



OKLAHOMA
Water Resources Board



2025 **OCWP**
Oklahoma Comprehensive Water Plan

EXECUTIVE SUMMARY

Oklahoma Water Reuse Action Plan

FINAL | November 2023


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Abbreviations

CEC	constituent of emerging concern
DPR	direct potable reuse
ID	identification
IPR	indirect potable reuse
OCWP	Oklahoma Comprehensive Water Plan
ODEQ	Oklahoma Department of Environmental Quality
ORWA	Oklahoma Rural Water Association
OWRAP	Oklahoma Water Reuse Action Plan
PFAS	per- and polyfluoroalkyl substances
WRF	water recovery facility

OVERVIEW

Purpose and Background of the Oklahoma Water Reuse Action Plan

The Oklahoma Water Reuse Action Plan (OWRAP) was developed through a multi-agency collaborative effort in conjunction with the development of the 2025 update to the Oklahoma Comprehensive Water Plan (OCWP). Water reuse is a proven strategy for efficiently using locally available supplies; its implementation necessarily reflects site-specific needs, economics, and values and priorities.

The overarching goal of the OWRAP is to identify and remove implementation challenges for water reuse such that reuse of any type is a viable option for water users (municipal, agricultural, industrial, and others). There is no intent to mandate water reuse, but it should be a viable path for those that want to consider and/or implement reuse.

Similar to the U.S. Environmental Protection Agency's national Water Reuse Action Plan (WRAP, <https://www.epa.gov/waterreuse/water-reuse-action-plan>), the OWRAP is an ongoing process. New Actions will be added to the OWRAP over time, and Actions will be "checked off" as they are completed and implemented. As such, the heart of the OWRAP is a living database of Actions that will continue to be updated over time. This report provides an orientation to the OWRAP and an overview of its key components, and documents the Actions initially identified as of mid-2023.

The OWRAP can help prepare and position Oklahomans to address the increasingly challenging water supply needs. Moreover, water reuse, as supported by and facilitated by the OWRAP, can help meet the goals of Oklahoma's Water for 2060 Act. The Water for 2060 Act established a goal of using no more fresh water in 2060 than was used in 2012.

The OWRAP is designed to be a collaborative framework for resolving hurdles and ultimately removing roadblocks and facilitating water reuse of all types, including but not limited to the following:

- **Municipal nonpotable water reuse:** Recycling treated water from a municipal water recovery facility (WRF) to satisfy water demands that do not require drinking water (potable) quality, such as industrial cooling or landscape irrigation.
- **Municipal potable water reuse:** Recycling treated water from a municipal WRF to augment drinking water supplies. This can be accomplished through the use of an advanced water purification facility to augment surface water or groundwater supplies (indirect potable reuse [IPR]) or by directly augmenting potable water supplies for distribution to the community (direct potable reuse [DPR]).
- **Agricultural water reuse:** Examples include recycling treated water from a municipal WRF to augment crop irrigation and/or livestock water needs, or reusing tailwater runoff from crop irrigation to support these uses.
- **Industrial water reuse:** Recycling treated water from a municipal WRF to help meet industrial water demands, and/or reusing water from an industrial facility for its onsite needs. This can include industries of any type that use water and/or produce industrial wastewater, including the energy industry (e.g., produced water from oil and gas operations), power generation, or any other industrial water user and producer.

In each case, recycled water must be treated to meet the water quality standards appropriate for the intended use to maintain protection of public health and the environment. This is typically addressed via state-level regulations.

Process for Developing, Maintaining, and Implementing the OWRAP

The Oklahoma Collaborative Reuse Advancement Work Group was formed in 2022 to support development of the OWRAP. Although the OWRAP was initiated by the OWRB in conjunction with development of the 2025 OCWP, the very nature of water reuse involves stakeholders from across multiple viewpoints, authorities, and responsibilities – and the OWRAP is by necessity a collaboration between entities, not specific to OWRB or any single entity. Work Group members included representatives from:

- Chickasaw Nation,
- City of Bartlesville,
- City of Duncan,
- City of Guymon,
- Norman Utilities Authority,
- Oklahoma City Water Utilities Trust,
- Oklahoma Conservation Commission,
- Oklahoma Department of Agriculture, Food, and Forestry,
- Oklahoma Department of Environmental Quality (ODEQ),
- Oklahoma Rural Water Association (ORWA),
- Oklahoma State University,
- OWRB,
- U.S. Environmental Protection Agency, and
- University of Oklahoma.

The Work Group met several times from April 2022 through August 2023 to develop the structure and initial Actions in the OWRAP. It is anticipated that the Work Group will continue to meet periodically to update Actions in the plan and add new Actions as appropriate. Work Group membership may be expanded as this process continues to evolve.

Elements of the OWRAP

Five Strategy Areas were identified as the fundamental basis for successful water reuse in Oklahoma.



Each of these Strategy Areas is described in further detail in the next section of this report. Each of the Strategy Areas was characterized in the following areas:

- **Drivers:** Primary reasons why each Strategy Area is important for facilitating reuse in Oklahoma.
- **Barriers:** Factors that could impede or constrain reuse implementation within each Strategy Area.
- **Goals:** Target accomplishments within each Strategy Area.
- **Actions:** Specific actions that provide mechanisms for achieving the goals of the OWRAP.

OWRAP STRATEGY AREAS: DRIVERS, BARRIERS, GOALS

Economic

The Economic Strategy Area focuses on the economics of water reuse. This includes funding and financing programs, including existing and potential financial incentives, grants, and financing options. It also considers the cost/benefit tradeoffs of water reuse relative to other available water supply options. Several financing programs are currently offered through the OWRB Financial Assistance Division. The programs historically have focused on traditional water supply projects. However, OWRB, ODEQ, ORWA, and the Oklahoma Municipal League formed the Oklahoma Strategic Alliance, which could help identify, develop, and promote financial assistance programs for water reuse projects.

Actions under this strategy area help develop, and coordinate funding and financing options specific to water reuse treatment and conveyance infrastructure; and then convey the information to municipalities and industries. These financial programs will support projects that invest in long-term sustainable water solutions through implementing and operating reuse systems for beneficial use.

Activities within this strategy area are underway, including the ability to finance water reuse projects through OWRB's Clean Water State Revolving Fund Loan Program and the creation of federal loan and grant programs via the 2021 Federal Infrastructure and Jobs Act, U.S. Bureau of Reclamation WaterSMART/ Title XVI grant programs, and Environmental Quality Incentives Program funds.

Economic Drivers

- Economically viable implementation and operation of reuse treatment and conveyance infrastructure, recognizing the costs and benefits of recycled water while addressing the common perception of lower value of recycled water (especially with nonpotable reuse).
- Achieve goals established in Oklahoma's 2012 Water for 2060 Act.
- Long-term return on investment for water utilities and users to implement and operate reuse systems.
- Economic benefit of investing in long-term drought-resistant, reliable water solutions for existing and growing water demands: water reuse is a locally available, sustainable supply source that can offset traditional sources and help mitigate surface water reliability concerns and declining aquifer levels from overuse of groundwater.

Economic Barriers

- Cost of additional treatment needed to meet regulatory requirements for nonpotable or potable reuse, relative to costs to acquire, produce, and convey water from traditional supply sources. This can include concerns about unknown treatment requirements for potential future regulatory requirements (e.g., constituents of emerging concern [CEC] and per- and polyfluoroalkyl substances [PFAS]) and a lack of treatment and water quality standards for DPR.
- Cost of infrastructure to distribute recycled water through separate nonpotable reuse ("purple pipe") transmission and distribution systems, relative to use of potable water through existing systems.
- Lengthy periods to achieve return on reuse system investments, while recognizing this will change over time as traditional supply options become scarce and more expensive to implement.

- Competing financial needs and priorities within water/wastewater systems, and between water needs and other public priorities such as transportation infrastructure.
- Limited understanding of the benefits of reuse and costs associated with reusing water.

Economic Goals

- Economically viable reuse systems relative to traditional supply sources, with sustainable water rates and educational programs to support utilities in setting these rates.
- Establish evaluation metrics to capture non-monetary and/or typically externalized (ignored) monetary benefits of water reuse. For example, establish the value of delaying supply infrastructure investment needed for "next viable supply option" instead of comparing to cost of existing supplies, which may not be expandable. Compare a traditional supply project to a water reuse project (real or hypothetical, example that could be shared with others). Include the reliability of supply alternatives in this analysis.
- Incentivize implementation of water reuse where appropriate (utilities and agriculture).
- Provide educational resources to utility managers, local government leaders, and state legislators to help support the need for financial resources for water reuse programs and systems.
- The ability for a utility to gain revenue from more than a one-time use of available water supplies, while covering its costs to produce and deliver recycled water.

Organizational

The Organizational Strategy Area focuses on roles of agencies, non-governmental organizations, associations, and other collaborating organizations in planning, permitting, funding/financing, constructing, and administering water reuse projects. Because water reuse cuts across so many aspects of managing the water cycle, accomplishing the goals of all five Strategy Areas works best when there is organizational alignment

with clearly defined roles and responsibilities of collaborating agencies and entities. These include permitting and regulatory agencies, funding partners, academia, nongovernmental organizations, and other water industry companies and organizations.

Organizational Drivers

- To meet anticipated timelines for public demand for reuse, cross-agency cooperation and collaboration is necessary for successful rollout of water reuse programs and systems.
- Efficient water management to reliably meet the current and future demands of Oklahomans.
- Tangible progress toward Legislative goals of Oklahoma's Water for 2060 Act (2012).
- Consistent approach and widespread messaging for reuse in Oklahoma.
- Representation of cross-sector interests in advancing water reuse.
- Leverage the numerous forms and levels of expertise between organizations.
- Increase available funds for research, rulemaking, statutory requests, etc. through collaborative initiatives.
- Identification of potential projects among and across water sectors.

Organizational Barriers

- Complex jurisdictional authorities between agencies.
- Limited or no availability of staff resources to develop and administer new regulatory programs.
- Competing interests and priorities between stakeholders within water sectors.
- Public stigma and perception can hamper willingness for decision-makers to fund and/or implement reuse projects.

Organizational Goals

- Alignment for consistent, collaborative interagency approaches to supporting and administering reuse systems, recognizing that well-run reuse programs are more likely to produce compliant, safe recycled water.
- Common understanding and policy to support "One Water" management strategies.
- Foster a spirit of advocacy for safe water reuse across a wide range of governmental and nongovernmental organizations perhaps via Water for 2060 accounting and activities (or similar messaging efforts).
- Regulated community awareness of regulatory compliance and financial support responsibilities.
- Cross-functional development of reuse implementation pathways to help overcome social and economic challenges.
- Expanding environmental education to include water reuse concepts (e.g., "Where does your water come from?" and "We all live downstream.").
- Identify and present broadly accepted educational curricula on water reuse.

Regulatory

The Regulatory Strategy Area focuses on treatment and water quality requirements, water rights, and potential downstream impacts associated with increased water reuse.

Regulations are crucial for defining the treatment and water quality requirements tailored to each type of use. Moreover, it is important to clarify water rights "credits" for augmenting supplies (e.g., for aquifer recharge or reservoir augmentation in an IPR system), and inform decisions when considering, planning, designing, and operating reuse systems. Additional drivers include the establishment of a regulatory structure that is equipped to help support community acceptance of water reuse.

Completed actions include regulations for nonpotable reuse (ODEQ 656 and 627), IPR (ODEQ 628), and initial interorganizational meetings regarding DPR regulations.

Regulatory Drivers

- Protection of public health and the environment.
- Protection of water rights.
- Desire for clarity on water rights "credits" for augmenting supplies with reuse projects and/or potential future water quality trading credits.
- Compliance with permit requirements for recycled water quality and quantity.
- Providing clearly defined, consistent requirements for use by utilities/entities when considering, planning, costing, designing, and/or operating reuse systems.
- Growing need for additional and diversified sources of water supply.
- Established regulatory structure can help support positive public perception/acceptance.

Regulatory Barriers

- State resources to develop, maintain, and/or administer reuse regulations relative to other priorities and needs.
- DPR regulations have not been developed (causes cost and schedule uncertainty for the project proponent if permitted through existing variance processes).
- Historical "siloed" approach to water management.
- Continuous evolution of new treatment and monitoring technologies not specifically authorized in regulations.
- Lack of clarity for reuse project proponents on water rights constraints (if any) on ability to reuse available reclaimed water supplies.

- Lack of clarity on ability for and process for receiving credit for subsequent recovery of reclaimed water that has been intentionally used to augment groundwater or surface water supplies in an IPR scheme.
- Excessive regulatory requirements may be an economic or operational deterrent relative to traditional water supply options.
- Public perception/acceptance of certain water source reuse during land application due to objectionable odor; lack of ability to enforce/respond to complaints or concerns.
- Uncertainty regarding PFAS regulations, other potential future regulated constituents, and how they will affect reuse.

Regulatory Goals

- Establish clarity on existing water rights regulations and/or policy for reuse and constraints (if any) on ability to reuse available reclaimed water supplies, and communicate current regulations/policy to potential reuse project proponents.
- Chart a course for establishing clarity on ability to recover reclaimed water that has been intentionally used to augment groundwater or surface water supplies in an IPR scheme.
- Assess whether existing water rights approach to water reuse is sufficiently protective of water rights (both for reuse utility/entity and other water rights holders in the basin); model potential scenarios and outcomes.
- Acknowledge that DPR can be implemented by water providers today using the established ODEQ variance process.

Social

The Social Strategy Area focuses on outreach and community acceptance, public service announcements, and political/legislative engagement. This Strategy Area is key because public support and buy-in from the end user are essential for the successful implementation of water reuse. Examples from around the country

demonstrate the critical role that community support can play in the success or failure of a proposed water reuse project. Additional drivers include enhancing state and local economic potential and capitalizing on community and business interest in sustainable water management strategies.

Activities within this strategy area are underway, including the annual Water Appreciation Day at the Capitol and a Bartlesville community outreach program for a planned IPR project. At a national level, the WaterReuse Association's "profiles in reuse" and related education materials already exist and can be used to guide development of Oklahoma-specific education materials for public distribution.

Social Drivers

- Extend life of existing water supplies.
- Meet current and future water demands:
 - Meet current demands during times of drought,
 - Meet future demands during normal and drought conditions, and
 - Avoid "Day Zero" – the day that supplies are insufficient to meet demands.
- Enhance state and local economic potential.
- Improve water system efficiency.
- Enhance public awareness regarding the safety and value of drinking water supplies, including topics such as:
 - The value of water,
 - Water supply challenges (in terms of supply availability and reliability and water quality), and
 - The reality that everyone lives downstream of others' water use – that is, streams and rivers already include recycled water that we reuse to meet the needs of our community, and there is no "new water" on the planet. This is sometimes referred to as "de facto" reuse.
- Preserve ecological and recreational benefits of in-stream flows.

- Efficient utilization of all water resources including water produced by water reclamation facilities, with a "fit for purpose" approach to matching supplies to demands.
- Community and political interest in sustainable water management strategies, including achieving the goals of the Water for 2060 Act.

Social Barriers

- Lack of public understanding and acceptance: Negative public perception on safety and water quality of nontraditional sources of supply.
- Concerns regarding presence of pathogens and constituents of emerging concern (e.g., pharmaceuticals, personal care products, PFAS) among the public, the medical community, politicians, and water suppliers.
- Historical perception that water supplies are ample in many areas of Oklahoma; lack of general public awareness of local status of water supply/demands.
- Lack of financial resources needed for advanced treatment systems and reuse infrastructure:
 - Increased water rates not feasible due to small service area base.
 - Reuse treatment and conveyance may be cost-prohibitive for some communities.
- Lack of long-term water planning, especially for small communities.
- Lack of technical knowledge of and/or assistance to water suppliers; workforce development is a challenge for water and wastewater utilities.

Social Goals

- Engage the public in understanding reuse drivers and benefits and the safety of reused water.
- Earn legislative and other political support.
- Earn support within organizations that provide grant- and loan-based funding.

- Educate public on water's history (i.e., there is no "new water" on the planet, and everyone lives downstream of other water users).
- Coordinate messaging between agencies and educators.
- Engage the medical community (possibly via public health officials) by providing information on effectiveness of treatment systems on removal of pathogens and constituents of concern, building on national efforts in the water reuse industry.
- Engage environmental groups on the ecosystem benefits of reuse.

Technical and Training

The Technical and Training Strategy Area focuses on the role of existing and evolving treatment and monitoring technologies, technical assistance to utilities or industries for treatment process selection, and leveraging national-level research efforts with local researchers. At a national level, technology generally is not limiting the successful implementation of water reuse because treatment capabilities are well established and tailored for producing "fit for purpose" water quality.

Ongoing activities under this strategy area are numerous. Examples include the Guymon Water Reuse feasibility study, Lawton's preliminary water reuse study, the Chickasaw and Choctaw Nations' Water Reuse Plan, Operational Fort Sill and Mustang Category 2 nonpotable reuse, the OCWP Water Workforce Development work group, Norman's Advanced Water Purification pilot study for IPR (augmentation of Lake Thunderbird), Bartlesville's IPR project (augmentation of Caney River supplies), ORWA training programs for water and wastewater operators, and ODEQ operator certification programs.

Technical and Training Drivers

- Growing population and climate change is increasing pressures on available water resources in Oklahoma.
- Tangible progress toward Legislative goals of Oklahoma's Water for 2060 Act (2012).
- Utilize surface and groundwater resources more efficiently and diversify water supply portfolios.
- Minimize unintended consequences of water reuse to the environment, economy, water rights, and other water reuse.
- Regulatory and public confidence in the consistent, reliable protection of public health and the environment, including managing constituents of emerging concern and newly regulated parameters such as PFAS.
- Need for adequately qualified staff to implement, operate, and maintain reuse systems.

Technical and Training Barriers

- Variable levels of understanding of the treatment, water quality, and management practices required for reuse and the degree to which current conventional and passive treatment processes meet the requirements.
- Emerging contaminants and possible future regulatory and treatment requirements to address them.
- Lack of existing local demonstration projects as leading implementers and influencers.
- Lack of funding for locally innovative water reuse research and implementation.
- Uncertainty of state regulatory framework for DPR, currently allowed through variance processes.
- Lack of widespread experience planning, designing, implementing, and operating water reuse systems in Oklahoma.
- Public opinion/perception regarding water reuse driven in part by a fear of the unknown (e.g., CECs, water rights, safety of recycled water).

- Staff shortages in all aspects of permitting, administration, management, and operations of water systems.
- Lack of training and certification programs for advanced water purification processes.
- Low public awareness of career opportunities in the water industry.

Technical and Training Goals

- Consolidate, compile, and/or develop Information relative to effectiveness of treatment processes and monitoring systems for achieving regulatory requirements in a toolbox approach.
- Innovation of advanced conventional and passive treatment technologies for water reuse of various types of water reuse sources (produced water, wastewater, stormwater).
- Increase state, industry, and university collaborations to expand available funding in areas of treatment, monitoring, and management systems related to water reuse.
- Complete local research to confirm or characterize unintended consequences (if any) of water reuse to the environment and downstream users.
- Make information relative to effectiveness of treatment processes and monitoring systems for achieving regulatory requirements available and accessible to water industry stakeholders and the public.
- Develop exemplars of water reuse – industries/facilities that successfully implement water reuse – to be used as positive examples.
- Develop readily available operator training and certification programs for advanced water purification processes and water reuse at multiple levels (entry level, intermediate, advanced certifications).
- Increase available workforce and awareness for water reuse careers.

OWRAP ACTIONS

Summary

OWRAP Actions were developed for each of the five Strategy Areas. The initial list of OWRAP Actions is provided in Appendix A. As noted earlier, the OWRAP Actions comprise a "living" database that will be continuously updated and maintained as Actions are completed and new Actions are identified.

The OWRAP Actions database includes the following fields:

- **Identification (ID) number:** For ease of reference, each Action has an identification number linked to its Strategy Area. For example, Action R-01 is associated with the Regulatory Strategy Area, Action S-01 is associated with the Social Strategy Area, and so on. The ID numbers are provided with a numeric tag for reference, not implying any priority or order of implementation.
- **Priority:** Relative importance of the Action toward meeting the Goals for the Strategy Area, scored 1 (high) through 5 (low). A score of 1 indicates an urgent Action, 3 represents moderate importance, and 5 indicates low priority.
- **Level of Effort:** Relative effort required to complete the Action, scored 1 (low) through 5 (high).
- **Target Initiation Timeline:** Goal for when the Action should be initiated. Options include 0 to 2 years, 3 to 5 years, and more than 5 years.

Prioritized Actions

The Work Group identified a list of 10 prioritized Actions for initial implementation that:

- Have a high relative priority (designated as a "1" or "2" on the 1 to 5 priority scale), and
- Have a low relative level of effort (designated as a "1" or "2" on the 1 to 5 level of effort scale).

The following 10 Actions were identified as implementation priorities using these criteria:

- **E-02:** Develop fact sheet on existing state and federal funding programs that are geared toward or suitable for funding reuse projects.
- **E-05:** Develop information that illustrates economic benefits of providing water suitable for intended purpose.
- **O-01:** Create a top level Inter-organizational Reuse Team; Identify persons within each supporting agency with expertise and capacity to advance water reuse in Oklahoma.
- **R-01:** Prepare concise guidance document or fact sheet summarizing current legal ability to reuse municipal return flows and receive credit for augmenting supplies with recycled water.
- **R-04:** Evaluate what-if scenarios to assess water availability implications of additional reuse, using updated Oklahoma H₂O Tool.
- **S-01:** Organize an Interagency Water Reuse Education and Outreach Team.
- **S-03a:** Compile existing education materials from across the nation and adapt them for use in Oklahoma.
- **S-05:** Evaluate and track how perception of reuse is changing over time (statewide and/or targeted communities).
- **T-04:** Identify IPR/DPR demonstrations and full-scale systems (Oklahoma/adjoining states) that could host technical tours/training for operators and regulators.
- **T-05:** Develop a FAQ/fact sheet highlighting exemplars of successful reuse across multiple types of reuse (e.g., municipal, agricultural, industrial).

A fact sheet for each of the prioritized Actions is provided in Appendix B, summarizing key aspects of the Action.

APPENDIX A **DATABASE OF INITIAL OWRAP ACTIONS**

ACRONYMS

AG	Oklahoma Attorney General
Ag	Agriculture or Agricultural
DPR	direct potable reuse
EPSCOR	Established Program to Stimulate Competitive Research
FACT	Funding Agency Coordination eam
FAQ	frequently asked questions
IPPRA	Institute for Public Policy Research and Analysis at OU
IPR	indirect potable reuse
IRT	Inter-organizational Reuse Team
M-SISNet	Meso-Scale Integrated Socio-Geographic Network
NA	not applicable
OCC	Oklahoma Corporation Commission
OCWP	Oklahoma Comprehensive Water Plan
ODAFF	Oklahoma Department of Agriculture, Food, and Forestry
ODEQ	Oklahoma Department of Environmental Quality
OK	Oklahoma
OML	Oklahoma Municipal League
ORWA	Oklahoma Rural Water Association
OSEE	Oklahoma Secretary of Energy and Environment
OSU	Oklahoma State University
OU	University of Oklahoma
OWEA	Oklahoma Water Environment Association
OWRAP	Oklahoma Water Reuse Action Plan
OWRB	Oklahoma Water Resources Board
OWRC	Oklahoma Water Resources Center
OWS	Oklahoma Water Survey
SWAWWA	Southwest Section of American Water Works Association
TBD	to be determined
USGS	United States Geological Survey

Oklahoma Water Reuse Action Plan

Actions to Address Drivers, Barriers, and Goals

Revised: November 2023

ECONOMIC ACTIONS

Subgroup Facilitator: Amber Wooten

- **ID:** E-## for "Economic-##." Sequential numeric tag for quick reference (not implying any order or priority).
- **Priority:** Relative importance, scored 1 (high) through 5 (low). 1 = urgent, 3 = moderate importance, 5 = low priority.
- **Level of Effort:** Relative effort required to complete the Action, scored 1 (low) through 5 (high).
- **Target Timeline:** Goal for time to complete the Action. Options include <2 years, 3-5 years, >5 years.

ID	Description	Priority (1 high - 5 low)	Level of Effort (1 low - 5 high)	Target Initiation Timeline (years)	Lead Agency / Entity	Supporting Agencies / Entities	Notes
E-01	Convene workgroup, coordinate with EPSCOR on their survey, or other partners to begin the discussion around the state about customers' willingness to pay to implement [potable] reuse and mitigate long-term effects of drought.	2	5	<2	OWRB	OWRAP Workgroup (existing members: Bartlesville, Dept of Conservation, Duncan, Guymon, Norman, ODAFF, ODEQ, Oklahoma City, ORWA, OSU Oklahoma Water Resources Center, OU Water Survey, WateReuse)	Consider willingness to pay for increased water supply or improved water quality, like potable water reuse
E-02	Develop fact sheet on existing state and federal funding programs that are geared toward or suitable for funding reuse projects.	1	2	<2	OWRB	ODEQ and OWRAP Workgroup Members	Update OWRB's white book to reflect reuse - highlight loan forgiveness programs for small systems
E-03	Identify potential opportunities (or unique ways) to partner with the Tribes and private sector to fund [potable] reuse projects and infrastructure improvements - consider pulling some case studies from other areas and review these through an Oklahoma lens.	3	4	<2	ODEQ	Funding Agency Coordinating Team (existing members: ORWA, Communities Unlimited, Indian Health Services, Oklahoma Council of Governments, Oklahoma Department of Commerce, ODEQ, OWRB, USDA Rural Development, EPA, Cherokee Nation)	FACT meeting monthly that helps small systems identify funding sources/partnerships - ODEQ, OWRB, ORWA - ex, South Delaware system (regional) included these agencies plus Tribal Nations.

ID	Description	Priority (1 high - 5 low)	Level of Effort (1 low - 5 high)	Target Initiation Timeline (years)	Lead Agency / Entity	Supporting Agencies / Entities	Notes
E-04	Establish evaluation metrics that capture non-monetary and/or typically externalized monetary benefits of water reuse. Use these metrics to complete an analysis comparing a traditional supply project to a reuse supply project.	1	4	<2	OWRB	ODEQ and OWRAP Workgroup Members	For example, establish the value of delaying supply infrastructure investment needed for "next viable supply option" instead of comparing to cost of existing supplies, which may not be expandable. Analysis could be completed on hypothetical or real example. The reliability of supply alternatives should be considered. ODEQ has considered calculating amount of water saved by doing different levels of reuse categories. Ability for a utility to "sell water more than once."
E-05	Develop information that illustrates economic benefits of providing water suitable for intended purpose.	1	2	<2	OWRB	ODEQ and OWRAP Workgroup Members	Selling water multiple times. OKC example, able to sell treated wastewater effluent to industries (win for industries because they buy water at discounted rate, win for OKC in that they offset fresh water needed and are able to gain revenue without incurring expense for additional treatment).

ORGANIZATIONAL ACTIONS

Subgroup Facilitator: Owen Mills

- **ID:** O-## for "Organizational-##." Sequential numeric tag for quick reference (not implying any order or priority).
- **Priority:** Relative importance, scored 1 (high) through 5 (low). 1 = urgent, 3 = moderate importance, 5 = low priority.
- **Level of Effort:** Relative effort required to complete the Action, scored 1 (low) through 5 (high).
- **Target Timeline:** Goal for time to complete the Action. Options include <2 years, 3-5 years, >5 years.

ID	Description	Priority (1 high - 5 low)	Level of Effort (1 low - 5 high)	Target Initiation Timeline (years)	Lead Agency / Entity	Supporting Agencies / Entities	Notes
O-01	Create a top level Inter-organizational Reuse Team (IRT); Identify persons within each supporting agency with expertise and capacity to advance water reuse in Oklahoma.	1	2	<2	OWRB continues to facilitate	ODEQ, ODAFF, OCC, OSEE, ORWA, ODWC, OWRB, Dept. of Commerce, Dept. of Energy & Env., public universities	Directors or Deputies that would determine big picture needs, timelines, messaging, funding allowance, etc. Consider also including OML and GRDA.
O-02	IRT - Identify personnel and outside stakeholders best fit to coordinate on the other Subgroups.	1	3	<2	OWRB continues to facilitate	All	
O-03	IRT - Evaluate/encourage candidate reuse projects in each water use-sector and how we might (or might not) support those projects.	1	3	3-5	OWRB continues to facilitate	All	Finding opportunities to focus specific agencies on the right projects to support, message, find funding, etc.
O-04	Liaison(s) with Legislature to garner understanding and support.	1	3	3-5	OSEE	All	
O-05	IRT - Coordinate on funding needs for agencies or research.	2	3	3-5	OWRB continues to facilitate	All	
O-06	IRT - Coordinate on regulatory questions and policy.	1	3	3-5	OWRB continues to facilitate	All	

Oklahoma Water Reuse Action Plan

Actions to Address Drivers, Barriers, and Goals

Revised: November 2023

REGULATORY ACTIONS

Subgroup Facilitator: John Rehring

- **ID:** R-## for "Regulatory-##." Sequential numeric tag for quick reference (not implying any order or priority).
- **Priority:** Relative importance, scored 1 (high) through 5 (low). 1 = urgent, 3 = moderate importance, 5 = low priority.
- **Level of Effort:** Relative effort required to complete the Action, scored 1 (low) through 5 (high).
- **Target Timeline:** Goal for time to complete the Action. Options include <2 years, 3-5 years, >5 years.

ID	Description	Priority (1 high - 5 low)	Level of Effort (1 low - 5 high)	Target Initiation Timeline (years)	Lead Agency / Entity	Supporting Agencies / Entities	Notes
R-01	Prepare concise guidance document or fact sheet summarizing current legal ability to reuse municipal return flows and receive credit for augmenting supplies with recycled water.	1	1	<2	OWRB	AG's office	
R-02	Evaluate options for defining water rights credit for augmenting surface water or groundwater through IPR for subsequent recovery.	1	3	<2	OWRB	USGS, Ag, 1-2 pilot municipal utilities,	High priority - IPR systems are already being designed.
R-03	Assemble a work group of water users to evaluate whether the current administration of reuse of return flows sufficiently protects downstream water rights interests.	3	3	<2	OWRB	ORWA, OML, Ag, 2-4 municipal utility representatives	To follow R-01; could be done in conjunction with R-02.
R-04	Evaluate what-if scenarios to assess water availability implications of additional reuse, using updated Oklahoma H ₂ O Tool.	2	2	<2	OWRB	NA	Tool development is in progress as part of OCWP development.
R-05	Develop DPR regulations.	4	5	TBD	ODEQ	TBD	No set schedule at this time; DPR can be implemented without specific DPR regs with case-by-case approval by ODEQ.
R-06	Develop and implement water rights credit system for return flows (including IPR projects).	2	3	3-5	OWRB	NA	Contingent on outcome of Action R-02 (~ 1-year process for rule making).
R-07	Assess water quality implications of reduced return flow discharges with respect to assimilative capacity of receiving waters.	4	5	>5	ODEQ	OWRB	Added per Feb. 2023 OWRAP meeting dialogue; Conduct after Action R-04 is completed, when potential future flow scenarios are better defined.
R-08	Establish/document DPR guidance and process for how ODEQ will approve DPR applications prior to DPR reg development, including reference to ODEQ white papers.	3	2	3-5	ODEQ	NA	Added per Feb. 2023 OWRAP meeting dialogue.
R-09	Develop regulatory framework for reuse of agricultural water reuse.	3	4	3-5	ODEQ	ODAFF	Added per Feb. 2023 OWRAP meeting dialogue.

Oklahoma Water Reuse Action Plan

Actions to Address Drivers, Barriers, and Goals

Revised: November 2023

SOCIAL ACTIONS

Subgroup Facilitator: Kevin Wagner

- **ID:** S-### for "Social-###." Sequential numeric tag for quick reference (not implying any order or priority).
- **Priority:** Relative importance, scored 1 (high) through 5 (low). 1 = urgent, 3 = moderate importance, 5 = low priority.
- **Level of Effort:** Relative effort required to complete the Action, scored 1 (low) through 5 (high).
- **Target Timeline:** Goal for time to complete the Action. Options include <2 years, 3-5 years, >5 years.

ID	Description	Priority (1 high - 5 low)	Level of Effort (1 low - 5 high)	Target Initiation Timeline (years)	Lead Agency / Entity	Supporting Agencies / Entities	Notes
S-01	Organize an Interagency Water Reuse Education & Outreach Team.	1	1	<2	OWRB	Extension, ORWA, ODEQ, OWRC, OK Water Survey, Oka, Sm. & Lg. Water Utility reps, Tribal rep(s)	Include representatives of target audiences (e.g., medical community); This could be a subgroup to the larger interagency organizational group (IRT per Action O-01).
S-02	Interagency Water Reuse Education/Outreach Team develops Water Reuse Education/Outreach Plan to support effective communication on water reuse.	1	3	<2	OWRB	Extension, ORWA, ODEQ, OWRC, OWS, Oka, Sm. & Lg. Water Utility reps, Tribal rep(s), OU IPPRA	Develop materials that are easy to tailor to specific audience (and specifically consider legislators); Tie plan and program to Water for 2060 Act.
S-02a	Characterize stakeholders (public, water utilities, legislators, medical community, environmental organizations, ag, industry, tribes, oil and gas) and identify priority partnerships and outreach needed to widen reuse opportunities.	1	3	<2	OWRB	Extension, ORWA, ODEQ, OWRC, OWS, Oka, Sm. & Lg. Water Utility reps, Tribal rep(s), IPPRA	Prioritize audiences by potential influence; based on 1) stakeholder viewpoint on particular issue, 2) stakeholder level of community influence, 3) stakeholder interest in topic, and 4) stakeholder association.
S-03	Tailor existing national education materials to Oklahoma audiences as needed to implement education/outreach plan.	1	3	<2	OWRB/Extension	Extension, ORWA, ODEQ, OWRC, OWS, Oka, Sm. & Lg. Water Utility reps, Tribal rep(s)	Informed by feedback of Action S-02, tailor existing reuse material to pertain to Oklahoma as a general population, as well as to specific water use sectors; Emphasize the concept of all downstream of someone.
S-03a	<i>Compile existing education materials from across the nation and adapt them for use in Oklahoma.</i>	1	2	<2	OWRB/Extension	Extension, ORWA, ODEQ, OWRC, OWS, Oka, Sm. & Lg. Water Utility reps, Tribal rep(s)	
S-03b	<i>Design complementary, yet individualized messaging for each type of reuse.</i>	1	3	<2	OWRB/Extension	Extension, ORWA, ODEQ, OWRC, OWS, Oka, Sm. & Lg. Water Utility reps, Tribal rep(s)	<i>e.g., messaging for non-potable reuse for agriculture, golf courses, baseball fields, WWTP land application to non-edible crops. Messaging for potable via IPR in lakes and streams, etc.</i>
S-03c	<i>For various types of reuse, tailor existing national education materials to Oklahoma audiences and/or develop new materials as needed.</i>	1	3	<2	OWRB/Extension	Extension, ORWA, ODEQ, OWRC, OWS, Oka, Sm. & Lg. Water Utility reps, Tribal rep(s)	

ID	Description	Priority (1 high - 5 low)	Level of Effort (1 low - 5 high)	Target Initiation Timeline (years)	Lead Agency / Entity	Supporting Agencies / Entities	Notes
S-03d	<i>Focus messaging on Needs & Benefits: meet future Demand (show the need), economic potential (more business, more purchasers, sell same water twice,...), drought resilience.</i>	1	3	<2	OWRB/Extension	Extension, ORWA, ODEQ, OWRC, OWS, Oka, Sm. & Lg. Water Utility reps, Tribal rep(s)	Outline & highlight social and environmental benefits.
S-04	Deploy/use the communications tool kit.	1	4	<2	OWRB/Extension	ORWA, ODEQ, OWRC, OWS, Oka, Water utilities	Assess toolkit effectiveness through application and survey for feedback.
S-04a	<i>Outreach to State Legislators to help them understand the potential role and value of water reuse in Oklahoma, to build support for potential future legislative requests (e.g., funding or any identified statutory needs).</i>	1	3	<2	OWRB	TBD	<i>This does not "request legislative funding" but would initiate legislator dialogue in case OWRB or others pursue that in the future.</i>
S-05	Evaluate and track how perception of reuse is changing over time (statewide and/or targeted communities).	2	2	3-5	OU IPPRA	TBD	Utilize OU IPPRA M-SISNet.
S-06	Revise communications toolkit as needed based on periodic reassessment (Action S-05).	3	3	3-5	OWRB	Extension, ORWA, ODEQ, OWRC, OWS, Oka, Sm. & Lg. Water Utility reps, Tribal rep(s)	
S-07	Build critical mass of utilities and agencies to join a national advocacy organization and form an Oklahoma state section.	1	3	3-5	OWRB	Water utilities and agency partners	Pull together high level notes on WateReuse state section formation - utilize water reuse committees from OWEA and SWAWWA in near term.

Oklahoma Water Reuse Action Plan

Actions to Address Drivers, Barriers, and Goals

Revised: November 2023

TECHNICAL/TRAINING ACTIONS

Subgroup Facilitator: Jason Vogel

- **ID:** T-### for "Technical/Training-##." Sequential numeric tag for quick reference (not implying any order or priority).
- **Priority:** Relative importance, scored 1 (high) through 5 (low). 1 = urgent, 3 = moderate importance, 5 = low priority.
- **Level of Effort:** Relative effort required to complete the Action, scored 1 (low) through 5 (high).
- **Target Timeline:** Goal for time to complete the Action. Options include <2 years, 3-5 years, >5 years.

ID	Description	Priority (1 high - 5 low)	Level of Effort (1 low - 5 high)	Target Initiation Timeline (years)	Lead Agency / Entity	Supporting Agencies / Entities	Notes
T-01	Develop operator training and certification program for advanced water treatment processes for IPR/DPR.	3	5	>5	ODEQ	Oklahoma Water Survey (OU), Cooperative Extension Service, OWEA	Oklahoma Water Survey and/or Cooperative Extension service may want to collaborate on training/certification development; ODEQ reuse rules require operators to have Class A water license and Class A wastewater treatment license.
T-02	Engage high schools to promote career opportunities in the water/wastewater industry.	2	4	3-5	ORWA	OSU, OWS (OU)	OSU had 2 week interactive summer camp (TURF) geared toward horticulture. Similar initiative for water may be well received.
T-03	Develop a fact sheet on the Kansas City high school student certification and utility interview program as a model for Oklahoma.	3	1	<2	OWRB	OSU	Input from ORWA, ODEQ, and Dept. of Education.
T-04	Identify IPR/DPR demonstrations and full-scale systems (Oklahoma/ adjoining states) that could host technical tours/training for operators and regulators.	2	1	<2	OWRB	ODEQ	Includes temporary, permanent, and mobile demos and full-scale plants.
T-05	Develop a FAQ/fact sheet highlighting exemplars of successful reuse across multiple types of reuse (e.g., municipal, agricultural, industrial).	1	1	<2	OWRB	ODEQ	Leverage available materials from WateReuse Assoc. and other states - ODEQ has information that can be used to support development.
T-06	Identify and evaluate specific research needs for Oklahoma; Facilitate joint research proposal development related to water reuse technology between government/industry/academia.	1	3	<2	ODEQ	OWS (OU), OSU	Ongoing task, not just in the first two years. Needs may be driven by regulatory requirements.
T-07	Identify emerging contaminant priorities, including monitoring methods and possible treatment technologies.	1	3	<2	ODEQ	TBD	Could be a sub-committee of the ODEQ stakeholder groups; updated yearly; would help inform Action T-06.

APPENDIX B **FACT SHEETS FOR PRIORITIZED ACTIONS**

OKLAHOMA WATER REUSE ACTION PLAN

ACTION E-02: FUNDING PROGRAMS FACT SHEET

DRAFT OWRAP Action Fact Sheet

Date Updated: July 18, 2023
Updated By: Carollo (ALW)

Overview			
Name	E-02: Funding Programs Fact Sheet		
Strategy Area	<input checked="" type="checkbox"/> Economic <input type="checkbox"/> Organizational <input type="checkbox"/> Regulatory <input type="checkbox"/> Social <input type="checkbox"/> Technical <table border="1" style="float: right;"> <tr> <td>Priority (1 high – 5 low):</td> <td>1</td> </tr> </table>	Priority (1 high – 5 low):	1
Priority (1 high – 5 low):	1		
Summary	Develop fact sheet on existing state and federal funding programs that are geared toward or suitable for funding reuse projects		
Timeline	Target Initiation: <2 years		
Lead Agency/Entity	OWRB		
Supporting Agencies/Entities	ODEQ OWRAP Workgroup Members		
Anticipated Cost and Funding Source	\$30K-\$50K; Funded by OWRB <table border="1" style="float: right;"> <tr> <td>Level of Effort (1 low – 5 high):</td> <td>2</td> </tr> </table>	Level of Effort (1 low – 5 high):	2
Level of Effort (1 low – 5 high):	2		
Description			
Drivers	Investing in long-term sustainable water solutions, rather than unsustainable or unreliable sources.		
Barriers	Competing needs and priorities within water/wastewater systems, and between water needs and other public priorities such as transportation infrastructure; Cost of infrastructure to distribute nonpotable reuse ("purple pipe" systems), relative to use of traditional supply sources ; Cost of advanced water purification facilities necessary for potable reuse.		
Goals	Economically viable reuse systems relative to traditional supply sources.		
Action Description	Action E-02 seeks to compile information regarding existing State of Oklahoma and federal funding programs that can be used to support local and/or regional planning, design, and construction of water reuse systems and infrastructure. A concise fact sheet will be developed to summarize existing state and federal funding/financing programs that are available to municipal, agricultural, and/or industrial water utilities and users. Anticipated content for the fact sheet includes a description for each identified funding source by funding agency and contact information; key applicant eligibility criteria; key project eligibility and scoring criteria; frequency and amount of funding available; the number of projects typically funded, and link to program (if available).		
Reference Documents and Files			

Items in Progress

No.	Action	Timeline	Responsibility
1	Update OWRB's white book to reflect water reuse as eligible project type	Update expected 4Q 2023	OWRB
2			
3			
...			

Next Steps

No.	Action	Timeline	Responsibility
1	Develop fact sheet(s) for funding programs that are not currently included in OWRB's white book	TBD	OWRB
2			
3			
...			

OKLAHOMA WATER REUSE ACTION PLAN

ACTION E-05: ECONOMIC BENEFITS OF STRATEGIC WATER REUSE

DRAFT OWRAP Action Fact Sheet

Date Updated: July 18, 2023
Updated By: Carollo (ALW)

Overview			
Name	E-05: Economic Benefits of Strategic Water Reuse		
Strategy Area	<input checked="" type="checkbox"/> Economic <input type="checkbox"/> Organizational <input type="checkbox"/> Regulatory <input type="checkbox"/> Social <input type="checkbox"/> Technical	Priority (1 high – 5 low):	1
Summary	Develop information that illustrates economic benefits of providing water suitable for intended purpose (possibly in conjunction with Action E-02: Funding Programs Fact Sheet)		
Timeline	Target Initiation: <2 years		
Lead Agency/Entity	OWRB		
Supporting Agencies/Entities	ODEQ OWRAP Workgroup Members		
Anticipated Cost and Funding Source	\$30K-\$50K; Funded by OWRB	Level of Effort (1 low – 5 high):	2
Description			
Drivers	Economically viable implementation and operation of reuse treatment and conveyance infrastructure. Nonpotable reuse (irrigation, cooling tower, etc.) is often viewed as lower-value water despite its benefits (e.g., nutrients for irrigation that are lacking in potable water); Achieve goals established in Oklahoma's 2012 Water for 2060 Act; Investing in long-term sustainable water solutions, rather than unsustainable or unreliable sources		
Barriers	Cost of infrastructure to distribute nonpotable reuse ("purple pipe" systems), relative to use of traditional supply sources; Limited understanding of the benefits of reuse and costs associated with reusing water; Public perception.		
Goals	Economically viable reuse systems relative to traditional supply sources; Incentivize implementation of water reuse where appropriate; Educate utilities and legislators.		
Action Description	Action E-05 seeks to illustrate the economic benefits of providing "fit for purpose" water quality that is suitable and appropriate for the intended use. This work can be done in conjunction with <i>Action E-02: Funding Programs Fact Sheet</i> to further emphasize how collaboration between utilities, local stakeholders, State of Oklahoma, and federal funding and financing programs can support planning, design, and construction of water reuse systems and infrastructure. Anticipated content for Action E-05 includes case studies of existing, economically viable reuse systems (i.e., Oklahoma City example where utility offsets freshwater needs while augmenting water system revenues with no additional treatment expense and industries benefit at by purchasing water at a discounted rate); outline of various levels of treatment and subsequent costs of treatment, finished effluent quality, and end uses; and possibilities for project financing/funding through loan and grant programs.		
Reference Documents and Files			

Items in Progress

No.	Action	Timeline	Responsibility
1			
2			
3			
...			

Next Steps

No.	Action	Timeline	Responsibility
1			
2			
3			
...			

OKLAHOMA WATER REUSE ACTION PLAN

ACTION O-01: INTERORGANIZATIONAL REUSE TEAM (IRT)

DRAFT OWRAP Action Fact Sheet

Date Updated: July 18, 2023
Updated By: Carollo (JPR)

Overview			
Name	O-01: Interorganizational Reuse Team (IRT)		
Strategy Area	<input type="checkbox"/> Economic <input checked="" type="checkbox"/> Organizational <input type="checkbox"/> Regulatory <input type="checkbox"/> Social <input type="checkbox"/> Technical <table border="1" style="float: right;"> <tr> <td>Priority (1 high – 5 low):</td> <td>1</td> </tr> </table>	Priority (1 high – 5 low):	1
Priority (1 high – 5 low):	1		
Summary	Create a top level Inter-organizational Reuse Team (IRT); Identify persons within each supporting agency with expertise and capacity to advance water reuse in Oklahoma.		
Timeline	Target Initiation: <2 years		
Lead Agency/Entity	OWRB		
Supporting Agencies/Entities	ODEQ, ODAFF, OCC, OSEE, ORWA, ODWC, Dept. of Commerce, Dept. of Energy & Environment, public universities		
Anticipated Cost and Funding Source	\$20K-\$30K (primarily in-kind); Funded by each agency/entity, facilitated by OWRB <table border="1" style="float: right;"> <tr> <td>Level of Effort (1 low – 5 high):</td> <td>2</td> </tr> </table>	Level of Effort (1 low – 5 high):	2
Level of Effort (1 low – 5 high):	2		
Description			
Drivers	To meet anticipated timelines for public demand for reuse, there is a need for cross-agency cooperation and collaboration; Consistent approach and widespread messaging for reuse in Oklahoma; Leverage the numerous forms and levels of expertise between organizations; Collaborative initiatives can increase available funds for research, rulemaking, statutory requests, etc.		
Barriers	Complex jurisdictional authorities between agencies; Competing interests and priorities between stakeholders within water sectors; Limited or no availability of staff resources to develop and administer new regulatory programs.		
Goals	Alignment for consistent, collaborative interagency approaches to supporting and administering reuse systems, recognizing that well-run reuse programs are more likely to produce compliant, safe recycled water; Common understanding and policy to support "One Water" management strategies; Cross-functional development of reuse implementation pathways to help overcome social and economic challenges.		
Action Description	Action O-01 seeks to provide an organizational structure necessary to move water reuse in Oklahoma to the forefront of conversations regarding water supply while soliciting feedback and ideas from parties who have a wide range of interests, needs, and backgrounds. Anticipated effort for Action O-01 includes coordination meetings and communications between interested parties; development of organizational charts and stakeholder analyses; documentation of discussions, decisions, and actions; and allocation of time and budget within individual organizations to support staff efforts in Action O-01.		
Reference Documents and Files			

Items in Progress

No.	Action	Timeline	Responsibility
1			
2			
3			
...			

Next Steps

No.	Action	Timeline	Responsibility
1	Make initial contact with partner agencies, e.g., Directors or Deputies that would determine big picture needs, timelines, messaging, funding allowance	TBD	OWRB
2			
3			

OKLAHOMA WATER REUSE ACTION PLAN

ACTION R-01: WATER REUSE QUANTITY GUIDANCE DOCUMENT

DRAFT OWRAP Action Fact Sheet

Date Updated: July 18, 2023
Updated By: Carollo (JPR)

Overview			
Name	R-01: Water Reuse Quantity Guidance Document		
Strategy Area	<input type="checkbox"/> Economic <input type="checkbox"/> Organizational <input checked="" type="checkbox"/> Regulatory <input type="checkbox"/> Social <input type="checkbox"/> Technical <table border="1" style="float: right; margin-left: 20px;"> <tr> <td>Priority (1 high – 5 low):</td> <td style="text-align: center;">1</td> </tr> </table>	Priority (1 high – 5 low):	1
Priority (1 high – 5 low):	1		
Summary	Prepare brief guidance document or fact sheet summarizing current legal ability to reuse municipal return flows and receive credit for augmenting supplies with recycled water		
Timeline	Target Initiation: <2 years		
Lead Agency/Entity	OWRB		
Supporting Agencies/Entities	Attorney General's Office		
Anticipated Cost and Funding Source	\$10K-\$20K; Funded by OWRB <table border="1" style="float: right; margin-left: 20px;"> <tr> <td>Level of Effort (1 low – 5 high):</td> <td style="text-align: center;">1</td> </tr> </table>	Level of Effort (1 low – 5 high):	1
Level of Effort (1 low – 5 high):	1		
Description			
Drivers	Desire for clarity on ability to reuse available reclaimed water supplies, on water rights "credits" for augmenting supplies with recycled water, and/or potential future water quality trading credits; Compliance with permit requirements for recycled water quality and quantity; Providing clearly defined, consistent requirements for use by utilities/entities when considering, planning, costing, designing, and/or operating reuse systems.		
Barriers	Lack of clarity (for reuse project proponents) on water rights constraints (if any) on ability to reuse available reclaimed water supplies; Lack of clarity on ability for (and process for) receiving credit for (and recovering) reclaimed water that has been intentionally used to augment groundwater or surface water supplies in an IPR scheme.		
Goals	Establish clarity on existing water rights regulations/policy for reuse and constraints (if any) on ability to reuse available reclaimed water supplies, and communicate current regulations/policy to potential reuse project proponents; Assess whether existing water rights approach to water reuse is sufficiently protective of water rights (both for reuse utility/entity and other water rights holders in the basin).		
Action Description	Action R-01 seeks to compile information regarding existing State of Oklahoma rules, regulations, and policies to reuse municipal and industrial return flows. Anticipated effort for Action R-01 includes upfront work by OWRB to interpret existing rules and regulations and summarize them into a guidance document and coordination with the Oklahoma Attorney General's Office so that information conveyed in the guidance document has been reviewed and has full State support.		
Reference Documents and Files			

Items in Progress			
No.	Action	Timeline	Responsibility
1			
2			
3			
...			
Next Steps			
No.	Action	Timeline	Responsibility
1	Draft guidance document	TBD	OWRB
2	Schedule meeting with Attorney General's office to discuss comments and review	TBD	OWRB
3			

OKLAHOMA WATER REUSE ACTION PLAN

ACTION R-04: WATER AVAILABILITY IMPLICATIONS MODELING

DRAFT OWRAP Action Fact Sheet

Date Updated: July 18, 2023
Updated By: Carollo (JPR)

Overview			
Name	R-04: Water Availability Implications Modeling		
Strategy Area	<input type="checkbox"/> Economic <input type="checkbox"/> Organizational <input checked="" type="checkbox"/> Regulatory <input type="checkbox"/> Social <input type="checkbox"/> Technical <table border="1" style="float: right;"> <tr> <td>Priority (1 high – 5 low):</td> <td>2</td> </tr> </table>	Priority (1 high – 5 low):	2
Priority (1 high – 5 low):	2		
Summary	Run what-if scenarios to evaluate water availability implications of additional reuse, using OWRB's updated Oklahoma H ₂ O Tool		
Timeline	Target Initiation: <2 years		
Lead Agency/Entity	OWRB		
Supporting Agencies/Entities	Not applicable		
Anticipated Cost and Funding Source	\$20K-\$30K; Funded by OWRB <table border="1" style="float: right;"> <tr> <td>Level of Effort (1 low – 5 high):</td> <td>2</td> </tr> </table>	Level of Effort (1 low – 5 high):	2
Level of Effort (1 low – 5 high):	2		
Description			
Drivers	Documenting reuse as a viable and drought-resistant source of water for more efficient use of existing supplies, reducing reliance on potable and fresh water sources, and diversifying water supply portfolios; Growing need for additional and diversified sources of water supply		
Barriers	Historical "siloed" approach to water management; Concerns over potential implications of increased water reuse on downstream surface water flows and water availability.		
Goals	Assess whether existing water rights approach to water reuse is sufficiently protective of water rights (both for reuse utility/entity and other water rights holders in the basin); model potential scenarios and outcomes.		
Action Description	Action R-04 seeks to assess implications that various water reuse scenarios/options may have to existing water availability through what-if scenarios/sensitivity analyses. The Oklahoma H ₂ O tool for Action R-04 is being updated as part of the OCWP physical water supply availability analyses. Anticipated effort for Action R-04 includes running a series of what-if scenarios with quantifiable impacts to downstream water availability; establishing a baseline projection for water availability through 2060 (i.e., no increase in water reuse); and running the models and generating data and outputs to convey information regarding water reuse implications to water availability in Oklahoma.		
Reference Documents and Files			

Items in Progress

No.	Action	Timeline	Responsibility
1	Oklahoma H ₂ O Tool is being updated as part of OCWP development	Completion 4Q 2023	OWRB
2			
3			
...			

Next Steps

No.	Action	Timeline	Responsibility
1			
2			
3			

OKLAHOMA WATER REUSE ACTION PLAN

ACTION S-01: WATER REUSE EDUCATION AND OUTREACH TEAM

DRAFT OWRAP Action Fact Sheet

Date Updated: July 18, 2023
Updated By: Carollo (JPR)

Overview			
Name	S-01: Water Reuse Education and Outreach Team		
Strategy Area	<input type="checkbox"/> Economic <input type="checkbox"/> Organizational <input type="checkbox"/> Regulatory <input checked="" type="checkbox"/> Social <input type="checkbox"/> Technical	Priority (1 high – 5 low):	1
Summary	Organize an Interagency Water Reuse Education & Outreach Team		
Timeline	Target Initiation: <2 years		
Lead Agency/Entity	OWRB		
Supporting Agencies/Entities	Extensions, ORWA, ODEQ, OWRC, OK Water Survey, Oka Institute, Water Utility representatives, Tribal Nations representatives		
Anticipated Cost and Funding Source	\$30K-\$50K; Facilitated by OWRB	Level of Effort (1 low – 5 high):	1
Description			
Drivers	Enhance state and local economic potential; Enhance public awareness regarding the safety and value of drinking water supplies – per the concept that “we all live downstream”; Community and political interest in sustainable water management strategies to achieve Water for 2060 Goal.		
Barriers	Lack of understanding and acceptance from the public – negative public perception on safety and water quality of nontraditional sources of supply; Concerns regarding presence of constituents of emerging concern (e.g., pharmaceuticals, PFAS); Public, politicians, and water suppliers have historical perception that water supplies are ample in many areas of Oklahoma.		
Goals	Engage public in understanding reuse drivers, benefits, and safety of reuse water; Earn legislative and other political support; earn support within organizations that provide grant- and loan-based funding; coordinate messaging; engage stakeholders.		
Action Description	Action S-01 seeks to provide an organizational structure necessary to move water reuse in Oklahoma to the forefront of conversations regarding water supply by educating the public through outreach. Action S-01 could ultimately become a sub-group to <i>Action O-01: Inter-organizational Reuse Team (IRT)</i> to pool together resources and coordinate messaging. Anticipated effort for Action S-01 includes coordination meetings and communications between all interested parties (including representatives of target audiences like the medical community); development of organizational charts and stakeholder analyses; documentation of discussions, decisions, and actions; and allocation of time and budget within individual organizations to support staffs’ efforts in Action S-01.		
Reference Documents and Files			

Items in Progress

No.	Action	Timeline	Responsibility
1	Bartlesville community outreach for planned IPR project (<i>not through this task force, but can use lessons learned</i>)	TBD	-
2			
3			
...			

Next Steps

No.	Action	Timeline	Responsibility
1	Make initial contact with a first set of parties - Extension, ORWA, ODEQ, OWRC, OK Water Survey, Oka Institute, Water Utility representatives, Tribal Nations representatives, representatives of target audiences	TBD	OWRB
2	Develop outreach work plan and deploy communications tool kit	TBD	OWRB
3	Tailor existing national education materials to Oklahoma audiences	TBD	OWRB

OKLAHOMA WATER REUSE ACTION PLAN

ACTION S-03A: COMPILE EDUCATIONAL MATERIALS

DRAFT OWRAP Action Fact Sheet

Date Updated: July 18, 2023
Updated By: Carollo (JPR)

Overview			
Name	S-03a: Compile Educational Materials		
Strategy Area	<input type="checkbox"/> Economic <input type="checkbox"/> Organizational <input type="checkbox"/> Regulatory <input checked="" type="checkbox"/> Social <input type="checkbox"/> Technical <table border="1" style="float: right; margin-left: 20px;"> <tr> <td>Priority (1 high – 5 low):</td> <td style="text-align: center;">1</td> </tr> </table>	Priority (1 high – 5 low):	1
Priority (1 high – 5 low):	1		
Summary	Compile existing education materials from across the nation		
Timeline	Target Initiation: <2 years		
Lead Agency/Entity	OWRB/Extension		
Supporting Agencies/Entities	Extensions, ORWA, ODEQ, OWRC, OK Water Survey, Oka Institute, Water Utility representatives, Tribal Nations representatives		
Anticipated Cost and Funding Source	\$50K-\$70K; Funded by OWRB <table border="1" style="float: right; margin-left: 20px;"> <tr> <td>Level of Effort (1 low – 5 high):</td> <td style="text-align: center;">2</td> </tr> </table>	Level of Effort (1 low – 5 high):	2
Level of Effort (1 low – 5 high):	2		
Description			
Drivers	Enhance state and local economic potential; Enhance public awareness regarding the safety and value of drinking water supplies – concept that “we all live downstream”; Community and political interest in sustainable water management strategies to achieve Water for 2060 Goal.		
Barriers	Lack of understanding and acceptance from the public – negative public perception on safety and water quality of nontraditional sources of supply; Concerns regarding presence of constituents of emerging concern (e.g., pharmaceuticals, PFAS); Public, politicians, and water suppliers have historical perception that water supplies are ample in many areas of Oklahoma.		
Goals	Engage public in understanding reuse drivers, benefits, and safety of reuse water; Earn legislative and other political support; earn support within organizations that provide grant- and loan-based funding; coordinate messaging; engage stakeholders.		
Action Description	Action S-03a seeks to compile educational materials from other states and at the national level and tailor them for use in Oklahoma. Anticipated effort for Action S-03a includes data and reference collection; development of filing structure through a SharePoint site; coordination meetings and communications between Oklahoma representatives and other states or national resources; and allocation of time and budget within individual organizations to support staffs’ efforts in Action S-03a.		
Reference Documents and Files			

Items in Progress

No.	Action	Timeline	Responsibility
1	Bartlesville community outreach for planned IPR project (<i>not through this task force, but can use lessons learned</i>)	TBD	-
2			
3			
...			

Next Steps

No.	Action	Timeline	Responsibility
1	Make initial contact with other state and national resources	TBD	OWRB
2	Tailor existing national education materials to Oklahoma audiences	TBD	OWRB
3			

OKLAHOMA WATER REUSE ACTION PLAN

ACTION S-05: WATER REUSE PERCEPTION OVER TIME

DRAFT OWRAP Action Fact Sheet

Date Updated: July 18, 2023
Updated By: Carollo (JPR)

Overview			
Name	S-05: Water Reuse Perception Over Time		
Strategy Area	<input type="checkbox"/> Economic <input type="checkbox"/> Organizational <input type="checkbox"/> Regulatory <input checked="" type="checkbox"/> Social <input type="checkbox"/> Technical <table border="1" style="float: right; margin-left: 20px;"> <tr> <td>Priority (1 high – 5 low):</td> <td>2</td> </tr> </table>	Priority (1 high – 5 low):	2
Priority (1 high – 5 low):	2		
Summary	Evaluate/track how perception of reuse is changing over time (statewide and/or targeted communities)		
Timeline	Target Initiation: 3-5 years		
Lead Agency/Entity	University of Oklahoma (OU) Institute for Public Policy Research and Analysis (IPPRA)		
Supporting Agencies/Entities	None		
Anticipated Cost and Funding Source	\$40K-\$60K; Organized by OU IPPRA <table border="1" style="float: right; margin-left: 20px;"> <tr> <td>Level of Effort (1 low – 5 high):</td> <td>2</td> </tr> </table>	Level of Effort (1 low – 5 high):	2
Level of Effort (1 low – 5 high):	2		
Description			
Drivers	Enhance state and local economic potential; Enhance public awareness regarding the safety and value of drinking water supplies – concept that “we all live downstream”; Community and political interest in sustainable water management strategies to achieve Water for 2060 Goal.		
Barriers	Lack of understanding and acceptance from the public – negative public perception on safety and water quality of nontraditional sources of supply; Concerns regarding presence of constituents of emerging concern (e.g., pharmaceuticals, PFAS); Public, politicians, and water suppliers have historical perception that water supplies are ample in many areas of Oklahoma.		
Goals	Engage public in understanding reuse drivers, benefits, and safety of reuse water; Earn legislative and other political support; earn support within organizations that provide grant- and loan-based funding; coordinate messaging; engage stakeholders.		
Action Description	Action S-05 seeks to build on and track progress from all social strategy area actions, especially <i>Action S-01: Water Reuse and Education Outreach Team</i> and <i>Action S-03: Education Material Collection</i> . Moreover, Action S-05, when done in conjunction with other OWRAP Social Actions, will help inform those actions and support real-time feedback loops that can aid efforts across the entire Social strategy area. Anticipated effort for Action S-05 includes data collection; use and implementation of OU IPPRA Meso-Scale Integrated Socio-geographic Network (M-SISNet); conducting interviews with stakeholders, members of the outreach team, and the public; and allocation of time and budget within individual organizations to support staffs’ efforts in Action S-05.		
Reference Documents and Files			

Items in Progress

No.	Action	Timeline	Responsibility
1	Development of M-SISNet	TBD	OU IPPRA
2			
3			
...			

Next Steps

No.	Action	Timeline	Responsibility
1	Once Outreach Team is established, include Action S-05 as a task item and establish a champion within the team	TBD	OU IPPRA
2			
3			

OKLAHOMA WATER REUSE ACTION PLAN

ACTION T-04: POTABLE REUSE TECHNICAL TOURS AND TRAINING

DRAFT OWRAP Action Fact Sheet

Date Updated: July 18, 2023
Updated By: Carollo (JPR)

Overview			
Name	T-04: Potable Reuse Technical Tours and Training		
Strategy Area	<input type="checkbox"/> Economic <input type="checkbox"/> Organizational <input type="checkbox"/> Regulatory <input type="checkbox"/> Social <input checked="" type="checkbox"/> Technical <table border="1" style="float: right;"> <tr> <td>Priority (1 high – 5 low):</td> <td>2</td> </tr> </table>	Priority (1 high – 5 low):	2
Priority (1 high – 5 low):	2		
Summary	Identify IPR/DPR demonstrations and full-scale systems in Oklahoma and adjoining states that could host technical tours/training for operators and regulators		
Timeline	Target Initiation: <2 years		
Lead Agency/Entity	OWRB		
Supporting Agencies/Entities	ODEQ		
Anticipated Cost and Funding Source	\$10K-\$20K, excluding travel time and expenses; Funded by OWRB <table border="1" style="float: right;"> <tr> <td>Level of Effort (1 low – 5 high):</td> <td>1</td> </tr> </table>	Level of Effort (1 low – 5 high):	1
Level of Effort (1 low – 5 high):	1		
Description			
Drivers	Tangible progress toward Legislative goals of Oklahoma's Water for 2060 Act (2012); Regulatory and public confidence in the consistent, reliable protection of public health and the environment, including for constituents of emerging concern (CECs); Adequately qualified staff to implement, operate, and maintain reuse systems.		
Barriers	Variable levels of understanding of the treatment, water quality, and management practices required for reuse and the degree to which current conventional and passive treatment processes meet the requirements; Do not yet have local demonstration projects (need leading implementers, influencers); Lack of widespread experience planning, designing, implementing, and operating water reuse systems in Oklahoma; Lack of training and certification programs for advanced water purification processes.		
Goals	Information relative to effectiveness of treatment processes and monitoring systems for achieving regulatory requirements is available and accessible to water industry stakeholders and the public; Development of exemplars of water reuse – industries/facilities that successfully implement water reuse to be used as positive examples; Readily available operator training and certification programs for advanced water purification processes and water reuse at multiple levels (entry-level, intermediate, advanced certifications).		
Action Description	Action T-04 seeks to educate utility leaders, operators, and regulators in Oklahoma about existing IPR and DPR facilities at the demonstration and/or full-scale level. Action T-04 will provide operators the chance to interact with other operators which can help to improve the collective understanding of how to operate IPR/DPR process trains. Anticipated effort for Action T-04 includes nationwide collaboration and coordination; organizing site visits to various IPR/DPR facilities; sharing resources across organizations; and allocation of time and budget within individual organizations to support staffs' efforts in Action T-04.		
Reference Documents and Files			

Items in Progress

No.	Action	Timeline	Responsibility
1	Numerous IPR/DPR studies in the state of Oklahoma: ... Completed: Guymon Water Reuse Preliminary study ... Completed: Lawton Water Reuse Preliminary study ... Completed: Chickasaw and Choctaw Water Reuse Plan ... Ongoing: Operational Fort Sill and Mustang Category 2 NPR ... Ongoing: Oklahoma Water Workforce Development workgroup ... Ongoing: Norman Advanced Water Purification pilot study ... Ongoing: Bartlesville IPR project ... Ongoing: Produced water recycling centers operational (i.e., Bison, Lagoon Water Systems) ... Ongoing: Emphasis and implementation of agricultural and urban stormwater runoff management practices that emphasize infiltration and passive/indirect stormwater reuse ... Ongoing: Category 3, 4, and 5 water reuse (over 100) ... Ongoing: Golf course water reuse (Norman, Oklahoma City, Boiling Springs, Gallardia, etc.) ... Ongoing: Altus/Lugert irrigation reuse ... Ongoing: ORWA training programs for water and wastewater operators ... Ongoing: Oklahoma DEQ Operator Certification Program	Various	Various
2			
3			
...			

Next Steps

No.	Action	Timeline	Responsibility
1	Develop list of possible demonstrations and full-scale systems in Oklahoma and adjoining states that may be candidates for tours/training.	TBD	OWRB
2	Develop advanced treatment operator certification program.	TBD	ODEQ
3			

OKLAHOMA WATER REUSE ACTION PLAN

ACTION T-05: WATER REUSE CASE STUDIES FACT SHEET

DRAFT OWRAP Action Fact Sheet

Date Updated: July 18, 2023
Updated By: Carollo (JPR)

Overview			
Name	T-05: Water Reuse Case Studies Fact Sheet		
Strategy Area	<input type="checkbox"/> Economic <input type="checkbox"/> Organizational <input type="checkbox"/> Regulatory <input type="checkbox"/> Social <input checked="" type="checkbox"/> Technical <table border="1" style="float: right;"> <tr> <td>Priority (1 high – 5 low):</td> <td>1</td> </tr> </table>	Priority (1 high – 5 low):	1
Priority (1 high – 5 low):	1		
Summary	Develop a FAQ/fact sheet highlighting exemplars of successful reuse across multiple types of reuse (e.g., municipal, agricultural, industrial).		
Timeline	Target Initiation: <2 years		
Lead Agency/Entity	OWRB		
Supporting Agencies/Entities	ODEQ		
Anticipated Cost and Funding Source	\$20K-\$30K; Funded by OWRB <table border="1" style="float: right;"> <tr> <td>Level of Effort (1 low – 5 high):</td> <td>1</td> </tr> </table>	Level of Effort (1 low – 5 high):	1
Level of Effort (1 low – 5 high):	1		
Description			
Drivers	Tangible progress toward Legislative goals of Oklahoma's Water for 2060 Act (2012); Regulatory and public confidence in the consistent, reliable protection of public health and the environment, including for constituents of emerging concern (CECs); Adequately qualified staff to implement, operate, and maintain reuse systems.		
Barriers	Variable levels of understanding of the treatment, water quality, and management practices required for reuse and the degree to which current conventional and passive treatment processes meet the requirements; Lack of widespread experience planning, designing, implementing, and operating water reuse systems in Oklahoma; Lack of training and certification programs for advanced water purification processes; Low public awareness of career opportunities in the water industry		
Goals	Consolidate, compile, and/or develop Information relative to effectiveness of treatment processes and monitoring systems for achieving regulatory requirements in a toolbox approach; Information relative to effectiveness of treatment processes and monitoring systems for achieving regulatory requirements is available and accessible to water industry stakeholders and the public; Development of exemplars of water reuse – industries/facilities that successfully implement water reuse - to be used as positive examples; Increase water industry awareness of the effectiveness of treatment processes and monitoring systems for achieving regulatory requirements; Increase available workforce and awareness for water reuse careers.		
Action Description	Action T-05 seeks to compile information regarding water reuse technologies and highlight successful water reuse projects at the national level to show what is possible for water reuse in Oklahoma. Fact sheets can be developed in part with available materials from WaterReuse Association and adjoining states, as well as in conjunction with ODEQ and their available information. Anticipated effort for Action T-05 includes summaries of available technologies – including full-scale, demonstration, and R&D technologies; required operator trainings and certificates for operations; examples of successful reuse projects across various types of reuse (e.g., municipal, agricultural, industrial); and allocation of time and budget within individual organizations to support staffs' efforts in Action T-05.		

Reference Documents and Files

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Items in Progress

No.	Action	Timeline	Responsibility
1		Various	Various
2			
3			
...			

Next Steps

No.	Action	Timeline	Responsibility
1	Develop list of possible case study demonstrations and full-scale systems in adjoining states that may be candidates for highlighting in a fact sheet.	TBD	OWRB
2			
3			