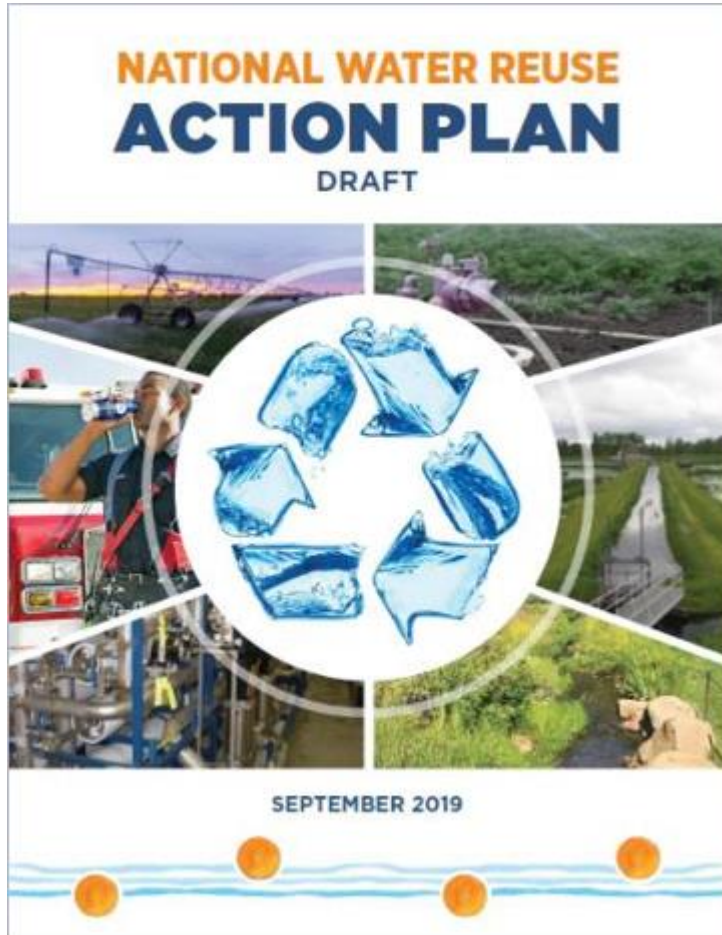
# Building the WRAP: Timeline & Features

## Key Features

- Ongoing stakeholder outreach and communication
- Weekly progress updates
- Regular federal partner meetings
- Adaptive management
- Collaborative development and implementation



# Draft Action Plan – September 2019



## Content Overview:

- Call to Action
- Section 1
  - The business case
- Section 2
  - 10 strategic objectives
  - 46 proposed actions
- Section 3
  - Looking forward



# Draft Action Plan – September 2019

## Key Inputs and Sources:

- Analysis and summary of literature (over 155 sources)
- Outreach with an ~2,300 participants (>20 forums)
- Public input from the docket (55 commenters)
- WateReuse Association expert convening report (spring 2019)
- Review of international experiences (Israel, Singapore, Australia, South Africa, Namibia)
- Reuse case studies for facilities in the United States
- Current federal agency roles

# National Water Reuse Action Plan: **Collaborative Implementation (Version 1)**

- Section 1. Building the National Water Reuse Action Plan (WRAP)
- Section 2. Water Reuse: Collaborative Action Implementation
  - **11 strategic themes**
  - **37 developed actions**
- Section 3. Communicating Progress and Managing Forward
  - Launch of the WRAP Online Platform
  - Collaborative Implementation (Version 1)
  - Imagining Version 2...
  - Legacy of Watershed-based Action
- **Print and online** versions released on 2/27/20
  - ~40 pages
  - 3 appendices

“ ...the EPA’s extensive and ongoing outreach to a wide range of stakeholders will be critical to ensuring the final WRAP is comprehensive and implementable. ”



# WRAP Online Platform

- Repository for all actions (developed and undeveloped)
- Provides background and opportunities to be gained
- Identifies leaders, partners, interested collaborators
- Captures milestones and progress
- Helps form the pipeline of new actions and collaboration

The image displays three overlapping screenshots of the WRAP Online Platform. The background screenshot shows the 'National Water Reuse Action Plan: Online Platform' with a table of actions. The middle screenshot shows the 'Enhance State Collaboration on Water Reuse' action details, including 'Action Attributes' and 'Implementation Milestones'. The foreground screenshot shows a detailed view of the 'Implementation Milestones' for the same action.

**National Water Reuse Action Plan: Online Platform**

Instructions: Click on an action in the table to display detailed information.

Strategic Theme Area: [Show all](#)

Show 10 entries

Strategic Theme Area	
Integrated Watershed Action	Develop a Federal Policy State Consideration of Water Reuse
Integrated Watershed Action	Prepare Case Studies of Successful Integrated Water Resources Management
Integrated Action	Incorporate Water Reuse and Planning Efforts at the Local Level
Integrated Watershed Action	Leverage EPA's Water Partners in the Context of Integrated Watershed Scale
Policy Coordination	Complete Existing State Policies
Policy Coordination	Enhance State Collaboration on Water Reuse
Policy Coordination	Complete the EPA Study of Oil Management
Policy Coordination	Enhance Wastewater Source Control Programs to Support Water Reuse
Policy Coordination	Complete and Develop Protected Waters for Potential Reuse
Policy Coordination	Develop Informational Materials to Facilitate Water Reuse/Collaboration

Showing 1 to 10 of 56 entries

**Enhance State Collaboration on Water Reuse**

Enhance State Collaboration on Water Reuse (Action 2.2.2)

[Action Attributes](#) [Action Team](#) [Implementation Milestones](#) [Outputs and References](#)

**Action Attributes**

Status: Developed

Action Leaders and Key Contact:

U.S. Environmental Protection Agency (EPA)  
Jeff Lape  
[jlape@epa.gov](mailto:jlape@epa.gov)

Association of Clean Water Administrators (ACWA)  
Jake Adler  
[jadler@acwa-us.org](mailto:jadler@acwa-us.org)

Association of State Drinking Water Administrators (ASDWA)  
Wendy Wilkes  
[wwilkes@asdwa.org](mailto:wwilkes@asdwa.org)

**Description:** Provide forums and opportunities for states to discuss water reuse. Some states, particularly in arid and semi-arid areas, have well-established opportunities to exchange ideas, experiences, successes, and challenges. The Annual WaterReuse Pacific Northwest Conference, organized by the states of Washington, Oregon, and California, provides a useful model and a coordinated state-focused forum to encourage states to come together in September 2018, ACWA and ASDWA co-organized and facilitated the representatives from 18 state water programs participated in this event engagement of additional state associations to engage in future state water reuse.

**Background:** Some states, particularly in arid and semi-arid areas, have well-established opportunities to exchange ideas, experiences, successes, and challenges. The Annual WaterReuse Pacific Northwest Conference, organized by the states of Washington, Oregon, and California, provides a useful model and a coordinated state-focused forum to encourage states to come together in September 2018, ACWA and ASDWA co-organized and facilitated the representatives from 18 state water programs participated in this event engagement of additional state associations to engage in future state water reuse.

**Opportunities:**

- Increase state collaboration on water reuse across the spectrum of water reuse.
- Share experiences across state organizations.
- Enable water reuse discussions and networking opportunities.

**Enhance State Collaboration on Water Reuse**

Enhance State Collaboration on Water Reuse (Action 2.2.2)

[Action Attributes](#) [Action Team](#) [Implementation Milestones](#) [Outputs and References](#)

**Implementation Milestones**

Expand all

1. Convene the 2nd state summit on water reuse at the 20th Annual WaterReuse Symposium in San Diego, CA.

Leader: ACWA (Jake Adler), ASDWA (Wendy Wilkes), EPA (Jeff Lape)

Partners: EPA, WaterReuse

Target Completion Date: September 2018

Actual Completion Date: September 2018

Milestone Complete: Yes

Status/Updates: Completed (28 representatives from 18 states attended)

2. Secure meeting facilitation and notetaking support for the 2nd state summit on water reuse.

3. Conduct water reuse-focused discussions at a session at the ASDWA Member Meeting.

4. Conduct water reuse-focused discussions at a session at the ACWA Midyear Meeting.

5. Initiate planning for next annual state summit on water reuse.

6. Compile a list of state water reuse contacts and roles and post in an accessible location online.

7. Convene the 2nd state summit on water reuse at the 20th WaterReuse Symposium in Denver, CO.

8. Prepare state summit on water reuse meeting summary for state representatives.

9. Additional milestones to be determined.

Use the arrows to navigate between actions.

[Previous Action](#) [Next Action](#)

# Action Implementation Plans

## Version 1 fostered the development of “action implementation plans” to:

- Demonstrate leadership for action.
- Promote partnerships and collaborative actions that leverage the resources and expertise of many stakeholders.
- Implement a means of demonstrating progress and accountability for the integrated actions.
- Begin to create an enduring, dynamic, and iterative approach that will lead to subsequent versions of the WRAP.





# WRAP Launch Event – February 27, 2020



## Section 2

# Water Reuse Collaborative Action Implementation

### The WRAP features 11 strategic themes:

- 2.1 Integrated Watershed Action
- 2.2 Policy Coordination
- 2.3 Science and Specifications
- 2.4 Technology Development and Validation
- 2.5 Water Information Availability
- 2.6 Finance Support
- 2.7 Integrated Research
- 2.8 Outreach and Communications
- 2.9 Workforce Development
- 2.10 Metrics for Success
- 2.11 International Collaboration



*Public landscapes throughout Northern California's City of Roseville are irrigated with recycled water.*



# Communicating Progress and Managing Forward

- Print Product and Launch of the WRAP Online Platform
- Identification of New Ideas for Actions
- Adaptive and Iterative Management—Imagining Version 2
  - **September 2020:**
    - Annual WaterReuse Symposium (Denver, Colorado) to report on action implementation progress
    - Initiate development of Action Plan (Version 2)
    - Start of next public comment period?
  - **April 2021:** Release Version 2 during Water Week
- Building an Enduring Legacy of Watershed-Based Action

# From Implementation to Institutionalization

- EPA goal to institutionalize water reuse into the Office of Water operational culture
- Exploring ways to embed reuse into the National Water Program
- What does this look like across the water user community?



# Get Involved!

- Support implementation of developed actions
  - Reach out to action leader(s) about status and next steps
- Initiate scoping of undeveloped or new action ideas
  - Share idea with WRAP team
  - Begin to compile key information (e.g., leader/partner organizations and contacts, background, implementation milestones)
  - Next suite of actions expected to be considered in fall 2020
- Questions/comments about the effort
  - Email [waterreuse@epa.gov](mailto:waterreuse@epa.gov)

# Thank You!

**Jeff Lape**, National Program Leader for Water Reuse  
EPA Office of Water  
[lape.jeff@epa.gov](mailto:lape.jeff@epa.gov)



<https://www.epa.gov/waterreuse/water-reuse-action-plan>

[waterreuse@epa.gov](mailto:waterreuse@epa.gov)

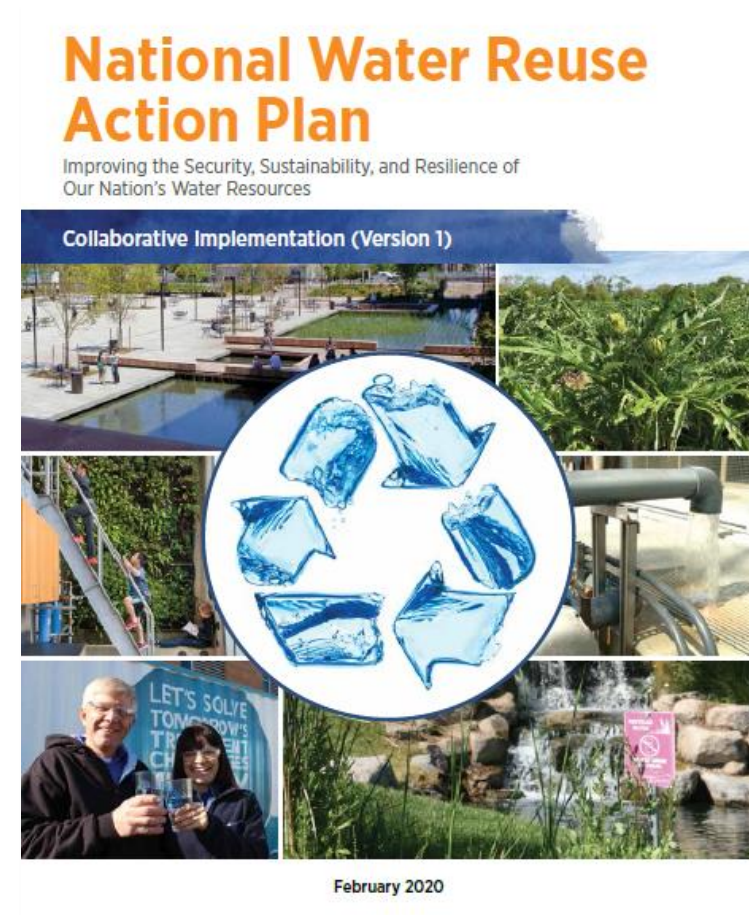
*Together, we can ensure the sustainability, security, and resilience of our Nation's water resources.*



# Repository – Unused Slides

# Agenda

- 1. Overview & background**
- 2. Public comment period**
- 3. Strategic themes & actions**
- 4. Implementation**



# Opportunities and Key Terms

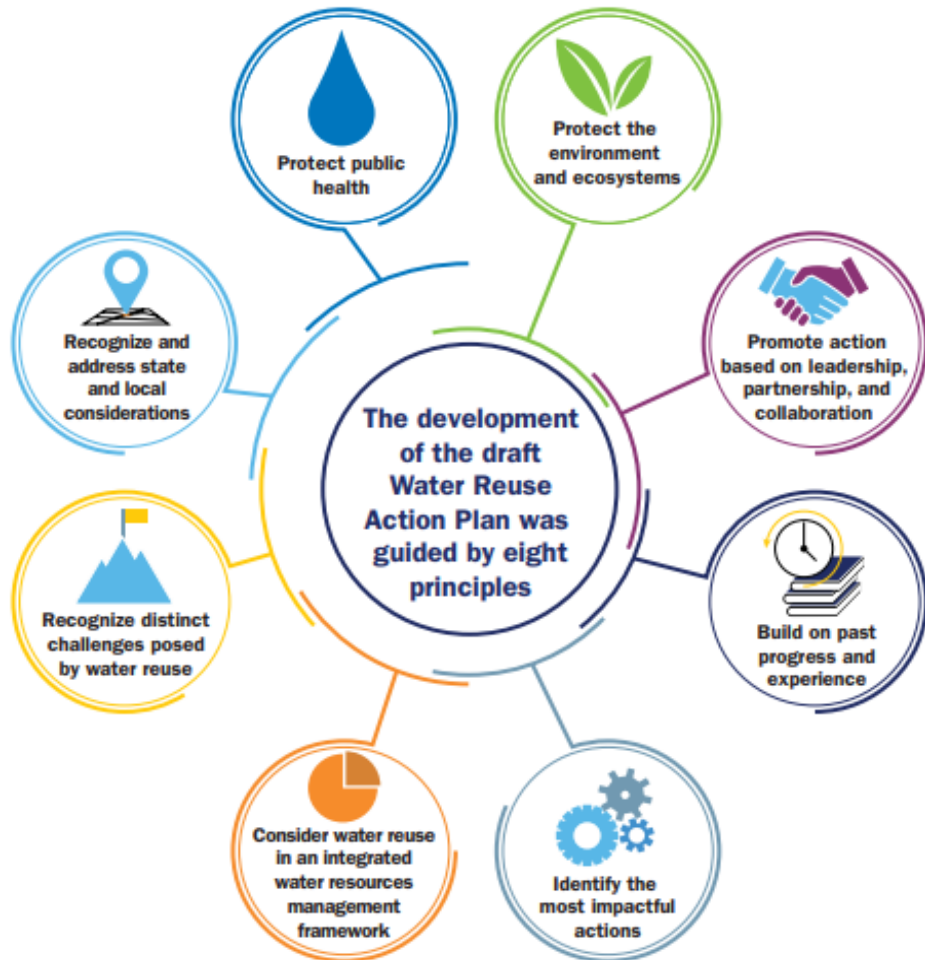
## Water Reuse – Broadly Framed

- Discussions of **water reuse** commonly include terms such as “recycled water,” “reclaimed water,” “purified water,” “alternative water supplies,” “improved water reliability,” and “water resource recovery.”
- **Sources of water for potential reuse** can include municipal wastewater, industry process and cooling water, stormwater (including captured rainwater), agriculture runoff and return flows, and oil and gas produced wastewater. These sources are considered “reused” after they are assessed for a new use and treated and verified to meet the appropriate and applicable fit-for-purpose specifications (e.g., protection of public health) for the end use application. These fit-for-purpose specifications may be established by a regulatory or management entity (e.g., a state) or by the end user.
- Examples of **reuse applications** include agriculture and irrigation, potable water supplies, groundwater storage and recharge, industrial process and cooling, onsite non-potable use, saltwater intrusion barriers, and environmental restoration.

## Fit-for-Purpose Treatment Specifications

- Fit-for-purpose treatment specifications describe and quantify the water quality characteristics necessary to meet end use needs, including public health protection and environment/ecosystem protection. Appropriate monitoring (e.g., using applicable methods, happening at the right frequency) will verify whether fit-for-purpose specifications are being met.

# WRAP Guiding Principles



**The guiding principles from the draft Action Plan were expanded based on public comment. Three new principles:**

- Commit to implementation through transparency and shared accountability.
- Communicate effectively.
- Apply adaptive management and governance.



# 90-Day Public Comment Period

## **Commenters were encouraged to:**

1. Identify the most important proposed actions they feel should be taken in the near term
2. Identify the specific attributes and outcomes of proposed actions that will achieve success
3. Identify implementation steps and milestones necessary to implement the proposed actions
4. Commit to lead or collaborate with others on implementing any of the proposed actions
5. Inform revisions and recommendations to the proposed 46 actions

**101 comments were received, averaging 5 pages in length.**

# 90-Day Public Comment Period

## Thematic Highlights of the Public Docket Comments:

- Widespread Support for the WRAP and Water Reuse as a Tool for Water Security, Sustainability, and Resilience
- Affirmation That Water Reuse Is One Tool in the Water Resource Toolbox
- Acknowledgement of Incorporating Prior Public Comments
- Defining and Reconciling Key Terms
- Emphasis on and Identification of Priority Actions
- Spectrum of Perspectives on the Potential for Reuse of Oil and Gas Produced Wastewater
- Recognition of Barriers/Challenges to Water Reuse
- Public Commitments to Lead or Support Actions
- Identification of New Proposed Actions
- Not Setting Goals for Water Reuse at This Time

## 2.1 Integrated Watershed Action

### Example Action:

Prepare Case Studies of Successful Water Reuse Applications Within an Integrated Water Resources Management (IWRM) Framework (Action 2.1.2)

*Action Leader: WaterReuse*

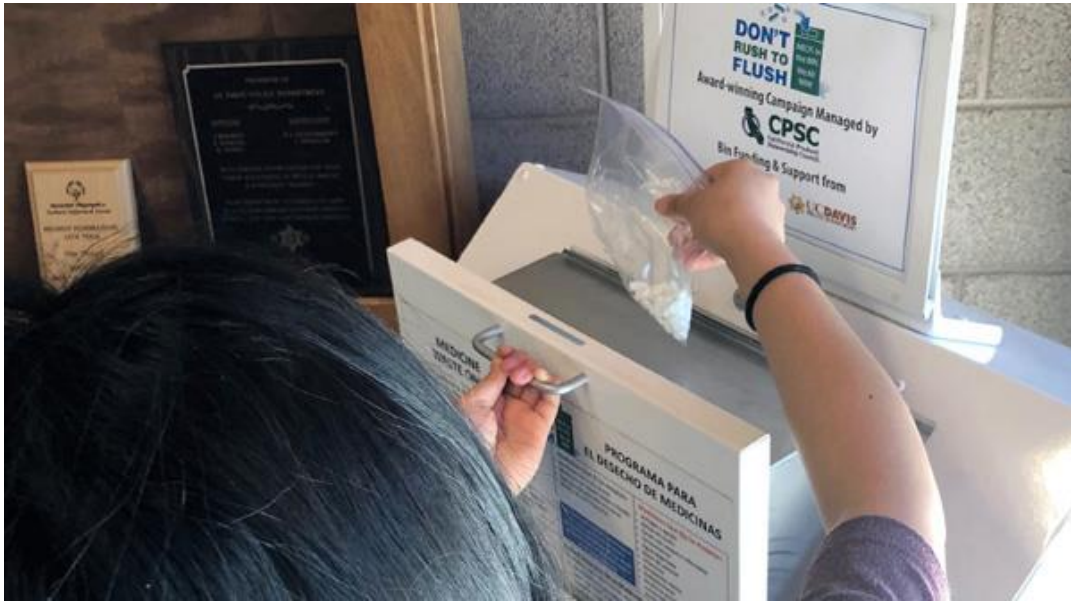
**“We support this plan because it integrates water reuse opportunities across multiple sectors including drinking water, agriculture, industry, recreation, and environmental protection.”**

—State of Oklahoma, Office of the Secretary of Energy & Environment



Rainwater catchment project near Pennington Creek, California, installed in partnership with the Morro Bay National Estuary Program, stores up to 296,000 gallons of rainwater for cattle troughs in the dry season.

# Policy Coordination



As part of the “Don’t Rush to Flush” campaign, pills are collected in a pharmaceutical drop box and properly disposed instead of entering the wastewater system.

## Example Action:

Enhance Wastewater Source Control through Local Pretreatment Programs to Support Water Reuse Opportunities for Municipal Wastewater (Action 2.2.4)

*Action Leaders: NACWA, WEF*

**“Exploring why resources, policies, and approaches vary (for example, across states or between federal programs), or how differences in seemingly-similar scenarios came to be (for example, what are the scientific bases of different fit for purpose specifications among similar types of reuse?), provide important contexts for end-users.”**

—ASDWA and ACWA



## 2.3 Science and Specifications

### **Example Action:**

Develop Research and Tools to Support the Implementation of Onsite Non-Potable Water Reuse Systems (ONWS) (Action 2.3.4, previously 2.6.5)

*Action Leader: NBRC for ONWS*

**“ Governments at all levels and non-governmental organizations should draw on the sound science and long history of water reuse in different parts of the country that can provide the basis for greater acceptance of this water management approach. ”**

—National Groundwater Association



The San Francisco Public Utilities Commission building irrigates exterior vegetation using onsite water reuse.

## 2.4

# Technology Development and Validation

### Example Action:

Support Water Reuse Through the U.S. Department of Energy's Water Security Grand Challenge (Action 2.4.3)

*Action Leader: DOE*

**"Technology validation processes can be complicated and variable between individual states; this issue presents an opportunity for EPA to assist in streamlining and standardizing technology validation processes to enable faster adoption of new technologies."**

—Denver Water



GlaxoSmithKline (Upper Providence, Pennsylvania) air handler condensate is reused by their cooling towers, resulting in 9 million gallons water savings in 2019, equivalent to \$140,000 in cost savings and a 14.3 percent reduction in water use.

## 2.5

# Water Information Availability

### **Example Action:**

Develop National Integrated Water Availability Assessments (New Action 2.5.4)

*Action Leader: USGS*

**“Using data to target watersheds with reuse potential could provide for more efficient use of state resources.”**

—New Mexico Environment Department



Terraces, buffers, and conservation tillage are among the practices being used by Shelby County, Iowa, farmers in a water quality improvement project to benefit a nearby lake.



## 2.6 Finance Support



Acting EPA Administrator Andrew Wheeler signs a \$614 million WIFIA loan to the City of San Diego alongside Mayor Kevin Faulconer.

### **Example Action:**

Compile and Promote Existing U.S. Department of Agriculture Funding and Resources for Rural Communities (Action 2.6.4)

*Action Leader: USDA*

**"Technology validation processes can be complicated and variable between individual states; this issue presents an opportunity for EPA to assist in streamlining and standardizing technology validation processes to enable faster adoption of new technologies."**

—Denver Water



## 2.7 Integrated Research

### Example Action:

Develop a Coordinated National Research Strategy on Water Reuse (Action 2.7.2)

*Action Leader: WRF*

**“Developing a coordinated research strategy on water use and reuse could provide a starting point from which future efforts to expand water reuse could be compared. A common research strategy could also help to inform potential water reuse approaches at the state and municipal levels.”**

—National Association of Home Builders



The Brackish Groundwater National Desalination Research Facility develops technologies for the desalination of brackish and impaired groundwater found in the inland states.

## 2.8 Outreach and Communications



El Paso's Tech2O Learning Center hosts thousands of students for field trips every year, helping next generation water customers appreciate the value of water.

### Example Action:

Establish a Water Reuse Champion Award Program for Private Sector Companies (New Action 2.8.4)

*Action Leaders: GreenBiz, WaterReuse*

**"More messaging on a national level of the benefits and successes [of water reuse] in tandem with discussion of the public health and environmental protection safeguards and benefits is necessary."**

—NACWA



## 2.9 Workforce Development

### Example Action:

Support and Promote Opportunities for Creating a Skilled Workforce for Water Reuse Applications (Action 2.9.2)

*Action Leaders: EPA, WaterReuse, AWWA, WEF*

**“With increasingly complex systems, particularly in the case of direct potable reuse, there are skills, knowledge and abilities that go beyond traditional operator certification requirements. ACWA and ASDWA recognize and respect the States’ autonomy in implementing their operator certification programs, however water reuse represents a unique opportunity for EPA to partner with states to identify key knowledge and skills needed by water system operators who are presiding over these water reuse projects.”**

—ACWA and ASDWA



Denver Water contractors install a purple pipe used to deliver recycled water in northeast Denver, Colorado

## 2.10 Metrics for Success



Breakout session at one of the WaterReuse expert convenings on water reuse during development of the draft Action Plan.

### **Example Action:**

Facilitate Implementation of the National Water Reuse Action Plan (Action 2.10.3)

*Action Leader: EPA*

**"According to the 2017 Reuse Inventory Report, Florida reused approximately 813 MGD (over 161 billion gallons per year) of potable quality water while serving to add 252 MGD (approximately 92 billion gallons per year) back to available water supplies."**

—Florida DEP



## 2.11 International Collaboration

### **Example Action:**

Raise Global Awareness and Preparedness for Water Reuse and the Water Reuse Action Plan (New Action 2.11.2)

*Action Leader: DOS*

**“The Chamber recommends that EPA continue to cooperate with leading organizations and countries (e.g., Israel) to ensure implementation of the most effective reuse solutions and associated funding options.”**

—U.S. Chamber of Commerce Business Task Force on Water Policy



The 2019 water management project in Kyrgyzstan is part of the Ambassador's Water Experts Program, which supports the U.S. Government's Global Water Strategy priorities.

# Action Leader Roles

- Coordinating among the action team.
- Facilitating implementation of the milestones.
- Seeking and including new partners to collaborate with, where appropriate.
- Providing updates on progress and outputs.
- Validating action leader responsibilities with subsequent versions of the WRAP.

# Examples of Developed Actions

## Prepare Case Studies of Successful Water Reuse Applications Within an Integrated Water Resources Management (IWRM) Framework (Action 2.1.2)

### DESCRIPTION:

Efforts will initially focus on compilation and dissemination of pertinent projects, taking advantage of existing information. This may be followed by development of new case studies to fill gaps in geography, reuse application, and/or source water.

### ACTION LEADER(S):

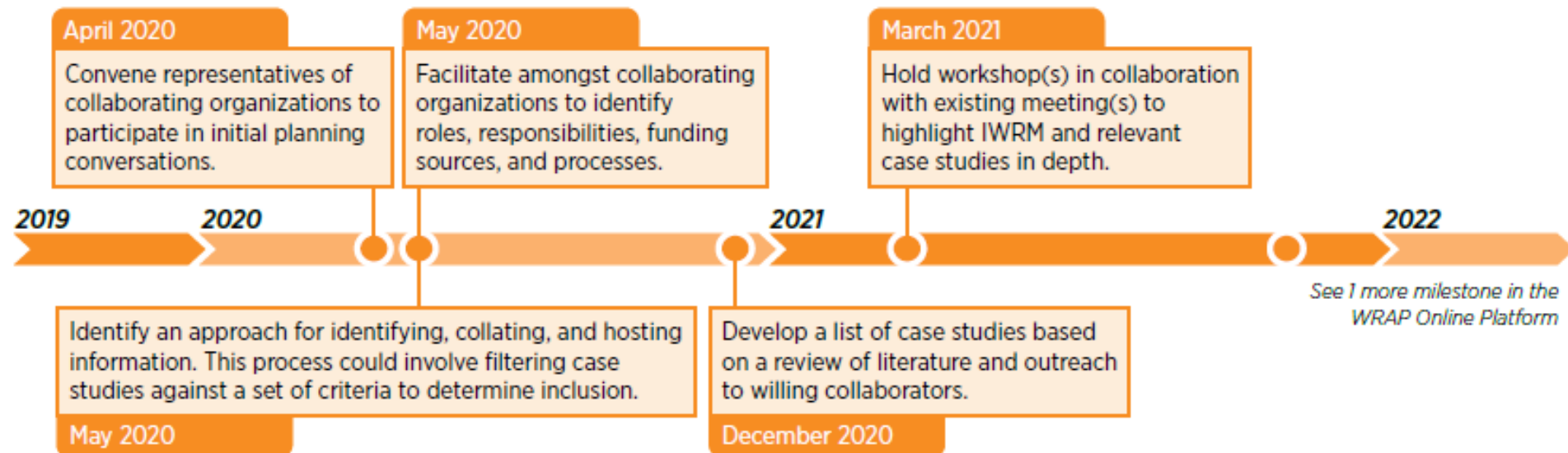
WaterReuse—Greg Fogel

### PARTNER(S):

NGWA, ACWA, AWWA

“Clearly documented case study examples can play a critical role in furthering integrated water management.”

—National Wildlife Federation





# Examples of Developed Actions

## Compile Existing State Policies and Approaches to Water Reuse (Action 2.2.1)

### DESCRIPTION:

This compilation will build on prior efforts by Western Resource Advocates, Western States Water Council, EPA, WaterReuse Association, and others.

### ACTION LEADER(S):

- EPA—Jeff Lape
- WaterReuse—Greg Fogel
- ACWA—Jake Adler
- ASDWA—Wendi Wilkes

### PARTNER(S):

ASTHO, ECOS, WSWC, GWPC

“ Exploring why resources, policies, and approaches vary (for example, across states or between federal programs), or how differences in seemingly-similar scenarios came to be (for example, what are the scientific bases of different fit for purpose specifications among similar types of reuse?), provide important contexts for end-users. ”

–ASDWA and ACWA





# Examples of Developed Actions

## Compile Existing Fit-for-Purpose Specifications (Action 2.3.1)

### DESCRIPTION:

Compile existing fit-for-purpose specifications (e.g., chemical and microbial) for different sources of water for potential reuse and end-use applications. The compilation will rely on federal, state, and international sources to inform water reuse best practices and facilitate broader implementation of reuse projects.

### ACTION LEADER(S):

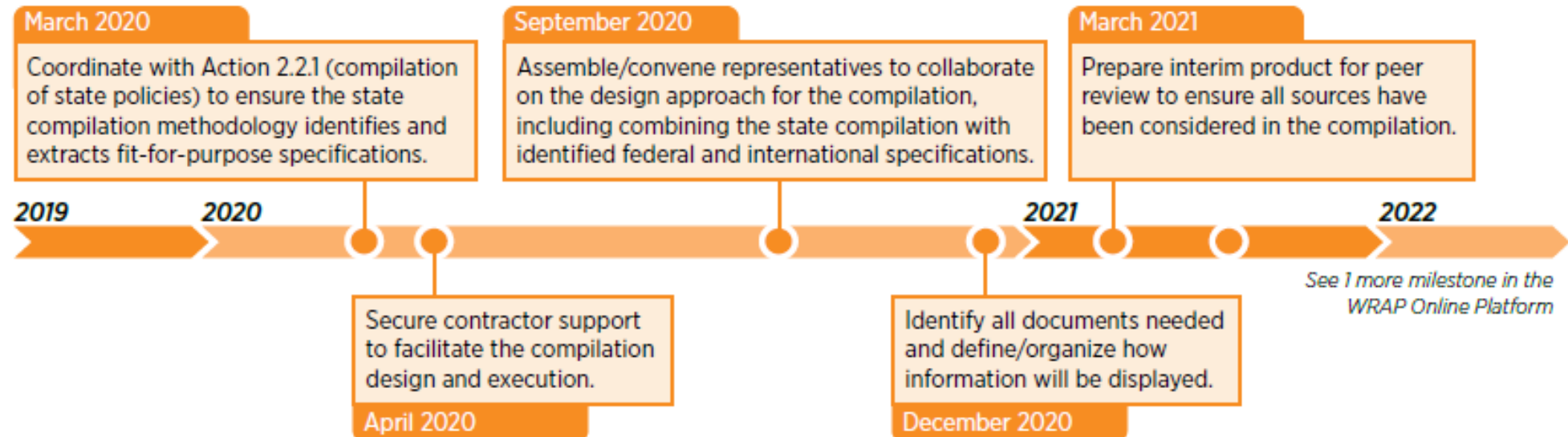
EPA—Sharon Nappier

### PARTNER(S):

ACWA, AMWA, ASDWA, WRF, WateReuse

“States agree that any water reuse aspiration or action must be evaluated with risks to public health, which states and EPA are charged to protect, as the central consideration...”

—ASDWA and ACWA



# Federal Policy Statement on Water Reuse

Water is critical to our nation's health, strength, security, and resilience, but the solutions available to manage water and its availability are often complex. When incorporated into an integrated water management plan, water reuse can be a valuable tool to enhance the availability and effective use of water resources. The federal government recognizes, acknowledges, and respects the primacy of states in the management of water resources within their borders.

The federal government supports the consideration of water reuse to increase water security, sustainability, and resilience, especially when considered through integrated and collaborative water resource planning approaches, typically at the watershed or basin-scale.

This policy statement is intended to guide federal agencies to:

- Encourage consideration of water reuse and integrated watershed-scale planning approaches;
- Communicate the value and benefits of water reuse; and
- Leverage existing programmatic, funding, and technical resources.