NATIONAL WATER REUSE ACTION PLAN

NATIONAL WATER REUSE ACTION PLAN QUARTERLY UPDATE
October–December 2021

A Message from Radhika Fox, EPA Assistant Administrator for Water

We are all part of a historic moment for water. As a nation, we have underinvested in our water infrastructure for far too long. Thirty years ago, the federal government's contribution was 63 percent of total capital spending—now it's about 9 percent. Under the Bipartisan Infrastructure Law, that is going to change. President Biden and Congress delivered BIG on the promise to build a better America. The law provides over $50 billion to EPA's water programs—the single largest investment in water infrastructure our nation has ever seen—and it removes barriers to federal funding to ensure that all communities will have access to this opportunity. A priority for this funding is pursuing a climate resilient water future, and water reuse is central to this strategy. Investing in water reuse protects the health of our communities and our environment while creating good paying jobs. Thanks to the dedication and creativity of EPA's water reuse team and our partners, we are poised to accelerate progress on water reuse. I look forward to the important milestones that will be achieved in 2022, which will include a report from the stormwater experts convening at the Johnson Foundation; a U.S. delegation mission to Israel to discuss reuse policy, technology, and science; and a whitepaper on navigating the NPDES permitting process for water reuse projects. Let's get to work!

The status table below includes brief updates on all WRAP actions. Acronyms are defined at the end of this document.

Seeking Feedback on Proposed WRAP Actions

Four proposed WRAP actions are summarized below, with more information available on the WRAP Online Platform. We welcome feedback on proposed actions via waterreuse@epa.gov through February 25, 2022.

IN CASE YOU MISSED IT

Our WRAP monthly update listserv messages highlight actions and reuse events. Issues from this past quarter are available online:

- **October update**
- **November update**
- **December update**

1. **Integrated Watershed Action: Advance Water Reuse in Agriculture Through Outreach and Convening of Multi-Disciplinary Partners** (Action 1.6, led by **Pacific Institute**, **EPA**, and **FDA**)

   Agricultural irrigation accounts for over 40 percent of freshwater withdrawals in the United States, but only about 2 percent of U.S. farms report using recycled water for irrigation.[1,2] There are multiple cultural, societal, institutional, and regulatory barriers to advancing both centralized agricultural reuse (treated municipal wastewater for irrigation), and decentralized reuse of waters generated onsite on the farm. Action team members plan to conduct outreach with a diverse group of relevant stakeholders, including water reuse practitioners, drainage professionals, agronomists, soil scientists, food safety regulators, water

[1] U.S. Department of Agriculture, National Agricultural Statistics Service. (2019). Table 6: Farms using recycled or reclaimed water: 2018 and 2013. In *2017 Census of Agriculture: 2018 irrigation and water management survey.* AC-17-SS-1. https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/Farm_and_Ranch_Irrigation_Survey/fris_1_0006_0006.pdf

[2] Dieter, C. A., M. A. Maupin, R. R. Caldwell, M. A. Harris, T. I. Ivahnenko, J. K. Lovelace, N. L. Barber, and K. S. Linsey. (2018). *Estimated use of water in the United States in 2015*. Circular 1441. U.S. Geological Survey. https://doi.org/10.3133/cir1441

quality regulators, industry, and non-governmental organizations to identify opportunities and challenges to safely advance agricultural reuse.

2. **Policy Coordination: Integrate Water Reuse and Water Security into FEMA Hazard Mitigation Programs** (Action 2.14, led by **FEMA** and **EPA**)
   Hazard mitigation is any sustainable action that reduces or eliminates long-term risk to people, property, and natural resources from future disasters. Mitigation planning helps break the cycle of disaster damage, reconstruction, and repeated damage. Water reuse is one of several tools that can be supported by various federal funding programs to help address future hazards, such as drought and flooding. FEMA programs do not currently fund water reuse and drought resiliency projects to their full potential. The EPA water reuse team and FEMA intend to develop educational materials to support the inclusion of water reuse (including stormwater capture), water efficiency, source water protection, and other integrated water resources management measures to mitigate drought and other hazards into FEMA's Building Resilient Infrastructure and Communities (BRIC), Hazard Mitigation Grant Program (HMGP), and other related programs.

3. **Finance Support: Develop the Bureau of Reclamation's Large-Scale Water Recycling and Reuse Funding Opportunity** (Action 6.5, led by **Reclamation**)
   The Bipartisan Infrastructure Law, enacted November 2021, provides the authority and funding for a new large-scale water recycling and reuse grants funding opportunity. Specifically, the law gives Reclamation the authority to provide a federal cost share of up to 25 percent for water reuse projects with a total estimated cost exceeding $500 million in the western states that Reclamation covers. Priority is to be given to projects that serve multiple purposes, such as fish and wildlife enhancement, or address environmental impacts from Reclamation projects, or are multi-state or regional in nature. In 2022, Reclamation plans to develop a process to implement this authority and allocate the appropriated funding to eligible projects.

4. **Outreach and Communications: Highlight Water Reuse Opportunities in the National Pretreatment Program Framework** (Action 8.7, led by **EPA**)
   The national pretreatment program is a component of the National Pollutant Discharge Elimination System (NPDES) program. Its objectives include 1) optimizing operational efficiencies at wastewater treatment facilities, 2) preventing the introduction of pollutants that are incompatible with municipal treatment processes and may pass untreated into the environment, and 3) improving opportunities to recycle and reclaim both municipal and industrial wastewaters and sludges. However, there are misconceptions as to how the pretreatment program may be administered to support water reuse. This action will engage key stakeholders and clarify how local pretreatment programs can be refocused and promoted to increase the marketability of recycled water, while simultaneously protecting public and environmental health.

Newly Active 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're pleased to announce that two actions proposed in the previous quarter are now underway:

Incorporate Water Quality and Onsite Reuse Research into Codes and Standards for Premise Plumbing (Action 2.18, led by **EPA** and **NBRC for ONWS**)

- ✓ Strategic theme tie-in: Update national plumbing codes and standards to include risk-based framework for onsite non-potable water systems which may be incorporated into state and local plumbing codes.

Assess Regulatory Programs for Produced Water Reuse Applications
(Action 3.8, led by **EDF**)

- ✓ Strategic theme tie-in: Analyze whether regulators considering new uses for produced water have the tools to manage potential risks. This action aims to provide insight into more research needed to inform improvements to state regulatory programs.

Completed WRAP Action

A newly completed WRAP action summary, featuring the accomplishments and impact of activities under Action 11.2 (**Raise Global Awareness and Preparedness for Water Reuse and the WRAP**), is available on this webpage. As part of this action, DOS and partners promoted water reuse globally and built water reuse capacity by leveraging public diplomacy tools and the WRAP. DOS launched a webinar series that shared U.S. water technologies and approaches to stakeholder engagement, messaging, and regulations with a global audience, reaching over 42,000 people from more than 78 countries. This action also integrated water reuse into new and existing DOS programs and outreach, equipping water managers with a better understanding of the technologies and approaches used to strengthen water security. DOS plans to continue international engagement on reuse through its public diplomacy and programs and as part of Action 11.1 (Facilitate U.S.-Israel Collaboration on Technology, Science, and Policy of Water Reuse) and Action 11.3 (Develop and Highlight Case Studies Relevant to the WICER Framework).

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.

Status Update on WRAP Actions

* *For the implementation progress bars in the table below, dark blue indicates completed milestones, light blue indicates milestones that are in progress, and white reflects forecasted future milestones.*

** *Completed actions are those in which all supporting milestones are completed and no additional milestones will be added.*

Shortened Action Title and Number	Action Leader(s)	Brief Update	Implementation Progress*
Integrated Watershed Action			
Prepare Case Studies of Successful Water Reuse Applications (Action 1.2)	**Aliza Furneaux** (WateReuse)	The action team is finalizing case studies that explore how communities incorporated water reuse into their integrated water management plans. The case studies involve recycled water used for onsite non-potable water reuse, surface water augmentation, and potable reuse.	
Leverage EPA's Water Partnership Programs (Action 1.4)	**Bob Benson** (EPA)	The water reuse and water resource management inventory was published. This provides a snapshot of recent water reuse projects and initiatives across some of the NEP and Urban Waters partnership locations. A water reuse pilot project, carried out in collaboration with the River Network and the National Park Service under Milestone 7, is in its final stages; the report is complete and awaiting approval for distribution.	
Develop Case Studies of Low-Input Solutions (Action 1.5)	**Layne Piper** (ECOS)	ECOS is creating a case study template and conducting outreach to obtain more information about select reuse projects which showcase the integration of low-input solutions across a variety of geographic areas, community sizes, and applications of water reuse.	
Policy Coordination			
Compile Existing State Policies and Approaches to Water Reuse (Action 2.1)	**Jake Adler** (ACWA), **Alan Roberson** (ASDWA), **Sharon Nappier** (EPA), **Greg Fogel** (WateReuse)	Work has begun to compile and organize state policy and regulatory documents.	
Enhance State Collaboration on Water Reuse (Action 2.2)	**Jake Adler** (ACWA), **Alan Roberson** (ASDWA), **Ashley Harper** (EPA)	ACWA, ASDWA, ASTHO, ECOS, GWPC, and EPA are continuing to convene to discuss topics, needs, and logistics for a collaborative reuse webinar series for states. The action team is also exploring the potential for a state regulator networking opportunity at the WateReuse Symposium in March 2022.	
Enhance Wastewater Source Control Through Local Pretreatment Programs (Action 2.4)	**Cynthia Finley** (NACWA), **Claudio Ternieden** (WEF)	NACWA is developing an online resource library for case studies and other relevant documents that show how pretreatment pollution prevention programs can be incorporated into a water reuse program.	

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Develop Materials on How CWA NPDES Permits Can Facilitate Water Reuse (Action 2.6)	**Justin Mattingly** (EPA), **David Smith** (EPA, retired), **Kevin Weiss** (EPA), **Sean Rolland** (ACWA)	The draft white paper—identifying issues and case studies addressing key NPDES permitting questions specific to water reuse—is undergoing final review with expected completion in early 2022. A webinar titled *Permitting Water Innovation: Improving Permitting Processes to Support New Water Management Technologies and Strategies* was held in November 2021. The webinar presented findings and insights from recent research, water reuse actions, and specific case studies to explore how permitting affects implementation of innovative water management approaches.	
Utilize Existing Working Groups to Coordinate Federal Engagement (Action 2.7)	**Sharon Nappier** (EPA)	The Interagency Sustainability Working Group, Interagency Water Working Group, and National Drought Resilience Workgroup are continuing to convene with their partners. The next quarterly federal partners meeting is scheduled in January 2022.	
Align Tools to Promote Best Management of Unused/Expired Pharmaceuticals (Action 2.9)	**Sharon Green** (LACSD)	The action team recently updated the Flush 3P website to include links to information on safe drug disposal, developed outreach materials regarding EPA's Hazardous Waste Pharmaceutical Rule, and identified outreach and communication needs of water and wastewater utilities regarding pharmaceuticals in recycled water. The team expects to complete the remaining milestones by the end of February 2022.	
Leverage Existing USDA Programs for Consideration of Agricultural Water Reuse (Action 2.12)	**Alan Gillespie** (USDA)	NRCS is continuing to evaluate the effectiveness of two interim practice standards—managed aquifer recharge and groundwater recharge basins—in California as part of its fiscal year 2022 program delivery.	
Support Local and Regional Reuse Projects (Action 2.16)	**Eric Rosenblum, Greg Fogel** (WateReuse), **David Smith** (EPA, retired)	The report on interagency collaboration models has been submitted and is being prepared for publication in February 2022. A summary of the project will be presented at UNESCO's EauMega Conference on January 11, 2022, and a more complete discussion of the results will be presented in March 2022 at a workshop at the WateReuse Symposium.	
Propose Nationwide Permit Addressing Reuse (Action 2.17)	**Jennifer Moyer** (USACE)	The NWP relating to construction of water reclamation facilities (NWP 59) was published on December 27, 2021 and can be found on the USACE website. Once the permits have been posted for 60 days, they can be used.	
Incorporate Onsite Reuse Research into Codes and Standards for Premise Plumbing (New Action 2.18)	**William Platten** (EPA), **Rabia Chaudhry** (EPA), **Paula Kehoe** (NBRC for ONWS), **Taylor Nokhoudian** (NBRC for ONWS)	The EPA Premise Plumbing Workgroup and the NBRC plan to convene multiple stakeholders with the goal of incorporating water quality research on onsite water treatment, storage, and delivery into building plumbing codes and standards at a national level. EPA and NBRC for ONWS collaborated to develop the Action Implementation Plan.	

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Science and Specifications			
Compile Existing Fit-for-Purpose Specifications (Action 3.1)	**Sharon Nappier** (EPA)	EPA developed a web-based tool, called the REUSExplorer, for an initial launch in January 2022. The explorer will help users locate reuse regulations and guidelines and their underlying science. Subsequent content will be added in phases throughout the year. The first end-use data available will be focused on potable water reuse, onsite non-potable water reuse, and other centralized non-potable reuse applications (not including agricultural and landscape reuse applications).	
Convene Experts on Urban Stormwater Capture and Use (Action 3.3)	**David Smith** (EPA, retired), **Chris Kloss** (EPA), **Danielle Johnson** (JFW), **Seth Brown** (NMSA), **Richard Luthy** (ReNUWIt), **Greg Fogel** (WateReuse), **Claudio Ternieden** (WEF)	Following the September 2021 meeting, the action team is preparing a meeting report that identifies key findings and recommended actions to address the most important barriers to more widespread SCU implementation in urban areas. They are reviewing the draft report and plan to complete it by early 2022. WateReuse presented about the September 2021 SCU convening at WEFTEC 2021.	
Develop Research and Tools to Support ONWS (Action 3.4)	**Paula Kehoe** (NBRC for ONWS)	NBRC for ONWS continued to advance the development of an operator certificate exam and training for onsite systems. In partnership with WEF and the Association of Boards of Certification, the group began recruitment of subject matter experts to refine the knowledge base and skills that will be tested on the exam.	
Assess Specifications of Wastewater in Food Animal Protein Processing Facilities (Action 3.5)	**Jay Garland** (EPA)	EPA resumed sampling in March 2021 to characterize the quality of animal protein processed in wastewater with a focus on the occurrence and density of zoonotic pathogens and chemicals of concern. The Agency planned to complete the sampling by the end of 2021.	
Viral Pathogen and Surrogate Approaches for Assessing Treatment Performance (Action 3.6)	**Sarah Ludwig-Monty** (EPA)	EPA announced five awardees receiving a total of $6 million in funding for research on human viruses in water intended for reuse in August 2021, as part of the STAR grant program. A kick-off meeting is planned for February 2022.	
Develop Papers on Emerging Public Health Topics in Reuse (Action 3.7)	**Ashley Harper** (EPA), **Kruti Ravaliya** (FDA)	EPA and FDA created an issue paper template and continue to meet regularly to develop the issue papers. They are currently developing the first issue paper, which is tentatively titled *Antimicrobial Resistance in Water Reuse Systems: Potential Relevance for Public Health*.	
Assess Regulatory Programs for Produced Water Reuse (New Action 3.8)	**Nichole Saunders** (EDF), **Cloelle Danforth** (EDF)	In October, EDF presented at WEFTEC 2021. The presentation was titled *Framework to Address Regulatory Challenges when Considering Reuse of Complex Wastewaters: A Case-Study to Prioritize Constituents of Concern in Developing Permitting Programs for Surface Discharges of Produced Water by Cross-Walking to State Standards and Toxicity Data,* and the abstract can be found here. Following the conference, EDF developed its Action Implementation Plan.	

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Technology Development and Validation			
Implement New Mexico Produced Water Research Consortium (Action 4.2)	**Rebecca Roose** (NMED), **Lynette Guevara** (NMED)	The NM-PWRC Directors conducted three public education and outreach meetings on produced water issues and Consortium research across New Mexico in November 2021. The NM-PWRC Annual Membership Meeting was held in December in Las Cruces, New Mexico, where participants reviewed annual activities and initiated plans to coordinate with additional states on an approach for produced water research.	
Support Water Reuse Through DOE's Water Security Grand Challenge (Action 4.3)	**Diana Bauer** (DOE)	DOE announced the two winners of the Water Resource Recovery Grand Prize (Phase 2) in November 2021.	
Support Air-Cooling Condensate Water Reuse in Large Buildings (Action 4.5)	**Thomas Lawrence** (ASHRAE), **Bob Boulware** (Design Aire), **Pete DeMarco** (IAPMO), **Greg Eades** (EPA), **John Wammes** (WW), **Fred Betz** (ASHRAE), **Jay Garland** (EPA), **Gaby Schubert** (WTA), **Michael Jahne** (EPA)	EPA and select action partners completed water quality sampling for the EPA study of condensate quarter quality. Sampling sites included Purdue University, Rice University, and Exploration Park at the Kennedy Space Center.	
Implement and Manage the NAWI Energy-Water Desalination Hub (Action 4.6)	**Kenny Kort** (DOE), **Peter Fiske** (NAWI), **Meagan Mauter** (NAWI)	NAWI hosted their second annual meeting and held a virtual workshop in December 2021 to help inform the Advanced Manufacturing Office's future research, development, and deployment programs in the energy-water nexus.	
Evaluate Low-Input Methods to Remove Pharmaceutical Residues (Action 4.7)	**Clinton Williams** (USDA)	Action partners at Penn State University are continuing to conduct research to compare candidate biochar materials for emerging contaminant sorption.	
Water Information Availability			
Foster USDA Watershed-Scale Pilot Projects to Share Water Information (Action 5.1)	**Alan Gillespie** (USDA)	NRCS's CIG program announced awards in December 2021, with $2.4 million awarded to three proposals focused on water resources: *Low-Tech Process Based In-Stream Structures to Increase Climate Resiliency in the Great Plains; On-Farm Water Capture and Reuse: Performance Demonstration, Economic Feasibility, and Design Tool Development;* and *Mesoscale AI-Based Root-Zone Soil Moisture Monitoring for Efficient Farm Irrigation.*	

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Identify Monitoring Practices for Reuse Applications (Action 5.2)	**Erin Partlan** (WRF)	Research teams are beginning research on two projects: 1) developing standard operating procedures for the collection, storage, and extraction of aqueous samples for *in vitro* bioanalytical tool screening and 2) assessing water quality monitoring needs, tools, gaps, and opportunities for potable water reuse.	
Develop National Integrated Water Availability Assessments (Action 5.4)	**Brian Clark** (USGS)	USGS has developed project plans, and work is underway to identify gaps and compile information needed to initiate simulations for suitable use estimates.	
Quantify the National Volumes of Water Potentially Available for Reuse (Action 5.5)	**Ashley Harper** (EPA), **Patrick Dube** (WEF), **Greg Fogel** (WateReuse)	This action builds on the 2018 WEF ReNEW Water Project to quantify the current amount of municipal wastewater reuse and potential volumes available for reuse. WEF is currently collecting data via survey of their members and other sources to update estimates of potential for municipal wastewater reuse. Additionally, the action team chose to prioritize stormwater as an additional source of water for quantifying reuse potential.	
Finance Support			
Compile Federal Funding Sources and Develop Interagency Decision Tool (Action 6.1)	**Sonia Brubaker** (EPA), **Stephanie Santell** (EPA), **David Smith** (EPA, retired)	The action team has completed work on determining the user requirements and framing the user interface for their interagency decision tool.	
Communicate Eligibility of Water Reuse in State Revolving Fund Programs (Action 6.2A)	**Justin Mattingly** (EPA), **Kiri Anderer** (EPA)	The Council of Infrastructure Financing Authorities released a newsletter in 2021 providing updates on the availability of $1 billion in funding through WIFIA for state infrastructure financing authorities and EPA's *Integrating Water Reuse into the Clean Water State Revolving Fund* report. They have delayed updates to the Drinking Water State Revolving Fund Eligibility Handbook until 2022.	
Compile and Promote Existing USDA Resources for Rural Communities (Action 6.4)	**Steve Polacek** (USDA)	USDA is collecting data on state engineers and related reuse projects in Florida, California, and Idaho under the Water and Waste Disposal Loan and Grant and Water and Waste Disposal Technical Assistance and Training Grant.	
Integrated Research			
Develop a Coordinated National Research Strategy (Action 7.2)	**Julie Minton** (WRF)	WRF completed a survey on research needs for stormwater harvesting practices at local, regional, and state levels through Project 4841. The results of this survey have been incorporated into Action 3.3.	
Increase Understanding of Current Aquifer Storage and Recovery Practices (Action 7.4)	**Mike Paque** (GWPC), **Justin Mattingly** (EPA), **Kara Goodwin** (EPA)	GWPC's ASR-MAR Workgroup hosted a webinar in December 2021 that focused on guidance for understanding and minimizing arsenic mobilization in ASR projects.	

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Coordinate and Promote Water Reuse Technology in Federal SBIR Programs (Action 7.5)	**April Richards** (EPA)	EPA announced over $3 million in funding to 30 U.S. small businesses to develop novel technologies to address pressing environmental and public health problems. Under the category of clean and safe water, two businesses received awards to develop technologies for either agricultural water reuse or non-potable onsite reuse.	
Develop Reclamation's Advanced Water Treatment Research Roadmap (Action 7.6)	**Yuliana Porras-Mendoza** (Reclamation)	Reclamation sent its roadmap to agencies in the Federal Water Treatment Working Group for review.	
Life-Cycle Analysis to Support Cost-Effective Enhanced Aquifer Recharge (Action 7.7)	**Jacquelyn Bell** (EPA)	EPA, as part of its STAR program, is seeking applications proposing research to develop cost-benefit tools to support Enhanced Aquifer Recharge as a viable, safe, and cost-effective water management strategy. The team held a webinar in December 2021 to provide information on the opportunity and the request for applications will close on January 13, 2022.	
Outreach and Communications			
Compile and Develop Outreach and Communication Materials (Action 8.1)	**Pat Sinicropi** (WateReuse), **Greg Fogel** (WateReuse)	WateReuse anticipates adding new communication materials focused on climate change, affordability, and agricultural reuse to the WRAP Online Platform.	
Establish a Water Reuse Champion Award Program (Action 8.4)	**Shana Rappaport** (GreenBiz), **Greg Fogel** (WateReuse), **Jon Freedman** (Suez)	WateReuse and Suez met with an additional action partner and anticipate an announcement on the Water Reuse Champion award in spring 2022 at the WateReuse Symposium.	
Engagement with Disadvantaged and Rural Communities on Water Reuse (Action 8.5)	**David Smith** (EPA, retired), **Rabia Chaudhry** (EPA)	In November 2021, Russel City, Kansas, and Fernwood, Idaho, held initial meetings to assess the feasibility of implementing water reuse projects. EPA held a webinar focusing on keys to success for water recycling in small and disadvantaged communities.	
Develop Public Health Communication Tools for Reuse (Action 8.6)	**Jonathan Yoder** (CDC), **Mia Mattioli** (CDC), **Ashley Harper** (EPA), **Rabia Chaudhry** (EPA)	CDC and EPA have been meeting biweekly and have created a content scoping outline for both public and medical health professional websites.	

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Workforce Development			
Support and Promote Opportunities for Creating a Skilled Workforce (Action 9.2)	**Jim Horne** (EPA), **Greg Fogel** (WateReuse), **Barb Martin** (AWWA), **Claudio Ternieden** (WEF)	AWWA is currently collecting information on existing water reuse training materials to support state-level efforts to develop advanced water treatment operations and water reuse training programs. Once the compilation is complete, AWWA will develop recommendations to expand operator training to support water reuse and other advanced water treatment operations nationwide.	
Metrics for Success			
Facilitate Implementation of the National Water Reuse Action Plan (Action 10.3)	**Sharon Nappier** (EPA)	EPA expects to announce awards for the funding opportunity titled *National Priorities: Water Innovation, Science, and Engagement to Advance Water Reuse Request for Applications* in summer 2022.	
International Collaboration			
Facilitate U.S.-Israel Collaboration on Water Reuse (Action 11.1)	**Sharon Nappier** (EPA), **Adam Schalimtzek** (MoEP), **Omer Bab** (MoEI)	The action team led the collaborative development of a draft itinerary for an in-person delegation mission to Israel in spring 2022. The team continues to discuss other opportunities for collaboration, including professional dialogues, webinars and treWAG 2022 symposium participation.	
Develop and Highlight Case Studies Relevant to International Contexts (Action 11.3)	**Rabia Chaudhry** (EPA), **Clémentine Marie Stip** (The World Bank)	EPA and World Bank convened action partners to discuss review committee roles (e.g., authors, connectors, reviewers) and completed a draft case study template.	
Complete Actions**			
Inclusive of the following completed actions: • **Develop Federal Policy Statement to Support Consideration of Water Reuse** (Action 1.1) • **Complete the EPA Study of Oil and Gas Extraction Wastewater Management** (Action 2.3) • **Conduct Outreach and Training with Tribes to Build Water Reuse Capacity** (Action 2.15) • **Support and Communicate WIFIA Funding** (Action 6.2B) • **Raise Global Awareness and Preparedness for Water Reuse and the WRAP** (Action 11.2)			
45 Active Actions **5 Complete Actions**	**35 Unique Action Leaders**		**256 Milestones Completed**

Abbreviations Used in This Document					
ACWA	Association of Clean Water Administrators	FDA	U.S. Food and Drug Administration	NWP	Nationwide permit
ASDWA	Association of State Drinking Water Administrators	GWPC	Groundwater Protection Council	ONWS	onsite non-potable water system
ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers	IAPMO	International Association of Plumbing and Mechanical Officials	PWRC	Produced Water Research Consortium
ASR-MAR	aquifer storage and recovery–managed aquifer recharge	JFW	Johnson Foundation at Wingspread	Reclamation	U.S. Bureau of Reclamation
ASTHO	Association of State and Territorial Health Officials	LACSD	Sanitation Districts of Los Angeles County	ReNUWIt	Reinventing the Nation's Urban Water Infrastructure
AWWA	American Water Works Association	MoEI	Ministry of Economy and Industry (Israel)	SBIR	Small Business Innovation Research
CDC	Centers for Disease Control and Prevention	MoEP	Ministry of Environmental Protection (Israel)	SCU	stormwater capture and use
CIG	Conservation Innovation Grant	NACWA	National Association of Clean Water Agencies	STAR	Science to Achieve Results
DOE	U.S. Department of Energy	NAWI	National Alliance for Water Innovation	USACE	U.S. Army Corps of Engineers
DOS	U.S. Department of State	NBRC	National Blue Ribbon Commission	USDA	U.S. Department of Agriculture
ECOS	Environmental Council of the States	NEP	National Estuary Program	USGS	U.S. Geological Survey
EDF	Environmental Defense Fund	NMED	New Mexico Environment Department	WEF	Water Environment Federation
EPA	U.S. Environmental Protection Agency	NMSA	National Municipal Stormwater Alliance	WEFTEC	Water Environment Federation Technical Exhibition Conference
FEMA	U.S. Federal Emergency Management Agency	NPDES	National Pollutant Discharge Elimination System	WIFIA	Water Infrastructure and Finance Innovation Act
		NRCS	Natural Resources Conservation Service	WRF	Water Research Foundation
				WTA	Water Tech Alliance
				WW	Water Works, Inc.