

# NATIONAL WATER REUSE ACTION PLAN



## NATIONAL WATER REUSE ACTION PLAN QUARTERLY UPDATE

January–March 2022

### A Message from Patricia Sinicropi, Executive Director of the WateReuse Association

As this collaborative effort—the National Water Reuse Action Plan—enters its third year, the WateReuse Association congratulates EPA and all WRAP action leaders and partners on all that they have accomplished. The Biden Administration continues to lead in advancing water reuse for public health, environmental protection, and climate resilience. The historic Bipartisan Infrastructure Law (BIL) will accelerate essential investments in water reuse across the country and keep collaboration moving forward with an interagency water recycling working group. At the [37th Annual WateReuse Symposium](#) this March, the WateReuse Association highlighted the success of 10 WRAP actions and ongoing efforts to an audience of more than 550 water sector professionals.

As we look toward the future, WateReuse is excited to announce a partnership with the Chamber of Commerce, SUEZ Water Solutions, and the University of Pennsylvania Water Center to further engage the industrial sector in water reuse. The partnership will develop an Industrial Water Reuse Champions Award program recognizing the top Fortune 1000 companies that incorporate best-in-class water recycling and reuse programs to improve water stewardship and achieve their water management goals. WateReuse Association is honored to be a partner with EPA, federal agencies, and our water sector colleagues in advancing the work of the WRAP—and advancing water recycling across America.

Onward!

*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 Action

A new proposed WRAP action is summarized below, with more information available on the [WRAP Online Platform](#).

We welcome feedback on this proposed action via [waterreuse@epa.gov](mailto:waterreuse@epa.gov) through May 27, 2022.

### **Technology Development and Validation: Develop an NSF Protocol for Deployable Graywater Reuse Systems in Military Operations** ([Action 4.8](#), led by APHC)

APHC is collaborating with NSF International and DOD Joint Medical Services to develop a protocol (NSF Protocol P248.03) to evaluate the performance of deployable and decentralized non-potable graywater reuse treatment systems not intended for permanent installations. A protocol does not currently exist to validate the performance of onsite systems in a timely manner to support their strategic deployment in field and other temporary operations. Performance targets should be based on a risk-based framework and DOD operational requirements. This protocol can address unique conditions associated with graywater treatment and reuse in resource constrained environments. The resulting data can support the military safety review process and support greater resilience and self-sufficiency in military operations.

### IN CASE YOU MISSED IT

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

- [January update](#)
- [February update](#)
- [March update](#)

## 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 are pleased to announce that five previously proposed actions are now underway:



Integrated  
Watershed  
Action

### **Address Barriers to Water Reuse in Agriculture Through Improved Communication and Partnerships**

([Action 1.6](#), led by **Pacific Institute, EPA, FDA, University of Arizona, and USDA**)

- ✓ **Strategic theme tie-in:** Conduct outreach and research with a diverse group of stakeholders to improve regulatory coordination and develop educational materials, guidance, and other relevant resources that support the safe advancement of agricultural water reuse.



Policy  
Coordination

### **Integrate Water Reuse and Water Security into FEMA Hazard Mitigation Programs**

([Action 2.14](#), led by **FEMA and EPA**)

- ✓ **Strategic theme tie-in:** Support the inclusion of water reuse, water efficiency, source water protection, and other integrated water resources management measures into FEMA's hazard mitigation funding programs to help address drought and other hazards.



Water  
Information  
Availability

### **Develop a Dashboard That Reflects Water Usage to Help Evaluate the Life Cycle Impacts of Materials** ([Action 5.6](#), led by **EPA**)

- ✓ **Strategic theme tie-in:** Create an interactive dashboard with standardized information to illustrate the resource inputs and life cycle environmental impacts of material goods across industrial sectors.



Finance  
Support

### **Develop the Bureau of Reclamation's Large-Scale Water Recycling and Reuse Funding Opportunity** ([Action 6.5](#), led by **Reclamation**)

- ✓ **Strategic theme tie-in:** Develop a transparent process for implementing Reclamation's authority to allocate funding from the BIL to provide a federal cost share of up to 25 percent for water recycling projects with a total cost of at least \$500 million.



Outreach and  
Communication

### **Highlight Water Reuse Opportunities in the National Pretreatment Program Framework** ([Action 8.7](#), led by **EPA**)






- ✓ **Strategic theme tie-in:** Engage stakeholders and develop educational materials to support pretreatment programs across the country to better achieve the stated objective of improving opportunities to recycle and reclaim municipal and industrial wastewater.




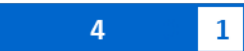



*We welcome federal, state, tribal, local, and water sector partners to propose actions to advance water reuse. Ideas for new actions may be sent to [waterreuse@epa.gov](mailto:waterreuse@epa.gov). For information about how to propose, lead, or collaborate on a WRAP action, visit [this webpage](#).*







## 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.

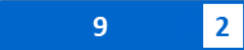






\*\* Completed actions are those in which all supporting milestones are completed and no additional milestones will be added.









Shortened Action Title and Number	Action Leader(s)	Brief Update	Implementation Progress*
<b>Integrated Watershed Action</b>			
<b>Prepare Case Studies of Successful Water Reuse Applications</b> (Action 1.2)	<b>Aliza Furneaux</b> (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.	
<b>Leverage EPA's Water Partnership Programs</b> (Action 1.4)	<b>Bob Benson</b> (EPA)	The Urban Waters Partnership released a new report, <a href="#">Promoting Equitable Water Supply Management Through Integrated Planning and Partnerships</a> . The pilot project worked with stakeholders in two designated Urban Waters locations—the San Antonio River in Texas and upstream partners of the Rio Reimagined in Arizona's Verde River—to identify systemic barriers and strategic opportunities for collaborative actions to integrate water reuse and water equity into water resource management at the river system scale.	
<b>Develop Case Studies of Low-Input Solutions</b> (Action 1.5)	<b>Layne Piper</b> (ECOS)	ECOS is creating a case study template and conducting outreach to obtain more information about select reuse projects that showcase the integration of low-input solutions across a variety of geographic areas, community sizes, and applications of water reuse.	
<b>Address Barriers to Water Reuse in Agriculture</b> (New Action 1.6)	<b>Anne Thebo</b> (Pacific Institute), <b>Rabia Chaudhry</b> (EPA), <b>Kruti Ravaliya</b> (FDA), <b>Jean Mclain</b> (University of Arizona), <b>Audrey Draper</b> (USDA)	EPA, FDA, Pacific Institute, the University of Arizona, and the Volcani Institute collaborated to develop the Action Implementation Plan and will begin work on the action milestones. Outreach is ongoing to engage more action partners, such as WRF and other EPA and USDA offices.	
<b>Policy Coordination</b>			
<b>Compile Existing State Policies and Approaches to Water Reuse</b> (Action 2.1)	<b>Jake Adler</b> (ACWA), <b>Alan Roberson</b> (ASDWA), <b>Sharon Nappier</b> (EPA), <b>Greg Fogel</b> (WateReuse)	The action team has begun to compile and organize state policy and regulatory documents.	

Shortened Action Title and Number	Action Leader(s)	Brief Update	Implementation Progress*
<b>Enhance State Collaboration on Water Reuse</b> (Action 2.2)	<b>Jake Adler</b> (ACWA), <b>Alan Roberson</b> (ASDWA), <b>Ashley Harper</b> (EPA)	ACWA, ASDWA, ASTHO, ECOS, GWPC, and EPA continue to convene to discuss state topics, needs, and logistics for a collaborative reuse webinar series for states, which is anticipated to kick off in May 2022 with an ASR-MAR webinar. At the WaterReuse Symposium in March 2022, ACWA hosted a cross-program state regulators meeting, and Shellie Chard (Oklahoma Department of Environmental Quality) reported on the meeting and state priorities during the symposium's closing plenary.	
<b>Enhance Wastewater Source Control Through Local Pretreatment Programs</b> (Action 2.4)	<b>Cynthia Finley</b> (NACWA), <b>Claudio Ternieden</b> (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.	
<b>Develop Materials on How CWA NPDES Permits Can Facilitate Water Reuse</b> (Action 2.6)	<b>Justin Mattingly</b> (EPA), <b>Kevin Weiss</b> (EPA), <b>Sean Rolland</b> (ACWA)	The final white paper, <a href="#">Navigating the NPDES Permitting Process for Water Reuse Projects: Strategies to Enable Recycling and Project Water Quality</a> , was published in March 2022. The white paper summarizes key items to consider when permitting water reuse projects, presents strategies to effectively permit water reuse projects, and draws upon specific case studies that illustrate these strategies.	
<b>Utilize Existing Working Groups to Coordinate Federal Engagement</b> (Action 2.7)	<b>Sharon Nappier</b> (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 for April 2022.	
<b>Align Tools to Promote Best Management of Unused/Expired Pharmaceuticals</b> (Action 2.9)	<b>Sharon Green</b> (LACSD)	The action team recently updated the Flush 3P <a href="#">website</a> to include links to information on safe drug disposal, developed outreach materials on EPA's Hazardous Waste Pharmaceuticals 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 April 2022.	
<b>Leverage Existing USDA Programs for Consideration of Agricultural Water Reuse</b> (Action 2.12)	<b>Alan Gillespie</b> (USDA)	In January 2022, NRCS included drought mitigation as an EQIP-CIC focus area option for fiscal year 2022. USDA expanded the list of conservation practices eligible for financial assistance through CICs to include drainage water management and irrigation water management. Additional information on EQIP-CIC can be found <a href="#">here</a> .	
<b>Integrate Water Reuse into FEMA Hazard Mitigation Programs</b> (New Action 2.14)	<b>Josh Human</b> (FEMA), <b>Justin Mattingly</b> (EPA)	FEMA and EPA collaborated to develop the Action Implementation Plan and will begin work on the action milestones.	


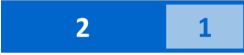




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<b>Support Local and Regional Reuse Projects</b> (Action 2.16)	<b>Eric Rosenblum, Greg Fogel</b> (WateReuse)	The action team prepared a <a href="#">report</a> and companion <a href="#">summary document</a> to explore how agencies can successfully work together to develop recycled water resources. The report offers an analytical framework for understanding the dynamics of interagency collaboration, which is supported by a detailed analysis of case studies in different U.S. regions. It also includes a summary of “lessons learned,” as well as questions and exercises to facilitate utility collaboration and an annotated bibliography of references for further study.	
<b>Propose Nationwide Permit Addressing Reuse</b> (Action 2.17)	<b>Jennifer Moyer</b> (USACE)	The NWP relating to construction of water reclamation facilities (NWP 59) was published in December 2021 and can be found on the <a href="#">USACE website</a> . The permit has been live for 60 days and can now be used.	
<b>Incorporate Onsite Reuse Research into Codes and Standards for Premise Plumbing</b> (New Action 2.18)	<b>William Platten</b> (EPA), <b>Rabia Chaudhry</b> (EPA), <b>Paula Kehoe</b> (NBRC for ONWS), <b>Taylor Nokhoudian</b> (NBRC for ONWS)	The action team onboarded two new action partners—NSF International and U.S. GSA—as both are relevant codes and standards organizations. Currently, NBRC is engaging with NSF International to incorporate onsite treatment criteria into their certification process.	
<b>Science and Specifications</b>			
<b>Compile Existing Fit-for-Purpose Specifications</b> (Action 3.1)	<b>Sharon Nappier</b> (EPA)	The <a href="#">REUSEExplorer</a> successfully launched in January 2022, with the first end-use data focusing on potable water reuse, onsite non-potable water reuse, and other centralized non-potable reuse applications (not including agricultural and landscape reuse applications). The next end-use data will include agriculture, landscape, and livestock watering applications. EPA gave a presentation at the WateReuse Symposium in March 2022, providing a demo of the tool to water reuse sector participants.	
<b>Convene Experts on Urban Stormwater Capture and Use</b> (Action 3.3)	<b>Justin Mattingly</b> (EPA), <b>Chris Kloss</b> (EPA), <b>Danielle Johnson</b> (JFW), <b>Seth Brown</b> (NMSA), <b>Richard Luthy</b> (ReNUWit), <b>Greg Fogel</b> (WateReuse), <b>Claudio Ternieden</b> (WEF)	The final convening report, <a href="#">Pure Potential: The Case for Stormwater Capture and Use</a> , was published in March 2022. The report lays the groundwork for establishing a unified community of practice around SCU and a strategic framework for coordinated action to address the most important challenges to widespread SCU implementation in urban areas. The action leaders presented their findings at the WateReuse Symposium in March 2022.	
<b>Develop Research and Tools to Support ONWS</b> (Action 3.4)	<b>Paula Kehoe</b> (NBRC for ONWS)	San Francisco Public Utilities Commission released an <a href="#">e-book</a> titled <i>Onsite Water Recycling: An Innovative Approach to Solving an Old Problem</i> in February 2022. In partnership with WEF and the Association of Boards of Certification, NBRC for ONWS began recruiting subject matter experts to refine the knowledge base and skills that will be tested on an operator certificate exam and taught during training for onsite systems.	






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<b>Assess Specifications of Wastewater in Food Animal Protein Processing Facilities</b> (Action 3.5)	Jay Garland (EPA)	EPA continues sampling 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 plans to complete the sampling by summer 2022. The analysis of both microbiological and chemical contaminants is ongoing, with publication of results expected in fiscal year 2023.	
<b>Viral Pathogen and Surrogate Approaches for Assessing Treatment Performance</b> (Action 3.6)	Sarah Ludwig-Monty (EPA)	A kickoff meeting is anticipated for April/May 2022 for <a href="#">five awardees</a> receiving a total of \$6 million for research on human viruses in water intended for reuse as part of EPA's STAR program.	
<b>Develop Papers on Emerging Public Health Topics in Reuse</b> (Action 3.7)	Ashley Harper (EPA), Kruti Ravaliya (FDA)	The first draft issue paper, tentatively titled <i>Antimicrobial Resistance in Water Reuse Systems: Potential Relevance for Public Health</i> , is currently under development.	
<b>Assess Regulatory Programs for Produced Water Reuse</b> (New Action 3.8)	Nichole Saunders (EDF), Cloelle Danforth (EDF)	EDF continues its research into produced water land application; exposure and risk pathway scenarios; and potentially applicable guidelines, regulations, laws, and other relevant resources for permitting programs. Nichole Saunders (EDF) presented initial findings of this work at the WaterReuse Symposium in March 2022 and at the <a href="#">ECOS Oil and Gas Caucus</a> meeting in April 2022. EDF's two-page summary of the project can be found <a href="#">here</a> .	
<b>Technology Development and Validation</b>			
<b>Implement New Mexico Produced Water Research Consortium</b> (Action 4.2)	Rebecca Roose (NMED), Lynette Guevara (NMED)	The New Mexico PWRC published a <a href="#">gap analysis and research plan</a> for produced water reuse outside the oil and gas sector, presented a session at the WaterReuse Symposium in March 2022, and initiated several active working groups to delve deeper into topics related to produced water reuse outside of the oil and gas sector. Active working groups include Risk and Toxicology (including Risk Assessment Framework subgroup), Outreach and Education, and Infrastructure and Scenario Planning.	
<b>Support Water Reuse Through DOE's Water Security Grand Challenge</b> (Action 4.3)	Diana Bauer (DOE)	Submissions for Stage V of the competition, "Drink," closed in January 2022. Participants had 180 days to build and ship their wave energy-powered desalination systems in the open ocean at Jennette's Pier in Nags Head, North Carolina. The <a href="#">winners</a> of the competition were announced in April 2022.	
<b>Support Air-Cooling Condensate Water Reuse in Large Buildings</b> (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)	WTA is conducting outreach to coordinate condensate reuse expert talks at facilities and universities.	

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<b>Implement and Manage the NAWI Energy-Water Desalination Hub</b> (Action 4.6)	<b>Kenny Kort</b> (DOE), <b>Peter Fiske</b> (NAWI), <b>Meagan Mauter</b> (NAWI)	NAWI is planning to announce awards for a funding opportunity on autonomous water and precision separations this year. DOE anticipates completing a peer review of the NAWI Energy-Water Desalination Hub in June 2022. NAWI-themed special issues in leading water research journals allow NAWI researchers to disseminate their work and NAWI alliance members to learn about cutting-edge research relevant to their sectors. The first NAWI-themed special issue, entitled " <a href="#">Technology Baselines and Innovation Priorities for Securing Water Supply</a> ," was published in <i>ACS ES&amp;T Engineering</i> in March 2022.	
<b>Evaluate Low-Input Methods to Remove Pharmaceutical Residues</b> (Action 4.7)	<b>Clinton Williams</b> (USDA)	The action team submitted their annual research project report, and action partners from Penn State University are writing a paper for a journal publication on the selection of biochar material with high sorption potential for selected emerging contaminants.	
<b>Water Information Availability</b>			
<b>Foster USDA Watershed-Scale Pilot Projects to Share Water Information</b> (Action 5.1)	<b>Alan Gillespie</b> (USDA)	NRCS's CIG program announced <a href="#">awards</a> in December 2021, with \$2.4 million awarded to three proposals focused on water resources: <i>Low-Tech Process Based In-Stream Structures to Increase Climate Resiliency in the Great Plains</i> ; <i>On-Farm Water Capture and Reuse: Performance Demonstration, Economic Feasibility, and Design Tool Development</i> ; and <i>Mesoscale AI-Based Root-Zone Soil Moisture Monitoring for Efficient Farm Irrigation</i> . Trials with the CIG awardees will be conducted until 2023.	
<b>Identify Monitoring Practices for Reuse Applications</b> (Action 5.2)	<b>Erin Partlan</b> (WRF)	The action team is nearing completion on conducting surveys and interviews to better understand current practices and needs for monitoring process performance and water quality at potable reuse facilities. A final workshop took place in March 2022 and a report is in progress.	
<b>Develop National Integrated Water Availability Assessments</b> (Action 5.4)	<b>Brian Clark</b> (USGS)	USGS and their internal programs developed new milestones, including a USGS water availability assessment and the development of a National Water Census, with anticipated completion later this year.	
<b>Quantify the National Volumes of Water Potentially Available for Reuse</b> (Action 5.5)	<b>Ashley Harper</b> (EPA), <b>Patrick Dube</b> (WEF), <b>Greg Fogel</b> (WaterReuse)	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 has finished collecting data via survey of their members and other sources. The team is currently analyzing the data to update estimates of potential for municipal wastewater reuse. The updated report is expected to be completed in spring 2022. The action team also chose to prioritize stormwater as another source of water for quantifying reuse potential.	
<b>Reflect Water Usage of Materials in a Life Cycle Dashboard</b> (Action 5.6)	<b>Priscilla Halloran</b> (EPA), <b>Jarrod Bridge</b> (EPA), <b>Wesley Ingwersen</b> (EPA)	EPA, in collaboration with USGS, developed the expanded Action Implementation Plan and will begin work on the action milestones.	

Shortened Action Title and Number	Action Leader(s)	Brief Update	Implementation Progress*
<b>Finance Support</b>			
<b>Compile Federal Funding Sources and Develop Interagency Decision Tool</b> (Action 6.1)	<b>Sonia Brubaker</b> (EPA), <b>Stephanie Santell</b> (EPA)	Three new milestones have been added to this action: (1) convene and facilitate demonstration workshops or user focus groups for input on final design of the decision support interface, (2) compile information on available funding and financing programs, and (3) complete the development of the decision support tool and integrate it with the Water Finance Clearinghouse.	
<b>Communicate Eligibility of Water Reuse in State Revolving Fund Programs</b> (Action 6.2A)	<b>Justin Mattingly</b> (EPA), <b>Kiri Anderer</b> (EPA)	Updates to the <i>Drinking Water State Revolving Fund Eligibility Handbook</i> have been delayed due to other priorities. In lieu of this milestone, the action team added a new milestone to publish a Drinking Water State Revolving Fund water reuse eligibility fact sheet, which was published in 2020. The action team added a new milestone to publish a fact sheet on funding drought resiliency projects with the Clean Water SRF that will provide an overview of the eligible activities that can be funded and highlight successful projects.	
<b>Compile and Promote Existing USDA Resources for Rural Communities</b> (Action 6.4)	<b>Steve Polacek</b> (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.	
<b>Develop Reclamation's Large-Scale Water Reuse Funding Opportunity</b> (New Action 6.5)	<b>Amanda Erath</b> (Reclamation)	Reclamation developed their Action Implementation Plan and will begin work on the action milestones.	
<b>Integrated Research</b>			
<b>Develop a Coordinated National Research Strategy</b> (Action 7.2)	<b>Julie Minton</b> (WRF)	WRF completed a survey on research needs for stormwater harvesting practices at local, regional, and state levels through Project <a href="#">4841</a> . The results of this survey have been incorporated into Appendix B of Action 3.3's final convening report: <a href="#">Pure Potential: The Case for Stormwater Capture and Use</a> .	
<b>Increase Understanding of Current Aquifer Storage and Recovery Practices</b> (Action 7.4)	<b>Mike Paque</b> (GWPC), <b>Justin Mattingly</b> (EPA), <b>Kara Goodwin</b> (EPA)	EPA anticipates publishing a report on the current state of practice and research associated with water reuse for EAR and ASR and a report on the current state of aquifer recharge and ASR practices regulated by the UIC program in summer 2022.	
<b>Coordinate and Promote Water Reuse Technology in Federal SBIR Programs</b> (Action 7.5)	<b>April Richards</b> (EPA)	EPA created a <a href="#">document</a> that analyzes lessons learned from small businesses that have commercialized reuse technologies.	
<b>Develop Reclamation's Advanced Water Treatment Research Roadmap</b> (Action 7.6)	<b>Yuliana Porrás-Mendoza</b> (Reclamation)	At the WaterReuse Symposium in March 2022, Reclamation shared their progress on compiling research needs that support augmenting water supplies by treating impaired water sources. The research roadmap is anticipated to be finalized and posted on Reclamation's website in the coming months.	



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<b>Life-Cycle Analysis to Support Cost-Effective Enhanced Aquifer Recharge</b> (Action 7.7)	<b>Jacquelyn Bell</b> (EPA)	As part of its STAR program, EPA closed the request for applications in January 2022 for Enhanced Aquifer Recharge research. Six applications were deemed eligible, and peer review began in March 2022. The relevancy reviews are scheduled for late April 2022.	
<b>Outreach and Communications</b>			
<b>Compile and Develop Outreach and Communication Materials</b> (Action 8.1)	<b>Ben Glickstein</b> (WateReuse), <b>Aliza Furneaux</b> (WateReuse)	WateReuse convened a planning group to scope out a new plan for Action 8.1 and establish a working group.	
<b>Establish a Water Reuse Champion Award Program</b> (Action 8.4)	<b>Aliza Furneaux</b> (WateReuse), <b>Jon Freedman</b> (Suez), <b>Chuck Chaitovitz</b> (Chamber of Commerce), <b>Joanna Spigonardo</b> (University of Pennsylvania Water Center)	WateReuse, the Chamber of Commerce, SUEZ Water Solutions, and the University of Pennsylvania Water Center held planning meetings to scope the Industrial Water Reuse Champions Award program that is anticipated to be awarded in spring 2023.	
<b>Engagement with Disadvantaged and Rural Communities on Water Reuse</b> (Action 8.5)	<b>Rabia Chaudhry</b> (EPA)	In March 2022, a targeted TA scope was determined by multi-stakeholder consultation to support a small Idaho community's funding application for the Clean Water SRF. The community hopes to reuse treated municipal wastewater for an agricultural irrigation project and incorporate the latest climate data into the project design. The TA team is being assembled through AWWA's Community Water Corps program. Bruce Macler, an Action 8.5 partner, will provide a presentation titled <i>Understanding the Opportunities and Considerations for Wastewater Reuse in Small Communities</i> at NRWA's in-service training for state Rural Water Association staff in Anaheim, California in June 2022.	
<b>Develop Public Health Communication Tools for Reuse</b> (Action 8.6)	<b>Jonathan Yoder</b> (CDC), <b>Mia Mattioli</b> (CDC), <b>Ashley Harper</b> (EPA), <b>Rabia Chaudhry</b> (EPA)	CDC and EPA began drafting website content according to the content scoping outlines for both public and medical health professional websites. EPA meets regularly with SCCMA to discuss content for a news bulletin on water reuse, anticipated for release in summer 2022.	
<b>Highlight Water Reuse Opportunities in the National Pretreatment Program Framework</b> (New Action 8.7)	<b>Jan Pickrel</b> (EPA), <b>Justin Mattingly</b> (EPA)	The EPA action team developed their Action Implementation Plan and will begin work on the action milestones.	

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<b>Workforce Development</b>			
<b>Support and Promote Opportunities for Creating a Skilled Workforce</b> (Action 9.2)	<b>Jim Horne</b> (EPA), <b>Greg Fogel</b> (WaterReuse), <b>Barb Martin</b> (AWWA), <b>Claudio Ternieden</b> (WEF)	AWWA collaborated with EPA to prepare a <a href="#">compilation</a> of available water reuse/advanced water treatment training resources. The list identifies the applicable location, program link, and notes for each included training resource. AWWA will reference this list when developing recommendations to expand operator training to support water reuse and other advanced water treatment operations nationwide.	
<b>Metrics for Success</b>			
<b>Facilitate Implementation of the National Water Reuse Action Plan</b> (Action 10.3)	<b>Sharon Nappier</b> (EPA)	EPA coordinated a presentation from federal water reuse leaders at the WaterReuse Symposium in March 2022. The plenary session focused on the federal government's role in promoting water reuse nationwide.	
<b>International Collaboration</b>			
<b>Facilitate U.S.-Israel Collaboration on Water Reuse</b> (Action 11.1)	<b>Sharon Nappier</b> (EPA), <b>Adam Schalimtzek</b> (MoEP), <b>Omer Bab</b> (MoEI)	The action team led the collaborative development of a draft itinerary for an in-person delegation mission to Israel that has been rescheduled for fall 2022. The team continues to discuss other opportunities for collaboration, including professional dialogues, webinars, and <a href="#">treWAG 2022</a> .	
<b>Develop and Highlight Case Studies Relevant to International Contexts</b> (Action 11.3)	<b>Rabia Chaudhry</b> (EPA), <b>Clémentine Marie Stip</b> (The World Bank)	EPA and World Bank created a shortlist of about 20 water reuse projects that action partners have begun scoping for case study development. Team members also presented progress under this action at the WaterReuse Symposium in March 2022.	
<b>Complete Actions**</b>			
Inclusive of the following completed actions: <ul style="list-style-type: none"> <li>• <b>Develop Federal Policy Statement to Support Consideration of Water Reuse</b> (Action 1.1)</li> <li>• <b>Complete the EPA Study of Oil and Gas Extraction Wastewater Management</b> (Action 2.3)</li> <li>• <b>Conduct Outreach and Training with Tribes to Build Water Reuse Capacity</b> (Action 2.15)</li> <li>• <b>Support and Communicate WIFIA Funding</b> (Action 6.2B)</li> <li>• <b>Raise Global Awareness and Preparedness for Water Reuse and the WRAP</b> (Action 11.2)</li> </ul>			
<b>50 Active Actions</b> <b>5 Complete Actions</b>	<b>38 Unique Action Leaders</b>		<b>282 Milestones Completed</b>

### Abbreviations Used in This Document

ACWA	Association of Clean Water Administrators	FEMA	U.S. Federal Emergency Management Agency	NWP	Nationwide permit
APHC	U.S. Army Public Health Center	FDA	U.S. Food and Drug Administration	ONWS	onsite non-potable water system
ASDWA	Association of State Drinking Water Administrators	GSA	U.S. General Services Administration	PWRC	Produced Water Research Consortium
ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers	GWPC	Groundwater Protection Council	Reclamation	U.S. Bureau of Reclamation
ASR	aquifer storage and recovery	IAPMO	International Association of Plumbing and Mechanical Officials	ReNUWit	Reinventing the Nation’s Urban Water Infrastructure
ASR-MAR	aquifer storage and recovery—managed aquifer recharge	JFW	Johnson Foundation at Wingspread	SBIR	Small Business Innovation Research
ASTHO	Association of State and Territorial Health Officials	LACSD	Sanitation Districts of Los Angeles County	SCCMA	Santa Clara County Medical Association
AWWA	American Water Works Association	MoEI	Ministry of Economy and Industry (Israel)	SCU	stormwater capture and use
BIL	Bipartisan Infrastructure Law	MoEP	Ministry of Environmental Protection (Israel)	SRF	State Revolving Fund
CDC	Centers for Disease Control and Prevention	NACWA	National Association of Clean Water Agencies	STAR	Science to Achieve Results
CIG	Conservation Innovation Grant	NAWI	National Alliance for Water Innovation	TA	technical assistance
DOD	U.S. Department of Defense	NBRC	National Blue Ribbon Commission	UIC	Underground Injection Control
DOE	U.S. Department of Energy	NMED	New Mexico Environment Department	USACE	U.S. Army Corps of Engineers
EAR	Enhanced Aquifer Recharge	NMSA	National Municipal Stormwater Alliance	USDA	U.S. Department of Agriculture
ECOS	Environmental Council of the States	NPDES	National Pollutant Discharge Elimination System	USGS	U.S. Geological Survey
EDF	Environmental Defense Fund	NRCS	Natural Resources Conservation Service	WEF	Water Environment Federation
EPA	U.S. Environmental Protection Agency	NRWA	National Rural Water Association	WIFIA	Water Infrastructure and Finance Innovation Act
EQIP-CIC	Environmental Quality Incentives Program—Conservation Incentive Contract	NSF	National Science Foundation	WRF	Water Research Foundation
				WTA	Water Tech Alliance
				WW	Water Works, Inc.