

WATER REUSE IN THE WEST: STATE PROGRAMS AND INSTITUTIONAL ISSUES



A Report Compiled by the

**Western States Water Council
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INTRODUCTION

Water reuse can provide western states with a reliable supply of water to help address growing water demands. The practice is also becoming more practical and cost-effective given the scarcity of fresh water supplies, the abundance of wastewater created by growing populations, and increasingly stringent wastewater discharge requirements. However, while many states have expressed an interest in reusing water, a number of legal, institutional, and societal constraints can potentially hinder reuse.

In 2008, the Western Governors' Association adopted "Water Needs and Strategies for a Sustainable Future: *Next Steps*," which identified a number of policy objectives related to water management in the West, including a recommendation that the states investigate institutional mechanisms for furthering water reuse.¹ This report is a direct response to this recommendation and builds upon previous Council efforts that have broadly discussed barriers to reuse in the West.² In particular, this report describes current reuse programs and efforts in each of the Council's 18 member states, as well as the institutional issues and other factors that encourage or discourage reuse in those states. This information is intended to help western states learn from each other as they work to carry out the *Next Steps*' report's recommendations.

This report consists primarily of narrative summaries for each member state that discuss the results of a survey that the Council circulated in 2010.³ Although the terms and concepts associated with water reuse vary significantly across the West, "water reuse" for the purpose of this report refers to surface and/or groundwater that is used, treated or reconditioned, and then used again. It does not address water that is merely reused on a specific site without being treated or reconditioned.

For each member state, this report contains information pertaining to: (1) its laws and regulations governing reuse; (2) available funding options for reuse projects; (3) legal, political, technical, and institutional issues that encourage or discourage reuse; and (4) specific state efforts to encourage reuse or overcome barriers. Where applicable, a number of states also provided information on their existing water reuse projects, which is contained in Appendix C.

¹ WESTERN GOVERNORS' ASSN., WATER NEEDS AND STRATEGIES FOR A SUSTAINABLE FUTURE: NEXT STEPS V (2008), available at: <http://www.westgov.org/wswc/water%20needs%20&%20strategies-6'08%20final.pdf>. The Council serves as an advisor and resource to the governors of 18 western states on water policy issues. ² CRAIG BELL & JEFF TAYLOR, W. STATES WATER COUNCIL, WATER LAWS AND POLICIES FOR A SUSTAINABLE FUTURE: A WESTERN STATES PERSPECTIVE 99 (2008), available at: [http://www.westgov.org/wswc/laws%20&%20policies%20report%20\(final%20with%20cover\).pdf](http://www.westgov.org/wswc/laws%20&%20policies%20report%20(final%20with%20cover).pdf); CHAD SHATTUCK, W. STATES WATER COUNCIL, WATER REUSE IN THE WESTERN UNITED STATES, 16 (2002) (on file with author) (investigating the general legal, social, and institutional constraints to water reuse common in the West). *See also*: U.S. ENVTL. PROTECTION AGENCY, GUIDELINES FOR WATER REUSE, Appendix B (2004), available at: <http://www.epa.gov/nrmrl/pubs/625r04108/625r04108.pdf>. The Environmental Law Institute has also prepared a number of reports that address various aspects of the legal frameworks pertaining to reuse in the West. These reports are available at: http://www.eli.org/Program_Areas/western_water_projects.cfm. ³ The following individuals assisted Council staff in preparing the survey and this report: Tracy Hofmann, New Mexico State Engineer's Office; Rick Huddleston, Idaho Dep't of Env't. Quality; John Kennington, Utah Div. of Water Quality; and Jim McCauley, Wash. Dep't. of Ecology.

The summaries show that the extent to which reuse occurs and the factors that encourage or impede it vary considerably depending upon the individual circumstances of each state. Further, some states have highly developed regulatory programs specific to reuse, while others may not have any programs and may lack a statutory or regulatory definition for the practice. Nevertheless, states reported various common barriers, including inflexible and duplicative regulations, concerns about how to protect senior water rights, lack of funding, and health concerns among the general public. Common efforts to encourage reuse involve state funding mechanisms, public outreach, and state-sponsored workgroups to identify and overcome barriers. In general, the most effective state efforts appear to be those carried out at the direction of a governor or state legislature, and include significant collaboration with stakeholders to develop laws, regulations, and policies aimed at encouraging reuse.

STATE SUMMARIES

This section summarizes the survey responses received from member states. It focuses primarily on the institutional and other issues that encourage or discourage reuse, as well as the efforts of member states to encourage reuse or overcome barriers. Given this emphasis, the summaries do not endeavor to provide an exhaustive description of each state's legal and regulatory framework. Rather, they strive to provide a general overview of each framework in order to set forth the context needed to understand the issues and efforts that each state has identified. More information is also available in Appendix B, which contains a table that identifies the laws, regulations, guidance documents, and other information regarding each state's legal and regulatory framework for water reuse.

F. KANSAS

Over 140 communities and facilities in Kansas are authorized to reuse treated wastewater for applications, such as irrigating turf on golf courses and parks. Utilizing wastewater for irrigation in the western half of the state is also fairly common. Nevertheless, the state reports that reuse has not had a "very high profile."

1. Reuse Laws and Regulations in Kansas

Kansas' laws and regulations do not contain definitions for water reuse or a synonymous term. However, the state's water laws do recognize water reuse/reclamation as beneficial uses of water. For instance, the Kansas Water Appropriation Act states that "all water"⁶⁹ is dedicated to the use of the people and that the Chief Engineer shall not approve any application submitted for the proposed use of fresh water "in any case where *other waters* are available for such proposed use and the use thereof is technologically and economically feasible."⁷⁰ Its regulatory definition for "waste of water" also includes the diversion or withdrawal of water that is not "used or *reapplied* to a beneficial use."⁷¹

The Kansas Department of Health and Environment's (KDHE) Bureau of Water regulates the public health concern aspects of reuse in Kansas, while the Division of Water Resources within the Kansas Department of Agriculture regulates the water use aspects. KDHE's programs are related to public water supplies, wastewater treatment systems, the treatment and disposal of sewage, and

nonpoint sources of pollutions. In addition, KDHE's minimum standards for the design of water pollution control facilities include guidelines for agricultural application of wastewater and sludge.

Certain NPDES permits also have special conditions governing the use of effluent for irrigation, as well as monitoring requirements. For example, the City of Colby has a permit that authorizes it to use treated wastewater to irrigate baseball diamonds and soccer fields, but prohibits it from using the water for irrigation of crops produced for direct human consumption. Among other things, the city must also post signs around the fields indicating that reclaimed wastewater is used to irrigate the grass. The permit also requires Colby to monitor and test treated wastewater for any calendar month during which landscape irrigation is used and to submit monitoring reports on or before the 28th of the following month.

Of note, Kansas' rules and regulations require that the extent of consumptive use by a water right may not be increased significantly after the perfection period has expired. Municipal use is generally presumed to be fully consumptive, and quantification of consumptive use is typically only made upon filing an application to change the point of diversion, place of use, or use made of water. When a municipality releases water back into the system through wastewater effluent discharges, that water becomes available for appropriation. If impairment of an existing downstream right occurs, determination of who has the right to use water follows the prior appropriation doctrine rather than ascertaining whether upstream cities have increased their consumptive use and consequently reduced return flows. Kansas further reports that it would not knowingly approve a new application that would be primarily dependent upon "return flows" from another source or user unless conditioned upon availability of the return flows.

2. Reuse Funding in Kansas

Water reuse projects in Kansas are funded "locally, if at all." The state does not provide financial assistance in the form of grants or loans, but did note that federal grants for wastewater reuse from concentrated animal feeding operations (CAFOs) and other types of reuse "may be helpful incentives."

3. Issues Affecting Reuse in Kansas

Reuse's "low profile" in Kansas means that the state's legal and regulatory framework remains relatively untested. However, if Clean Water Act (CWA) requirements become more stringent, reuse may present a lower cost option than treatment upgrade. Such a scenario could test the state's framework and reveal additional factors that encourage or discourage reuse.

Kansas' water plan does include a "high priority issue" focused on the role of reuse in water conservation in the Lower Arkansas River Basin, where a total of 11 communities and commercial facilities are authorized to reuse treated wastewater.⁷² The plan notes that renewable fuel production is a growing industry in the Basin and may present opportunities for industrial reuse.⁷³ Irrigation also accounts for nearly 75% of all reported water pumped or diverted in the Basin and the plan suggests that reusing water for irrigation and agricultural land "could have a significant impact on water use in this region."⁷⁴ Other opportunities include using reused water to irrigate recreational facilities such as parks and golf courses and recharging aquifers.⁷⁵

On the other hand, the plan identifies a number of potential obstacles. First, protection of human health is “the primary concern” when developing and implementing a wastewater reuse program.⁷⁶ KDHE has identified a number of standard management practices for the reuse of treated domestic wastewater for instances in which the wastewater will be applied to public areas such as golf courses or parks.⁷⁷ Examples of protective practices include an increased degree of disinfection, only applying treated wastewater when public access is restricted, and posting signs warning against swimming in or drinking ponded wastewater.⁷⁸

Second, the plan reports that the public’s perception of utilizing reclaimed water to augment potable water sources, even in an indirect manner, has prevented implementation of some projects. For example, in its survey response, Kansas noted that a proposal in Wichita to blend and treat effluent from its landfill as a raw supply source was scuttled due to public outcry over perceived health concerns. Given this type of public perception, the plan recommends, “Community involvement and public education is an important component in developing large scale wastewater reuse projects in the basin.”⁷⁹

Third, the plan acknowledges that water reuse and the associated change in water returned to the natural system may impact instream habitat. The Lower Arkansas Basin is home to numerous threatened and endangered species, including six fish. The plan states, “Consideration of the potential impacts to instream habitat and species viability is needed to ensure that water conservation measures do not negatively impact instream use.”⁸⁰

Fourth, salt accumulation may also be a factor when evaluating the potential for reuse, especially on golf courses and in agricultural irrigation. According to the plan, water softening and other activities can add substantial amounts of sodium chloride to the wastewater and typical wastewater treatment processes often do not remove or manage inorganic salts. Thus, “Facilities choosing to irrigate with treated wastewater may need to alter plant species selections or use other methods to address total dissolved solids, sodium and salinity in effluent.”⁸¹

Lastly, the plan notes that the use and disposal of pharmaceuticals and personal care products in sewer systems and surface water is an “emerging concern” for wastewater treatment. Plants are designed to remove conventional pollutants like suspended solids and biodegradable compounds but are not designed to remove low concentrations of synthetic pollutants, such as pharmaceuticals. Depending on the purpose and application, the plan advises that the affect and mitigation of these contaminants should be considered.⁸²

4. State Efforts Regarding Reuse in Kansas

Kansas does not have a formal program to promote reuse. However, the “high priority issue” in its state water plan for the Lower Arkansas River Basin notes:

“The State of Kansas should identify strategies for implementation of an institutional and regulatory framework to better utilize reclaimed water as a valuable water resource that should be used efficiently and effectively.”⁸³

With respect to the Lower Arkansas River Basin, the plan states that the Basin's population is expected to grow by more than 38% by the year 2040, and that water reuse may "provide an alternative supply while conserving current and future supplies to better serve the projected demands.⁸⁴ It also makes the following recommendations regarding possible state actions to encourage water reuse in the Basin:

- Provide public education on water reuse in irrigation, industry, municipal and domestic uses, and encourage communities to build in reuse as part of their plans to meet future demand.
- Where appropriate, establish the promotion and encouragement of water conservation and reuse as formal basin specific objectives.
- Facilitate storage of seasonal reclaimed water from streamflow (including aquifer storage and recovery).
- Facilitate interagency coordination to ensure water reuse activities and permits remain in compliance with Kansas Water Appropriation rules and regulations and stream habitat issues are discussed.
- KDHE should evaluate the potential impact of water reuse of downstream users and stream habitat.
- Encourage the use of reclaimed water in lieu of other water sources in the agricultural irrigation, landscape irrigation, industrial/commercial/institutional and indoor water use sectors.
- Link reuse to regional water supply planning including integrated water resources planning.⁸⁵

⁶⁶ *Id.*

⁶⁷ The rule drafts, written comments received, and documents distributed during the rulemaking process are available at:

http://www.deq.idaho.gov/rules/waste_water/58_0117_1001_pending.cfm.

⁶⁸ IDAHO DEP'T OF ENVTL. QUALITY, IDAHO GUIDANCE FOR THE RECLAMATION AND REUSE OF MUNICIPAL AND INDUSTRIAL WASTEWATER (2007), available at: http://www.deq.idaho.gov/water/permits_forms/permitting/guidance.cfm.

⁶⁹ KAN. STAT. ANN. §82a-702 (2010).

⁷⁰ *Id.* § 82a-711(a) (emphasis added).

⁷¹ KAN. ADMIN. REGS. §5-1-1(kkkk) (2010) (emphasis added). Kansas' regulations also state that the Chief Engineer shall require the construction of surface brine storage facilities in cases where it is not technologically feasible to "utilize poorer quality water" for the development of underground storage in mineralized formations and fresh water must be used. *Id.* §5-3-5b.

⁷² KANSAS WATER OFFICE, LOWER ARKANSAS RIVER BASIN HIGH PRIORITY ISSUE: THE ROLE OF REUSE IN WATER CONSERVATION, 2 (2009), available at:

http://www.kwo.org/Kansas_Water_Plan/KWP_Docs/VolumeIII/LARK/Rpt_LARK_BPL_Role_Reuse_KWP2009.pdf.

⁷³ *Id.*

⁷⁴ *Id.*

⁷⁵ *Id.* at 2-3.

⁷⁶ *Id.* at 3.

⁷⁷ *Id.*

⁷⁸ *Id.*

⁷⁹ *Id.*

⁸⁰ *Id.*

⁸¹ *Id.*

⁸² *Id.*

⁸³ *Id.*

⁸⁴ *Id.*

⁸⁵ *Id.* at 4. With respect to the fourth recommendation, the plan intends to improve the coordination of the Kansas Department of Agriculture's Division of Water Resources and the Kansas Department of Wildlife and Parks.

CONCLUSION

The types of issues that encourage or discourage reuse vary considerably among the western states and depend upon a number of factors, including a state's legal and regulatory framework, available water supplies, public perception, funding sources, concerns about impacts on water rights, and many others. Thus, there is no "one size-fits-all" approach for addressing barriers to reuse, and states wanting to encourage reuse will need to develop solutions and programs tailored to their specific circumstances.

Nevertheless, states can still learn from each other in determining how and whether to investigate institutional mechanisms for encouraging reuse. One common theme that emerges from this report is that governors, state legislatures, and relevant state agencies have an important role in encouraging reuse. Specifically, the majority of the most recent state efforts aimed at removing barriers and encouraging reuse stem from some type of executive order, legislative directive, or administrative policy.

The development of effective state reuse efforts and programs will also likely require robust public participation and interagency coordination. To this end, many state efforts to address barriers have employed a model in which state regulators from relevant agencies work jointly with stakeholders in work groups or task forces to collaboratively develop ways of identifying obstacles and making recommendations to encourage reuse. Some of the possible benefits of this approach include: (1) expanding state knowledge of the issues affecting reuse; (2) additional resources to identify and address barriers; (3) increased coordination; and (4) greater public support for resulting laws, regulations, and policies.

A significant number of states have further expressed concern about emerging contaminants, particularly with respect to treatment and disposal methods. There also appears to be a fair amount of uncertainty about the state of the science regarding the human health impacts of these contaminants. More scientific studies on this topic may be needed.

Ultimately, reuse will likely continue to grow in importance as a means of conserving and extending available water supplies as the demand for water increases in the West and elsewhere. It may also present communities with an alternate wastewater disposal method and help abate pollution by diverting effluent from sensitive water supplies. Ideally, this report will serve as a resource to those states seeking to encourage reuse and resolve the potential barriers and hazards associated with the practice.