NATIONAL WATER REUSE ACTION PLAN

WRAP QUARTERLY UPDATE
October–December 2022

A Message from Rod Snyder, EPA Senior Advisor for Agriculture to the Administrator

In November, I was pleased to join a U.S. delegation to Israel to learn first-hand about the country's global leadership on water reuse policies, technologies, and research. Nearly 90 percent of Israel's wastewater is treated and reused for agricultural irrigation, especially for high-value crops. The study tour of Israel was just the beginning of EPA exploring future knowledge sharing opportunities between agricultural and water sector leaders in the United States to improve our understanding and acceptance of the benefits of water reuse. Additionally, the EPA Water Reuse Program and partner organizations are now working to reduce barriers to water reuse for agricultural purposes, both in the Office of Water's Climate Adaptation Implementation Plan (Priority Action 1.C.2) and in the National Water Reuse Action Plan (Action 1.6).

Immediately following the water reuse mission to Israel, EPA Administrator Michael Regan joined Israel's Environment Minister Tamar Zandberg at COP 27 in Sharm El-Sheikh, Egypt, to discuss water reuse as an important climate adaptation strategy. During the session, Administrator Regan communicated EPA's commitment to international collaboration, including the development of tools and partnerships, as part of the WRAP.

Lastly, Administrator Regan issued a new charge to EPA's Farm, Ranch, and Rural Communities Federal Advisory Committee (FRRCC) in 2022 focused on how the Agency can help advance climate mitigation and adaptation goals for U.S. agriculture. The committee met in January in Washington, D.C., and received updates on a variety of climate policies and programs, including the benefits of water reuse for farmers in regions experiencing frequent or prolonged drought. FRRCC meeting materials and related information are available here.

Abbreviations are defined at the end of this document. See the Online Platform for more information about each action.

New WRAP Actions

WRAP actions seek to advance water reuse planning and implementation across the country. Actions are organized by strategic theme to help focus efforts and inspire future action. We are pleased to announce that the following new actions are now underway. Please email the action leaders, using contact information found in the Online Platform, to get involved or provide input!

IN CASE YOU MISSED IT

WRAP email updates highlight relevant water reuse activities and events. Monthly updates from this past quarter are available online:

- October update
- November update
- December update

Policy Coordination

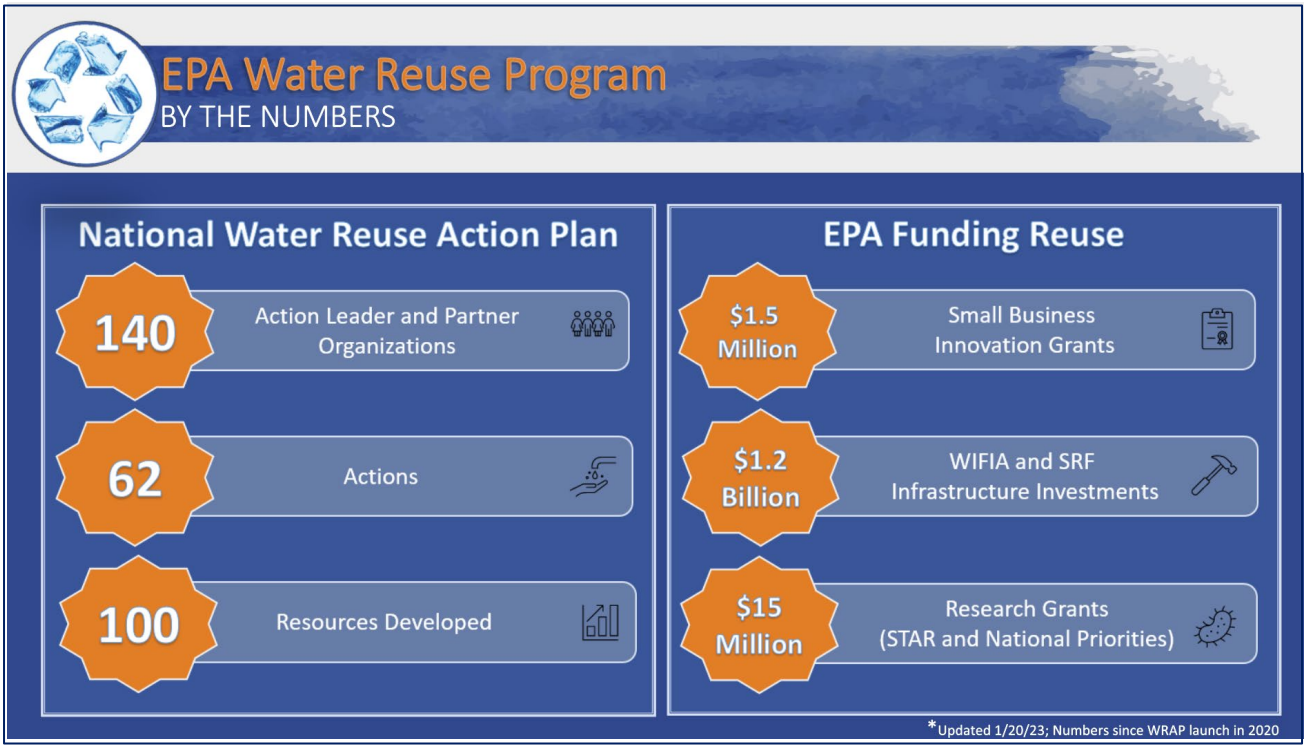
Advance Strategies for Permitting Innovative Wastewater Management Practices and Water Reuse Through the NPDES Program (Action 2.19, led by **EPA**, **University of California, Berkeley**, and **Stanford University**)

Brief description and strategic theme tie-in: Permitting processes are critical in shaping how wastewater management projects may be designed and implemented to address various climate problems, such as drought. Fully understanding these permitting processes and available flexibilities may positively influence a water manager's interest in pursuing water reuse and other innovative technologies and practices. This action builds on previous research and aims to refine, communicate, and disseminate information on the role of permitting processes in promoting innovative wastewater treatment and management. The action team plans to hold an expert workshop to create the foundation for a potential future permit writer training to encourage the adoption of innovative technologies and management practices.

Water Information Availability

Evaluate the Potential of Urban Stormwater Capture and Use in Colorado (Action 5.8, led by **Pacific Institute**)

Brief description and strategic theme tie-in: With the ongoing drought putting increased pressure on already stressed water supplies, communities in Colorado are interested in evaluating stormwater as an additional water source. However, more information is needed on the volumetric potential of stormwater to contribute to water supplies, as well as legal limitations due to state water-rights laws. The action team plans to create a report to establish the baseline understanding of the untapped volumetric potential for urban SCU to help resolve the existing water supply demand gap in Colorado, as well as to identify and monetize the co-benefits of SCU, such as mitigating flood risk and reducing water quality impairments. Through the measurement and monetization of urban SCU in the context of the existing Colorado water law, the action should illustrate how this strategy can be adapted and scaled in states with a similarly constrained water rights framework.



Completed WRAP Actions

Two WRAP actions were completed this quarter, demonstrating productivity and progress under the strategic themes for Policy Coordination and Science and Specifications. The completed WRAP action summaries were developed with action leaders and highlight impacts, lessons learned, and potential future activities.

Policy Coordination

Support Local and Regional Reuse Projects by Identifying Challenges, Opportunities, and Models for Interagency Collaboration

(Action 2.16, led by **Eric Rosenblum**, **WateReuse**, and **EPA** in collaboration with four partners)
Successful wastewater reuse and SCU projects bring together multiple stakeholders—communities, wastewater agencies, municipal stormwater programs, and drinking water agencies—that often have single-purpose mandates and limited ability to pursue integrated water management strategies. They may also involve several jurisdictions within regions and watersheds. This action was initiated to support the development of multi-agency water reuse programs by identifying challenges, opportunities, and models for improved interagency collaboration. The final report, *Multi-Agency Water Reuse Programs: Lessons for Successful Collaboration,* is designed to help agency managers respond to the pressures of population growth, resource depletion, and climate change by working together to develop water reuse programs. Drawing on an extensive literature review and detailed case studies, the report identifies common legal, financial, regulatory, and organizational challenges and provides examples of how utilties can work together to build successful reuse programs. The case studies also highlight the role of agency leaders in cultivating support for regional programs and the importance of communication in maintaining effective partnerships. The action team members have presented their findings at a number of professional conferences, including webinars and panel discussions at UNESCO (2020 and 2021), the WateReuse Symposium (2021, 2022), a poster presentation at Singapore International Water Week (2021), and a workshop on "Collaborative Art: Working Beyond Borders to Solve Systems-Based Problems" at the IWA World Water Congress (2022).

Science and Specifications

Convene Experts to Address Opportunities and Challenges Related to Urban SCU

(Action 3.3, led by **EPA, JFW, NMSA, ReNUWIt, WateReuse**, and **WEF** in collaboration with two partners)
In September 2021, experts from across the country convened at the Johnson Foundation at Wingspread to identify key activities needed to advance SCU nationwide. Together, they found the need to build trust and understanding through partnerships; expand funding mechanisms; clarify regulations, policy, and guidance; advance science and treatment standards; and accelerate the use of new technologies and SCU strategies as key mechanisms for advancing SCU. These findings can be found in a convening report, which was published in March 2022. EPA's Office of Water partners are working to enhance collaboration and build institutional capacity for SCU, and two infographics will be released in 2023 based on this collaboration.

This Quarter's WRAP Action Outputs and Activities

Visit the Water Reuse Information Library for a robust set of WRAP outputs and other water reuse resources.

Policy

- **U.S.-Based Water Reuse Delegation to Israel.** More than 40 representatives from the U.S. water sector, including utilities, industry, states, and the federal government, traveled to Israel this fall as part of a science, technology, and policy informational exchange focused on water reuse practices. The group visited several reuse facilities, including the Sorek water desalination plant, one of the world's largest reverse osmosis desalination facilities, and the Emek Hefer Water Reclamation Project, which supplies treated wastewater for agricultural irrigation. They also learned how Israel mitigates potential long-term impacts of water reuse on crop and soil quality. U.S. and Israeli water sector leaders reflected on Israel's approach to water reuse and discussed reuse strategies for U.S. communities in a webinar. A summary report of key takeaways from the trip is anticipated for release in winter 2023. *(Action 11.1: Facilitate U.S.-Israel Collaboration on Water Reuse)*
- **TreWAG Agricultural Reuse Conference in Israel.** Technical and research experts convened in Kibbutz Hagoshrim, Israel, in October for the TreWAG "Understanding and Mitigating Effects of Treated Wastewater Reuse in Agriculture: From Risks to Policy and New Opportunities" conference hosted by the Volcani Institute. Action leaders co-hosted the event, which focused on understanding and mitigating effects and risks of using treated wastewater reuse in agriculture and new opportunities for expanding agricultural reuse. A collaborative white paper based on the technical round table discussions is forthcoming. *(Action 1.6: Address Barriers to Water Reuse in Agriculture)*

Technical

- **New Reuse Applications Included in the REUSExplorer**. The REUSExplorer is searchable by state, source of water, and end-use application. The following end-uses were recently added to the REUSExplorer:
  - Water reuse for environmental restoration.
  - Water reuse for impoundments.

  The tool already included information on potable water reuse, onsite non-potable reuse, centralized non-potable reuse, water reuse for agriculture, water reuse for consumption by livestock, and water reuse for landscaping applications. *(Action 3.1: Compile Existing Fit-for-Purpose Specifications)*
- **Characterization of Roof Runoff Microbial Quality in Four U.S. Cities with Varying Climate and Land Use Characteristics**. Roof runoff could be an important local water source in regions with growing populations and limited water supply. However, there is little guidance on how to use it safely—and, therefore, a need for research to characterize its microbial quality. This two-year research effort examined roof runoff microbial quality in four U.S. cities: Fort Collins, Colorado; Tucson, Arizona; Baltimore, Maryland; and Miami, Florida. It produced the largest-scale dataset to date of enteric pathogens in U.S. roof runoff collections and will inform treatment targets for different non-potable applications. *(Action 3.4: Develop Research and Tools to Support ONWS)*

Financial

- **EPA Awards Research Funding to 25 Small Businesses to Develop Environmental Technologies**. At the end of December, EPA announced nearly $2.5 million in research funding for 25 small businesses to develop technologies that address some of the country's most pressing environmental problems. The funded work included two reuse projects:

- **J-Tech LLC** (Lakewood, Colorado) was funded to develop a septic tank technology that enables low-cost, sustainable disinfection of wastewater for onsite non-potable reuse.
- **LeapFrog Design** (Bend, Oregon) was funded to develop a modular ecological water treatment system for onsite capture and non-potable reuse from single-family residences.

These awards are part of EPA's SBIR program, which runs an annual, two-phase competition for funding. Awardees are receiving up to $100,000 in Phase I funding for six months for "proof of concept" of their proposed technologies. *(Completed Action 7.5: Coordinate and Promote Water Reuse Technology in Federal SBIR Programs)*

- **Reclamation Releases Funding Opportunity for Development of Water Reuse and Desalination Projects**. Reclamation is providing funding assistance for the preparation of feasibility studies and planning activities for potential new Title XVI Water Reclamation and Reuse projects, desalination construction projects, and large-scale water recycling projects. Funding will be provided under two groups:
  - Up to $1 million in federal funding for projects with an anticipated cost of less than $500 million.
  - Up to $5 million in federal funding for projects with an anticipated cost of more than $500 million.

  Learn more here. Applications are due on **February 28, 2023**.
- **DOE Announces $23 Million in Research and Development Funding to Support Decarbonizing the Nation's Water Treatment Sector**. This FOA intended to drive innovation to decarbonize the entire life cycle of WRRFs. These facilities, which treat wastewater from public water systems, are among the country's largest industrial electricity users. Their full lifecycle GHG emissions are on par with direct emissions from the food and beverage industry—one of the largest GHG-emitting industries in the United States. The concept paper submission deadline is **January 27, 2023**, and the full application submission deadline is **April 3, 2023**.
- **DOE Announces Project Selections to Build Water Security and Climate Resilience**. DOE, in partnership with the NAWI Hub, announced the selection of seven projects that will advance NAWI's strategic goals of improving the energy efficiency of water treatment technologies and the diversification of water supply through the cost-effective utilization of non-traditional water sources across the United States. Selected projects included a reuse project titled "Data-Driven Fault Detection and Process Control for Potable Reuse with Reverse Osmosis." Led by Carollo, the project seeks to lower the cost of reverse-osmosis-based advanced treatment systems by improving existing technologies to make treatment of non-traditional waters competitive with conventional water sources. *(Action 4.6: Implement and Manage the NAWI Energy-Water Desalination Hub)*
- **FEMA Offers Opportunities for Technical Assistance and Hazard Mitigation Funding**. FEMA's competitive mitigation grant programs provide states, local communities, tribes, and territories funding to address future risks from natural disasters—such as wildfires, drought, hurricanes, earthquakes, and increased flooding—to foster greater community resilience and reduce disaster suffering. The BRIC program funds natural hazard mitigation projects, which can include water reuse projects that mitigate drought. FEMA and EPA are collaborating in the WRAP to better integrate water reuse into their funding programs. FEMA is offering direct technical assistance to all communities that may not have the resources to begin climate resilience planning and project solution design on their own. **Grant applications are accepted through January 27, 2023**. *(Action 2.14: Integrate Water Reuse into FEMA Hazard Mitigation Programs)*

We welcome federal, state, tribal, local, and water sector partners to propose actions to advance water reuse. Ideas for new actions may be sent to waterreuse@epa.gov. For information about how to propose, lead, or collaborate on a WRAP action, visit this webpage.

Abbreviations Used in This Document			
BRIC	Building Resilient Infrastructure and Communities	NPDES	National Pollutant Discharge Elimination System
COP	Conference of the Parties of the UN Framework Convention on Climate Change	ONWS	onsite non-potable water systems
DOE	U.S. Department of Energy	Reclamation	U.S. Bureau of Reclamation
EPA	U.S. Environmental Protection Agency	ReNUWIt	Re-inventing the Nation's Urban Water Infrastructure
FEMA	Federal Emergency Management Agency	REUSExplorer	Regulations and End-Use Specifications Explorer
FOA	Funding Opportunity Announcement	SBIR	Small Business Innovation Research
FRRCC	Farm, Ranch, and Rural Communities Federal Advisory Committee	SRF	State Revolving Fund
GHG	greenhouse gas	SCU	stormwater capture and use
JFW	Johnson Foundation at Wingspread	UNESCO	UN Educational, Scientific and Cultural Organization
IWA	International Water Association	WEF	Water Environment Federation
NAWI	National Alliance for Water Innovation	WIFIA	Water Infrastructure Finance and Innovation Act
NMSA	National Municipal Stormwater Alliance	WRRF	Water Resource Recovery Facility