

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'tl. 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.

A. ALASKA

Alaska reports that it does not have any laws or regulations pertaining to the types of water reuse that are the subject of this report. It also does not have any facilities that are using, treating, or reusing water.

B. ARIZONA

Reuse is increasing in Arizona and the quality of reused water and the quantity of direct reuse has increased steadily since the state revised its regulations in 2001. In total, current estimates of use of reclaimed water for an allowed beneficial purpose total over 3% of statewide water use, while water reuse within the state's active management areas is over 6%.⁴

1. Reuse Laws and Regulations in Arizona

Arizona uses the term "reclaimed water," which it defines by statute as water that has been treated or reprocessed by a wastewater treatment plant or an onsite wastewater treatment facility.⁵ The Arizona Administrative Code (AAC) also defines "direct reuse" as the beneficial use of reclaimed water for specified purposes. It excludes the following uses from this

⁴ BLUE RIBBON PANEL ON WATER SUSTAINABILITY, FINAL REPORT 15 (2010) [hereinafter BLUE RIBBON REPORT], available at: http://www.adwr.state.az.us/AzDWR/waterManagement/documents/BRP_Final_Report-12-1-10.pdf.

⁵ ARIZ. REV. STAT. § 49-201(32) (LexisNexis 2010).

definition: “(1) the use of water subsequent to its discharge under the conditions of a National Pollutant Discharge Elimination System (NPDES) permit; (2) the use of water subsequent to discharge under the conditions of an Aquifer Protection Permit issued under specified provisions of the AAC; or (3) the use of industrial wastewater or reclaimed water, or both, in a workplace subject to a federal program that protects workers from workplace exposures.”⁶ Reclaimed water that is used directly with no opportunity for public exposure is not considered “direct reuse.”⁷

The Arizona Department of Environmental Quality (ADEQ) has jurisdiction over the state’s reclaimed water program and has statutory authority to adopt rules with standards for reclaimed water conveyances and water quality standards.⁸ It also operates a reclaimed water permit program that relies on general permits but also provides individual permits for those uses that do not fit general permit requirements.⁹ The Arizona Department of Water Resources (ADWR) regulates the water quantity aspects of reclaimed water. It is also important to note that reclaimed water belongs to the party that produced it. This means that it is not subject to the same water rights limitations as surface water and groundwater.

As for monitoring, individual reclaimed water permits and some individual permits have reporting requirements. For domestic wastewater, monitoring requirements are contained in individual “Aquifer Protection Permits” that are necessary for wastewater treatment plants to operate.¹⁰ Individual permits are also required when industrial wastewater influences the characteristics of reclaimed water.

2. Reuse Funding in Arizona

In Arizona, municipalities, utilities, and end users provide funding for water reuse activities. The state’s Water Infrastructure and Finance Authority is authorized to finance the construction, rehabilitation, and/or improvement of drinking water, wastewater, wastewater reclamation, and other water quality facilities and projects by providing below market interest rates on loans for eligible projects.

⁶ ARIZ. ADMIN. CODE. § R18-9-701(1) (2010).

⁷ For instance, Arizona reports that there are a number of power plants and industrial facilities that use reclaimed water for cooling or other water supplies that do not qualify as “direct reuse,” and therefore do not require a reclaimed water permit.

⁸ *Id.* §§ 49-203.A.6, 49-221.E (LexisNexis 2010). The regulations appear in ARIZ. ADMIN. CODE § R18-9-601 – 720 and § R18-11-301 – 309. Arizona also reports that the Groundwater Section of ADEQ’s Water Quality Division regulates reuse and that ADEQ has not delegated the program to any counties or other agencies, although some may claim authority under local health codes.

⁹ All permit requirements and general permits are adopted in rule at ARIZ. ADMIN. CODE § R18-9-701 – 720. Arizona includes graywater use within the reclaimed water permit program and has adopted a general permit for residential graywater use that provides guidelines for safe use.

¹⁰ Arizona requires Aquifer Protection Permits (APPs) if one owns or operates a facility that discharges a pollutant directly to an aquifer, to the land surface, or to the area between an aquifer and the land surface in such a manner that there is a reasonable probability that the pollutant will reach an aquifer. ADEQ issues both general and individual APPs. See ARIZ. REV. STAT. §§ 49-241 – 49-252; ARIZ. ADMIN. CODE. § R18-9-101 – R18-9-403 (setting forth the statutes and rules regarding APPs).

3. Issues Affecting Reuse in Arizona

Arizona's legal and regulatory framework has resulted in the construction and improvement of a number of high-performance sewage treatment plants. Reclaimed water is also distributed for a variety of uses to many hundreds of end users, while reclaimed water distribution systems supply recharge facilities and irrigate golf courses, outside landscapes, parks, schoolyards and other agricultural, industrial, and power generation needs. In total, 59% of wastewater treatment plants within Arizona distribute reclaimed water for reuse. Reuse also occurs in every county. The state maintains that this is due in part to ADEQ's permitting program, which utilizes "an uncomplicated, yet protective" regulatory framework for reclaimed water that relies largely on simple end user permits.¹¹

However, additional potential for reuse exists, particularly outside of Arizona's active management areas (AMAs).¹² Although many plants are authorized to supply reclaimed water, not all of this capacity is currently being used. One principal factor that has historically limited the use of reclaimed water both inside and outside of the AMAs is that such water is usually produced at the lowest, downstream edge of a community. This means that it is costly, particularly in retrofit situations, to convey the water to high value re-users within the community.¹³

There are also a number of possible opportunities for developing incentives or for better matching potential uses with available reclaimed water supplies. One example includes locating solar thermal electrical generation plants next to wastewater treatment plants where reclaimed water is not fully utilized. Some Arizona communities are also investigating decentralized wastewater treatment options in which smaller, high performance odor-free plants are located within their borders, thereby providing high-value uses with lower infrastructure costs.¹⁴

4. State Efforts Regarding Reuse in Arizona

In August 2009, Arizona Governor Jan Brewer announced the formation of a "Blue Ribbon Panel on Water Sustainability" to identify and overcome obstacles to increasing water sustainability, with a focus on increasing water reuse, recycling, and conservation. The Directors of ADWR and ADEQ, as well as the Chairman of the Arizona Corporation Commission (ACC), served as joint chairs of the panel. Forty members were also appointed to the Panel, representing legislative leadership, state agencies, local governments, city governments, tribal governments, federal government, universities, and private utilities.¹⁵

¹¹ BLUE RIBBON REPORT, *supra* note 4, at 15 – 17.

¹² The 1980 Arizona Groundwater Code created five AMAs, which are subject to regulation pursuant to the state's Groundwater Code. Areas outside of the AMAs are not subject to the Groundwater Code. ARIZ. DEP'T. OF WATER RESOURCES, ACTIVE MANAGEMENT AREAS (AMAS) AND IRRIGATION NON-EXPANSION AREAS (INAs), available at: <http://www.adwr.state.az.us/AzDWR/WaterManagement/AMAs/>.

¹³ BLUE RIBBON REPORT, *supra* note 4, at 15 – 17.

¹⁴ *Id.*

¹⁵ *Id.* at vi – vii. ADWR also maintains a website with information on the panel located at: <http://www.adwr.state.az.us/AzDWR/waterManagement/BlueRibbonPanel.htm>

The Panel established five working groups, each of which was chaired by a panel member and open to the public to facilitate discussion on issues and involve a broad spectrum of stakeholders and experts.¹⁶ The working groups focused on public perception and acceptance, regulations and permitting, infrastructure, and funding, among other things.

In November 2010, the Panel produced a substantive report based on the workgroups' efforts. To develop the report, the workgroups held a total of 58 meetings involving 320 individuals and produced a series of white papers. The report consolidated the issues and recommendations set forth in the white papers into 18 sets of recommendations and 68 sub-recommendations, which it organized into the following categories: (1) education/outreach; (2) standards; (3) information development and research; (4) regulatory improvements; and (5) incentives.

The Panel presented the report to the Governor, the Legislature, ADWR, ADEQ, and ACC for consideration in November 2010. Importantly, the report does not recommend new regulatory programs. Instead, it makes recommendations aimed at improving Arizona's existing toolbox of water management, education, and research capabilities.¹⁷ Some of the report's recommendations regarding reuse that may be of interest to other states are summarized and described below.

a. Education and Outreach

The report found that there is a general lack of understanding and miscommunication that is affecting public awareness regarding the relationship between water availability, water resource management, water quality, economic development, environmental needs, and quality of life.¹⁸ This miscommunication can be exacerbated by the varying definitions for reclaimed water and associated terminology that exist statewide. A lack of awareness of the availability of water reuse and water resource-related information (technologies and financial information) is also present in a number of forums as a critical issue for water conservation, water reuse, and water management efforts.¹⁹

To address these obstacles, the report set forth a number of recommendations, including:

- ADWR and ADEQ should create a coalition to engage industry experts and utilize professional assistance to translate industry terminology into “an acceptable lexicon” for statewide use.
- ADWR should create a state-hosted and easily accessible information portal with research-based information on water pricing, water supply, water quality, water management, and water conservation and efficiency programs (including reuse), water harvesting, and education/technology information. .

¹⁶ *Id.* at vi.

¹⁷ *Id.*

¹⁸ *Id.* at 22.

¹⁹ *Id.* at 22 – 25.

- Public and/or private wastewater agencies should be encouraged to evaluate their ability to implement a reuse program in the next two years
- Develop a series of out-of-session meetings with stakeholders and legislators to discuss water resources and the programs that protect and enhance water sustainability.
- ADWR, ADEQ, and ACC should conduct an outreach campaign to highlight the potential uses of reclaimed water that could include a state “Water Reuse Day” and the engagement of academics, local celebrities, and business partners as official spokespeople for reclaimed water.²⁰

Of note, the report finds that the presence of emerging contaminants can lead to a perception among the public that using reclaimed water is unsafe. The number of compounds in use and an increased understanding of their potential impact on human health and the environment may also make developing water quality standards and regulations increasingly complex. The report finds that there is a need for the public, community leaders, water treatment professionals, and business and industry to understand and be aware of water quality issues and how their actions may impede reclaimed water use. Among other things, it recommends expanding pharmaceutical take-back programs and media outreach, as well as funding research on the effects of trace organics in streams receiving wastewater, and the fate of trace organics in effluent discharge to surface water or infiltrated for groundwater replenishment.²¹

b. Standards

The report identified a number of regulatory impediments to reuse, including: (1) a lack of comprehensive standardized technical criteria, (2) perceived redundancies in permit reporting requirements and the need for greater understanding of the state’s reuse programs on the regulated community; (3) the lack of a state-recognized and approved training and certification program for the operation of reclaimed water distribution systems, which could contribute to negative public perceptions of reuse in the event of operator error; and (4) under-utilization of reclaimed water supplies.²² Recommendations to address these issues include:

- Initiate a stakeholder process to review and amend regulations as necessary to improve, enhance or encourage use, storage and exchange of recycled water.
- Create a matrix of state, regional, and local infrastructure specifications and standards to identify similarities, inconsistencies, and gaps to develop recommendations on a “suite of standards” that would provide a common foundation of safety and establish good engineering practices for reclaimed water distribution systems. Create a Reclaimed Water Infrastructure Advisory Panel of state, county, local, and private experts to help develop the matrix.

²⁰ *Id* at 134.

²¹ *Id.*

²² *Id.* at 26 – 29.

- Create an indirect potable reuse (IPR) steering committee to further advance IPR's use by streamlining agency reviews, incorporating new technologies, and directing the IPR Advisory Panel.²³ Create an IPR Advisory Panel to focus on the effectiveness and implementation of new technologies and field studies.
- ADEQ should facilitate the development of a reclaimed water distribution system operator system training program and associated certification.
- Convene a stakeholder process to identify inconsistencies or conflicts among state regulatory programs.²⁴

c. Information Development and Research Agenda

The Panel noted that timely and accurate data is needed to develop rational regulations and standards that encourage reuse that increase public confidence in the use of reclaimed water. However, permit data submission in Arizona by reclaimed water permittees is commonly done manually. This can be a time consuming and inefficient process that can create real and perceived administrative requirements and costs that may cause some agencies and utilities to shy away from implementing a reuse program.²⁵

To address these issues, the report recommends that ADEQ and ADWR initiate a process to review and revise permit and non-permit data submittal requirements for necessary frequency consistency, as well as the applicability of monitoring requirements. Data would be submitted electronically and the agencies would develop a standard for an electronic data management system that would be available to all regulators, permittees, contractors, and the public. In creating the system, the agencies would utilize the participation of stakeholders, information technology professionals, and the regulated community. An intergovernmental agreement between the regulatory agencies could also help administer the development of the system.²⁶

Further, the report recommends the formation of a coalition between Arizona, California, Texas, Colorado, and Florida (considered by the report to be national leaders in developing reuse programs) along with the WaterReuse Association, WaterReuse Research Association, EPA, and other state and national institutions to develop a strategic research plan to answer questions pertaining to the development of new expanded uses of reclaimed water.²⁷

d. Regulatory Improvements

This section of the panel's report focuses on policy and rule changes needed to encourage the use of new water sources, including reclaimed water. One notable obstacle is the concern among some stakeholders that definitions in rules and statutes are inconsistent. The report also

²³ Indirect potable reuse is defined as the injection of advanced treated reclaimed water into the saturated zone of a potable source water aquifer. *Id.* at 27.

²⁴ *Id.* at 135.

²⁵ *Id.* at 30 – 33, 136.

²⁶ *Id.*

²⁷ *Id.*

found that reuse and other permits do not adequately address unique situations, noting that the permit process may prohibit the use of reclaimed water for an environmental benefit because it is based on rigid standards that make the environmental use infeasible due to treatment costs. Further, the report noted that jurisdictional/duplication issues exist between ADEQ, ADWR, ACC, and counties. The report specifically noted that one county had taken an active role in permitting reuse sites in a manner similar to ADEQ, although ADEQ has not delegated its reclaimed water program to any county. Among other things, this duplication creates additional work, inefficient work flow, and increased transactional costs for regulatory agencies, reclaimed water providers, and end users.²⁸

Some of the recommendations aimed at addressing these issues include:

- ADWR, ADEQ, ACC, and the counties should review statutes for inconsistencies in definitions and duplication of fees.
- Update reclaimed water quality standards.
- Establish ratemaking guidelines that mirror the state programs currently in place for power utilities.
- ADEQ should adopt a number of modifications to allow for more flexibility in its standards and permitting, including accommodating the use of reclaimed water for environmental purposes (habitat restoration, riparian preservation, environmental and ecosystem enhancement projects, etc.).
- ADEQ should determine if counties are duplicating programs and charging fees for programs that the state is also conducting.
- ADEQ should improve the interface between its various permitting requirements where reclaimed water is incorporated as a resource to support a public project involving overlapping programs with equally beneficial goals (e.g., reuse, recharge or multiple water sources, stormwater management, etc.).²⁹

e. Incentives

In addition to identifying ways to improve regulations and standards, the report finds that incentives could provide added motivation to increase reclaimed water use. It specifically recommends developing, expanding, and promoting tax exemptions for the use of alternative water supplies, while also expanding the tax credit for reclaimed water infrastructure capital investment through legislation.³⁰

²⁸ *Id.* at 34 – 37.

²⁹ *Id.* at 136 – 138.

³⁰ *Id.* at 38, 139

C. CALIFORNIA

California has a long history with reuse that dates back as far as the late 1800s, when farmers began using municipal wastewater for irrigation and others used it for landscape irrigation.³¹ Given this history, the state has enacted comprehensive laws, regulations, policies, and programs regarding the practice. It is also state policy to promote the use of reused water to the maximum extent to supplement existing ground and surface water supplies to help meet the state's water needs.³² Reuse has increased over the years and California estimates that it currently reuses approximately 724,000 acre-feet of water per year.³³

1. Reuse Laws and Regulations in California

The California Water Code (CWC) defines “recycled water” as water that as a result of treatment of waste is suitable for a direct beneficial use or a controlled use that would not otherwise occur, and is therefore considered a valuable resource.³⁴ Statutes and regulations regarding the use of recycled water in California can be found in the CWC, California Code of Regulations (CCR), and the California Health and Safety Code.³⁵ The State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards (collectively, “Regional Water Boards”) regulate the water quality and quantity aspects of water reuse under the CWC, while the California Department of Public Health (CDPH) regulates the public health aspects pursuant to CCR Title 22, Division 4, Chapter 3. A 1996 Memorandum of Agreement (MOA) between the Department of Health Services (DHS), SWRCB, and the Regional Water Boards regarding the use of recycled water divides the areas of authority and responsibility between these agencies. It also includes methods and mechanisms needed to ensure ongoing and continuous future coordination of activities regarding recycled water use.

California permits recycled water activities from public entities and some private sources by issuing waste discharge requirements (WDR), individual water recycling requirements (WRRs),³⁶ Master Reclamation permits, or under SWRCB's statewide general permit. The Regional Water Boards determine which type of permit to issue depending on the project type,

³¹ STATE WATER RES. CONTROL BD., STRATEGIC PLAN: JANUARY 2007-DECEMBER 2008 9 (2007), available at: http://www.swrcb.ca.gov/water_issues/programs/#waterrecycling [hereinafter STRATEGIC PLAN].

³² See CAL. WATER CODE §§ 13521 – 22, 13550(a) (Deering 2011) (establishing a state policy supporting the use of recycled water).

³³ PAUL ANDERSON ET AL., MONITORING STRATEGIES FOR CONTAMINANTS OF EMERGING CONCERN ii (2010), available at: <http://www.sccwrp.org/ResearchAreas/Contaminants/ContaminantsOfEmergingConcern/RecycledWaterAdvisoryPanel.aspx>.

³⁴ CAL. WATER CODE § 13050(n). The term “recycled water” and “reclaimed water” have the same meaning. *Id.* §26.

³⁵ Water quality control plans (basin plans) may also contain the recycled water use policy of Regional Water Boards. See *Id.* §§ 13050 – 57; 13575 – 83; CAL. CODE REGS. tit. 22, §§ 60301 – 60357 (setting forth California's statutes and regulations regarding water recycling).

³⁶ Anyone who recycles or proposes to recycle water, and who uses or proposes to use recycled water, must file a report with the appropriate Regional Water Board. *Id.* § 13522.5. If a Regional Water Board determines that it is necessary to protect public health, safety, or welfare, it may prescribe water recycling requirements where recycled water is used or proposed to be used. *Id.* § 13523.

user type, and application area. The Boards also consult with the CDPH when issuing WRRs, which contain public health related requirements.

Additionally, CDPH requires engineering reports under CCR Title 22 from the project proponents for project approval, which is a prerequisite for any treated municipal reuse.³⁷ Once CDPH approves an engineering report, the appropriate Regional Water Board will issue a WDR, which includes reclamation requirements. SWRCB does not issue WDRs for reuse facilities, but enrolls entities applying for water recycling projects with entirely landscape irrigation use under its landscape irrigation general permit.³⁸

Recycled water activities with an agricultural or industrial water source are permitted differently than activities with domestic wastewater sources, and the Regional Water Boards will permit such activities by issuing a WDR. Agricultural water source does not require treatment if it meets the agricultural water quality for reuse. Conversely, industrial source water must meet treatment standards and effluent limitations, be limited to crop irrigation uses, and meet CDPH requirements. WDRs issued to an industrial facility that recycles its water contain WRRs, which the Regional Water Board establishes in coordination with CDH. Further, secondary treated domestic wastewater effluent that meets CDPH criteria is also recycled through certain crop irrigation practices under WDRs issued by the Regional Water Boards.

All of the water reuse permit types contain a set of monitoring requirements. The sampling frequency varies and depends on a number of factors, such as the facility type, threat to water quality, treatment type, and constituents of concern. The reporting frequency also varies and could be monthly, quarterly, or annually. Technical reports are submitted to the permit issuing authority, which is either one of the Regional Water Boards or SWRCB.

2. Reuse Funding in California

SWRCB operates a Water Recycling Funding Program (WRFP), which promotes water recycling by providing technical and financial assistance in the form of grants and loans to agencies and other stakeholders to support research and project planning, design, and construction.³⁹ Since the late-1970s, the WRFP has distributed close to \$151 million in planning and construction grants and approximately \$611 million in low-interest loans for water recycling projects.⁴⁰

³⁷ CAL. CODE REGS. tit. 22 §§ 60323 – 60331.

³⁸ STATE WATER BD. ORDER NO. 2009-0006-DWQ. The SWB only enrolls those public entities in its general permit that produce tertiary treated disinfected effluent for landscaping and for other specified uses. Regional Boards can also enroll an entity in the statewide general permits if it receives the application and the project proponent is a public entity (i.e., municipalities) that produces tertiary treated disinfected effluent and meets the terms and conditions of the general permit. For additional information, see: http://www.swrcb.ca.gov/water_issues/programs/water_recycling_policy/landscape_irrigation_general_permit.shtml

³⁹ It also provides grant funding to assist public agencies with feasibility studies and planning efforts. Construction projects may also receive funding with a combination of grants and loans. Privately owned water utilities regulated by the Public Utilities Commission may apply for construction grants. For more on WRFP's activities, see: http://www.swrcb.ca.gov/water_issues/programs/grants_loans/water_recycling/index.shtml.

⁴⁰ STRATEGIC PLAN, *supra* note 31, at Foreword.

Projects are usually funded on a “readiness to proceed” basis and the amount of the grants and loans available for funding varies from year to year. Funding for the program comes from three sources. The first is from California’s Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (Proposition 50), which authorizes grants for water recycling projects that meet the goals and objectives of the California Bay-Delta Program (CALFED), among other things. The second is the state’s Clean Water State Revolving Fund (SRF) Loan Program, which provides low-interest loans to public agencies for planning, design, and construction of projects that recycle water to replace the use of the state and/or local supply. The third is the state’s Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Act (Proposition 13). The funds for construction grants and loans from Proposition 13 have essentially been exhausted. However, a small amount of money comes into the program from loan repayments, which provide the sources of the funds for the planning grant program. These grants are relatively small at \$75,000, which means that repayment funds are sufficient to maintain the program.⁴¹

3. Issues Affecting Reuse in California

Overall, California reports that its legal and regulatory framework encourages water recycling. The CWC specifically states that the use of potable water for non-potable uses is an unreasonable use of water where suitable recycled water is available.⁴² There is also political support for recycled water use, and the Water Quality Control Plan (Basin Plan) of each Regional Water Board emphasizes recycled water in their respective basins by requiring project proponents to first consider reclaiming treated wastewater whenever there is sufficient agricultural land available for reuse.

Nevertheless, California notes that there are some aspects of its framework that can discourage reuse. One such aspect is the fact that requirements may vary among the Basin Plans of each region. California also reports that the following requirement set forth in the CWC may also discourage recycling:

“The owner of a waste water treatment plant operated for the purpose of treating wastes from a sanitary sewer system shall hold the *exclusive right* to the treated waste water as against anyone who has supplied the water discharged into the waste water collection and treatment system, including a person using water under a service contract, unless otherwise provided by agreement.”⁴³

California reports that it is not aware of any interstate compacts or other agreements that conflict with its water reuse laws and policies, noting that many compacts expressly state that a settlement act should not be construed to alter the applicability of state water law or procedures. Although the issue of recycled water may arise during negotiations over the allocation of interstate waters, most of these issues typically relate to the allocation of recycled water rather than the state’s ability to regulate such water. For example, the Truckee River Operating

⁴¹ STATE WATER RES. CONTROL BD., WATER RECYCLING PROGRAM FUNDING GUIDELINES 1-2 (2008), available at: http://www.waterboards.ca.gov/water_issues/programs/grants_loans/water_recycling/index.shtml.

⁴² CAL. WATER CODE § 13550(n).

⁴³ *Id.* § 1211 (emphasis added).

Agreement specifies that certain parties may not claim a right to effluent from wastewater treatment facilities that is attributable to certain categories of water use. At the same time, the California-Nevada Interstate Compact, which Congress has not ratified, also states that the reuse of allocated water is not prohibited.

4. State Efforts Regarding Reuse in California

California has long supported laws and policies to promote water recycling.⁴⁴ In 2002, the California Department of Water Resources (DWR) formed a Recycled Water Task Force as directed by legislation (Assembly Bill 331) to evaluate the state's framework of state and local rules, regulations, ordinances, and permits to identify opportunities for and obstacles to increasing the safe use of recycled water. The Task Force was a cooperative effort between DWR, SWRCB, and CDPH. Its 40-person membership also represented federal, state, and local government interests, as well as public health professionals, private sector entities, environmental organizations, academics, and others.⁴⁵

In 2003, the Task Force issued a final report to the Legislature, which estimated that California had the potential to recycle up to 1.5 million acre-feet of water per year, which could free up enough water to meet approximately 30% of the household water needs associated with projected population growth. It also noted that California would need to invest nearly \$11 billion in infrastructure to produce and deliver the recycled water, but that these costs would be generally comparable to other supply options. In addition, the report identified 26 issues with respective recommendations intended to help the Legislature, state government, public agencies, and other stakeholders address obstacles, impediments, and opportunities for California to increase its recycled water usage. These recommendations targeted actions at various levels and were not restricted to legislative actions or statutory changes. Further, many were intended for state or local agencies to implement without additional legislative authorization or mandates.⁴⁶

Some of the report's recommendations that may be of interest to other states include:

- Local agencies should engage the public in active dialog and participation using a community value-based decision-making model in planning water recycling projects.
- State government should take a leadership role in encouraging recycled water use and improve policy consistency within branches of state government.
- The state should develop comprehensive education curricula for public schools, while institutions of higher education should incorporate recycled water education into their curricula.

⁴⁴ See STRATEGIC PLAN, *supra* note 31, at 14 (providing a historical overview of California policies aimed at promoting water recycling).

⁴⁵ CALIF. RECYCLED WATER TASK FORCE, WATER RECYCLING 2030: RECOMMENDATIONS OF CALIFORNIA'S RECYCLED WATER TASK FORCE xi–xvi (2003), available at: <http://www.water.ca.gov/recycling/TaskForce/>.

⁴⁶ *Id.*

- The state should develop a water issues information program, including water recycling, for radio, television, print, and other media.
- The state should investigate alternative approaches within its existing framework to achieve more consistent and less burdensome regulatory mechanisms affecting the incidental runoff of recycled water from use sites.
- The state should create a uniform interpretation of state standards in state and local regulatory programs.
- The state should expand funding sources to include sustainable state funding for research on recycled water issues.
- The state should encourage an integrated academic program on one or more University campuses for water recycling research and education.
- A revised funding procedure should be developed to provide local agencies with assistance in potential state and federal funding opportunities.⁴⁷

The Task Force's report has also informed subsequent state efforts. In 2006, the Legislature enacted Assembly Bill 371, which included a statement that CDPH, DWR, SWRCB, and the Regional Water Boards should take appropriate action to implement the recommendations of the Task Force's report. The bill also required the California Department of Transportation to install piping appropriate for recycled water use in any of its landscape irrigation projects if they receive notification from a recycled water producer that recycled water will be provided for those projects within ten years.⁴⁸

Subsequently, the SWRCB adopted a "Recycled Water Policy" in 2009 that is aimed at increasing the use of recycled water from municipal wastewater sources. Among other things, it adopts a goal for California to increase its use of recycled water over 2002 levels by at least 1 million acre-feet per year by 2020, and by at least 2 million acre-feet by 2030. It also defines the roles of SWRCB and the Regional Water Boards and sets forth criteria aimed at streamlining the permitting process and maximizing consistency.⁴⁹

The policy also called for the creation of a "blue ribbon" advisory panel to guide future actions relating to emerging contaminants, or "chemicals of emerging concern" (CECs).⁵⁰ In 2010, a Chemicals of Emerging Concern Advisory Panel consisting of six experts was formed to provide guidance for developing monitoring programs that assess the potential threats of emerging contaminants from various recycling practices, including indirect potable reuse via surface spreading, indirect potable reuse via subsurface injection into a drinking water aquifer,

⁴⁷ *Id.*

⁴⁸ STRATEGIC PLAN, *supra* note 31, at 15.

⁴⁹ STATE WATER RES. CONTROL BD., RECYCLED WATER POLICY 1-4, available at: http://www.waterboards.ca.gov/water_issues/programs/water_recycling_policy/index.shtml.

⁵⁰ *Id.* at 12 – 14.

and urban landscape irrigation.⁵¹ In June 2010, the Panel provided recommendations to SWRCB and CDPH, which it developed by soliciting stakeholder input and considering public comments.⁵² The report includes the following four “products” intended to assist the state as it refines its recycled water policy: (1) a conceptual framework for determining which CECs to monitor; (2) application of the framework to identify a list of chemicals that should be monitored presently; (3) a sampling design and approach for interpreting results from CEC monitoring programs; and (4) priorities for future improvements in monitoring and interpretation of CEC data. SWRCB held a hearing on the recommendations in December 2010, and the project is scheduled for completion in 2011.

Other recent efforts of note include municipal wastewater recycling surveys in 2002 and 2010,⁵³ the issuance of SWRCB’s landscape irrigation general permit in 2009, and a 2007 WRF strategic plan that set forth the goal of promoting and funding economically feasible water recycling projects that result in a statewide public benefit.⁵⁴ With respect to public education, SWRCB also holds workshops regarding water recycling and related issues. SWRCB and its Office of Public Participation use these forums to inform the public and address public misunderstanding and fear about water recycling.

D. COLORADO

Water reuse has a long history in Colorado, with the municipalities of Colorado Springs and Aurora having operating reuse projects since the 1960s. The state does not sponsor a water reuse program and municipal or private entities sponsor all of the state’s reuse projects. In recent years, the state has seen a dramatic increase in the number of reuse projects and there are currently 23 entities discharging reused water, most of which began operation after 2000.

1. Reuse Laws and Regulations in Colorado

The Colorado Water Control Act gives the Water Quality Control Commission (WQCC), which is the administrative agency responsible for developing state water quality policies, broad authority to promulgate regulations for the “reuse of reclaimed domestic wastewater for purposes

⁵¹ ANDERSON ET AL., *supra* note 33, at i-vi, available at: <http://www.sccwrp.org/ResearchAreas/Contaminants/ContaminantsOfEmergingConcern/RecycledWaterAdvisoryPanel.aspx>. The Panel consists of six experts with expertise in the following fields: biochemistry, analytical chemistry, civil engineering, epidemiology/risk assessment, ecotoxicology, and human health toxicology. Specific questions the Panel has been charged with addressing are: (1) what are the appropriate constituents to be monitored in recycled water, and what are the applicable monitoring methods and detection limits; (2) what toxicological information is available for these constituents; (3) would the constituent list change based on level of treatment; (4) what are the possible indicators (i.e., surrogates) that represent a suite of emerging contaminants; and (5) what levels of emerging contaminants should trigger enhanced monitoring in recycled, ground or surface waters. *Id.*

⁵² *Id.* at ii-vi.

⁵³ For more on the 2002 and 2010 surveys, see: http://www.swrcb.ca.gov/water_issues/programs/grants_loans/water_recycling/munirec.shtml.

⁵⁴ STRATEGIC PLAN, *supra* note 31, at 21. The plan was intended to guide the WRF for calendar years 2007-2008 and set forth the following “strategic projects:” (1) develop an economic/financial analyses guidance; (2) develop beneficiary pays framework guidance; (3) perform project performance analyses; (4) develop standard operating procedures; (5) develop a training program; and (6) promote, coordinate, and finance water recycling statewide efforts.

other than drinking that will protect the public health and encourage the reuse of reclaimed domestic wastewater.”⁵⁵ Colorado’s reuse rule (Regulation 84) uses the term “reclaimed water,” which it defines as “domestic wastewater that has received secondary treatment by a domestic wastewater treatment works and such additional treatment as to enable the wastewater to meet the standards for approved uses.”⁵⁶ Regulation 84 does not recognize water reuse as a beneficial use or purpose per se but does indicate that it was developed “to further promote reuse of reclaimed domestic wastewater by providing a comprehensive framework which, when followed, will assure responsible management of operations and a product of quality compatible with the state’s goals of protecting the public health and the environment.”⁵⁷ Case law interpreting Colorado’s legal framework for water rights also recognizes the importance of reusing trans-basin water to extinction. Approved uses for domestic wastewater under the regulation include specified landscape irrigation, fire protection, industrial uses, and commercial uses.⁵⁸

An entity (“treater”) wishing to put reclaimed domestic wastewater to use must submit a “letter of intent” to the Water Quality Division of the Colorado Department of Public Health and Environment (“Division”), which has jurisdiction over the water quality aspects of reuse.⁵⁹ These letters, which are equivalent to applications, must include affirmation that the treater’s reuse activities will not “materially injure water rights.”⁶⁰ If the Division approves the letter of intent, it will issue a “notice of authorization” (NOA) authorizing the treater’s proposed actions and setting forth the conditions of operations, including approved types of use, reuse water quality requirements, and monitoring and reporting requirements. Once a facility obtains an NOA, it can then have site owners (users) submit their own letters of intent to receive and use reused water. If the site is approved, then the site will receive an NOA. The Division of Water Resources within the Colorado Department of Natural Resources has jurisdiction over the water quantity aspects of water reuse.

The Division regulates reuse under Regulation 84. All facilities that distribute reclaimed water must monitor for *E. coli* and total suspended solids or turbidity. The frequency of the monitoring depends on the type of reuse activity and associated water quality requirements. Treaters of reclaimed water are also required to inspect a representative number and type of users each year and submit their monitoring results to the Division and note significant violations in annual reports.

Colorado reports that there are several activities where water may be reused that are not regulated as water reuse. Such activities include graywater, agricultural reuse, and the blending of raw water into reclaimed water. Water reuse activities with an agricultural water source or industrial water source that result in application of the water to land or a discharge to surface or groundwater are required to obtain a discharge permit.

⁵⁵ COLO. REV. STAT. § 25-8-205(1)(f) (2010).

⁵⁶ COLO. CODE REGS. § 1002-84.5(14) (2010).

⁵⁷ *Id.* § 1002-84.21(B) (2010).

⁵⁸ *Id.* § 1002-84.8

⁵⁹ *Id.* § 1002-84.6(A).

⁶⁰ *Id.* § 1002-84.6(A)(7).

2. Reuse Funding in Colorado

Municipalities have funded most of Colorado's reuse projects through bonding or borrowing, and these projects generally support themselves through the sale of reuse water. Reuse projects are also eligible for SRF funding and some projects have been financed through this mechanism, though no specific portion of the available funding is set aside exclusively for reuse projects.

The Division, which completed the survey for Colorado, also indicated that it is unaware of any specific situations where funding has prevented a reuse project from moving forward and reports that it does not appear that additional financial incentives for larger communities are necessary. However, it did note that some smaller communities may not have been able to implement reuse projects due to a lack of available financing. Thus, it stated:

“It would be helpful to have a source of ‘cheap’ (grant/low-no interest loan) funding for smaller communities with water rights that would allow reuse as they typically do not have capital on hand to support the planning, design, and other pre-construction costs for a reuse project.”

3. Issues Affecting Reuse in Colorado

Colorado noted that the recent “explosive growth” in reuse projects indicates that its political and regulatory processes encourage reuse and that the financial costs of projects have not significantly inhibited new or expanded projects. This is due in part to the fact that the state developed its regulatory framework regarding water quality and public health protection to be simple and straightforward to encourage the reuse of water wherever feasible. Moreover, reuse has been well-accepted and has enjoyed long-term, political support in Colorado for a number of reasons, including the state's arid climate and relatively long history with the practice, as well as the leadership provided by early municipal practitioners.

The requirement in Regulation 84 that all letters of intent affirm that a treater's reuse activities will not harm water rights have also prevented reuse projects from creating conflicts with interstate water compacts and water rights. However, Colorado did acknowledge that treaters must have the water rights to direct water to reuse, which could inhibit reuse in certain situations.

Colorado further noted that obtaining resources for the Division to timely issue notices of authorization to treaters and users, provide assistance, conduct inspections, and take enforcement action where necessary is one of the most important issues regarding water reuse in Colorado. The Division also indicated that it does not see a need for a revision of the state's reuse statute because it gives broad authority to AQCC. However, it would like to see changes in Regulation 84 to authorize additional uses and to further streamline the regulation provided it receives additional resources to support the outcome of such changes.

The state has not addressed organic contaminants in reclaimed water. However, treaters have begun to look at the need to develop educational information and material as this issue is expected to become more important in the future.

4. State Efforts Regarding Reuse in Colorado

Colorado has not been formally involved in the promotion of reuse projects and the Division is not aware of any specific reuse plans that are part of the state's overall water plan. Instead, private and municipal entities implement all of the reuse projects found within the state.

Of note, Colorado has worked with the Joint Water Reuse Committee of the Rocky Mountain Section of the American Water Works Association and the Rocky Mountain Water Environment Association (Joint Committee) to develop proposals that ultimately led to the statutory authority that authorized AQCC to promulgate reuse regulations and expanded the scope of use of reclaimed domestic wastewater. For instance, when Regulation 84 was first promulgated in 2000, it limited the use of reclaimed domestic wastewater to landscape irrigation. Since that time, the Division and the Joint Committee have made a number of requests to AQCC for the purposes of considering additional uses of reclaimed water and other changes to Regulation 84. AQCC has since adopted a number of these changes, including changes that expanded the authorized uses of reclaimed domestic wastewater to include commercial, industrial, and fire protection uses.

E. IDAHO

In Idaho, there are 37 industrial and 86 municipal permitted sites. The overall trend for reuse has increased since the creation of state's reuse program in 1988. Common methods of using treated wastewater in Idaho include land application for irrigation, commercial toilet flushing, dust control, and fire suppression. In 2009, the state reports that its reuse permitting program generated 8.5 billion gallons of water and removed 5.6 million pounds of nitrogen, 1.5 million pounds of phosphorus, and 146.6 million pounds of COD.

1. Reuse Laws and Regulations in Idaho

Idaho uses the term "recycled water," which it defines as water that has been treated by a wastewater treatment plant and is used in accordance with its "Recycled Water Rules."⁶¹ Idaho also recognizes the use of recycled water for beneficial uses.⁶² Idaho's recycled rules establish the procedures and requirements for reclamation and reuse facilities and require anyone wishing to land-apply or otherwise use wastewater to obtain a wastewater reuse permit from the Idaho Department of Environmental Quality (IDEQ) before constructing, modifying, or operating a wastewater reuse facility. IDEQ issues two types of permits – industrial permits to regulate

⁶¹ IDAHO ADMIN. CODE r.58.01.17. *See also* IDAHO CODE ANN. §39-115 (2010) (setting forth pollution control permit requirements).

⁶² *Id.* Recognized beneficial uses include but are not limited to domestic water supplies, industrial water supplies, agricultural water supplies, navigation, recreation, wildlife habitat, and aesthetics. The beneficial use depends upon actual use, the ability of the water to support a non-existing use now or in the future, and its likelihood of being used in a given manner. The use of water for the purpose of wastewater dilution or as a receiving water for a waste treatment facility effluent is not a beneficial use. *Id.* r. 58.01.17.200.03.

reuse of wastewater from such operations as food processing facilities, and municipal permits to regulate reuse of wastewater that contains treated sewage.

Municipal reuse in Idaho may be used for irrigation purposes, such as farmlands, orchards, golf courses, cemeteries, parks, playgrounds, schoolyards, and other areas. Due to the nature of this recycled water and its potential exposure to humans and animals, Idaho applies specific treatment requirements to municipal recycled water such as monitoring requirements that include mandatory bacterial sampling. Permittees must also meet other measurable criteria, depending on whether the municipal recycled water may come into contact with edible or inedible portions of raw food crops, fruit, fodder, seed, and processed food crops.

To minimize the potential negative impacts of reuse, IDEQ's water reuse permits require monitoring and reporting determined by site-specific environmental and operational parameters. In particular, permittees must submit an annual water reuse site performance report that includes an interpretative discussion of daily, weekly, and monthly monitoring data (wastewater characteristics, hydraulic loading, groundwater, soils, etc.) related to environmental impacts. The purpose of the monitoring is to provide a timely and cost effective assessment of both wastewater treatment process operations, as well as the impact of operation and management activities on groundwater, surface water, soil resources, and crop health. Monitoring information also provides feedback to determine wastewater land treatment changes that should be made to manage environmental impacts as needed.

It is also important to note that Idaho's Recycled Water Rules do not apply to livestock truck washing facilities, feedlots, dairies, and mining.⁶³ Further, the rules do not apply to the incidental use of recycled water for landscape irrigation at a wastewater treatment plant subject to certain conditions.⁶⁴ Idaho's "Wastewater Rules (Section 58.01.16 of its Administrative Code)" cover some of these excluded activities, while the Idaho Department of Agriculture's rules govern dairies.

2. Reuse Funding in Idaho

Water reuse activities in Idaho are typically funded like other wastewater facilities in the state. Funding options include state and federal loan programs, cash savings, and federal grant projects. IDEQ also provides both grant and loan opportunities for wastewater treatment facilities on an annual basis. Grants are provided to aid in facility planning efforts and IDEQ funds the grants with \$250,000 each year. A 50/50 match is required. IDEQ also offers loans at low rates with repayment terms of up to 20 years. The FY2010 fiscal year funding for loans was \$47.1 million. IDEQ does not know how much of this funding will be dedicated to reuse efforts until the individual grants and loans are finalized.

3. Issues Affecting Reuse in Idaho

In Idaho, the issues that drive alternate effluent management options for water reuse often result from regulatory requirements and include stringent Total Daily Maximum Load (TMDL)

⁶³ *Id.* r.58.01.17.100.02.

⁶⁴ *Id.*

allocation, more restrictive NPDES permits, and wastewater treatment system upgrades. Funding for reuse projects can be an issue and Idaho notes that convincing rate payers of the importance of infrastructure needs can be a challenge. Issues of concern include total dissolved solids, phosphorus, groundwater contamination, buffer zones, and storage.

Historically, there have been odor and groundwater issues with some water reuse sites. However, there is continuing improvement. Currently, all reuse permits prohibit plants from creating public health hazards or nuisance conditions including odors. Permittees must develop nuisance odor management plans that outline specific design considerations, operation and maintenance procedures, and management practices to minimize the potential for or limit odors. Plans must also include procedures for responding to odor incidents and notifying the public if an incident occurs.

IDEQ recognizes that current wastewater treatment methodologies were not designed to remove microconstituents of emerging concern (including pharmaceuticals and personal care products). The risk associated with chronic low dose exposure for many of these chemicals is largely unknown because exposure and toxicity data is still being collected and evaluated. EPA and IDEQ also have not established Maximum Contaminant Limits for these microconstituents, so they are currently unregulated. There are currently no groundwater or surface water quality standards associated with these microconstituents.

Idaho further reports that IDEQ currently is not implementing or planning to implement a program to monitor these microconstituents of emerging concern in groundwater, surface water, or drinking water due to funding limitations. However, IDEQ is striving to keep pharmaceuticals out of the state's water resources by encouraging responsible disposal of unused medication. Specifically, IDEQ has supported multiple outreach projects such as pharmaceutical take-back programs to support the message of not disposing drugs into sewers.

4. State Efforts Regarding Reuse in Idaho

In March 2011, Idaho enacted a number of significant revisions to its water reuse rule in response to comments from stakeholders that the previous nomenclature and requirements may have been too strict. The revisions were intended for clarification purposes rather than scientific reasons, and are aimed at facilitating more efficient implementation of the rule. They are also aimed at reducing the economic burdens on the regulated community and helping the public better understand recycled water requirements.⁶⁵ Some of the key changes include:

- Changing the name of the rule from “Rules for the Reclamation and Reuse of Municipal and Industrial Wastewater Rules” to “Recycled Water Rules.”
- Replacing the previously-used term “reclaimed wastewater” with “recycled water.”
- The addition of language to allow for the continuation of expiring reuse permits under certain conditions.

⁶⁵ IDAHO DEP'T OF ENVTL. QUALITY, NOTICE OF RULEMAKING – PROPOSED RULE, Docket No. 58-0117-1001 (2010), available at: http://www.deq.idaho.gov/rules/waste_water/58_0117_1001_pending.pdf.

- Changing the duration of a reuse permit for a fixed term of not more than ten (10) years.
- Revisions to clarify language, reduce redundancy with other rules, and increase efficiency.
- The addition of language to establish the mechanism for a reuse permit transfer and for temporary cessation or closure of operations.⁶⁶

IDEQ developed the revisions based on discussions and concerns raised during the rulemaking process. Specifically, it published a notice in April 2010 and made the draft rule available for public review. The public participated in the rulemaking process by attending three public meetings and submitting written comments, which IDEQ considered.⁶⁷

To encourage reuse, IDEQ hosts an annual water reuse conference to bring together representatives from cities, counties, states, and federal agencies, as well as consultants, developers, industry experts, operators, and other professionals to network and discuss key issues related to water reuse in Idaho and the West. Idaho had this conference for the last seven years and over 200 people attended the conference in 2010 and 2011. Of note, the agency has created an extensive reuse guidance document intended to be a dynamic information source that evolves as new technology becomes available or expands as additional issues of concern are researched and developed.⁶⁸ A reuse guidance committee comprised of IDEQ and stakeholders drives the process that was established to provide input on system requirements

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

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).

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.”

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.

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,

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_BPI_Role_Reuse_KWP2009.pdf.

⁷³ *Id.*

⁷⁴ *Id.*

⁷⁵ *Id.* at 2-3.

⁷⁶ *Id.* at 3.

⁷⁷ *Id.*

⁷⁸ *Id.*

⁷⁹ *Id.*

“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).

⁸⁰ *Id.*

⁸¹ *Id.*

⁸² *Id.*

⁸³ *Id.*

⁸⁴ *Id.*

- 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

G. MONTANA

1. Reuse Laws and Regulations in Montana

Montana requires a water right permit for any water put to a beneficial use, such as domestic, irrigation, stock, industry, or other uses. The state does not recognize water reuse as a beneficial use per se. Instead, whether a certain use of water is a “beneficial use” is determined by the actual use rather than the source from which the water comes.⁸⁶

Montana’s Water Rights Bureau within the state’s Department of Natural Resources and Conservation issues water rights permits, while the Department of Environmental Quality (MDEQ) regulates the use of wastewater through its Montana Discharge Elimination System (MPDES). All point sources of wastewater discharge must obtain and comply with MPDES permits, which are designed to protect the receiving stream quality at the point of discharge.⁸⁷

MDEQ has issued a circular that contains design standards for reuse facilities, which includes an appendix that sets forth standards to be used for the design and review of projects involving spray irrigation of sewage effluent from a domestic wastewater treatment facility. Among other things, it includes different requirements for: (1) spray irrigation of food crops; (2) fodder, fiber, and seed crops; and (3) landscape irrigation for golf courses, cemeteries, freeway landscapes, and other areas where the public has similar access; and (4) landscape irrigation for parks, playgrounds, school yards, unrestricted golf courses, and other areas with similar public access. The criteria also require the spray irrigation site to be at least 100 feet away from any water supply well.⁸⁸

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.

⁸⁶ SHATTUCK, *supra* note 2, at 16.

⁸⁷ MONTANA DEP’T OF ENVTL. QUALITY, MONTANA POLLUTANT DISCHARGE ELIMINATION SYSTEM (MPDES), available at: <http://deq.mt.gov/wqinfo/mpdes/default.mcp.x>.

⁸⁸ The circular states: “It was assumed in the development of these standards that the industrial component of the influent wastes is relatively small compared with the discharge of toxic substances regulated by an effective

Of note, in March 2011, the Montana Legislature passed H.B. 52, which provides rulemaking authority to the Montana Board of Environmental Review to regulate reclaimed wastewater from public sewage systems, and authorizes the adoption of treatment standards and monitoring, record keeping, and reporting requirements. It also amends section 75-6-102 of the Montana Code to define “reclaimed wastewater” as “wastewater that is treated by a public sewage system for reuse for private, public, or commercial purposes.”⁸⁹ Governor Brian Schweitzer has signed the bill, which will become effective on October 1, 2011.⁹⁰

2. Issues Affecting Reuse in Montana

In Montana, the water rights aspects of water reuse figure prominently. Any reuse of water must be permitted so that senior water users depending on a water source will not be adversely affected. The state’s Water Rights Bureau, which completed the survey for Montana, has also opined that water reuse should only be promoted if there will not adversely affect senior water users.

3. State Efforts Regarding Reuse in Montana

Montana does not have a formal reuse program promoting reuse. The Water Rights Bureau has also noted that it neither encourages nor inhibits water reuse. Instead, its primary focus is on impairment to senior water rights. If an applicant can show water is available for reuse, it will issue a water right permit.

H. NEBRASKA

Reuse is becoming more popular in Nebraska as surface water quality criteria become more stringent. The state reports that this “allows our small towns to have an alternative to surface water discharge and have the added benefit of beneficial reuse.”

1. Reuse Laws and Regulations in Nebraska

Nebraska recognizes reuse as a beneficial use but its statutes and regulations do not have a specific term for the practice. The Nebraska Department of Environmental Quality (NDEQ) regulates reuse pursuant to its NPDES program under the federal CWA. Chapter 12 of NDEQ’s “Title 119 – Rules and Regulations Pertaining to the Issuance of Permits under the National Pollutant Discharge System” provides two procedures designed to permit and authorize the land application of effluent and/or single pass noncontact cooling water and/or biosolids.⁹¹

The first of these procedures is “authorization by rule,” which allows land application of

pretreatment program.” MONTANA DEP’T OF ENVTL. QUALITY, CIRCULAR DEQ-2: DESIGN STANDARDS FOR WASTEWATER FACILITIES, B-1 (1999), available at: <http://www.deq.state.mt.us/wqinfo/Circulars/DEQ2.PDF>.

⁸⁹ H.B. 52, 62nd Leg., 2011Reg. Sess. (Mt. 2011).

⁹⁰ MONTANA LEGISLATURE, DETAILED BILL INFORMATION FOR H.B. 52, available at: [http://laws.leg.mt.gov/laws11/LAW0203W\\$BSRV.ActionQuery?P_BLTP_BILL_TYP_CD=HB&P_BILL_NO=52&P_BILL_DFT_NO=&P_CHPT_NO=&Z_ACTION=Find&P_SBJ_DESCR=&P_SBJT_SBJ_CD=&P_LST_NM1=&P_ENTY_ID_SEQ=](http://laws.leg.mt.gov/laws11/LAW0203W$BSRV.ActionQuery?P_BLTP_BILL_TYP_CD=HB&P_BILL_NO=52&P_BILL_DFT_NO=&P_CHPT_NO=&Z_ACTION=Find&P_SBJ_DESCR=&P_SBJT_SBJ_CD=&P_LST_NM1=&P_ENTY_ID_SEQ=).

⁹¹ Title 119, Ch. 12 NEB. ADMIN. CODE § 001 (2010).

effluent and/or single pass noncontact cooling water and/or biosolids pursuant to an NPDES permit, provided the activity observes all of the requirements, conditions, limitations, and prohibitions contained in Chapter 12 or any other relevant regulations contained in Title 119. All of these facilities likely have lagoon structures that are inspected approximately every 5 years. At that time, all records are reviewed to determine compliance.

The second procedure pertains to “site-specific land application authorization.” If a land application site and/or the land application material cannot satisfy the necessary requirement, contained in Chapter 12 and Title 119, the applicant may submit an application for a site specific land application permit and/or site specific language to be placed in an NPDES permit for an individual wastewater treatment facility. NDEQ determines whether to approve the permit on a case by case basis.⁹² These facilities are also inspected every five years for minor operators and every year for major operators. Permitted facilities are required to send their compliance information to NDEQ on a quarterly basis.

2. Reuse Funding in Nebraska

Municipal treatment plant effluent reuse is encouraged and funded in Nebraska in the same manner as other municipal wastewater treatment facilities, meaning through SRF funds, the U.S. Department of Agriculture (USDA), or private funds. Occasionally, grants from Section 319 of the CWA and/or the Drinking Water SRF Source Water Protection set-aside grants are also available.

3. Issues Affecting Reuse in Nebraska

Nebraska does not report any political, regulatory, financial, or other factors that inhibit water reuse. It also notes that it receives “very few” complaints from the public regarding reuse activities.

However, the state does report that the activity of reuse through the NPDES program may come into conflict with other regulatory agencies such as the Nebraska Game and Parks Commission, Fish and Wildlife Service, or one of the state’s Natural Resources Districts. Primarily, this conflict comes into play in areas where consumptive use is restricted either due to threatened and endangered species or ground/surface water protection from depletion. The agencies generally resolve these conflicts through consultation.

As for emerging contaminants, Nebraska states: “We currently don’t address them and probably will not until they become part of our surface water standards.”

4. State Efforts Regarding Reuse in Nebraska

Nebraska reports that it does not have a state-sponsored program to encourage reuse. Nevertheless, water reuse is “becoming much more popular” as more stringent surface water quality criteria have provided smaller towns with an alternative to surface water discharge.

⁹² *Id.* § 001.02.

To encourage reuse, Title 119 strives to make the permitting process “less onerous.” As mentioned previously, under the “land application by rule approach,” Title 119 sets forth an expedited process that allows entities with NPDES permits to use reused wastewater for irrigation without obtaining a site-specific permit, provided the activity meets specified requirements.⁹³

I. NEVADA

Nevada notes that it has generally seen an increased interest in the reuse of treated effluent. Local agencies have appropriated effluent for golf course and crop irrigation, while several cities use treated effluent for irrigation, dust control, and industrial cooling purposes.⁹⁴ The state currently reports over 80 reuse projects.

1. Reuse Laws and Regulations in Nevada

Nevada has no “formal” water reuse programs, has no specifically defined term for reuse, and does not recognize reuse as a beneficial use or purpose.⁹⁵ Nevertheless, the Nevada Administrative Code (NAC) does contain a legislative declaration that promotes the use of effluent “where that use is not contrary to the public health, safety or welfare, and where that use does not interfere with federal obligations to deliver water of the Colorado River.”⁹⁶ The state has also defined the term “treated effluent,” adopted regulations that establish various “approved uses” for five “reuse categories, and issued guidance documents for the reuse of treated effluent.”⁹⁷ The guidance documents use the term “reclaimed water,” which means “domestic wastewater that has been treated to secondary treatment standards and disinfected to levels necessary...for the chosen method of reuse.”⁹⁸

These regulations also state that the Nevada Division of Environmental Protection within the Department of Conservation and Natural Resources must issue a permit for the use of treated effluent. As part of the permitting process, permittees must submit for review and approval an effluent management plan. State regulations also recognize five reuse categories for “approved uses” of treated effluent, each of which contains different requirements for bacteriological quality.⁹⁹

⁹³ *Id.* § 001.01.

⁹⁴ SHATTUCK, *supra* note 2, at 17.

⁹⁵ For reservoirs, the Nevada Code states: “Effluent discharged from the point of the final treatment from within a sewage collection and treatment system shall be considered water as referred to in this chapter, and shall be subject to appropriation for beneficial use under the reservoir-secondary permit procedure described in this section. NEV. REV. STAT. § 522.440(3) (2011).

⁹⁶ *Id.* § 522.024.

⁹⁷ The term “treated effluent” refers to “sewage that has been treated by a physical, biological or chemical process.” NEV. ADMIN. CODE § 445A.2748 (2011). The term does not include graywater. *See also Id.* §§ 445A.70 – 280, 2762 – 2771 (2010) (setting forth regulation for the use of treated effluent).

⁹⁸ NEVADA DIV. OF ENV'T'L PROT., BUREAU OF WATER POLLUTION CONTROL, WTS-1A: GENERAL DESIGN CRITERIA FOR RECLAIMED WATER IRRIGATION USE, iii, available at <http://ndped.nv.gov/bwpc/wts1a.pdf>. NEVADA DIV. OF ENV'T'L PROT., BUREAU OF WATER POLLUTION CONTROL, WTS-1B: GENERAL CRITERIA FOR PREPARING AN EFFLUENT MANAGEMENT PLAN, iii, available at <http://ndped.nv.gov/bwpc/wts1b.pdf>. The guidelines also state that other terms for “reclaimed water” include “treated effluent, reuse water, and recycled water.” *Id.*

⁹⁹ NEV. ADMIN. CODE. § 445A.2762 – 2771.

Nevada monitors the reuse of treated effluent through quarterly reporting and periodic site inspections, among other things. The frequency and scope of the monitoring varies. In many cases, however, there is monthly monitoring with quarterly reporting requirements.

2. Reuse Funding in Nevada

Reuse activities in Nevada are funded locally. The state does provide financial assistance in the form of grants or loans from the state's Clean Water SRF for the reuse of treated effluent. The state further reports that it is not currently considering financial or other incentives to promote reuse at the state level.

3. Issues Affecting Reuse in Nevada

Important considerations affecting reuse in Nevada include: (1) whether there is public acceptance; (2) local government support; (3) the potential impacts to waters and the environment; (4) the availability of water; (5) the cost of fresh water; (6) the quality and treatability of wastewater; (7) the cost of additional wastewater treatment; (8) the risks to public health; and (8) how to address and protect unregulated pollutants and emerging contaminants such as endocrine disrupters, pharmaceuticals, and personal care products. Nevada maintains that these considerations have both encouraged and hindered reuse.

4. State Efforts Regarding Reuse in Nevada

Nevada does not have a formal reuse program. Moreover, it opines that its legal and regulatory framework neither inhibits nor encourages reuse. Instead, the Division sees its role as regulating the discharge of pollution through proper regulation and permitting.

The state is also considering the development of Indirect Potable Reuse (IPR) guidance and regulatory changes. As part of this consideration, the Division is looking at outside assistance to develop a document on the state of the knowledge for IPR that is based on the conditions and experiences specific to Nevada. The document would hope to summarize: (1) identification of what has been done in the state, including categories of reuse and associated regulatory requirements; (2) hydrogeologic characterization for Nevada and the benefits/constraints to IPR; (3) existing or potential contaminants of concern and their health impacts; (4) studies on fate and transport; (5) treatment technology availability/suitability and/or management approach; and (6) public perceptions and outreach.

J. NEW MEXICO

Water reuse is relatively common in New Mexico and the majority of the state's large and medium-sized municipalities are practicing some form of reuse. The number of municipalities seeking to perform reuse or increase their reuse is also growing steadily.

1. Reuse Laws and Regulations in New Mexico

Although reuse is recognized as a beneficial use, it is not well defined by statute or regulation. Nevertheless, “reclaimed water” is the nomenclature the state uses in the groundwater discharge permits that govern the environmental and public health protection aspects of reuse in New Mexico.¹⁰⁰ However, this wording does not appear in the relevant statutes and regulations.¹⁰¹ Further, New Mexico states that its Water Quality Act (WQA) does encourage the beneficial reuse of water but does not set forth specific requirements.

For the most part, New Mexico regulates reclaimed water use through groundwater discharge permits issued pursuant to its Water Quality Control Commission (WQCC) regulations, which the New Mexico Environment Department (NMED) provides.¹⁰² To obtain a permit, applications must be submitted to NMED and go through a process that includes public notice to adjacent property owners and general publication. Once NMED has prepared a draft permit, it will provide notice of the draft availability and a 30-day comment period will commence. If NMED does not receive adverse comments or hearing requests, it will issue a permit.¹⁰³ NMED considers all comments and grants hearings based upon “significant public interest.” New Mexico reports that the current permit process takes approximately six months to one year for uncontested permits and significantly longer for permits in which a hearing is held.

Within NMED, the Ground Water Quality Bureau,¹⁰⁴ Liquid Waste Program,¹⁰⁵ and Drinking Water Bureau¹⁰⁶ each regulate a different water quality aspect of reuse. The New Mexico Construction Industries Division within the state’s Regulation and Licensing Department regulates the design and construction of reclaimed water supply systems and back-flow prevention as it relates to public health, sanitation, and cross connection control. The New

¹⁰⁰ The Construction Industries Division of New Mexico is updating the New Mexico Plumbing Code and is considering the terms “recycling water” or the current term “reclaimed water.” N.M. CODE R. § 14.8.2.27 (Weil 2010). The Plumbing Code addresses the use of reclaimed water for toilet flushing and the design/installation of systems for this purpose. *Id.* In addition, the state’s Liquid Waste Disposal and Treatment regulations authorize the use of “effluent that meets secondary treatment standards for subsurface irrigation.” *Id.* § 20.7.3.805. The state’s Water Quality Act defines “graywater” as “untreated household wastewater that has not come in contact with toilet waste and includes wastewater from bathtubs, showers, washbasins, clothes washing machines and laundry tubs, but does not include wastewater from kitchen sinks or dishwashers or laundry water from the washing of material soiled with human excreta, such as diapers.” N.M. STAT. ANN. § 74-6-2(A) (LexisNexis 2010).

¹⁰¹ N.M. CODE R. § 20.6.2 (Weil 2010); N.M. STAT. ANN. §§ 76-6-1 – 17.

¹⁰² *Id.* § 20.6.2. New Mexico also prepared a guidance document in 2007, entitled “Above Ground Use of Reclaimed Domestic Wastewater.” It is available at: <http://www.nmenv.state.nm.us/fod/liquidWaste/AGURWW.pdf>.

¹⁰³ Should an applicant propose a reuse activity that NMED is unwilling to permit, NMED can formally deny the application and the applicant can appeal the decision to WQCC. However, New Mexico indicates that it is more common for NMED to discuss its concerns with the applicant and attempt to persuade the application to propose an approvable use of the reclaimed water.

¹⁰⁴ The Ground Water Quality Bureau issues discharge permits for domestic waste over 2,000 gpd and all other waste types covering above ground reuse (irrigation, fire suppression, toilet flushing, snow making, cooling water, etc.) and aquifer storage and recovery projects.

¹⁰⁵ The Liquid Waste Program issues liquid waste permits for the discharge and subsurface reuse of residential and commercial domestic waste under 2,000 gpd, as well as the use of up to 250 gpd of graywater at small residential and commercial sites. Permits primarily address public health concerns.

¹⁰⁶ The Drinking Water Bureau oversees public water supplies. Where indirect and direct potable reuse is implemented, the drinking water regulations intersect reuse through source water protections.

Mexico Office of the State Engineer and Interstate Stream Commission regulate the water quantity aspects of reuse.

New Mexico generally regulates agricultural and industrial wastewater sources generated from dairy, mining, and energy production activities with discharge permits issued pursuant to its WQCC regulations. However, the state typically considers these discharges to be “waste disposal” as opposed to reuse. Consequently, permit conditions for these activities are different than for domestic wastewater reuse.¹⁰⁷

Public and private water reuse permittees monitor their reuse activities in accordance with the specific conditions of their permits, which differ for large and small municipal systems that practice high contact irrigation reuse. NMED has authority to collect compliance samples at facilities, but does so infrequently. However, NMED does conduct site inspections and reports that it inspects approximately 50% of permitted reuse facilities and sites each year.

2. Reuse Funding in New Mexico

In New Mexico, reuse projects are generally funded through SRF funding, USDA grant/loan funds, Community Development Block Grants, state legislative appropriations, EPA funding, and private funding sources.

3. Issues Affecting Reuse in New Mexico

New Mexico reports that increased funding for reuse projects would likely have the most profound effect in promoting reuse. It also noted that some regulatory changes could encourage reuse. For example, New Mexico’s current regulatory framework combines reuse projects with all other discharges for groundwater permitting. The framework’s public notice process was conceived as a means of including the participation of individuals that could be adversely affected by “disposal” of wastes and envisions relatively rural settings. However, for large municipal entities seeking to permit relatively benign (but widespread) above ground irrigation reuse projects, the public notice process can be very burdensome. Thus, the state opines that changes to the public notice process for reuse dischargers could reduce the permitting burden, and could be done in a manner that ensures that public participation in the permitting process is preserved or even enhanced.¹⁰⁸

The state’s Ground Water Storage and Recovery Act (enacted in 1999) allows governmental and quasi-governmental entities to create a bank of water that can be utilized under a permitting system that is outside of a specific water right.¹⁰⁹ This legislation creates a water rights permitting approach to aquifer storage and recovery (ASR). The overall ramifications for water rights holders are not yet clear, but New Mexico is poised to enact ASR

¹⁰⁷ NMED is currently in the process of rulemaking from the Dairy Industry in accordance with legislation that the state’s Legislature passed in 2009. The outcome of the rulemaking process could significantly change the regulation of this discharge type.

¹⁰⁸ New Mexico indicates that there is “at least a possibility that this change could be enacted over the next 3-5 years.”

¹⁰⁹ N.M. STAT. ANN. § 72-5A-1 – A-17 (LexisNexis 2010).

as a water management strategy. The requirements for the treatment, quality, and monitoring of reclaimed wastewater used in ASR projects have not been completely determined. Although NMED drafted a guidance document to address these projects, the document has not been finalized and its development has stalled. As a result, NMED is addressing these issues on a case-by-case basis for the current ASR projects under development.

NMED has encountered difficulty in permitting water reuse projects for the state's largest cities, such as Albuquerque, in part because of WQCC regulation's public notice issues noted above, and in part because of the need to issue multiple permits to each individual entity using reclaimed water (end users). In response, NMED has altered its permit approach for the largest municipalities when specific treatment techniques are employed and very high water quality can be achieved. This new approach involves issuing a permit only to the treatment facility, not to each of end users. This allows flexibility in adding new locations to the reuse system and in providing reclaimed water to private properties, although NMED prohibits the municipalities from providing reclaimed water directly to individual residences in this approach. City ordinances control many of the aspects that a standard permit would otherwise address, such as signage and irrigation management. NMED has issued a permit to Albuquerque under these conditions. It is expected that over time, this could become the preferred path for permitting large municipal reclaimed water systems.

A regulatory gap may exist for projects that intend to utilize reclaimed domestic wastewater for a direct potable water source. NMED's Drinking Water Bureau regulates potable treatment and distribution systems, and their regulations partially extend to source waters. However, where direct reuse for potable supply is implemented, it is possible that no agency will have authority over the wastewater treatment and reclamation systems because the treated water does not discharge to the environment. The other challenge with these projects is that the state and federal drinking water regulations did not envision reclaimed wastewater as a source water and therefore do not take into account threats posed by failure of the reclamation system.

Unplanned surface water augmentation has been ongoing in New Mexico for many years through surface water discharges governed by NPDES permits. However, these situations typically occur with significant dilution and environmental barriers prior to potable water intake structures. Projects that utilize reclaimed wastewater as a major input into surface water reservoirs (Surface Water Augmentation) are being considered in New Mexico. In these situations, NPDES permits will be required for the discharge to the reservoir and the state's Drinking Water Bureau will regulate the drinking water treatment and distribution systems. However, at times, the vast majority of the reservoir's contents could be reclaimed wastewater and these systems could approach direct potable reuse. This will eliminate the dilution and environmental barrier common to unplanned surface water augmentation, potentially increasing the risk to water supplies. It is unclear whether additional monitoring or controls will be added or required through regulatory means.

New Mexico further indicates that a system that rewards entities for offsetting potable water demand by implementing reuse would be beneficial. Currently, reuse is often viewed as a "new" source of water that allows expansion of water use, sometimes beyond sustainability. A

financial incentive that encourages the use of reused water to offset potable demand would maximize the benefit of reuse. However, it is not clear how best to implement such an incentive.

As for emerging contaminants, New Mexico's regulatory agencies are largely awaiting studies on whether micro-constituents represent a threat to public health or the environment, as well as EPA guidance on this subject.¹¹⁰

4. State Efforts Regarding Reuse in New Mexico

New Mexico does not have an overarching program aimed at promoting reuse and its state water plan does not directly address reuse. Nevertheless, NMED routinely highlights the benefits of reuse and promotes reuse projects. It also attempts to instruct the public on the rationale for reuse and a reasonable reuse standard aimed at ensuring public safety through public meetings, hearings, presentations, and other outlets. Legislation concerning Aquifer Storage and Recovery projects was passed in an effort to encourage ASR as a water management strategy. NMED has participated in the New Mexico Water Reuse Committee, which is affiliated with the Rocky Mountain Section of the Water Environment Federation.

K. NORTH DAKOTA

North Dakota has seen an increase in requests to reuse wastewater due to limited quantities of water available in select regions of the state.

1. Reuse Laws and Regulations in North Dakota

North Dakota does not define water reuse, nor does it have specific statutes or regulations dedicated to reuse. The state does recognize reuse as a beneficial use on a case-by-case basis. The North Dakota Department of Health (NDDH) is the state agency with jurisdiction over reuse and regulates the activity through its wastewater treatment program. NDDH has also issued guidelines for using treated domestic wastewater from municipal domestic sewage treatment plants to irrigate public property such as parks and golf courses, as well as construction purposes such as soil compaction, dust suppression and washing aggregate.¹¹¹

North Dakota does not currently regulate organic contaminants in reused water.

2. Reuse Funding in North Dakota

North Dakota has “no real funding avenues” for water reuse projects but notes that projects may be eligible for SRF funding.

¹¹⁰ At least one aquifer recharge project in New Mexico is actively investigating the occurrence and removal/destruction of micro-constituents. The state reports that others have declined to do so. Studies have been conducted on contaminant occurrence in NPDES discharges and receiving streams, although these are not considered reuse.

¹¹¹ N.D. DEP'T OF HEALTH, GUIDELINES FOR USING TREATED WASTEWATER IN CONSTRUCTION (on file with author); N.D. DEP'T OF HEALTH, CRITERIA FOR IRRIGATION WITH TREATED WASTEWATER (on file with author).

3. Institutional Issues Affecting Reuse in North Dakota

North Dakota identified “water quality concerns” as the state’s most important issues regarding water reuse and notes that using wastewater for irrigation practices is dependent on localized conditions, such as weather.

4. State Efforts Regarding Reuse in North Dakota

NDDH does not have a formal program to promote water reuse. However, the State Engineer encourages water reuse as an alternative in areas that are water short. NDDH also promotes reuse on an informal, case-by-case basis by making itself available to the public to address concerns. In particular, it notes: “When we get a request, there are concerns from the public, but if you get the information out on the project, most concerns are addressed.”

L. OKLAHOMA

Reuse is uncommon in Oklahoma. However, a 2008 survey issued to municipal and rural water suppliers as part of its comprehensive water plan does shed some light on the extent of reuse in the state. Of the 561 survey respondents, 24 providers indicated that they currently reuse treated wastewater and 411 indicated that they do not reuse treated wastewater. Thirteen providers also indicated that they plan to increase or initiate water reuse. Eleven of the largest 46 responding providers (those serving more than 10,000 people) indicated that they reuse treated water, and 8 of the 46 largest providers reported that they plan to initiate or increase water reuse. In 2007, responding providers reported annual total reuse of approximately 3 billion gallons.¹¹²

1. Reuse Laws and Regulations in Oklahoma

Oklahoma does not have a water reuse program nor does it define “reuse.” Its laws and regulations are not specific to reuse and do not make a distinction between ambient waters and reused waters. In particular, the state notes: “As all waters are considered ‘waters of the state,’ and by default ‘waters of the nation,’ there is no distinction between waters from a pipe and waters from rain.” As a result, its legal and regulatory framework is essentially “blind” to reuse and does not necessarily inhibit or encourage the practice.

Nevertheless, Oklahoma does allow land application of municipal and industrial wastewater for the purpose of beneficial use (e.g., crop irrigation). The Oklahoma Department of Environmental Quality permits these activities pursuant to the Oklahoma Discharge Elimination System (OPDES). The permitting process is slightly different for municipal and industrial wastewaters, but the state limits both to applications for agronomic rates.

Some industrial facilities also use wastewater for dust suppression, in which case there can be no runoff from the suppressed areas. The state further reports that a power plant in southwest Oklahoma purchases treated sanitary wastewater from the town of Lawton. The plant

¹¹² OKLA. WATER RESOURCES BD., OKLAHOMA COMPREHENSIVE WATER PLAN 2011 UPDATE: PROVIDER SURVEY SUMMARY REPORT, 3.5 (2009), available at: http://www.owrb.ok.gov/supply/ocwp/pdf_ocwp/WaterPlanUpdate/OCWPPProviderSurveyReport.pdf.

uses the wastewater for cooling purposes, which are returned to a lake that discharges into a nearby stream. Oklahoma regulates the activity under the OPDES program and the discharges are not treated differently from other discharges.

Oklahoma does not conduct specific monitoring relative to reused waters and the Oklahoma Water Resources Board (OWRB) and Office of the Secretary of the Environment also have regulatory responsibilities related to reuse.

2. Reuse Funding in Oklahoma

Oklahoma reports that there are no unique funding incentives for water reuse. It also does not provide financial assistance for reuse projects through grants and loans.

3. Institutional Issues Affecting Reuse in Oklahoma

Oklahoma identified cumulative water quality impacts and CWA compliance as having the largest impact on reuse. It specifically noted that the CWA is “unforgiving” regarding the release of waters not meeting the state’s water quality standards.¹¹³ For instance, Oklahoma reports that one municipality had investigated the possibility of using its municipal wastewater to fill water hazards on a golf course from which it would subsequently irrigate the greens. Ultimately, this did not occur because of the water quality requirements associated with this discharge. Increased “flexibility” in the application of NPDES permits to discharges into states waters would also be helpful, provided such water is beneficially reused and “any discharge to a water of the nation [meets] CWA requirements.”

4. State Efforts Regarding Reuse in Oklahoma

Water reuse is a specific item that Oklahoma is discussing in its state water plan.

M. OREGON

Interest in recycled water use continues to develop in Oregon. As of 2009, Oregon had permitted more than 120 recycled water use projects, and the Oregon Association of Clean Water Agencies has identified recycled water use as a top priority for its members. Revised administrative rules adopted in 2008 have also led to a number of proposed reuse projects, including seven new recycled water projects and ten requests for upgrades to recycled water systems or irrigation improvements.

1. Reuse Laws and Regulations in Oregon

Oregon’s regulations specifically set forth a policy “to encourage the use of recycled water for domestic, agricultural, industrial, recreational, and other beneficial purposes in a

¹¹³ Oklahoma further reports that there are situations in which less “treatment” may be acceptable prior to the reuse of wastewater in certain water cooling reservoirs provided the discharges from the reservoirs meet water quality standards.

manner which protects public health and the environment of the state.”¹¹⁴ The Oregon Department of Environmental Quality (ODEQ) also operates a statewide program that encourages and regulates various types of reuse, including “recycled water” and “industrial wastewater.”¹¹⁵

a. Recycled Water

“Recycled” water refers to treated effluent generated from a municipal wastewater treatment system that, as a result of treatment, is suitable for a direct “beneficial purpose.”¹¹⁶ Oregon also uses the term “reclaimed water” to refer to water that has been used for municipal purposes, has been treated in a sewage treatment system, and is suitable for a direct beneficial purpose or a controlled use that could not otherwise occur.¹¹⁷ The two terms are nearly synonymous and “recycled water” includes “reclaimed water.”

Oregon requires municipal wastewater treatment plants to obtain a water quality permit from ODEQ in order to reuse water. This includes the development of a comprehensive recycled water use plan that details site and facility specific requirements. The Environmental Public Health section of the Oregon Health Authority also reviews proposals to reuse less treated recycled waters (Classes C and D) to address protection of public health. ODEQ’s reuse regulations define end uses and water quality standards for those uses.¹¹⁸

Oregon allows effluent to be put to beneficial uses through a registration process without the need to acquire a new water right. There are no fees or formal approval associated with this process.¹¹⁹ Oregon case law also holds that a water right holder may recapture wastewater that remains on his or her land, and re-apply that water to the original beneficial use in the location authorized under the water right without any additional authorizations. Oregon courts have further ruled that organizations such as irrigation districts or municipalities may capture waste or seepage water before it enters a natural waterway and before it leaves the boundaries of the district. This allows municipalities to capture water that has been delivered, such as treated effluent, industrial wastewater, or irrigation runoff, and reuse it within the authorized area.¹²⁰

Within this framework, a person intending to use recycled water must file a reclaimed water registration with OWRD. OWRD does not conduct a public interest review for reclaimed

¹¹⁴ OR. ADMIN. R. 340-055-0007 (2009). *See also Id.* R. 340-055-0005 – 340-055-0030 (setting forth the state’s primary reuse regulations).

¹¹⁵ ODEQ also regulates Graywater (shower and bath waste, sink water, etc.) under its program. Since graywater typically does not include treatment, it is not addressed in this report. For more information on ODEQ’s graywater regulations, see: <http://www.deq.state.or.us/wq/reuse/graywater.htm>.

¹¹⁶ OR. ADMIN. R. 340-055-0010.

¹¹⁷ OR. REV. STAT. § 537.131 (2009).

¹¹⁸ Oregon regulations define four reclaimed water quality levels that range from Class A, which requires advanced treatment, to Class D, which can be obtained through simple biological treatment. Classes B and C represent intermediate levels of treatment. Higher levels are allowed for a greater number of uses and require less management restrictions. *Id.* R. 340-055.

¹¹⁹ These aspects of Oregon’s legal framework stem from the passage of S. 204 in 1991, which represented the state’s first major step towards encouraging water reuse of treated municipal effluent.

¹²⁰ Oregon reports that municipalities can reuse this water for uses that would normally occur under a municipal water right, without acquiring new water right permits or other authorizations.

water registration, but reclaimed water registration may be subject to a notice requirement. OWRD will also notify persons with water rights that may be affected by reuse of the wastewater effluent under certain circumstances.¹²¹ Affected water right holders will have the preference to use the reclaimed water if they show that the cessation of municipal discharges impairs their ability to obtain water under their water right.

Recycled water use plans specify site monitoring requirements and individual facilities monitor water quality at a frequency required by rule or permit.¹²² Monitoring is also done in accordance with a wastewater treatment system owner's NPDES or Water Pollution Control Facilities (WPCF) permit. Monitoring and oversight of individual recycled water use programs by ODEQ occur during routine compliance inspections.

Of further note, Oregon recognizes the existence of organic contaminants in recycled water, but has not adopted any specific policies or regulations pertaining to them. ODEQ may include additional permit limits or conditions, or both, if it determines or has reason to believe additional requirements for the use of recycled water are necessary to protect public health or the environment or both.¹²³

b. Industrial Water

"Industrial wastewater" refers to treated effluent from an industrial process, manufacturing or business, or from the development or recovery of any natural resource. Agricultural process water derived from the processing of fruit, vegetables, or other food products, is an example of this type of water.

Oregon allows water from industrial and agricultural sources to be reused for irrigation purposes and requires a general or individual permit issued by ODEQ or Oregon Department of Agriculture (ODA).¹²⁴ State guidance describes general reuse requirements for industrial sources,¹²⁵ while water quality permits, regulation, and federal regulation set forth the requirements for CAFOs.¹²⁶ All industrial reuse and CAFO permits require the development of a

¹²¹ The circumstances include: (1) if the municipality discharged wastewater into a natural waterway for five or more years; (2) the discharge constitutes more than 50% of the average flow of the waterway; and (3) the discharge would cease as a result of the reuse.

¹²² Monitoring frequency varies for different classes of water, with higher classes (e.g. Class A at once per day) requiring more frequent monitoring than lower classes (e.g., Class D at once per week). OR. ADMIN. R. 340-055 (setting forth monitoring frequencies).

¹²³ In a context broader than organic contaminants in recycled water, ODEQ is undertaking an effort in response to legislation (SB 737) to develop a list of priority persistent bioaccumulative toxins that have a documented effect on human health, wildlife, and aquatic life. It provided a progress report to the state Legislature in June 2010. ODEQ maintains a website on this effort at: <http://www.deq.state.or.us/wq/SB737/>.

¹²⁴ OR. ADMIN. R. 340-045 (setting forth regulations for NPDES and WPCF permits).

¹²⁵ The guidance is available at: <http://www.deq.state.or.us/wq/reuse/industrial.htm>. Oregon reports that the most commonly reused industrial wastewaters originate from food processing activities that range from large-scale industrial processes (e.g. potato processing) to smaller activities (e.g., fruit packing or viniculture). Food processing waters often include nutrients, such as nitrogen, which may be used to supplement or replace some of the chemical fertilizer used in agriculture. However, the physical, chemical, and microbiological properties of industrial wastewater can vary widely based upon the type of industrial activities. Some industrial wastewaters may contain high concentrations of salts, metals, or other constituents that may limit reuse applications.

¹²⁶ OR. ADMIN. R 340-051.

water management plan that accounts for hydraulic and nutrient loading, and must be approved by the agency with program authority.

2. Reuse Funding in Oregon

The Clean Water SRF loan program provides low-cost loans for the planning, design, or construction of various water pollution control activities in Oregon. ODEQ administers the program and any public agency in Oregon is eligible for a loan. Eligible agencies include cities, counties, sanitary districts, soil and water conservation districts, irrigation districts, and various special districts.

Oregon's Infrastructure Finance Authority helps communities develop infrastructure, public facilities, and address utility and economic development infrastructure needs through the following programs:

- "Community Development Block Grants" are available to non-entitlement cities and counties for a variety of community facilities and public works projects.
- "Special Public Works Funds," provide funding for construction and/or improvement of infrastructure needed to support industrial, manufacturing, and certain types of commercial development.
- "Water/Wastewater Financing" for the construction and/or improvement of water and wastewater systems to meet state and federal standards.

Additionally, the Oregon Legislature passed Senate Bill 1069 in 2008, directing OWRD to provide grants for studying the feasibility of water conservation, reuse and storage projects, including the analyses of long-term environmental consequences. OWRD has awarded 22 grants under this directive, including four for water reuse projects.

3. Issues Affecting Reuse in Oregon

a. General Issues Affecting Reuse

The major reuse issues affecting reuse in Oregon are: (1) water conservation and water rights; (2) water quality and the environment; and (3) public health. From a water rights perspective, a potential barrier to municipal water reuse may exist if a municipality intends to reuse effluent that would otherwise be discharged into a natural waterway. Specifically, the municipality may be prohibited from reusing the effluent if downstream water right holders can demonstrate that discontinuation of the discharge will impair their ability to obtain water under their water rights. This determination will depend upon the number of years the municipality has discharged the effluent, as well as the percentage of water the discharge has historically contributed to the live flow of the waterway.

From a water quality and environmental perspective, Oregon does not allow recycled water used for irrigation purposes to result in adverse effects to groundwater or surface water, or

reduce the productivity of the land application site. Primary concerns focus on ensuring that water application rates meet crop needs and do not exceed the capacity of the site, which could result in surface runoff or subsurface leaching into groundwater. Recycled water quality (i.e., chemical characteristics) may also require special consideration when irrigation occurs in a state-designated groundwater management area, on marginal soils, or is used for artificial groundwater recharge. The state reviews these issues on a case-by-case basis under these circumstances.

Public health issues with recycled water use primarily focus on exposure to pathogens, and include the generation of aerosols as well as maintaining water quality to minimize pathogen re-growth in storage and distribution systems. Treatment standards, recycled water monitoring, irrigation buffers, and site access restrictions are among some of the controls used to protect public health. Additional conditions to ensure the protection of public health, such as maintaining a chlorine residual or site-specific irrigation controls, are considered on a case-by-case basis.

b. Water Reuse Urban Task Force and Barriers to Reuse

In 2003, the Oregon Legislature passed Senate Bill 820, requiring ODEQ to work with interested parties to develop a report on the opportunities and barriers associated with wastewater reuse in urban areas. In response, ODEQ convened a “Water Reuse Urban Task Force” composed of interested parties and stakeholders to identify opportunities and barriers. The Task Force released a report in 2004 that identified factors that encourage reuse, barriers, possible incentives, and recommendations.¹²⁷ Factors encouraging reuse included:

- As surface water sources become fully appropriated, new water users must seek alternative supplies.
- Population and economic growth exert demands on the state’s fixed water supply.
- Increased costs for producing and distributing drinking water.

The Task Force also identified three major categories of barriers to reuse. Under the first category, “agency rule interpretations,” it found “a lack of coherent state policy” as an overarching barrier to water reuse. The Task Force noted that each agency had its own mandates, rules, and policies, and that there was “limited coordination” among agencies. Moreover, it found that applicants for reuse permits encountered varying interpretations of reuse regulations from within and among agencies. Without a consistent statewide water reuse policy, the report reasoned that state agencies did not have incentives to encourage reuse.¹²⁸

Second, the Task Force reviewed Oregon’s reuse regulations, emphasizing the need for greater regulatory flexibility and questioning the need for water reuse plans when the highest level of water treatment standards is satisfied. It also discussed the possible need for a process to

¹²⁷ OREGON DEP’T. OF ENVTL. QUALITY AND THE URBAN REUSE TASK FORCE, IMPLEMENTATION OF SENATE BILL 820, 7 (Dec. 2004) [hereinafter TASK FORCE REPORT], available at: <http://www.deq.state.or.us/wq/pubs/reports/sb820report.pdf>.

¹²⁸ *Id.* at 8 – 9.

establish a level of treatment that will be acceptable for completely unrestricted non-potable uses. With respect to possible barriers, the report noted that the state's reuse regulations could be improved to better address more allowable end uses in urban and rural areas.¹²⁹

Third, the Task Force identified economic impediments as a "large barrier" to water reuse, noting: "If a major source of reuse water is a centralized water treatment facility, the costs of piping to end users may be considerable." The report also found that widespread urban water reuse could have the paradoxical effect of increasing the costs to consumers of supplying potable water. In particular, potable water providers must maintain extensive delivery infrastructure such as pipes valves, pumps, and storage tanks. Decreases in demand for potable water that result from reuse will only generate a marginal reduction in the overall delivery cost for potable water, but "may well raise the per gallon cost for consumers simply to cover the fixed-cost infrastructure."¹³⁰

Fourth, the Task Force report found that there "remain substantial obstacles to broad public acceptance of water reuse." At the time of the report, Oregonians viewed water treated to a lower standard than drinking water with great suspicion. It noted that regulatory language such as "reclaimed wastewater" or "reclaimed sewage" served to reinforce this skepticism and that "understandable neutral language" could be helpful.¹³¹

Based on these findings, the report made a number of recommendations, including:¹³²

- Oregon should develop a "clear and coherent" state policy promoting water reuse done in a manner protective of human health and the environment. Such a policy could be in the form of an executive order from the Governor or appropriate action from the Legislature.
- The State regulatory agencies should establish internal and external mechanisms to coordinate efforts to encourage water reuse.
- Affected state agencies should collaborate to develop guidance that clearly describes how water reuse projects move through Oregon's regulatory and permitting process.
- A manual of Best Management Practices for water reuse projects should be compiled as a tool for reuse project developers, municipalities, and others.
- In developing new policies and reviewing existing regulations, water quality treatment standards should be developed in a way that more appropriately matches defined end uses which should be included in the standards.

¹²⁹ *Id.* The report specifically noted that urban landscaping, industrial and commercial applications could be listed in a revised regulation along with the appropriate water quality requirements. This, it reasoned, would expand the types and locations of reuse projects and conserve more potable water for drinking water purposes.

¹³⁰ *Id.* at 9.

¹³¹ *Id.* 10.

¹³² *Id.* at 11 – 13.

- State agencies could also remove stigmatizing language from regulations and utilize public education and outreach to explain the benefits of reuse.

The report also identified a number of financial and regulatory incentives to help developers and communities consider reuse. Some of these included:

- Tax credits and exemptions for projects that reuse water.
- Expanding existing state loan programs, such as the SRF program to encourage municipalities to provide water for reuse.
- Creating incentives through Oregon’s statewide Land Use Planning program.
- Working towards providing varying levels of water quality commensurate with the intended use, with the understanding that meeting drinking water standards is not always necessary for all water uses (e.g., using potable water to irrigate a golf course).¹³³

Of further note, a 2009 academic study on water reuse in Corvallis, Oregon provided some insight into the factors that influence public acceptance of water reuse. Among other things, the study found that sustainability was the largest factor influencing acceptance and that other factors included trust in the city, prior knowledge of wastewater, gender (depending on use), and education. Ninety-three percent of respondents found Oregon State University scientists to be the most credible source of information concerning the use of treated wastewater. Other university scientists were second with 78%, followed by city reports of regular testing at 78%, the Oregon Department of Health at 77%, ODEQ at 75%, and EPA at 61%. The study also described the types of water reuse applications that the public saw as “very favorable” or “favorable,” with 89% approving of utilizing recycled water to irrigate business park landscapes and 33% approving of the use of recycled water to irrigate edible crops.¹³⁴

4. State Efforts Regarding Reuse in Oregon

In 2005, Governor Ted Kulongoski responded to the Task Force’s request for a “clear and coherent” state policy promoting reuse by signing Executive Order 05-04, which stated:

¹³³ *Id.* at 9 – 10.

¹³⁴ Karen DuBose, Graduate Student at Oregon State University, Presentation at the Oregon Water Resources Commission Meeting (Nov. 2009) (Describing the results of a study on public acceptance of reuse in Corvallis, Oregon) (on file with author). “Very favorable” and “favorable” results for other reuse applications included: (1) irrigating golf courses – 88%; (2) flushing toilets in public buildings – 88%; (3) irrigating non-edible agriculture – 86%; (4) using recycled water to cool buildings – 82%; (5) using recycled water in industrial processes – 81%; (6) irrigating public parks – 78%; (7) supplying fire hydrants – 77%; (8) supplying car wash businesses – 67%; and (8) irrigating school grounds – 65%. *See also* KAREN DUBOSE & BRENT STEEL, ORE. STATE UNIV., WATER REUSE IN CORVALLIS: MODELING PUBLIC ACCEPTANCE AND A PLAN FOR PUBLIC INVOLVEMENT (2009) (discussing the results of a study on the public acceptance of reuse in Corvallis, Oregon), available at: <http://water.usgs.gov/wrri/08grants/progress/2008OR100B.pdf>.

“The State of Oregon shall promote policies and programs to encourage and support water reuse, to work together to overcome institutional and regulatory barriers and funding constraints, to ensure protection of public health and environmental quality, to encourage public acceptance of water reuse, and to help this state meet overall water needs.”¹³⁵

The Order also indicated that Oregon would strive to improve its policies and internal operations to encourage more reuse by:

- Requiring the state agencies that participated in the Task Force to review agency policies and rules, as they are revised, and make appropriate revisions to remove potential regulatory barriers and to encourage water reuse.
- Making ODEQ responsible for coordinating with other state agencies, businesses, non-profit organizations, local governments, and citizens to develop guidance describing the regulatory and permitting requirements for water reuse projects.
- Ordering ODEQ, ODWR, and the Oregon Department of Human Services to coordinate outreach activities that encourage water reuse and to meet annually to determine whether agency procedures and permitting activities are consistent with the Order.
- Ordering ODEQ and other relevant agencies to work together to resolve issues with other state agencies relative to reuse and to collaborate and allow pilot projects that are protective of public health and the environment.¹³⁶

The Oregon Legislature and ODEQ have also taken the following actions to address the issues cited in the 2004 Task Force report:

- In 2006, ODEQ, ODA, ODWR, and other state agencies signed a memorandum of understanding (MOU) that set forth each agency’s responsibilities pertaining to the approval of water reuse projects. The MOU also described other agency actions to promote water reuse.¹³⁷ Currently, the agency is preparing a recycled water use plan checklist and case studies portraying several types of recycled and industrial water reuse projects throughout the state.¹³⁸
- In 2008, the Environmental Quality Commission’s adopted revised Recycled Water Use rules that specifically identify over 30 beneficial purposes for which

¹³⁵ OREGON GOVERNOR’S OFFICE, EXEC. ORDER NO. 05-04: WATER REUSE AS AN INTEGRAL COMPONENT OF ECONOMIC DEVELOPMENT, WATER CONSERVATION, AND ENVIRONMENTAL SUSTAINABILITY IN OREGON (2005), available at: <http://governor.oregon.gov/Gov/pdf/EO0504.pdf> .

¹³⁶ *Id.*

¹³⁷ INTERAGENCY MEMORANDUM OF UNDERSTANDING ON WATER REUSE (2009), available at: <http://www.deq.state.or.us/wq/reuse/docs/mou.pdf>.

¹³⁸ See OREGON DEP’T. OF ENVTL. QUALITY, WATER REUSE PROGRAM: RECYCLED WATER (2010), available at: <http://www.deq.state.or.us/wq/reuse/recycled.htm>; OREGON DEP’T. OF ENVTL. QUALITY, WATER REUSE PROGRAM: INDUSTRIAL WATER (2010), available at: <http://www.deq.state.or.us/wq/reuse/industrial.htm>.

treated effluent from municipal wastewater treatment facilities may be used. In doing so, the Commission expressed a strong interest in continuing efforts by ODEQ to further encourage recycled water use.¹³⁹

- ODEQ has developed a number of reuse guidance documents for staff and the public. In particular, ODEQ developed guidance in 2009 to assist staff involved with the permitting of recycled water projects.¹⁴⁰

Additionally, the Oregon Legislative Assembly passed H.B. 3369 in 2009, directing OWRD to lead the development of a state-wide, integrated water resources strategy. An overarching goal of the strategy is to provide policy guidance and recommended actions to help Oregon meet its current and future water needs in terms of water quantity, water quality, and ecosystem functions. When completed, it is anticipated that the strategy will encourage the implementation of water reuse projects to help meet the state's water supply needs.¹⁴¹

N. SOUTH DAKOTA

South Dakota reports that a “handful” of municipalities and industries are land applying waste water to irrigate crops and golf courses. Most CAFOs also use land applications of wastewater. Although reuse is not increasing significantly for municipalities and industries, the state has seen a substantial increase in the number of CAFOs over the last 10 years.

1. Reuse Laws and Regulations in South Dakota

South Dakota does not have any laws or regulations concerning reuse and the state does not have any specific language relating to water reuse. Instead, its laws advocate that water be put to a beneficial use to serve the general welfare of the state and that the waste or unreasonable use of water be prevented. Nevertheless, a 1975 South Dakota Attorney General's Office opinion does provide some guidance regarding the reuse of municipal sewage effluent. It reasoned that land application of wastewater by a municipality is valid under the original appropriation and does not require an additional permit to irrigate, provided that the water is used for municipal purposes and the use does not affect downstream prior appropriators.¹⁴²

The South Dakota Department of Environment and Natural Resources regulates the water quality aspects associated with municipal and domestic wastewater, industrial wastewater, and CAFOs. The Department's Surface Water Quality Program regulates the land application of treated municipal and domestic wastewater via NPDES permits (referred to as a “surface discharge” permit).¹⁴³ Industrial wastewater satisfies the statutory definition of solid waste and

¹³⁹ OR. ADMIN. R 340-055. The rules can be viewed at: http://arcweb.sos.state.or.us/rules/OARs_300/OAR_340/340_055.html.

¹⁴⁰ OR. DEP'T. OF ENVTL. QUALITY, DEQ INTERNAL MANAGEMENT DIRECTIVE: IMPLEMENTING OREGON'S RECYCLED WATER RULES, (2009), available at: <http://www.deq.state.or.us/wq/pubs/imds/RecycledWater.pdf>.

¹⁴¹ OR. WATER RESOURCES DEP'T., INTEGRATED WATER RESOURCES STRATEGY, available at: http://www.wrd.state.or.us/OWRD/LAW/Integrated_Water_Supply_Strategy.shtml.

¹⁴² Op. Att'y Gen. S.D. 75-177, 1 (1975).

¹⁴³ These permits contain requirements to protect human health and the environment, the specifics of which depend on the potential for runoff or human contact. In addition, surface discharge permits require permittees to develop a

the Department regulates industrial wastewater through its Waste Management Program via solid waste permits. These permits are required for any land application, irrigation, or other reuse of industrial wastewater. As with surface water discharge permits, a solid waste permit will set conditions to ensure the protection of human health and the environment. South Dakota also uses a general permit to regulate CAFO reuse under the authorities of its Surface Water Discharge permitting program.¹⁴⁴

The state's discharge permits require the development of best management practices plans to ensure proper application of the wastewater. Depending on the type of wastewater, water quality and/or soil sampling is required to ensure that permit conditions are met. South Dakota also issues these permits for five years at a time and reviews and revises the permit conditions as needed. Permit parameters and the nature of the wastewater may result in requirements for facilities to report water quality and/or soils on a monthly or quarterly basis.

Of note, South Dakota does not regulate water reuse as an appropriation of water, which means that the allowable quantity of water is not specifically regulated. In addition, the state reports that there are industries that have begun reusing wastewater internally. For example, some ethanol plants and meat packing plants reuse cooling waters for plant clean-up or other uses. The Department does not regulate this type of internal reuse.

2. Reuse Funding in South Dakota

Water reuse projects in South Dakota currently qualify for funding under state funding programs such as EPA's SRF programs. As long as they meet the applicable funding program eligibility requirements, water reuse projects can also compete for state financial assistance just like any other water or wastewater project.

South Dakota reports that the Department receives dedicated water funding revenues of about \$10 million annually. The state is also a minimum allocation state for EPA's SRF programs, which means that it receives 0.5% and 1.0% respectively of the Clean Water SRF and Drinking Water SRF Congressional appropriations.

3. Issues Affecting Reuse in South Dakota

The most important issue regarding reuse in South Dakota is the need for adequate storage. The state explains:

“South Dakota recently experienced a drought cycle, during which time wastewater reuse served as an effective way to manage both low water levels for farmers and dispose of wastewater for the facilities. However, during wet years, many facilities have trouble

nutrient management plan to ensure that nutrients in the wastewater are properly reused and not over applied. The Department also requires plans and specifications for wastewater reuse projects and has developed design criteria for the reuse of treated domestic wastewater. The criteria are available at: <http://denr.sd.gov/documents/designnumber.pdf>.

¹⁴⁴ The permit regulates the application of wastewater to ensure proper application of the water and require site restrictions and a nutrient management plan to ensure that the wastewater is beneficially reused and not over applied. Bacteria and nutrients are the primary concerns with CAFO wastewater.

with storage. Over the last two years, there has been an increase in precipitation and a decrease in temperatures, leading to higher water levels and less evaporation in storage ponds. At the same time, many farmers had less of a need to land apply treated wastewater. Therefore, during a time when water levels were increasing in the storage pond, the facilities had fewer options for land application and disposal of the wastewater.”

Financial factors also drive water reuse. The state specifically noted, “If it costs less to dispose of wastewater than to treat it sufficiently and discharge directly into a water source, then the facility will consider land disposal.” For CAFOs, the rising cost of fertilizer in recent years has also provided a financial incentive to reuse wastewater.

In most cases, South Dakota reports that permitting requirements in surface water discharge or solid waste permits do not inhibit the reuse of wastewater. Most operators understand the need for the requirements and the state strives to ensure that the requirements “make sense” and protect human health and the environment. However, there is one statutory solid waste permit provision that requires legislative approval for large scale solid waste facilities that dispose or incinerate over 200,000 tons of solid waste per year.¹⁴⁵ This provision has likely inhibited some water reuse for industrial facilities and a small number of industrial facilities have proposed land application in excess of 200,000 tons per year, which means that they would need approval from the South Dakota Legislature before the Department could issue a solid waste permit. Some facilities have reevaluated their land application plans in light of this requirement.

At this point, the Department has not required testing of emerging contaminants. However, it does require facilities to employ best management practices, such as proper application rates, berms to prevent runoff, and incorporation into the soil to prevent surface and groundwater contamination. The state maintains that these efforts will help prevent organic contaminants from entering waters.

4. State Efforts Regarding Reuse in South Dakota

South Dakota does not have an active program promoting water reuse. Nevertheless, the Department has worked with industries and communities to address individual concerns and provide water quality testing to demonstrate the effectiveness of wastewater treatment and land application.

O. TEXAS

Texas’ reuse regulatory program focuses on two types of water reuse – direct and indirect. Direct reuse refers to the use of wastewater effluent that has been directly conveyed from the wastewater treatment plant to the place of use via pipelines, storage tanks, and other infrastructure. Indirect reuse refers to water that is discharged into a watercourse and subsequently re-diverted for a beneficial purpose or use. The Texas Commission on

¹⁴⁵ S.D. CODIFIED LAWS §§ 34A-6-53 – 54 (2010).

Environmental Quality's (TCEQ) Water Quality Program regulates direct reuse and the Water Rights Program regulates indirect reuse.

Texas reports that direct reuse of treated wastewater is fairly common and that it has seen a recent increase in the number of entities requesting authorization under the reclaimed water program. Currently, there are 251 active municipal reclaimed water authorizations and 105 industrial reclaimed water authorizations, with an unknown number of industrial entities and facilities reusing graywater. An increase in wholesale distribution or sale among Texas entities is also possible, which could raise questions of how to regulate the practice in the most effective manner. Indirect reuse is also becoming more common and Texas has witnessed an increase in applications as water needs are often greater than existing supplies.

1. Reuse Laws and Regulations in Texas

Texas' water quality regulations govern direct reuse,¹⁴⁶ which includes the use of treated municipal wastewater, graywater, and treated industrial wastewater.¹⁴⁷ The Texas Commission on Environmental Quality (TCEQ) regulates all aspects of direct reuse that does not pertain to crude oil and natural gas activities.¹⁴⁸ The state authorizes direct reuse via an individual authorization or directly by state rule. It also issues individual authorizations for direct reuse of municipal wastewater. As for industrial reclaimed water, the location where direct reuse occurs, the processes generating the reclaimed water, and the quality of the water dictate whether an individual authorization or authorization directly by rule will apply. Reuse of graywater is authorized directly by rule.

Authorizations issued for the direct reuse of municipal reclaimed water require the submittal of monthly discharge monitoring reports (DMRs). Self-monitoring of effluent occurs at a frequency of once per week or twice per week depending on the level of the treatment and uses of reclaimed water. Authorizations issued for the direct reuse of industrial reclaimed water require monitoring for various constituents on a case-by-case basis and at varying frequencies. Texas does not require DMRs under the industrial program.¹⁴⁹ Graywater reuse is subject to specific conditions and monitoring in certain instances, which is retained on site.

Agricultural sources are not included in TCEQ's reclaimed water program. TCEQ regulates CAFOs via the issuance of individual Texas Pollutant Discharge Elimination System or state only permits. Reclaimed water authorizations for municipal, industrial, and graywater operations are handled differently.

¹⁴⁶ Title 30 of The Texas Administrative Code, Chapter 210 regulates the direct reuse of treated industrial, treated municipal wastewater, and graywater. Additional rules related to the operation of reclaimed water production plants (commonly referred to as satellite plants) are located in 30 TAC Chapter 321, Subchapter P. Texas Water Code Section 26.0311 and Texas Health and Safety Code Section 341.039 regulates the use of graywater.

¹⁴⁷ Texas' reclaimed water program does not regulate industrial facilities that recycle treated wastewater back into processes at a facility. Municipal and industrial facilities that hold individual wastewater permits under the Texas Land Application Permit (TLAP) are also not considered to be reuse facilities.

¹⁴⁸ The Railroad Commission of Texas regulates direct reuse of treated wastewater from crude oil and natural gas activities.

¹⁴⁹ Any violation of effluent limitations contained in an authorization to use industrial reclaimed water will result in suspension of the authorization.

The Texas Water Code authorizes indirect reuse but does not include a specific definition. It does define return flow and reuse.¹⁵⁰ However, Chapter 11 of the Texas Water Code does provide when state authorization is required.¹⁵¹ A person interested in indirect reuse must obtain a bed and banks authorization under Texas Water Code Section 11.042. This section requires an authorization to use the bed and banks of a river or stream to convey water for diversion and subsequent reuse. The statute requires protection of water rights holders that may have relied on that water being in the stream. Environmental impacts must be considered and special conditions may be included in the authorization. TCEQ regulates the indirect reuse of treated wastewater through the water rights permitting program. The requirements for a bed and banks permit apply to all uses of the reuse water.

For indirect reuse, monitoring of compliance with permits depends on whether the permit is located in an area administered by a watermaster and whether the permit includes specific reporting or monitoring requirements. Outside of a watermaster area, the enforcement of water rights is strictly complaint driven. Within a watermaster area, staff is available to inspect water rights operations on a daily, weekly, or monthly basis. In these areas, a permittee must notify the watermaster prior to diverting water. Most new permits for reuse of return flows require that the permittee develop and maintain an accounting plan ensuring that only return flows are diverted.

2. Reuse Funding in Texas

Administering cost-effective financial programs for constructing water supply, wastewater treatment, flood control, and agricultural water conservation projects is the responsibility of the Texas Water Development Board (TWDB). Water reuse projects are eligible for funding under several of the TWDB-administered programs. These include the SRFs, Water Infrastructure Fund, State Participation Fund, and Water Development Fund.

Texas reports that there is a need to establish funding mechanisms that specifically address the challenges of starting up a reclaimed water system. A major challenge for implementing direct, non-potable reclaimed water projects is funding for constructing the initial infrastructure. During the initial stages of non-potable systems, the projects often do not generate adequate revenue to pay for the cost of constructing and operating the systems. Similarly, obtaining funding for advanced treatment facilities that may be required for some indirect potable reuse projects is also a challenge.¹⁵²

Funding actions of the TWDB require a finding of consistency of the proposed funding action with the State Water Plan. The current plan, Water for Texas 2007, projects that 14% of

¹⁵⁰ “Return water or return flow” refers to that portion of state water diverted from a water supply and beneficially used that is not consumed as a consequence of that use and returns to a watercourse. Return flow includes sewage effluent. Reuse refers to the “authorized use for one or more beneficial purposes of use of water that remains unconsumed after the water is used for the original purpose of use and before that the water is either disposed of or discharged or otherwise allowed to flow into a watercourse, lake, or other body of state-owned water.” 30 TEX. ADMIN. CODE § 20.297.1 (2010).

¹⁵¹ TEX. WATER CODE ANN. § 11.042 (2010).

¹⁵² Alan Plummer and Associates Inc., The History of Water Reuse in Texas (Draft) (Oct. 2010) (prepared for the Texas Water Development Board).

the state's new water supplies needed by 2060 will be from water reuse. The estimated cost for those facilities is \$4 billion.

3. Issues Affecting Reuse in Texas

Texas identified a number of unresolved legal issues involving both direct and indirect reuse that have caused some degree of uncertainty. For direct reuse, the state reports that its current direct reuse program does not specifically authorize the indoor reuse of graywater in individual residences. This issue is currently being explored.

There are a number of unresolved issues involving indirect reuse, including: (1) whether the reuse of return flows, after discharge to a stream, is a use of state water subject to the laws of prior appropriation or subject to a different regulatory scheme; (2) whether return flows derived from different sources of water should be treated differently for purposes of evaluating a request to reuse the return flows; (3) who can obtain indirect reuse rights; (4) whether Section 11.042 is inconsistent with Section 11.046 of the Water Code (unused water is returned to the stream and is subject to appropriation by others); and, (5) what type of analysis must be done to determine the impact on other water right holders and the environment?

At a work session in 2005, the TCEQ Commissioners decided that for surface water based return flows, staff should consider the application as one for unappropriated water. However the Commission did not decide how the analysis should be done to determine if the authorization should be issued. Interestingly, Texas notes that these questions can inhibit some applications because of the uncertainty, but can encourage others because those applicants view the uncertainty as flexibility in the statute. As of April 2011, an application is being considered by TCEQ that may answer some of these questions.¹⁵³

4. State Efforts Regarding Reuse in Texas

Texas encourages direct reuse of treated wastewater through its reclaimed water program. Specifically, the permitting program is streamlined to eliminate the need for public notice and potentially lengthy contested case hearings. The municipal reclaimed water program requires no fees for submittal of applications and there are no annual fees. Likewise, the industrial reclaimed program directly authorizes certain reclaimed water reuse directly by rule, negating the need to submit applications and obtain authorizations. When an application is required to be submitted, a minor \$100 fee is required and no annual fees are assessed. Texas regulations also authorize graywater reuse with no application or fee requirements.

TCEQ recently adopted rules to authorize construction and operation of reclaimed water production facilities along a municipality's wastewater collection system.¹⁵⁴ This encourages reuse of reclaimed water on a more economical basis via construction of smaller wastewater treatment plants closer to the demand for reclaimed water.

¹⁵³ Application of the Brazos River Authority for Water Use Permit 5851 Before the State Office of Administrative Hearings, TCEQ Docket No. 2005-1490-WR. SOAH Docket No. 582-10-4184.

¹⁵⁴ The rules are found at 30 TEX. ADMIN. CODE. § 321 (2010).

As for public education, TCEQ has an extensive outreach program related to water quality programs, including the direct reuse program. Specifically, TCEQ hosts a Water Quality Advisory Work Group, which is a voluntary group comprised of professionals, the regulated community, and the public at large that meets quarterly to discuss issues related to water quality, wastewater permits, and wastewater standards.¹⁵⁵ A similar stakeholder group, the Water Rights Advisory Work Group, addresses water rights permitting issues. It provides TCEQ with expanded knowledge and resources to help with permitting issues.¹⁵⁶ Additionally, TCEQ regularly speaks at regional and state level conferences and seminars on reuse programs, while the Texas Water Development Board utilizes educational programs that explain water reuse and the need for additional supplies.

As noted previously, there are unresolved issues relating to whether indirect reuse is a new appropriation of water and what types of water availability analyses should be performed. To help address some of this uncertainty, TCEQ encourages applicants for indirect reuse water rights permits to meet with staff to discuss the application process.

As for emerging contaminants, the Texas Legislature passed two bills (H.B. 3753 and S. 1757) in the 81st Legislative Session that require TCEQ to establish a work group to investigate pharmaceuticals in relation to current disposal methods. This work group has been formed and findings will be reported to the legislature prior to the next session. The reclaimed water program currently does not specifically address pharmaceuticals and emerging contaminants.

P. UTAH

In general, water reuse projects are uncommon in Utah and it does not appear that such projects will see significant growth in the near future. Currently, the state has approved 11 water reuse projects, all of which are publically owned treatment works (POTWs) or sewer improvement districts.

1. Reuse Laws and Regulations in Utah

Utah's "Wastewater Reuse Act," also known as "73-3c" (adopted under H.B. 38 in the 2006 Utah Legislature) governs reuse and describes how the state approves reuse activities.¹⁵⁷ It defines "reuse water" as "domestic wastewater treated to a standard acceptable under rules made by the Water Quality Board" (WQB).¹⁵⁸ The Legislature enacted H.B. 38 to address how the state should regulate POTWs. This effectively applied the term "water reuse" to a narrower scope of projects with the following characteristics:¹⁵⁹ (1) the project sponsor must be a POTW or a sewer improvement district; (2) the project must gain approval from WQB, the State

¹⁵⁵ For more information on the Water Quality Advisory Work Group, please see:

http://www.tceq.state.tx.us/permitting/water_quality/stakeholders/WQ_advisory_group.html

¹⁵⁶ For more information on the Water Rights Advisory Work Group, please see:

http://www.tceq.state.tx.us/permitting/water_supply/water_rights/wrawg.html

¹⁵⁷ UTAH CODE ANN. §§ 73-3c-101 –, 401 (2010).

¹⁵⁸ *Id.* § 73-3c-102. It also defines "water reuse project" as a "project for the reuse of domestic wastewater that requires the approval by the Water Quality Board...and the State Engineer..." *Id.*

¹⁵⁹ Prior to 73-3c, Utah's state water plan defined "water reuse" as "the direct use of wastewater, which involves the application of some degree of treatment, and the planned use of the resulting effluent for a beneficial purpose."

Engineer, and virtually all entities which ever had an interest in the designated water right for the project;¹⁶⁰ (3) the source water rights must be identified as “municipal” water rights; and (4) the new reuse cannot effectively enlarge the underlying municipal water rights without being given a new junior priority date.

The Legislature recognized that some projects may be necessary for some POTWs, but may also not be approvable by all interests. Thus, it gave WQB a “dispensation” to allow an entity to change its point of discharge for: (1) treatment purposes; (2) to enhance the environment; (3) to protect public health, safety, or welfare, or (4) to comply with rules WQB created or a POTW’s discharge permit. Under these circumstances, WQB does not need to fulfill all of the approval requirements for a reuse project and needs only to consult with the State Engineer. In operating parlance, these changes in point of discharge are considered to be “disposal” projects instead of “water reuse” projects.¹⁶¹ Reuse activities with an agricultural or industrial water source are not considered to be “water reuse” and are approved differently.¹⁶²

Utah’s Division of Water Quality (the Division) within the state’s Department of Environmental Quality and the State Engineer both must approve water reuse projects. The Division issues reuse operating permits for reuse facilities and reviews the treatment process and application parameters to satisfy water quality, environmental, and human health concerns.¹⁶³ Reuse operating permits require self-monitoring in which entities sample reused effluent on either a daily, weekly, monthly, or quarterly basis and report their results on a monthly or annual frequency. In certain situations, the Division may randomly sample reused effluents to verify the self-reporting and permit compliance. The State Engineer reviews projects for conformance with water rights and quantity issues and will issue an approval letter for acceptable projects.

2. Reuse Funding in Utah

If wastewater treatment infrastructure is included in a reuse project for a public entity, that entity may qualify for SRF assistance for low-interest loans or grants to fund the project. Otherwise, the sponsoring entity usually funds the project. The state reports that high costs for reuse water as compared with other available raw water sources could create challenges in justifying project costs during the public funding process. Up to several million dollars each year are available for assistance in funding wastewater treatment projects in Utah.

3. Institutional Issues Affecting Reuse in Utah

There are three main issues that inhibit water reuse in Utah. First, the state has a well-developed water storage and supply infrastructure, which means that the current costs of raw supply water are significantly lower than the costs of reused water. Second, Utah requires a

¹⁶⁰ This group would include the chain of all conveyors and users from the original water rights holders to the end users of the reuse water. Any person whose water may be replaced may also reject the project.

¹⁶¹ The inference is that the facility has a significant need to implement the discharge with few, if any, other viable options to dispose of its effluent.

¹⁶² The Utah Department of Agriculture approves agricultural water sources projects, while the Division approves industrial water source projects for quality, health, and environmental concerns on a case-by-case basis.

¹⁶³ The Division has rules governing these concerns, which are located in UTAH ADMIN. CODE R317-3-11 (2010). If infrastructure construction is involved, the Division will also require a construction permit prior to construction.

relatively high quality of water for reuse, especially in areas accessible to the public. This means that treatment costs are high compared to available, less-expensive raw water supplies and the economic justification for reuse projects has generally proven to be difficult. Third, Utah reports that its legal/water rights framework is inhibitory to the development of water reuse projects.

With respect to the third issue, 73-3c increased the number of entities with standing to approve or deny water reuse projects, thereby rendering approval of such projects more difficult. The requirement that the rights identified for reuse cannot expand the underlying water right without receiving a junior priority date can also impose a number of limitations that can inhibit reuse. Specifically, the underlying rights must allow for the new uses, the quantity of water used cannot increase over the amount the underlying rights allow, and the location of use must be the same as the location allowed by the underlying rights. Some Utah regulators have opined that one way to encourage water reuse in Utah would be to give treatment entities more latitude in how to utilize or dispose of their effluent. Under such a scenario, the proponent would only have to seek the approval of the State Engineer and WQB for project approval.

Section 73-3c has also created uncertainty about the types of projects that qualify as “water reuse.” Prior to the law’s enactment in 2006, most projects that land applied treated effluent or disposed of it through means other than a direct discharge into surface waters were considered to be “water reuse” projects. However, H.B. 38 applied the term “water reuse” to a narrower scope of projects and many of the older projects are now considered to be “disposal” projects. As previously noted, WQB can allow some POTWs to change their point of discharge. However, questions remain as to the latitude WQB has in determining whether a project is a “change of point of discharge” disposal project as opposed to a “water reuse” project. There is also a question of whether using treated effluent for snowmaking is a discharge to surface waters.

Utah has not experienced environmental problems or issues associated with the reuse of properly treated domestic wastewater effluents. It also does not expect that any human health or surface/groundwater contamination problems will develop from reuse projects. However, certain full scale and pilot projects have demonstrated that the salinity concentration in reclaimed water may adversely affect the long-term viability of the soils at some reuse sites. Although such an occurrence is not eminent, soil fertility problems could possibly result from the long-term application of saline effluents.

To date, Utah is studying the issues involved with emerging contaminants. However, before embarking on concrete measures and rule making regarding these contaminants, it is waiting for the formation of a national consensus or policy on the risks posed by them, and how to treat and dispose of these substances.

Reuse projects may affect downstream water supplies by reducing flows to the downstream water systems. If that was the case, the State Engineer would need to exert his authority to maintain the required flows in the stream.

4. State Efforts Regarding Reuse in Utah

Utah does not have a formal state program to promote or encourage water reuse. Instead, project sponsors are usually responsible for promoting the acceptability of an individual project and conducting any public outreach and education that may be needed.

Although the state does not have a formal program, in 2005, the Utah Division of Water Resources published a supplement to the Utah State Water Plan that focused entirely on water reuse.¹⁶⁴ The purpose of this report was to establish a basic understanding of water reuse technology within the state and encourage its adoption as necessary.

Q. WASHINGTON

In 1992, the Washington Legislature passed the Reclaimed Water Use Act (“the Act”), which provided a statewide program for the treatment and management of wastewater resources for new uses.¹⁶⁵ Among other things, the law encourages the use of “reclaimed water” by requiring its consideration in watershed planning, water supply planning, and wastewater planning. It also declares that reclaimed water is not considered wastewater and directs the Departments of Ecology and Health to take steps necessary to administer, develop, and encourage reclaimed water use.¹⁶⁶ Since the Act’s adoption, 24 reclaimed water facilities have been permitted and this number will likely increase by 50% in the next five years.

1. Reuse Laws and Regulations in Washington

The Act defines reclaimed water as water derived from wastewater with a domestic wastewater component that has been adequately and reliably treated, so that it can be used for beneficial purposes.¹⁶⁷ It also includes definitions for “agricultural industrial process water”¹⁶⁸ and “industrial reuse water.”¹⁶⁹ As for permitting, the Act provides specific authority to permit both privately and publically owned and operated reclaimed water systems. Ecology’s Water Quality Program is the primary agency responsible for permitting and reviews the environmental quality aspects of reclaimed water. Ecology’s Water Resources Program reviews water right impairment aspects, while Health’s Office of Shellfish and Water Protection reviews public health aspects.¹⁷⁰

¹⁶⁴ See UTAH DIV. OF WATER RES., WATER REUSE IN UTAH, 2005, available at: <http://water.utah.gov/WaterReuse/WaterReuse.pdf>.

¹⁶⁵ JIM MCCAULEY, DENISE LAHMANN, KATHERINE CUPPS, WASH. DEP’T OF ENVTL. QUALITY, WASHINGTON’S RECLAIMED WATER PROGRAM – EVOLVING FROM GUIDELINES TO RULE, 2, available at: http://conferences.wsu.edu/conferences/waterland/proceedings/6_Paper_McCauley.pdf.

¹⁶⁶ *Id.*

¹⁶⁷ WASH. REV. CODE § 90.46.010 (LexisNexis 2010).

¹⁶⁸ “Agricultural industrial process water” means water that has been used for the purpose of agricultural processing and has been adequately and reliably treated, so that as a rule of that treatment, it is suitable for other agricultural water use. *Id.*

¹⁶⁹ “Industrial reuse water” means water that has been used for the purpose of industrial processing and has been adequately and reliably treated, so that as a result of that treatment, it is suitable for other uses. *Id.*

¹⁷⁰ Washington notes that some types of water may be recycled onsite for certain purposes and considered exempt from the Act. For example, a facility producing disinfected secondary effluent may use that product onsite without

Washington requires all permitted systems to submit monthly reports of their monitoring activities prescribed by their operating permits. The state may also arrange site visits to the permitted locations as necessary and violations may trigger enforcement action.

2. Reuse Funding in Washington

Reclaimed water projects in Washington are typically funded from multiple state and federal sources (e.g, SRF funds, USDA Agricultural Rural Development grants and loans, EPA Innovative and Alternative Treatment grants, etc.), along with local bonds. Reclaimed water projects also compete with wastewater treatment projects for state funding and federal pass-through dollars.

Of note, four demonstration projects were constructed from 1999 to 2000 with financial assistance from the state legislature. The state also enacted a specific grant program in 2008 to provide \$5 million for planning and construction.

3. Issues Affecting Reuse in Washington

Washington identified a number of issues affecting reuse. First, its previous permitting process inhibited reuse due to the uncertainty and risk that resulted in part from the lack of a comprehensive administrative rule governing reuse. Specifically, the state's reclaimed water program had matured to a point where the guidance and policy documents that it used to permit projects are no longer adequate for the state's planning, review, and permitting purposes.¹⁷¹

Second, the cost of building infrastructure to move water from reclaimed water plants to customers is another significant challenge to the distribution and use of reclaimed water. Therefore, there is a need to find incentives to assist with the planning and construction of reclaimed water facilities.

Third, there is a need for public education and outreach to better explain the role of reclaimed water in water management. However, current budget constraints have limited Washington's reclaimed water education and outreach efforts. Nevertheless, it does maintain a website with factual information intended to encourage the use of reclaimed water.¹⁷²

The state further reported that it has experienced a debate regarding the appropriate approach to permit increased consumptive use resulting from the process of reclaiming water, as well as the impacts on existing water rights. One perspective is that any consideration of impairment of existing water rights from reclaimed water is unfair because the state initially granted a water right for use of the water. Moreover, other changes in consumptive use by a water supplier or wastewater discharger can occur without any concern for impairment of existing uses. On the other hand, some have argued that any new consumptive use of the water through reuse should go through the process needed to acquire a completely new water right.

obtaining a separate reclaimed water permit. Also, secondary effluent may be used to irrigate non-food crops as a land treatment system permitted under Section 90.48 of the Washington Code.

¹⁷¹ MCCAULEY ET AL., *supra* note 165, at 13.

¹⁷² The website is available at: <http://www.ecy.wa.gov/programs/wq/reclaim/ruledevelopment.html>.

The state's current law lies between these two theoretical approaches. Reclaimers do not need to apply for a new water right to increase their consumptive use, even in closed basins. However, they may not impair existing water rights downstream of the discharge point unless compensation or mitigation is agreed to by the affected water right holder. Washington notes that this protects existing water rights, including instream flows, which are considered water rights. It also "severely limits" use of reclaimed water in some parts of the state.

Another issue pertaining to reuse waters is that the current law limits consideration of impairment to water rights that are downstream of the former wastewater discharge point. For typical water rights permits, the state considers impairment for all water rights within a particular water body. This consideration is based solely on priority rather than location relative to the discharge point.

In sum, Washington reports that it is striving for balance between supporting new uses of water through reuse and protecting existing water rights. In some situations, it will favor one goal over the other depending on the facts of the particular circumstance.

4. State Efforts Regarding Reuse in Washington

In 2006, the Washington Legislature directed Ecology to coordinate with Health to adopt a comprehensive rule on all aspects of reclaimed water use by December 2010. The overall goal was to develop a "Reclaimed Water Program" through rule, guidance, and statute that runs smoothly and consistently, while protecting public health and the environment to make reclaimed water available to help meet future water requirements. Subsequently, the Legislature directed the agencies to look at several specific aspects of such a program, including consideration of a long-term dedicated funding program to construct reclaimed water facilities and to identify barriers to reclaimed water.¹⁷³

To assist in the creation of the rule, the Legislature directed Ecology and Health to form a stakeholder Rule Advisory Committee (RAC). RAC consisted of a broad range of state agency officials and other interested parties representing various stakeholder groups, including those potentially affected by the rule and parties with technical expertise and knowledge. RAC also held regular meetings that were open to the public.¹⁷⁴

In 2010, RAC produced a draft rule that describes the division of responsibilities between Ecology, Health, and the reclaimed water provider. It includes technical standards and best management practices, as well as procedures for the submittal and review of planning

¹⁷³ WASH. DEP'T OF ECOLOGY, FOCUS ON RECLAIMED WATER: RECLAIMED WATER RULE ADOPTION 1 (2010) [hereinafter ECOLOGY FOCUS REPORT], available at: <http://www.ecy.wa.gov/pubs/1010011.pdf>. As part of the legislation, the Washington Legislature adopted changes to state law on the consideration of potential impairment of downstream water rights by reclaimed water facilities. However, the Governor vetoed that section and directed Ecology to work with legislative leadership to address water rights impairment from water reuse projects.

¹⁷⁴ WASH. DEP'T OF ECOLOGY, RULE ADVISORY COMMITTEE (2010), available at: <http://www.ecy.wa.gov/programs/wq/reclaim/reclaimadvcomm.html>

documents, water rights impairment assessments, and management of operating permits.¹⁷⁵ The rule also incorporates stakeholder comments, and was the subject of a “Reclaimed Water Workshop” that Ecology hosted in October 2010 to discuss the permitting of existing facilities to illustrate how it will implement the draft rule through permits.¹⁷⁶

However, before the draft rule was finalized, Governor Christine Gregoire issued Executive Order 10-16 in November 2010, ordering the suspension of all non-critical rule development and adoption through December 31, 2011.¹⁷⁷ Governor Gregoire then signed legislation in May 2011 that would provide regulatory relief to cities and counties from several environmental rules that had passed both houses of the legislature, delaying reclaimed water rulemaking until July 2013.¹⁷⁸ Ecology will use the delay to focus on developing guidance on reclaimed water to answer stakeholder concerns. Ecology and Health will also continue to use existing authority to permit reclaimed water.¹⁷⁹

Nevertheless, the process RAC used to develop the draft rule is still informative even if the rulemaking process has been temporarily halted. Specifically, during the rule development process, a number of issues came to the forefront, including: (1) removing barriers to the use of reclaimed water; (2) streamlining the permitting process; (3) funding; (4) technical standards; and (5) water rights issues. To investigate these issues, Ecology formed the following task forces:¹⁸⁰

a. Reclaimed Water Technical Advisory Panel (TAP)

TAP provided information and recommendations for RAC and Ecology to consider when updating existing reclaimed water technical standards, design criteria, and monitoring requirements. It consists of water reuse experts from the Pacific Northwest Clean Water Association, academia, and state government familiar with Washington.¹⁸¹

b. Water Rights Advisory Committee

The Committee consisted of representatives from local governments, utilities, and stakeholders to assist Ecology in examining and finding appropriate solutions to water right issues. Among other accomplishments, the Committee developed a step-by-step process to

¹⁷⁵ ECOLOGY FOCUS REPORT, *supra* note 173. The draft rule is available at: <http://www.ecy.wa.gov/programs/wq/reclaim/OTS3438version4.pdf>.

¹⁷⁶ WASH. DEP'T. OF ECOLOGY, RECLAIMED WATER USE RULE DEVELOPMENT PROCESS (2010), available at: <http://www.ecy.wa.gov/programs/wq/reclaim/ruledevelpmnt.html>.

¹⁷⁷ Exec. Order No. 10-06 Suspending Non-Critical Rule Development and Adoption (Nov. 2010), available at: http://www.governor.wa.gov/execorders/eo_10-06.pdf. The order was intended to focus the state's staff resources on direct service delivery, while also promoting economic recovery by providing a stable and predictable regulatory environment for small businesses and local government. *Id.*

¹⁷⁸ H.B. 1478, 62nd Leg., 2011 Reg. Sess. (Wa. 2011).

¹⁷⁹ WASH. DEP'T. OF ECOLOGY, RULE-MAKING SUSPENSION – DECISION UPDATES (2010), available at: http://www.ecy.wa.gov/laws-rules/suspension_update.html#delayed

¹⁸⁰ ECOLOGY FOCUS REPORT, *supra* note 173, at 1.

¹⁸¹ WASH. DEP'T. OF ECOLOGY, RECLAIMED WATER TECHNICAL ADVISORY PANEL (2010), available at: <http://www.ecy.wa.gov/programs/wq/reclaim/technicalpanel.html>

assess and address potential impairments and developed a working definition of “water right impairment” that combines existing water right policy, rule, and case law.¹⁸²

c. Long Term Funding Sub-Task Force

The Sub-Task Force provided recommendations for a long-term dedicated funding program to construct reclaimed water facilities. This 10-member sub-task force includes representatives from Ecology, Health, city, county, water-sewer district utilities, environmental, and business communities.¹⁸³ In 2007, the Sub-Task Force issued a report to the Legislature that reviewed financing tools for reclaimed water in other states, especially Arizona, California, Florida, and Texas. The report concluded that existing sources of grants, loans, and self-financing may likely continue to be the major means of financing future reclaimed water projects, but also identified the following potential sources of direct revenue or capitalization of grant and loan funds for reclaimed water projects:¹⁸⁴

- General bond obligations can provide grants to write down the construction costs of new or expanded facilities or can be directed to existing or new loan funds such as the SRFs for water and wastewater.
- Enact legislation that dedicates designated sources of revenue for water reclamation.
- Legislative appropriations from general tax revenues.
- A carefully targeted state tax or fee on water withdrawals or consumption, with appropriate exemptions for health related consumption, to provide revenues for reclaimed water projects.¹⁸⁵
- Voluntary contributions that utilities collect from ratepayers and funnel into a capital fund to invest in sustainable water infrastructure, including reclaimed water.¹⁸⁶ Under such a program, water or wastewater utility customers could choose to purchase sustainable water infrastructure, including reclaimed water, for a percentage of their annual water use.

¹⁸² WASH. DEP’T OF ECOLOGY, WATER RIGHTS IMPAIRMENT STANDARDS FOR RECLAIMED WATER: STAKEHOLDER VIEWS AND ECOLOGY RECOMMENDATIONS v – vi (2009), available at: <http://www.ecy.wa.gov/pubs/0911027.pdf>.

¹⁸³ WASH. DEP’T. OF ECOLOGY, LONG TERM FUNDING SUB-TASK FORCE (2010), available at: <http://www.ecy.wa.gov/programs/wq/reclaim/longtermfunding.html>.

¹⁸⁴ LANGDON MARSH, ENVTL. LAW INST., REPORT ON FUNDING AND FINANCING FOR RECLAIMED WATER FACILITIES 6 – 12 (2007), available at: <http://www.ecy.wa.gov/programs/wq/reclaim/advisorycommittee/Funding/ELI%20Report%20Funding%20and%20Financing.pdf>.

¹⁸⁵ The report cites a “flush fee” that Maryland adopted in 2005, which adds \$2.50 per person a month to the utility bills of property owners who use the public sewer system. *Id.* at 7.

¹⁸⁶ This concept is based on existing green energy voluntary surcharges collected by utilities in which customers can choose to purchase new, renewable energy for a percentage of their annual electricity use. The proceeds are invested in projects like wind farms, geothermal, or tidal energy projects in which the utility participates.

- Using SRF guaranty authority to expand the number of projects financed. The CWA and Safe Drinking Water Act both allow states to “guarantee, or purchase insurance for, local obligations where such action would improve credit market access or reduce interest rates.”¹⁸⁷ Using this authority would not constitute a new source of revenue but could extend overall capacity of SRFs to finance local reclaimed water projects.
- Leveraging the capacity of an SRF to provide loans to qualifying projects, including reclaimed water projects, at below market rates.
- States have considerable discretion in establishing priorities for SRF investments in projects and could grant priority points for projects that incorporate reclaimed water.
- Using private activity bonds, which local governments use to provide debt financing for projects that significantly benefit private users (e.g., water and sewer projects) and are normally payable solely from payments made by the private user or the property financed. States and municipalities could choose to favor or require reclaimed water facilities as a condition of making private activity bonds available. States could also prioritize caps on these bonds to favor projects that incorporate reclaimed water.
- Utilizing tax increment financing, which is a method of facilitating development or redevelopment of defined areas of property by utilizing future tax revenues to pay for necessary improvements. Under this method, local officials designate an area for improvement and then earmark any future growth in property tax revenues in that district to pay for predetermined development expenditures. Such expenditures could theoretically include reclaimed water projects.
- Investing state pension funds in innovative projects that could include reclaimed water. While the pension funds need to achieve a reasonable rate of return for investors, the investment may be on more favorable terms than might be otherwise available from private sources, especially if the transaction were structured in a way that the overall return was satisfied by other aspects of a larger project the pension fund is investing in.
- In areas where reclaimed water projects are planned and there is a Superfund or brownfield site that is being redeveloped, it may be possible to invest responsible-party funds to help implement the reclaimed water project.
- Federal highway funds can be used to deal with water quality issues in conjunction with projects. If a reclaimed water project is planned in the vicinity of a federally funded project and it could meet the required criteria, some of the project funds might be allocated to assist with reclaimed water project.
- The federal New Markets Tax Credit Program allows taxpayers to receive a credit against federal income taxes for making quality equity investments in designated Community Development Entities (CDEs). Where reclaimed water projects are

¹⁸⁷ FWQA (P.L. 100-4), Title VI, § 603(d)(3); FSDWA (P.L. 104-182), § 1452(3)(f).

planned in areas where there is an active CDE, there may be an opportunity to work with CDE and target businesses to finance reclaimed water compatible infrastructure in their projects.

- Many nonprofit organizations use affinity cards to raise funds for their programs, and government-supported environmental funds have been designated to receive funds from such credit card purchases. Under such a system, a credit card company could donate a certain percentage of the interest earned on certain purchases to funds that support reclaimed water projects and education efforts.
- Sales of special license plates could provide states with additional funding for reclaimed water projects and efforts.

d. Removing Barriers Rule Sub-Task Force

This Sub-Task Force identified and recommended actions to increase the promotion of reclaimed water as a water supply and water resource. Among other things, the Sub-Task Force considered: (1) staffing levels, resources, and roles within Ecology and Health; (2) optimizing organizational structure; (3) unresolved reclaimed water use legal issues; and (4) a more appropriate name to describe reclaimed water.¹⁸⁸ As part of this effort, the Environmental Law Institute issued a report in 2007 on possible incentives that Washington, municipalities, and utility districts could adopt to encourage the use of reclaimed water. The report reviewed different tools that are available in Washington and other states and identified the following, non-exhaustive list of possible practices:¹⁸⁹

- Mandates that require the use of reclaimed water in appropriate circumstances.
- Planning requirements in which all locally adopted plans include consideration of reclaimed water zones or favor reclaimed water where it is or reasonably available.¹⁹⁰
- Create a regional agency with growth management, transportation, air quality, water, and potentially other planning, environmental management, and financing authority to assure that reclaimed water and other alternate water sources are included in federal, state, and local mandated planning.
- States could use their authority to condition permission to develop new areas on the construction of adequate facilities (water, sewer, sidewalks, etc.) to require the installation of reclaimed water facilities and piping if an analysis shows that reclaimed water is available or will be available in a reasonable time.

¹⁸⁸ WASH. DEP'T. OF ECOLOGY, REMOVING BARRIERS RULE SUB-TASK FORCE (2010), available at: <http://www.ecy.wa.gov/programs/wq/reclaim/removingbarriers.html>.

¹⁸⁹ LANGDON MARSH, ENVTL. LAW INST., REPORT ON INCENTIVES FOR RECLAIMED WATER 1 – 7 (2007), available at: <http://www.ecy.wa.gov/programs/wq/reclaim/incentivesreclaimed.pdf>.

¹⁹⁰ The report noted that municipalities are generally free to adopt such provisions on their own, in the absence of a state mandate. *Id.* at 2 – 3.

- Using zoning tools, such as incentive, inclusionary, cluster, environmental, overlay, floating, mixed use, or performance zoning or unit development provisions, to set aside an area of a municipality for development of reclaimed water uses.¹⁹¹
- Enacting statutes that encourage or require that provisions be made for reclaimed water in planning for expanding water supply capacity.¹⁹²
- Using better agency coordination and training, use of performance codes, and changes in legal liability to address barriers in health and building codes.
- Creating an insurance program to reduce the risks associated with investments made by developers, who might balk at pre-installing reclaimed water compatible facilities if such efforts are not required or will not be for a considerable amount of time. The report identifies SRFs, which have broad authorization for conduit financing by municipalities for a broad array of facilities, as a possible source of capital for such programs.
- Simplifying requirements that apply to reclaimed water. The report cites amendments to the California Water Code that authorized regional boards to issue master reclamation permits to a producer and/or distributor of recycled water in lieu of prescribing individual water reuse requirements for reclaimed water users.¹⁹³

Two of the Sub-Task Forces addressed the issue of organic contaminants in reclaimed water and recommended not adopting any specific water quality contaminant levels until additional scientific research supports such standards. They also recommended that the state conduct investigative research that includes voluntary monitoring for wastewater, drinking water, stormwater, and any other environmental entity these contaminants may impact.

R. WYOMING

Reuse is not uncommon and is increasing in Wyoming. Nine wastewater reuse projects currently use treated domestic wastewater and that such water is “usually immediately reused for irrigation” due to the arid nature of the state. Wyoming also has larger amounts of wastewater from agricultural operations and mineral (primarily oil and gas) that are treated and reused.

1. Reuse Laws and Regulations in Wyoming

Wyoming recognizes reuse as a beneficial use and its regulations use the term “reuse of treated wastewater,” which means “domestic sewage discharged from a treatment works after completion of the treatment process.”¹⁹⁴ In general, municipalities have an inherent right to use

¹⁹¹ *Id.* at 3 – 4. Other land use tools identified in the report include: rezoning for higher density, density bonuses, exemptions from impact fees or special assessments, minimum lot sizes, infill development, adaptive reuse, historic preservation grants and tax credits, special use districts as for transit oriented development, tax abatements, credits or waivers, and grants of public land.

¹⁹² *Id.* at 4 – 5.

¹⁹³ *Id.* at 6 (citing CAL. WATER CODE §13523.1 (2010)).

¹⁹⁴ 020-080 WYO. CODE R. § 021(3)(y) (Weil 2010).

their wastewater discharges however they see fit but the Wyoming Supreme Court has held that multi-state compacts can supersede those rights.¹⁹⁵

Chapter 21 of the Wyoming Department of Environmental Quality's (WDEQ) Water Quality Rules and Regulations is a specific regulation for domestic wastewater reuse and establishes standards that address the primary health concerns associated with the reuse of treated wastewater.¹⁹⁶ WDEQ's Water Quality Division (the Division) regulates the health and water quality protection aspects associated with reuse, while the State Engineer's Office regulates the water rights aspects.

The state regulates wastewater reuse from agricultural sources through the nutrient management plans that are part of its NPDES (WYPDES) program. It also uses the WYPDES program and WDEQ rules to regulate Coal Bed Methane produced water.¹⁹⁷ Water reuse regulators must self-monitor, with occasional inspection from the Division.

2. Reuse Funding in Wyoming

Reuse activities in Wyoming receive funding through the Wyoming Water Development Commission with mineral tax revenues and through the SRF program. However, the state notes, "The fact that the EPA does not consider agricultural reuse to be 'categorically green' under the SRF programs is a hindrance." Wyoming also provides both grants and loans. Because of the scarcity of water in Wyoming, any practical project will usually receive funding.

3. Issues Affecting Reuse in Wyoming

In the past, public concerns regarding the safety of reused water have posed challenges for reuse projects in Wyoming that involved irrigation in public areas. For example, in the 1990's the City of Casper attempted to irrigate soccer fields with reused water. However, a citizen group led a movement that successfully stopped the plan.

More recently, extensive community education starting at the grass roots level has proven to be successful in lessening public concerns. In the early 2000's, the City of Cheyenne successfully implemented a reuse project after a successful education campaign aimed at "soccer moms." Wyoming notes: "Because it was a time of drought, the case was presented to them

¹⁹⁵ In *Thayer v. City of Rawlins*, the Court addressed the principle of the prior appropriation doctrine that an appropriator is continually entitled to the flow of the stream as it existed at the time of his appropriation. Under that principle, one making a new appropriation must be aware of how many senior users are already present on that stream and how much water they have appropriated prior to his or her use, and must expect his or her use to always be subject to those conditions. However, that appropriator can also expect anyone later acquiring rights to the same stream to do so only in a way that leaves the stream at the senior's headgate in the same condition as it existed at the time of his or her appropriation. In *Thayer*, the Court held that this principle did not apply to introduced water brought in from an outside (trans-basin) source and clarified that a water user who adds water to the natural flow of a stream is entitled to take that same "imported" water back out for her or her own use, even though a senior priority on the same stream may be left without water as a result. 594 P.2d 951 (Wyo. 1979).

¹⁹⁶ 020-080 WYO. CODE R. §021(1)(a) (2010).

¹⁹⁷ There are very large quantities of coal bed methane discharged in Wyoming. Some are used for irrigation, livestock water, and groundwater recharge, while others go "down the river."

basically as ‘do you want hard brown soccer fields or nice, safe, green soccer fields irrigated with reused water?’ Green grass carried the day.”

As mentioned previously, interstate compacts can supersede the ability of municipalities to use their wastewater discharges as they see fit. In particular, Wyoming reports that the Platte River Compact “severely limits” wastewater reuse along the North Platte River because treating the water discharge to the river has proven “far less expensive than [the] legal expenses [needed] to attempt to resolve interstate issues to allow wastewater reuse.”

Wyoming’s sparse population and its status as a headwaters state means that emerging contaminants are not concentrated in its waters. Further, because most reused water is used for irrigation purposes, the state’s high oxygen and UV levels that result from its high altitude break down the emerging contaminants very quickly.

4. State Efforts Regarding Reuse in Wyoming

Although Wyoming does not have a formal program to encourage reuse, Chapter 21 of its “Water Quality Rules and Regulations” states:

“It is the intent of these regulations to encourage and facilitate the productive and safe reuse of treated wastewater as a viable option in the management of the state's scarce water resources. The use of treated wastewater for non-potable purposes through ‘source substitution’ or replacing potable water used for non-potable purposes is encouraged.”¹⁹⁸

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

¹⁹⁸ 020-080 WYO. CODE R. §021(1) (2010).

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.

APPENDIX A

OVERVIEW OF STATE LEGAL AND REGULATORY FRAMEWORKS FOR WATER REUSE

	Specific Definition	Beneficial Use	Reuse Statutes, Regulations, Case Law, Guidance, Etc.	Agencies with Jurisdiction Over Reuse	Programs Promoting Reuse & State Funding Mechanisms
AZ	Reclaimed water	Yes	Statutes: -ARIZ. REV. STAT. § 49-201(32) Regulations: -ARIZ. ADMIN. CODE. §§ R18-9-601 – 720 -Id. § R18-11-301 – 309 -Id. § 49-203.A.6 -Id. § 49-221.E	AZ Dept. of Environmental Quality, Water Quality Div. (quality) AZ Dept. of Water Resources (quantity)	No program – but AZ has formed a “Blue Ribbon Panel” to look into reuse impediments and ways to advance reuse. In Nov. 2010, the Panel released a substantive report discussing obstacles and making recommendations, available at: http://www.adwr.state.az.us/AzDWR/waterManagement/documents/B RP_Final_Report-12-1-10.pdf. AZ’s Water Infrastructure and Finance Authority is authorized to finance the construction of wastewater, wastewater reclamation, and other water quality facilities/projects by providing below market interest on loans.
CA	Recycled water	Yes	Statutes: -CAL. WATER CODE §§26; 1210 – 12; 13050 – 57; 13575 – 83 Regulations: -CAL. CODE REGS. tit. 22, §§ 60301 – 60357 Guidance: Multiple documents, including a 2009 “Recycled Water Policy” are available at: http://www.swrcb.ca.gov/water_issues/programs/#waterrecycling A 2010 report from a science advisory panel providing guidance for developing monitoring programs that assess potential threats from emerging contaminants from recycled water, available at: http://www.swrcb.ca.gov/water_issues/programs/water_recycling_policy/recycledwater_cec.shtml	State Water Resources Control Board (quality and quantity/general permits) Regional Water Quality Control Boards (quality and quantity/individual permits) California Dept. of Public Health (public health)	Statewide program – aimed at encouraging water reuse (use of recycled water) in a manner to protect public health and the environment. Program website located at: http://www.swrcb.ca.gov/water_issues/programs/#waterrecycling California operates a Water Recycling Funding Program (WRFPP), which provides technical and financial assistance (grants and loans) to agencies and other stakeholders to support research and project planning, design, and construction. Funding is available through the state’s Clean Water SRF and two bond laws (Propositions 13 and 50). For more, please see:

			A 2003 "Recycled Water Task Force" report is available at: http://www.water.ca.gov/recycling/TaskForce/		http://www.swrcb.ca.gov/water_issues/programs/grants_loans/water_recycling/index.shtml
CO	Reclaimed water	Not recognized as such per se, but state regulations were designed to promote reuse of domestic wastewater	Regulations: -COLO. CODE. REGS. § 1002-84 -Id. § 25-8-205(1) Case law interpreting CO's legal framework recognizes the importance of reusing trans-basin water to extinction	CO Dept. of Health, Water Quality Control Div. (quality) CO Dept. of Natural Resources, Div. of Water Resources (quantity)	No program– but CO has worked with the Joint Water Reuse Committee of the Rocky Mountain Section of the American Water Works Association and the Rocky Mountain Water Environment Assn. Reuse projects are eligible for SRF funding but no specific portion is set aside for reuse projects.
ID	Recycled water	Yes	Statutes: -IDAHO CODE ANN. § 39-115 Regulations: -IDAHO ADMIN. CODE r.58.01.17 -Id. r.58.01.17 -Id. r.58.01.03 -Id. r.58.01.11 -Id. r.58.01.02 -Id. r.58.01.09 Guidance: -"Guidance for the Reclamation and Reuse of Municipal and Industrial Wastewater," available online at: http://www.deq.idaho.gov/water/permits_forms/permitting/guidance_reuse_0907.pdf . Information on recent revisions to Idaho's water reuse rule: http://www.deq.idaho.gov/rules/waste_water/58_0117_1001_pending.cfm	ID Dept. of Environmental Quality (IDEQ) (quality) ID Dept. of Water Resources (quantity)	State program – IDEQ hosts annual reuse conference of representatives from cities, state, federal agencies, consultants, developers, etc. to discuss reuse. IDEQ provides grant and loan opportunities for wastewater treatment facilities.
KS	No	Yes	No specific statutes or regulations for reuse. NPDES permits and state water quality permits regulate reuse. Related Statutes: -KAN. STAT. ANN. § 82a-702 -Id. § 82a-711(a) -Id. § 82a-520, Art. IV, Sec. H Related Regulations: -KAN. ADMIN. REGS. § 5-1-1(kkkk) -Id. § 5-3-5b	KS Dept. of Health and Environment, Bureau of Water (public health) KS Dept. of Agriculture, Division of Water Resources (water use)	No program No state funding – projects funded locally

			-Id. § 5-5-3		
MT	Reclaimed Water – effective Oct. 2011 per H.B. 52	Not recognized per se – whether or not a certain use of water is a “beneficial use” is determined by the actual use rather than the source from which the water comes	Statutes: In March 2011, the Montana passed H.B. 52 to: (1) provide rulemaking authority to the Board of Environmental Review to regulate wastewater from public sewage systems; (2) define “reclaimed wastewater,” and (3) authorize the adoption of treatment standards and monitoring, recordkeeping, and reporting requirements. H.B. 52 will become effective on Oct. 1, 2011, and the following statutes will be amended: -MONT. CODE ANN. § 75-6-102 -Id. § 75-6-103 The Montana Discharge Elimination System (MDES) regulates the use of wastewater. Guidance: Circular with design standards for reuse facilities, as well as standards to be used for the design and review of projects involving spray irrigation of sewage effluent from a domestic wastewater treatment facility, available online: http://www.deg.state.mt.us/wqinfo/Circulars/DEQ2.PDF	MT Dept. of Environmental Quality (MPDES) MT Department of Natural Resources and Conservation, Water Rights Bureau (water rights) MT Board of Environmental Review (rulemaking authority) – effective Oct. 1, 2011 per H.B. 52	No program No state funding
NE	No	Yes	No specific laws for reuse – regulated under NE’s NPDES program Regulations: -TITLE 119, CH. 12 NEB. ADMIN. CODE § 001	NE Dept. of Environmental Quality (quality) NE Dept. of Natural Resources (quantity) NE Health and Human Services (public health) Natural Resources Districts	No program Municipal treatment plant effluent reuse is funded in the same manner as other municipal wastewater treatment facilities. SRF funding is also available
NV	No –but does define “treated effluent”	No – reuse is an allowable form of treated effluent provided it meets requirements for bacteriological quality NV also has a legislative	Statutes: -NEV. REV. STAT. § 445A.415 -Id. § 522.024 Regulations: -NEV. ADMIN. CODE §§ 445A.070 – 280 -Id. § 445A.2748 -Id. § 445A.425 -Id. §§ 445A.2762, 2764, 2766, 2768, 2771	NV Dept. of Conservation and Natural Resources, Div. of Environmental Protection	No program No state funding

		declaration promoting reuse	Guidance: -“WTS-1A: General Design Criteria for Reclaimed Water Irrigation Use,” http://ndped.nv.gov/bwpc/wts1a.pdf -“WTS-1B: General Criteria for Preparing an Effluent Management Plan,” available online at: http://nped.nv.gov/bwpc/wts1b.pdf		
NM	No –but “reclaimed water” is the nomenclature the state uses	Yes	Statutes: -N.M. STAT. ANN. §§ 74-6-1 – 17 Regulations: -N.M. CODE R. § 20.6.2 -Id. § 20.7.3 <i>Reynolds v. City of Roswell</i> , 654 P.2d 537 (N.M. 1982) - addressed municipality’s right to reuse effluent Guidance: “Above Ground Use of Reclaimed Domestic Wastewater,” http://www.nmenv.state.nm.us/fod/liquidWaste/AGURWW.pdf	NM Environment Dept: -Ground Water Quality Bureau (discharge permits for domestic waste over 2,000 gpd and all other waste types) -Liquid Waste Program (discharge permits for the reuse of residential and commercial domestic waste under 2,000 gpd) -Drinking Water Bureau (oversight of public water supplies that develop indirect and direct potable reuse projects) NM Regulations and Licensing Dept, Construction Industries Division (design and construction) NM State Engineer & Interstate Stream Commission (quantity)	No program – but NM has participated in the NM Water Reuse Committee, which is affiliated with the Rocky Mountain Section of the Water Environment Federation. NM provides financing directly for reuse projects. SRF funding is also available.
ND	No	Yes – on case by case basis	No specific laws or regulations – ND regulates reuse through its wastewater treatment program Guidance: - “Guidelines for Using Treated Wastewater in Construction” - “Criteria for Irrigation with Treated Wastewater” <i>*Contact NDDH for guidance documents</i>	ND Dept. of Health (NDDH)	No program – but State Engineer encourages reuse in water short areas and NDDH promotes reuse on an informal, case-by-case basis.
OK	No	No	No specific laws or regulations – OK permits wastewater activities pursuant to its Oklahoma Discharge Elimination System (OPDES)	OK Dept. of Environmental Quality	No program No state funding
OR	Defines both “recycled water” & “reclaimed water”	Yes	Statutes: -OR. REV. STAT. §§ 537.131 – 132 -Id. § 215.213 -Id. § 468B.015	OR Dept. of Environmental Quality (quality) OR Dept. of Agriculture (CAFOs)	Statewide program – aimed at encouraging water reuse (use of recycled water) in a manner to protect public health and the

			Case Law: Water right holders may recapture wastewater, remaining on his/her land, and reapply that water to the original beneficial use in the location authorized under the water right without any additional authorizations. The courts have also ruled that organizations such as irrigation districts or municipalities may capture waste or seepage water before it enters a natural waterway and before it leaves the boundaries of the district. Regulations: -OR. ADMIN. R. 340-055-0005 – 0030 -Id. R. 690-086-0010 – 0920 Guidance/Policy: Executive Order 05 – 04, encouraging reuse: http://governor.oregon.gov/Gov/pdf/EO0504.pdf. "Internal Management Directive: Implementing Oregon's Recycled Water Rules," available at: http://www.deq.state.or.us/wq/pubs/imds/RecycleWater.pdf. Industrial reuse guidance: http://www.deq.state.or.us/wq/reuse/industrial.htm MOU defining agency reuse responsibilities: http://www.deq.state.or.us/wq/reuse/docs/mou.pdf Reports: Urban Water Reuse Task Force Report: http://www.deq.state.or.us/pubs/legislativepubs/2005/SB820ReuseFinalLegislativeReport.pdf.	OR Water Resources Dept. (water rights) Environmental Public Health Section, Oregon Health Authority (public health)	environment. It also maintains a website for the program with a variety of information, located at: http://www.deq.state.or.us/wq/reuse/reuse.htm. SRF funding is available. OR's Infrastructure Finance Authority also helps communities develop infrastructure, public facilities, and address the utility and economic development infrastructure needs through: (1) community development block grants; (2) special public works funds; and (3) water/wastewater financing. 2008 legislation (S.B. 1069) directed OWRD to provide grants for studying the feasibility of water conservation, reuse and storage projects, including the analyses of long-term environmental consequences.
SD	No	Yes	No specific laws or regulations – SD regulates land application of treated municipal and domestic wastewater via NPDES permits; industrial wastewater through its Wastewater Management Program; and uses a general permit to regulate CAFO reuse under its Surface Water Discharge program Guidance:	SD Dept. of Environment and Natural Resources	No program – but SD has worked with industries and communities to address individual concerns and provide water quality testing to demonstrate the effectiveness of wastewater treatment and land application.

			-Design criteria for the reuse of treated domestic wastewater, available at: http://denr.sd.gov/documents/designnumber.pdf. -Op. Att'y Gen. S.D. 75-177, 1 (1975) - reasoned that land application of wastewater by a municipality is valid under the original appropriation and does not require an additional permit to irrigate, provided that the water is used for municipal purposes and the use does not affect downstream prior appropriators		SRF funding is available
TX	Reclaimed water – also defines direct and indirect reuse	Yes	Statutes: -TEX. WATER CODE ANN. § 11.042 and § 11.046 -<i>Id.</i> 26.0311 -TEX. HEALTH & SAFETY CODE ANN. § 341.039 Regulations: -30 TEX. ADMIN. CODE §§ 295 and 297 -<i>Id.</i> §§ 210.1 et seq. -<i>Id.</i> § 321.1 et seq.	TX Commission on Environmental Quality (TCEQ –regulates direct and indirect reuse) Railroad Commission (crude oil and natural gas activities)	State Program – TCEQ hosts water quality and water rights advisory work groups consisting of professionals, the regulatory community, and the public to discuss issues related to water quality, wastewater permits, wastewater standards, and water rights. TX Water Development Board (TWDB) has educational programs that explain water reuse and the need for additional supplies TWDB is responsible for administering cost-effective financial programs for constructing water supply, wastewater treatment, flood control, and agricultural water conservation projects. Reuse projects are eligible for funding under several TWDB-administered programs, including: (1) SRFs; (2) the Water Infrastructure Fund; State Participation Fund; and (3) Water Development Fund. For more, see: http://www.twdb.state.tx.us/assistance/financial/fin_infrastructure/StateParticipation.asp
UT	Reuse water	State water plan recognized beneficial use prior to 2006 passage of new “Water Reuse Requirements”	Statutes: - UTAH CODE ANN. §§ 73-3c-101 – 401 -<i>Id.</i> §§ 19-5-101 – 124 Regulations: -UTAH ADMIN. CODE § r.317-3-11	UT Dept. of Environmental Quality, Div. of Water Quality (quality) State Engineer (water rights and quantity)	No program SRF funding is available if wastewater treatment infrastructure is included in a reuse project for a public entity.

			Guidance: -“Utah’s Water Resources, Planning for the Future” (State Water Plan), http://www.water.utah.gov/waterplan/SWP_pff.pdf -“Water Reuse in Utah,” http://www.water.utah.gov/waterplan/SWP_pff.pdf		
WA	Reclaimed water	Yes	Statutes: -WASH. REV. CODE § 90.03 -Id. § 90.44 -Id. § 90.46.010 -Id. § 90.48 Regulations: In development – postponed until July 2013 Guidance: -“Water Reclamation and Reuse Standards,” available at: http://www.ecy.wa.gov/pubs/97023.pdf	WA Dept. of Ecology (quantity and quantity) WA Dept of Health, Office of Shellfish and Water Protection (public health)	State program - four demonstration reuse projects were constructed from 1999 to 2000 with financial assistance from the state legislature. State grant program to provide \$5M for planning and construction. Reclaimed water systems are eligible to compete with wastewater projects for state and federal assistance.
WY	Reuse of treated wastewater	Yes	Statutes: -Wyo. Stat. Ann. § 35-11-101 -Id. § 45-11-301 Regulations: -020-080 WYO. CODE R. § 021 -Id. § 003 -Id. § 011 <i>Thayer v. Rawlins</i>, 594 P.2d 951 (Wyo. 1979) - holding that the principle that an appropriator is continually entitled to the flow of the stream as it existed at the time of appropriation did not apply to introduced water brought in from an outside (trans-basin) source. Case also clarified that a water user who adds water to the natural flow of a stream is entitled to take that same “imported” water back out to use, even though a senior priority on the same stream may be left without water as a result	WY Dept. of Environmental Quality, Water Quality Div. (public health & quality) State Engineer (water rights)	No program Wyoming Water Development Commission provides funding from mineral tax revenues and through the SRF program.

APPENDIX B¹

¹ The states of Arizona, California, Colorado, Idaho, Nevada, New Mexico, Oregon, Texas, Utah, Washington, and Wyoming provided the information used to create the tables contained in this appendix. Given the varying types of data utilized by each state and their different approaches to regulating reuse, each table is unique to its respective state but does strive to provide basic information about the number and types of reuse projects in each state.

ARIZONA WATER REUSE PROJECTS - DRAFT DATABASE¹
As of May 2009

	Permittee	Permit Type	Permit No.	Effluent End Use	Design Capacity	Comments
1.	Ridgeview RV Park	IND	101622	I/R	24000	Irrigation of trees and shrubs; leach lines
2.	Prescott Country Club Townhomes HOA	IND	100237	I reuse	25000	Golf course irrigation; Class B
3.	Decisions Inv Corp Biosphere 2	IND	102464	R EP	25000	infiltration basin/ land disposal
4.	Resource Recovery	IND	105204	Reuse	25000	AquaTec WWTP; at mine; treats septage
5.	Fountain Realty & Dev	IND	105327	R/ reuse	120,000	Desert Fountain WWTP; B+; infiltration
6.	Oak Crk Prop Ownrs	IND	101748	EP/R	30000	Two unlined ponds
7.	US Army-Yuma Proving Ground	IND	100795	EP	31000	Laguna Army Airfield sewage lagoons
8.	National Park Svc	IND	101631	I	32000	Irrigation of native vegetation; reuse
9.	Desert Skies RV Pk	IND	102648	R/SW	35000	Primary discharge to 4 surface impoundments, Option of discharge to dry wash
10.	High Country Pines	IND	103425	SW	36000	Disch to Turkey Draw
11.	Beaver Dam Sewr	IND	104153	SW	36600	virgin R?
12.	Elk Run LLC	IND	103676	SW	37000	Discharge to Houston Creek.
13.	Francisco Grande	IND	101693	I	40000	Used at resort golf course
14.	Yuma County	IND	103171	R	40000	WWTP
15.	W Horizon Resorts	IND	103557	R	40000	Colorado River Oasis WWTP
16.	Bistontown, LLC	IND	103703	SW	40000	Discharge to unnamed wash.
17.	Snowbase Subdiv	IND	103139	SW	40000	Discharge to Rio de Flag.
18.	Pine Crk Can Dist	IND	102949	R	40460	Percolation pond
19.	Valle Airpark	IND	103114	Reuse/SW	45000	Option of SW discharge or other use.
20.	USDA Forest Service-Tonto Nat'l Service	IND	100819	SW	45000	Discharge to Roosevelt Lake
21.	US Dept of Interior-Bureau of Reclamation	IND	102131	SW	45000	All effluent discharged to Colorado River.
22.	National Park Svc	IND	101403	Reuse	47000	Katherine Landing WWTP
23.	Ponderosa Environmental Systems, Inc	IND	100213	Reuse	48300	Reuse not specified
24.	Rancho Mirage	IND	102757	I	50000	Golf course use; B+
25.	Enchantment Resort WWTP	IND	100076	I	50000	Turf & landscape irrigation
26.	Maricopa Wtr Dist	IND	102895	I	50000	Onsite landscape irrigation
27.	Las Quintas RV Pk	IND	103137	R	50000	RV park WWTP.
28.	Far West Wtr&Swr	IND	103618	R	50000	Percolation basins.
29.	Sunlake Village LLC	IND	103681	R	50000	Sunlake Village Phase "B" WWTP
30.	Desert Garden I LLC	IND	101823	R	52200	70 seepage pits
31.	Escapes at N.Ranch	IND	101870	EP/R	55000	Two evap ponds plus leach field
32.	Monte Carlo MHP	IND	102579	R	55000	Infiltration basins
33.	Villages at Lynx	IND	100399	SW	55400	Discharge to Lynx Creek
34.	City of Yuma	IND	103545	R	56700	Citrus View WWTP, City of Yuma
35.	Tierra Grande Utilities	IND	105233	Reuse	60000	Tierra Grande WWTP; Class B

¹ Source: Arizona Department of Environmental Quality.

36.	Amer Ranch WWTP	IND	105009	I	60000	Turf/tree irrigation
37.	Midas Capital Desert Gardens II	IND	102435	R	60000	Seepage pits
38.	Pima County Wastewater Management Dept	IND	100640	R/Reuse/EP	60,000	Arivaca Junction WWTP
39.	Queen Valley S.D.	IND	101699	R/SW	60000	Disch to tributary of Queen Crk or land disposal
40.	Havasui Springs Resort, LLC	IND	102186	Reuse	60000	11 miles east of Casa Grande
41.	7 Canyons WTC	IND	103334	I	64000	Golf course irrigation (see R103334)
42.	US Army-Yuma Proving Ground	IND	100797	EP/R	64500	Material Test Area Lagoons
43.	MTC Corr Facility	IND	102889	I	65000	Reuse on non-food crops at BKW Farms; Class C
44.	Southland Sanitation	IND	101491	R/Reuse/EP	70000	Golden Acres WWTP; Class C
45.	Oracle Sanitary District	IND	100679	EP	70000	Series of clay-lined lagoons
46.	Cotton Ln RV Rsr	IND	101836	I	70000	Golf course reuse.
47.	Marana HS	IND	103122	R	70000	Marana High School WWTP; leach fields
48.	Pine Meadows Utilities LLC	IND	21397	R/SW	70000	Disch to Thompson Draw, leach field
49.	Town of Jerome	IND	100721	R/SW	70000	Wetlands>discharge to Bitter Creek
50.	Evergreen Air Center	IND	101435	EP	72000	Lagoons with evap ponds
51.	Paradise Peak West WWTP	IND	102182	I/R	75,000	Source is Paradise Peak West MHP; irr of Paradise Peak West golf course
52.	MHC Lim Prtnrship	IND	101755	SW	75000	Discharge to Dry Creek
53.	Alpine Sanitary Dist	IND	101437	EP; SW/reuse	76560	Near Alpine
54.	Naco Sanitary District	IND	100833	EP/R	80000	Discharge to 4 lagoons
55.	Town of Duncan	IND	101558	I/R	80000	Irrigation with resulting recharge
56.	Sunscape Estates WW Association, Inc	IND	100077	R	80000	Pumped through a meter into a percolation pond for disposal
57.	Tonopah Travel Ctr	IND	101834	R	80000	Leach field disposal
58.	Underhill Transfer	IND	103172	R	80000	Discharged to leach lines
59.	Petro PSC LP	IND	100283	SW	80000	Petro Stopping Center; disch to dry wash
60.	Town of Patagonia	IND	101356	SW	80000	Discharge to Sonoita Creek
61.	Ranch 160 LLC	IND	105216	SW	80000	Discharge to unnamed dry wash
62.	Tamarron Pines	IND	105201	R	82000	Tamarron Pines WWTP; leach field
63.	ADOA	IND	102761	R	87500	ASPC-Winslow; constructed wetlands
64.	Tubac Mgmt Co.	IND	105465	I	91500	Treatment wetlands->golf course irrigation
65.	Pinal County Community College District, Central Arizona College	IND	100660	EP/R	100000	Signal Peak Campus WWTF; 2 ponds, one lined, one unlined
66.	Roadhaven Resort	IND	101709	I/SW	100000	Turf irrigation; some SW disch
67.	Iron Springs Sanitary District	IND	100719	R	100000	Close Pine Lakes/Kingswood WWTP that treated domestic sewage
68.	Corrections Corp of America	IND	102749	R	100000	Eloy Detention Center
69.	Baca Float Wtr Co	IND	102959	R	100000	Wetlands-based wastewater treatment
70.	Town of Patagonia	IND	105267	SW	110000	Patagonia WWTP; disch to Sonoita Creek
71.	AZ American W.C.	IND	105010	R	112000	AZ Gateway WWTP; basin recharge
72.	Biasi Ranch Partners	IND	103612	EP	115400	Five evaporation ponds.
73.	Black Mountain Sewer Corporation	IND	100351	I	120000	Black Mountain WWTP; golf course reuse
74.	Town of Winkelman	IND	101902	SW	120000	Discharge to Gila River
75.	White Mountain Lakes Sanitation Inc	IND	100277	I	125000	White Mountain Lakes WWTP; Class C; irrigation of pasture grass

76.	Quintero Golf & CC	IND	105012	I	125000	Effluent mixed w/CAP; used on golf course
77.	Links at Coyote Wash	IND	105311	Reuse	126000	B+; specific reuse not identified
78.	Sweetwater Crk U	IND	102846	EP/R	126000	Sweetwater Creek Utilities WWTP, Yuma; 3 evaporation/percolation ponds
79.	Town of Taylor	IND	101416	EP	130000	Three lined evaporation ponds
80.	Town of Pima	IND	100805	I	130000	Irrigation of non-food crops
81.	Rio Rico Utilities	IND	101731	EP	150000	Contingency storage of raw sewage
82.	Far West Wtr&Swr	IND	105014	I	150000	Golf course irrigation
83.	IBM Corporation	IND	101680	I/Reuse/Dust	150000	Use at U of A Technology Park
84.	City of Bullhead City	IND	102012	R	150000	Sunridge Estates WWTP
85.	Pima County Wastewater Management Dept	IND	100631	R/SW	150000	Marana WWTP; reuse or discharge to Santa Cruz River
86.	US Dept of Interior-Nat'l Park Service	IND	100749	SW	150000	North Rim WWTP; Discharge to Transept Canyon
87.	Utility Source, LLC	IND	104083	SW	150000	Flagstaff Meadows WWTP
88.	TGS Riverland Partnrs	IND	105507	R/Reuse	154000	Topock Village Estates WWTP; rechg wells
89.	AZ Dept of Corrections	IND	100292	Reuse	155000	ASPC Safford WWTP
90.	Flagstaff Ranch Golf Club LLC	IND	21396	I	160000	
91.	Town of Clifton	IND	100973	Reuse	175000	Effluent sent to Phelps Dodge for mining use
92.	Bensch Ranch Util	IND	105001	SW	175950	Discharge to Big Bug Creek
93.	ADOA	IND	102341	EP/R	178000	Prison facility
94.	AZ American W.C.	IND	105229	R	198000	Russell Ranch WWTP; 2 recharge basins
95.	US Dept of Justice, Bureau of Prisons	IND	100363	I	198800	Prison WWTP; irrigation of trees & turf
96.	Town of Mammoth	IND	101690	EP/R	200000	Five EP/R ponds
97.	Far West Wtr&Swr	IND	103608	R	200000	Percolation basins.
98.	Blue Horizons WRF	IND	104165	SW	200000	Sent to RID canal
99.	Town of Fredonia	IND	103594	EP	210000	All water disposed of via evaporation.
100.	Forest Highlands Association	IND	100273	I	210000	Forest Highlands WWRF; golf course irrigation
101.	Town of Huachuca City	IND	100832	EP/R	220000	Discharge to 3 lagoons
102.	Buckskin Sanitary District	IND	100804	Reuse	228000	Unspecified reuse
103.	Corrections Corp of America	IND	105663	R	229000	Plus 20000 gpd of brine; vadose zone wells
104.	Town of Cave Creek	IND	103130	I	233000	Turf/landscape irrigation
105.	City of Tombstone	IND	100834	SW	240000	Discharge to Walnut Gulch
106.	GSA Investments	IND	104176	reuse	241000	Sunshine Estates WWTP
107.	Mountain Pass Utility	IND	105334	SW	249000	Disch to Big Wash; B+
108.	Town of Kearny	IND	103709	SW	250000	B+ effluent, disch to Gila R. or wetlands
109.	Town of Sahuarita	IND	103602	R	250000	Infiltration basins.
110.	Sunrise Vistas Util	IND	102580	R	250000	Four infiltration basins
111.	Picacho Sewer Co	IND	103890	R/Reuse	250000	Option of use via recharge permit.
112.	Whetstone Devlpment	IND	105502	R/Reuse	250000	Option of recharge or onsite reuse
113.	Town of Buckeye	IND	105629	R/SW	250000	Buckeye ID Canal disch/12 vadose zone wells
114.	US Army-Yuma Proving Ground	IND	100796	EP	256000	Main Administrative Area Lagoons; 3 impoundments
115.	City of Yuma	IND	101813	R	262000	1 percolation pond
116.	Sunbelt LLC	IND	103173	I	264000	Verde Santa Fe WWTP; B+; golf course

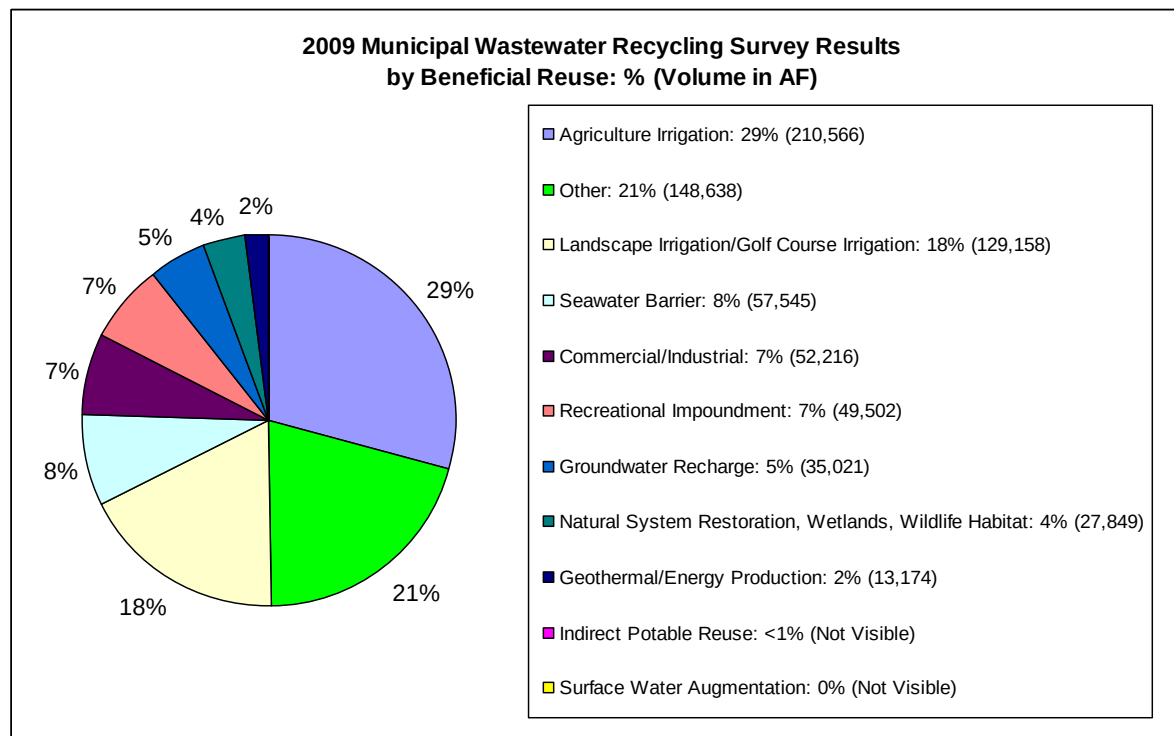
117.	Mohave Correctional	IND	103892	I	292500	Sacramento Road WWTP; effluent reused at Black Mountain Correctional Facility; fiber, seed, forage crops.
118.	Pima County Wastewater Management Dept	IND	100644	EP/R	300000	Coronada de Tucson WWTF
119.	Johnson Utilities	IND	105004	I	300000	Golf course irr
120.	Red Rock WRF	IND	105621	Reuse/SW	300000	Unspecified reuse or discharge to wash
121.	Grosvenor Holdings LC	IND	105488	SW	300000	Entrada del Oro WWTP; disch to wash
122.	Kachina Village Improvement District	IND	100362	I/R	309000	Kachina Village Improvement District WWTP; 8 wetlands; golf course reuse
123.	Joseph City Sanitary Dist	IND	100746	EP/R	329000	Unspecified reuse or evaporation
124.	Town of Miami	IND	100814	EP/R	330000	3 lagoons
125.	Far West Wtr&Swr	IND	102829	Reuse	340000	Marwood Plant, Yuma
126.	Town of Springerville	IND	100827	EP/R	350000	Discharged to wetlands
127.	City of Surprise	IND	105318	I	350000	Irrigation at an unspecified location
128.	AZ Dept of Corrections	IND	100227	EP/R	375000	ASPC Globe Prison WWTP wetlands and land disposal
129.	AZ Dept of Corrections	IND	100123	I	375000	ASPC Tucson; land application
130.	Johnson Utilities	IND	105325	I	415600	San Tan WRP; golf course & landscape irr
131.	ASPC Yuma	IND	100225	I	420000	ADOC facility; Class B; landscape irrigation
132.	Town of Florence	IND	100392	I	420000	Golf course irrigation
133.	City of Surprise	IND	100243	I	432000	Litchfield Rd WWTP; golf course reuse
134.	AZ American W.C.	IND	105202	R/Reuse	450000	Verrado WWTP; reuse or vadose zone wells
135.	Town of Quartzite	IND	102714	SW	450000	Quartzite WRF--no specific dischg in file
136.	Inscription Cyn Rch	IND	103119	I	455000	Landscape irrigation.
137.	City of St. Johns	IND	100828	Reuse	478000	Class C; unspecified reuse
138.	Town of Clarkdale	IND	100715	I/R	500000	Landscape irrigation & ponds
139.	Town of Superior	IND	100687	Reuse/SW	500000	Discharge to Queen Crk or unspecified reuse
140.	City of Somerton	IND	100791	SW	500000	Discharge to YCWUA Main Drain Canal
141.	Big Park Imp Dist	IND	102971	SW	500000	Disch to tributary of Jacks Canyon Wash
142.	City of Kingman	IND	100708	SW	530000	Downtown WWTP disch to Holy Moses Wash
143.	City of Williams	IND	101368	I	540000	Elephant Rocks Golf Course use
144.	Pinewood WWTP	IND	102887	I	600000	Reuse permit R102887; Golf Course, A+
145.	City of Willcox	IND	102778	I	600000	Willcox WWTP; Class B
146.	Ajo Improvement Co	IND	101678	I	250,000	To mine tailings disposal pond
147.	City of Bullhead City	IND	100603	I/R/EP	600000	Sierra WWTP; golf course irr, percolation ponds
148.	Town of Snowflake	IND	102019	Reuse/SW	600000	No more than 250000 gpd may be discharged under NPDES permit
149.	Town of Buckeye	IND	105022	Reuse/SW	600000	Sundance WRF; reuse or Buckeye I.D. use
150.	Rio Verde Utilities Inc	IND	100197	Reuse	700000	Reuse not specified
151.	Town of Gila Bend	IND	100576	SW	700000	Discharge to unnamed Gila River tributary
152.	Shea Sunbelt	IND	105021	I/SW	750000	Jomax WRF; A+; irr or disch option
153.	City of Prescott	IND	103159	Reuse	750000	Golf course irrigation. B+
154.	US Dept of Interior-Nat'l Park Service	IND	100751	Reuse/SW	750000	South Rim WWTP; unspecified reuse or

						discharge to Bright Angel Wash
155.	City of Goodyear	IND	105416	Reuse/SW	750000	Specific reuse not identified; SW disch option
156.	City of San Luis	IND	100790	SW	750000	Wellton-Mohawk lined salinity canal discharge
157.	South Grand Canyon Sanitary District	IND	100780	SW	750000	Tusayan WRF; discharge to Coconino Wash
158.	Town of Thatcher	IND	100807	I	800000	Reay Lane WWTP; irrigation of grain, cotton, pasture crops
159.	Town of Wickenburg	IND	100495	R/SW	800000	Percolation basin or disch to Hassayampa R
160.	City of Somerton	IND	105254	SW	800000	Discharge to Yuma Main Drain Canal
161.	ADOA Lewis Prison	IND	103236	I/R	822000	R: 665000 gpd; I: 157000 gpd; Class B+
162.	City of Page	IND	100303	EP/I	886300	Irrigation of golf course
163.	Palo Verde Utilities	IND	105454	R/Reuse	999000	Maricopa N WRF; vadose zone wells or reuse
164.	Bullhead Sanitary Dist	IND	102475	Reuse	999000	Bullhead City Section 18 WWTP; unspecified reuse
165.	Arizona-American Water Company	IND	102181	I/Reuse	1000000	Wishing Well WWTP, Class B; golf course and other unspecified reuse
166.	City of Holbrook	IND	103725	Reuse	1000000	Tree farm, golf course, alfalfa irrigation.
167.	Town of Chino Valley	IND	104236	R	1000000	May expand to 5 mgd
168.	Town of Buckeye	IND	105441	R/SW	1000000	Festival Ranch WWTP; reuse not specified
169.	Palo Verde Utilities	IND	105228	Reuse/SW	1000000	Palo Verde WRF
170.	City of Benson	IND	100829	Reuse/SW	1200000	Class B+; unspecified reuse & discharge to tributary of the San Pedro River
171.	USAF Environmental Branch	IND	100563	I/SW	1200000	Luke AFB WWTP; option of irrigation or discharge to Agua Fria River
172.	Tartesso WRF	IND	105340	R/SW/Reuse	1200000	Disch to Hassayampa River or recharge
173.	City of Globe	IND	100692	Reuse/SW	1200000	Pinal Creek WWTP; reuse or disch >Pinal Crk
174.	City of Bisbee	IND	100983	SW	1220000	Effluent conveyed 1.5 miles to outfall in Greenbush Draw
175.	SaddleBrooke Utility Company	IND	100356	Reuse/SW	1240000	SaddleBrooke WWTP; unspecified reuse plus discharge to Canada del Oro tributary
176.	Camp Verde S. D.	IND	101360	R	1300000	Percolation ponds
177.	Robson Communities	IND	105297	R/Reuse	1400000	Specific reuse not identified
178.	City of Cottonwood	IND	101434	Reuse	1500000	Landscape irrigation
179.	AZ City Sanitary Dist	IND	101688	Reuse	1500000	Golf course irrigation
180.	Town of Buckeye	IND	100574	SW	1500000	Discharge to Arlington Canal
181.	Ft. Mohave Tribe	IND	102342	Unknown	1500000	Tribal facility; 1991 permit
182.	Johnson Utilities	IND	103081	Reuse	1600000	Used on golf course; Section 11 WWTP
183.	City of Scottsdale	IND	100422	Reuse	1700000	Gainey Ranch WWTP; golf course irrigation
184.	Algonquin Water	IND	100217	I/R	1900000	Gold Canyon Sewer Company
185.	Town of Florence	IND	100370	Reuse/SW	1990000	Option of unspecified reuse or discharge to the Gila River
186.	City of Douglas	IND	100831	Reuse	2000000	Class C; discharged across international boundary for irrigation in Mexico

187.	City of Eloy	IND	101689	Reuse	2000000	0.525 mgd agricultural irrigation; Class C
188.	City of Coolidge	IND	100665	Reuse	2000000	Class C; unspecified reuse
189.	Pinetop-Lakeside Sanitary District	IND	100741	I	2000000	Treatment wetlands>landscape irrigation
190.	City of Sedona	IND	102298	I/R	2000000	Option of wetlands, recharge, irrigation
191.	Gila Resources	IND	100806	I/SW	2000000	Irrigation plus discharge to the Gila River
192.	N Gila Co San Dist	IND	101541	Reuse/SW	2000000	American Gulch WRF; any unused effluent disch to American Gulch
193.	Superstition Mtns Comm Util Dist	IND	102873	R/SW/Reuse	2100000	Recharge Site Location; Class B+
194.	City of Winslow	IND	100734	Reuse/SW	2200000	Agricultural irrigation; Class C
195.	City of Prescott	IND	101733	R	2200000	Airport WRF; irr option
196.	Lake Havasu City	IND	101612	R/Reuse	2200000	LHC Mulberry Avenue WWTP
197.	Pima County Wastewater Management Dept	IND	100642	R/Reuse/SW	2200000	Avra Valley WWTF; reuse in Tucson Reclaimed Water system, recharge, or disch to Santa Cruz River
198.	Pima Utility Company	IND	100557	R/Reuse	2400000	Sun Lakes WWTP; reuse or injection wells
199.	City of Show Low	IND	100737	R	2460000	Discharges to treatment wetlands
200.	Lake Havasu City	IND	101611	I/R	2500000	LHC Island WWTP
201.	Johnson Johnson Utilities - Anthem	IND	105646	I/R	3000000	Golf course irr/vadose zone rechg wells
202.	City of Kingman	IND	100611	R	3000000	Hilltop WWTP; wetlands + infiltration basins
203.	City of Goodyear	IND	101324	R/Reuse	3000000	Choice of reuse or recharge
204.	Fountain Hills S.D.	IND	101563	R/Reuse	3000000	Fountain Lake & recharge wells
205.	City of Yuma	IND	105005	R/Reuse	3300000	East Mesa Water Pollution Control Facility;A+
206.	Pima County Wastewater Management Dept	IND	100635	I/Reuse	3500000	Randolph Park WWTP; 1000 gpd for irrigation; remainder to Tucson Reclaimed Water System
207.	City of El Mirage	IND	101943	I/Reuse	3600000	Golf course reuse
208.	City of Bullhead City	IND	102392	R/Reuse	4000000	Plant is A+ reclaimed water
209.	City of Flagstaff	IND	102421	R/Reuse/SW	4000000	Reclaimed Class A+; NPDES No. AZ0023639
210.	City of Phoenix	IND	105008	I/R/SW/Reuse	4000000	N Gateway WRF; irr, rechg wells, discharge; A+
211.	City of Sierra Vista	IND	101489	R	4000000	Recharge via wetlands
212.	Johnson Utilities	IND	105324	R/Reuse	4000000	Basins, vadose zone wells, direct injection; A+
213.	City of Peoria	IND	100091	R	4000000	Beardsley Rd WRF; effluent recharged onsite
214.	Pima County Wastewater Management Dept	IND	100629	R/Reuse/SW	4100000	Green Valley WWTP; option of reuse, recharge or discharge to the Santa Cruz River
215.	City of Glendale	IND	100385	R/SW	4500000	Arrowhead Ranch WRF; recharge via injection wells or discharge to lakes
216.	AZ American W.C.	IND	102667	R	5000000	Northwest Valley WRF
217.	City of Prescott	IND	100353	Reuse	6000000	Sundog WWTP; specific reuse not specified
218.	City of Casa Grande	IND	100419	Reuse/SW	6000000	Disch to Santa Cruz Wash or unspecified reuse
219.	City of Avondale	IND	100573	SW	6400000	Avondale WWTP; discharge to Agua Fria River

220.	City of Glendale	IND	103580	R/Reuse	7000000	Option of recharge or permitted reuse.
221.	City of Surprise	IND	102478	R	7200000	South Surprise WRF; recharge basins
222.	City of Mesa	IND	100254	Reuse/SW	8000000	RWCD Main Canal, E Maricopa Floodway, or other beneficial use
223.	Litchfield Park Service Company (LPSCO)	IND	100310	Reuse/SW	8200000	Palm Valley WRF; A+ effluent; option of unspecified reuse or discharge to RID canal
224.	City of Tucson	IND	103370	R	10000000	Sweetwater US&R project.
225.	City of Chandler Municipal Utilities Dept	IND	100140	R/Reuse	10000000	Reuse or recharge at Chandler Ocotillo US&R Facility
226.	Town of Gilbert	IND	100393	R/SW	10100000	Neely WRF; recharge onsite or surface disch
227.	City of Peoria	IND	105401	R	11500000	Disch to Agua Fria Recharge Project
228.	City of Yuma	IND	100799	SW	12000000	Discharge to Colorado River outfall
229.	City of Mesa	IND	100369	I/SW	16000000	City of Mesa Northwest WRP; option of turf irrigation or discharge to RWCD main canal
230.	City of Mesa	IND	105443	R/Reuse/SW	16000000	Greenfield WRP
231.	US Section of the International Boundary Water Commission	IND	100620	SW	17200000	Nogales International WWTP; discharge to Santa Cruz River
232.	City of Tolleson	IND	100339	I/Reuse	17500000	Class B; 95% sent to PVNGS; also irr onsite
233.	City of Flagstaff	IND	100760	Reuse/SW	20000000	Wildcat Hill WWTP; unspecified reuse or discharge to lakes
234.	City of Phoenix	IND	103320	R/Reuse/SW	32000000	Option of reuse or discharge to Cave Crk
235.	Pima County Wastewater Management Dept	IND	100630	Reuse/SW	37500000	Ina Road Water Pollution Control Facility; option of reuse or discharge to Santa Cruz River
236.	Pima County Wastewater Management Dept	IND	100655	R/Reuse/SW	41000000	Discharge to Santa Cruz R., recharge at Sweetwater, use in Tucson reclaimed system
237.	City of Phoenix	IND	100578	SW	63000000	23rd Ave WWTP; up to 60000 gpd may be disch to RID canal; also disch to Salt River
238.	City of Phoenix	IND	100579	R/Reuse/SW	204500000	91st Ave WWTP; Use at PVNGS, discharge to Salt River, recharge at Tres Rios
239.	Arizona-Sonora Desert Museum	IND	100628	R	15000000000	Percolation trenches; Class C

CALIFORNIA STATE WATER REUSE PROJECTS¹



¹ Source: Office of Water Recycling, California State Water Resources Control Board.

COLORADO WATER REUSE PROJECTS¹
As of June 2010

	Project Name	Permitting or Approved ²	Type	Design Capacity	Year Operation Began
1.	City of Aurora Water Department	Approved	Irrigation	5 MGD	1968* ³
2.	Centennial Water & Sanitation	Approved	Irrigation	3 MGD	August 28, 2002
3.	City of Westminster Reclaimed Water Treatment Facility	Approved	Irrigation	6 MGD	August 30, 2002
4.	Plum Creek Wastewater Authority	Approved	Irrigation	3.55 MGD	1994*
5.	City of Louisville Wastewater Treatment Plant	Approved	Irrigation	2 MGD	November 1, 2002
6.	Upper Monument Creek	Approved	Irrigation	0.5 MGD	December 11, 2003
7.	Colorado Springs Utilities	Approved	Irrigation and Cooling Tower	26 MGD	1961*
8.	Fairways Metropolitan	Approved	Irrigation	0.107 MGD	April 21, 2003
9.	Town of Superior	Approved	Irrigation	2.2 MGD	May 13, 2003
10.	Stonegate Village	Approved	Irrigation	1.1 MGD	Mid 1980s*
11.	Denver Water	Approved	Irrigation and Cooling Towers	30 MGD	December 26, 2003
12.	City and County of Broomfield	Approved	Irrigation	6 MGD	April 6, 2004
13.	Arapahoe County Water & Wastewater	Approved	Irrigation	3.6 MGD	July 26, 2006
14.	Fort Collins Utilities	Approved	Cooling Towers	23 MGD	October 24, 2006
15.	The Glacier Club	Approved	Irrigation	0.2 MGD	October 26, 2004
16.	City of Yuma	Approved	Cooling Towers	0.25 MGD <i>does not currently discharge</i>	October 20, 2006
17.	Cornerstone Metropolitan District	Approved	Irrigation	0.14 MGD	June 16, 2006
18.	Kremmling Sanitation	Approved	Irrigation	0.3 MGD	June 6, 2007
19.	Front Range Airport	Approved	Irrigation	0.025 MGD	November 20, 2008
20.	Fairway Pines Metropolitan District	Approved	Irrigation	0.03 MGD	June 25, 2009
21.	Meridian Metropolitan District	Approved	Irrigation	1.5 MGD	1991*
22.	Wind River Ranch	Approved	Irrigation and Dust Control	0.004 MGD	June 2010

¹ Source: Colorado Department of Health, Water Quality Control Division.

² Colorado's "Regulation 84" is the primary rule governing reuse in Colorado. The Colorado Water Quality Control Division within the Colorado Department of Health regulates the water quality aspects of reuse under Regulation 84. The Division does not issue permits under the regulation, but issues "notices of authorization" (NOAs) authorizing proposed projects and setting forth conditions of operations.

³ Those projects with an asterisk in the "Year Operation Began" field are projects that began prior to the enactment of Regulation 84. The dates for these projects are estimates.

IDAHO WATER REUSE PROJECTS¹
As of August 2010

	Project Name	Permit No.	Volume (MG)	Nitrogen reused (lb/yr)	Phosphorus reused (lb/yr)	Municipal/Industrial
1.	City of Rupert	LA-000001-03	228.4	28,382	6,857	M
2.	Garfield Bay Water & Sewer Dist.	LA-000003-02	4.32	126	54	M
3.	ConAgra Foods Specialty Potato Products, American Falls	LA-000005-03	808	902,988	222,378	I
4.	Kootenai School District,	LA-000006-03	0.41	77	14	M
5.	City of Paul	LA-000009-01	25.1	1,327	281	M
6.	North American Foods, LLC - Idaho Falls	LA-000010-05	150	122,598	20,266	I
7.	North American Foods, LLC - Lewisville	LA-000011-04	228.4	211,439	40,002	I
8.	City of St. Maries	LA-000012-01	20	397	400	M
9.	Coolin Sewer District	LA-000013-03	11.6	1,316	484	M
10.	City of Franklin Wastewater Treatment	LA-000014-01	4.9	259	217	M
11.	Bottle Bay Recreational Water & Sewer Dist.	LA-000015-03	3.59	419	90	M
12.	Seneca, Buhl	LA-000016-02	75.82	71,454	13,089	I
13.	Stoneridge Utilities	LA-000017-02	10	2,585	492	M
14.	Outlet Bay Sewer District	LA-000018-03	18.1	3,034	921	M
15.	Sam Owen Campground	LA-000020	1.5	238	76	M
16.	City of Carey	LA-000021-02	4.12	316	131	M
17.	Glanbia - Richfield Plant	LA-000022-04	246.1	190,880	45,154	I
18.	City of Hazelton	LA-000023-02	5.95	675	181	M
19.	Max Herbold	LA-000024	30	3,153	1,188	I
20.	City of Lapwai	LA-000027-02	38.8	10,323	1,456	M
21.	University of Idaho, Aquaculture Research Lab	LA-000028-02	78.9	5,988	66	M
22.	City of Arco	LA-000029-02	61	4,833	1,201	M
23.	Idaho Pacific Corp.,	LA-000030-03	120.5	175,870	21,104	I
24.	J.R. Simplot Co. - Aberdeen,	LA-000031-03	212	270,516	47,738	I
25.	Basic American Foods, Shelley	LA-000032-03	293	190,602	29,323	I
26.	Idaho Supreme Potatoes, Inc.	LA-000033-02	164	214,738	32,689	I
27.	City of Lava Hot Springs	LA-000034-01	6.3	284	278	M
28.	NonPariel Corporation,	LA-000036-02	208	223,779	33,307	I
29.	Basic American Foods, Blackfoot,	LA-000039-01	520	57,679	27,322	I
30.	Basic American Foods, Rexburg,	LA-000040-02	344.4	172,338	33,606	I
31.	Nelson-Ricks Creamery Co.,	LA-000042-04	32.5	9,216	5,150	I
32.	Reed Gibby,	LA-000043-02	28.3	599,260	259,624	I
33.	Keegan, Inc.,	LA-000044-03	1.6	173	40	I
34.	City of Ashton	LA-000047-02	15	731	295	M
35.	City of Richfield	LA-000048-03	4.8	673	172	M
36.	Twin Falls - (Amalgamated Sugar)	LA-000049-02	56.9	56,946	1,329	I
37.	Paul - (Amalgamated Sugar)	LA-000050-02	123.8	74,339	650	I

¹ Source: Idaho Department of Environmental Quality.

38.	Kalispell Bay Sewer Dist.	LA-000052-04	4.9	1,001	249	M
39.	Southside Water & Sewer District	LA-000053-03	24.8	2,254	703	M
40.	Mack's Inn/Island Park Village System,	LA-000057-03	18.5	2,932	617	M
41.	Last Chance Ponds System,	LA-000058-02	12.1	575	311	M
42.	City of Gooding	LA-000059	28.5	4,956	879	M
43.	City of Newdale	LA-000064		0	0	M
44.	City of Menan	LA-000066-02	12.3	339	164	M
45.	North Lake Rec. Sewer & Water District	LA-000070-03	31	2,999	1,006	M
46.	Sandpiper Shores, Wastewater Treatment	LA-000072	0.285	46	11	M
47.	Santa/Fernwood Sewer Project, Treatment	LA-000074	0	0	0	M
48.	Larson	LA-000075	383.9	400,216	85,166	I
49.	City of Wendell Wastewater Treatment	LA-000076-03	40.2	4,426	1,542	M
50.	City of Albion Wastewater Treatment	LA-000077-02	6.3	757	168	M
51.	City of Filer Wastewater Treatment	LA-000079-02	18.9	3,231	583	M
52.	Bogus Basin Rec. Assoc., Treatment	LA-000080-03	1.6	144	73	M
53.	Meadow Gold	LA-000082	12.4	54,810	43,124	I
54.	Kidd Island Bay Lots Sewer Dist., Treatment	LA-000086-02	6.9	121	10	M
55.	St. Charles/Fish Haven Rec. Sewer District, Treatment	LA-000087-01	15	250	171	M
56.	Idaho Correctional Institution	LA-000088	44.6	4,464	1,116	M
57.	Schweitzer Mtn. Resort, Treatment	LA-000090-04	30.7	5,454	1,562	M
58.	Sorrento Lactalis, Wastewater Treatment	LA-000091-02	37	1,049	265	I
59.	Meadow Creek P.O.A., Wastewater Treatment	LA-000094-03	13.9	194	175	M
60.	CTI-SSI Food Services, Inc., Reuse	LA-000095-03	134.5	81,101	26,922	I
61.	Crossroads Water and Sewer, Treatment	LA-000096-01	8.1	338	246	I
62.	Wildwood Park, Wastewater Treatment	LA-000102-02	0.08	50	4	M
63.	Glanbia - Gooding Plant	LA-000103-05	712.88	463,743	164,688	I
64.	J.R. Simplot Co. - Don Plant, Reuse	LA-000104	66.1	30,430	12,790	I
65.	Bayview Water & Sewer District, Treatment	LA-000105-03	5.47	3,075	251	M
66.	City of Idaho City Wastewater Treatment	LA-000108-01	1.4	193	25	M
67.	Hayden Area Regional Wastewater Facility, Treatment	LA-000109-03	104.5	11,853	4,270	M
68.	City of Bellevue Wastewater Treatment Facility	LA-000112-01	70	16,346	2,335	M
69.	Huckleberry Bay Co., Treatment	LA-000113-02	1.67	270	63	M
70.	Woodhead Park, Wastewater Treatment	LA-000116-03	0.2	0	9	M
71.	West Mountain Water & Sewer, Treatment	LA-000117-01	8.1	115	34	M
72.	Idaho Club Subdivision & Golf Course, Treatment	LA-000123-01	4.2	98	6	M
73.	Blaine Larsen Fresh Pak Plant, Reuse	LA-000125-02	10.24	384	191	I
74.	Bruneau Sewer & Water Dist., Wastewater Treatment	LA-000129-02	8.4	1,380	245	M
75.	INTEC New Percolation Ponds Service (Industrial)	LA-000130-04	410	3,385	1,026	I
76.	Hidden Creek Ranch, Wastewater Treatment	LA-000138-02	0.24	22	22	M
77.	Central Facilities Area Sewage, Treatment	LA-000141-02	2.88	72	1	I
78.	Gozzer Ranch Golf and Lake Club, Reuse Facility	LA-000143-01	2.4	198	222	M
79.	City of Cottonwood Wastewater Treatment	LA-000144-02	18.2	1,533	395	M
80.	City of Murtaugh Wastewater Treatment	LA-000147-02	9.4	1,482	314	M
81.	MVP, Reuse	LA-000150-01	3.3	89,804	12,880	I
82.	Ellisport Bay Sewer Board, Wastewater Treatment	LA-000152-02	9.9	322	339	M

83.	Mountain Home AFB, Wastewater Treatment	LA-000154-03	7.5	319	106	I
84.	Naval Reactors Facility Industrial Waste Ditch, Treatment	LA-000155-01	12.25	654	5	I
85.	Stanley Sewer Association, Wastewater Treatment	LA-000156-03	13.2	892	495	M
86.	City of Malad Wastewater Treatment	LA-000159	0	0	0	M
87.	RTC Cold Waste System, Reuse	LA-000161	129	4,164	323	I
88.	City of DuBois Wastewater Treatment	LA-000166-02	54.3	5,434	1,069	M
89.	Twin Lakes Village, Wastewater Treatment	LA-000167-03	7.54	1,440	340	M
90.	Wada Potato Farms	LA-000171-02	13.39	2,356	592	I
91.	City of Eden Wastewater Treatment	LA-000173-02	1.063	112	40	M
92.	Hidden Springs, Wastewater Treatment	LA-000174-03	39.15	4,277	2,188	M
93.	Idaho Correctional Center, Boise, Treatment	LA-000176	39.24	3,410	1,407	I
94.	Dickinson Frozen Foods, Inc., Reuse	LA-000178-02	2.8	710	170	I
95.	Environmental Maintenance, Reuse	LA-000181-01	0	0	0	I
96.	Kootenai-Ponderay Sewer District, Treatment	LA-000182-02	11.5	1,461	500	M
97.	Stonebriar Subdivision, Wastewater Treatment	LA-000186-01	0.28	33	11	M
98.	Danskin Ridge No. 2, Reuse	LA-000187-01	3.4	85	85	M
99.	Club at Black Rock, The, Ww Treatment	LA-000188-02	8.6	120	796	M
100.	Food By Products	LA-000191	155.8	117,983	46,518	I
101.	City of McCammon Wastewater Treatment	LA-000192	0.43	13	19	M
102.	Ironhorse Subdivision, Wastewater Treatment	LA-000193-02	0.37	49	17	M
103.	River Birch Golf Course, Wastewater Treatment	LA-000194	1.75	60	35	M
104.	Helmer Water and Sewer District, Treatment	LA-000195-02	0	0	0	M
105.	Garden Valley School District, Wastewater Treatment	LA-000196	0.69	79	27	M
106.	Circle A Construction, Reuse	LA-000198	0.27	2,439	844	I
107.	Rivervine Water & Sewer, Wastewater System	LA-000199	1.8	195	38	M
108.	Arrowrock Ranch, Wastewater Treatment	LA-000203-01	3.6	558	87	M
109.	City of Tetonia Reuse System	LA-000208-02	11.5	1,304	230	M
110.	Skycliff Planned Development aka Cliffs Planned Community	LA-000209	6.8	567	11	M
111.	Raft River Energy 1 LLC, Reuse System	LA-000210	133.6	2,061	724	I
112.	SunCor Idaho (Avimor) Wastewater Treatment	LA-000211-02	109	7,272	91	M
113.	Bella Reve Planned Unit Development	LA-000213-01	29.5	2,460	25	M
114.	Southfork Landing Inc., Reuse	LA-000214-01	94	7,840	784	M
115.	City of Meridian Wastewater Treatment	LA-000215-01	8.8	903	169	M
116.	Ketchum/Sun Valley, WW Treatment	LA-000216	0	0	0	M
117.	Silverwood Theme Park, Wastewater Treatment	LA-000217-01	7.7	3,076	92	I
118.	City of Genesee Wastewater Treatment	LA-000218	2.9	218	97	M
	Totals		7,434	4,978,908	1,270,736	

NEVADA WATER REUSE PROJECTS¹
As of January 2010

	Project Name	Permit Number	Type
1.	Desert Rose Golf Course	NEV87073	Treated Effluent Applier
2.	University Farms	NEV92012	Treated Effluent Applier
3.	Empire Ranch Golf Course	NEV92015	Treated Effluent Applier
4.	Eagle Valley Golf Course	NEV92021	Treated Effluent Applier
5.	Legacy Golf Club/Pacific Life	NEV92024	Treated Effluent Applier
6.	NDOC - State Prison Dairy	NEV92030	Treated Effluent Applier
7.	Treasure Island & Casino	NEV92040	Treated Effluent Applier
8.	Carson City Parks Dept	NEV93006	Treated Effluent Applier
9.	Boulder Ranch Quarry	NEV93013	Treated Effluent Applier
10.	Silver Oak Development	NEV94015	Treated Effluent Applier
11.	Sparks Dept. Public Works - Reuse	NEV95005	Treated Effluent Applier
12.	Reno-Sparks Conv/ Wildcreek G.C.	NEV95007	Treated Effluent Applier
13.	Sun City Mac Donald Ranch Communities Asslo., Inc	NEV95038	Treated Effluent Applier
14.	Washoe Co. - S Meadows Business Park	NEV96005	Treated Effluent Applier
15.	Sunridge Golf Course	NEV96008	Treated Effluent Applier
16.	Rio Secco G. C. (Seven Hills)	NEV96010	Treated Effluent Applier
17.	Oasis Golf Club - Palmer & Canyon	NEV96016	Treated Effluent Applier
18.	Black Mountain Golf Course	NEV96017	Treated Effluent Applier
19.	Desert Pines Golf Course	NEV96019	Treated Effluent Applier
20.	Golden Gate Golf	NEV97004	Treated Effluent Applier
21.	Washoe Co. - Water Res. Dept.	NEV97011	Treated Effluent Applier
22.	Links of Las Vegas Golf Course	NEV98000	Treated Effluent Applier
23.	NDOW Fernley Wildlife Management Area	NEV98008	Treated Effluent Applier
24.	Schneider Ranch	NEV98013	Treated Effluent Applier
25.	Wolf Run Golf Course	NEV98018	Treated Effluent Applier
26.	CORE Revere LLC-The Lexington at Revere Golf Club	NEV98019	Treated Effluent Applier
27.	Anthem Golf Course & Clubhouse Grounds	NEV98023	Treated Effluent Applier
28.	TPC Summerlin Golf Course	NEV99001	Treated Effluent Applier
29.	TPC Las Vegas	NEV99002	Treated Effluent Applier
30.	Angel Park Golf Club	NEV99003	Treated Effluent Applier
31.	Badlands Golf Club	NEV99004	Treated Effluent Applier
32.	Canyon Gate Golf Course	NEV99005	Treated Effluent Applier
33.	Bruce Miller Ranch	NEV99006	Treated Effluent Applier
34.	Dragon Ridge Country Club	NEV97007	Treated Effluent Applier
35.	Washoe County Parks/Sierra Sage GC	NEV99010	Treated Effluent Applier
36.	Washoe County/N. Valley Sports Cmplx	NEV99011	Treated Effluent Applier
37.	Palm Valley Golf Course	NEV99015	Treated Effluent Applier
38.	Silver Springs Airport LLC	NEV99017	Treated Effluent Applier
39.	Park Cattle Co	NEV2000501	Treated Effluent Applier

¹ Source: Nevada Division of Environmental Protection, Bureau of Water Pollution Control.

40.	Palm Mortuary	NEV2000505	Treated Effluent Applier
41.	D'Andrea Golf Club	NEV2000509	Treated Effluent Applier
42.	Falcon Ridge Investments, LLC	NEV2000512	Treated Effluent Applier
43.	City of Henderson	NEV2000513	Treated Effluent Applier
44.	Three J's Inc - Dayton Valley GC	NEV2001501	Treated Effluent Applier
45.	Tuscany Hills Golf Club , Rhodes Homes	NEV2001503	Treated Effluent Applier
46.	Naniwa Energy LLC	NEV2001505	Treated Effluent Applier
47.	Troon Revere Holdings, L.L.C.	NEV2001511	Treated Effluent Applier
48.	Durango Hills Golf Club	NEV2001514	Treated Effluent Applier
49.	Kirman Tract Field	NEV2002505	Treated Effluent Applier
50.	Spanish Trail Golf Course	NEV2002512	Treated Effluent Applier
51.	Galeppi Ranch	NEV2002513	Treated Effluent Applier
52.	Bear's Best Las Vegas	NEV2002515	Treated Effluent Applier
53.	Red Rock Country Club	NEV2002517	Treated Effluent Applier
54.	Wildhorse Golf Club City of Henderson	NEV2002518	Treated Effluent Applier
55.	Siena Golf Club	NEV2002519	Treated Effluent Applier
56.	Park Cattle Company	NEV2003500	Treated Effluent Applier
57.	CC Parks & Recreation	NEV2003504	Treated Effluent Applier
58.	Truckee Meadow Water Reclamation Facility	NEV2003506	Treated Effluent Applier
59.	Washoe Co School District - Reuse TMWRF	NEV2003513	Treated Effluent Applier
60.	CC Park & Community Services	NEV2003514	Treated Effluent Applier
61.	Ruby View Golf Course	NEV2003515	Treated Effluent Applier
62.	Rhodes Ranch Golf Club	NEV2004500	Treated Effluent Applier
63.	Lazy 5 Ranch (aka Spanish Springs Parks)	NEV2004501	Treated Effluent Applier
64.	Lakeview Executive Golf Course	NEV2004518	Treated Effluent Applier
65.	Kiley Golf LLC-The Links at Kiley Ranch	NEV2004517	Treated Effluent Applier
66.	Spanish Springs Quarry	NEV2004529	Treated Effluent Applier
67.	Spanish Springs Valley	NEV2004530	Treated Effluent Applier
68.	Silver Bowl Sports Complex Park	NEV2004533	Treated Effluent Applier
69.	Desert Inn Master Plan Project	NEV2005501	Treated Effluent Applier
70.	Willow Creek Golf Course	NEV2005503	Treated Effluent Applier
71.	Spanish Springs Permit II	NEV2006506	Treated Effluent Applier
72.	Mountain Falls Golf Course	NEV2005509	Treated Effluent Applier
73.	Clark Co Parks Dept-Red Ridge Park	NEV2005507	Treated Effluent Applier
74.	Toana Vista Golf Course	NEV2006510	Treated Effluent Applier
75.	City of Reno - Effluent Re-use Cluster Permit 1	NEV2006512	Treated Effluent Applier
76.	Sceirine Ranch Reuse	NEV2007502	Treated Effluent Applier
77.	Stallion Mountain Country Club	NEV2007504	Treated Effluent Applier
78.	Sparks-East	NEV2007506	Treated Effluent Applier
79.	Coyote Springs Reuse Water Co - Golf Course #1	NEV2007507	Treated Effluent Applier
80.	Elko County Fairgrounds	NEV2007509	Treated Effluent Applier
81.	Legends @ Sparks Marina	NEV2008508	Treated Effluent Applier
82.	Conestoga Golf Course at Anthem Mesquite	NEV2008510	Treated Effluent Applier
83.	City of Sparks - Truck Fill Station	NEV2009502	Treated Effluent Applier
84.	Bently Agrowdynamics - Middle Ranch	NEV2009507	Treated Effluent Applier

NEW MEXICO WATER REUSE PROJECTS¹
As of February 2010

	Location	County	Description	Permitted Discharge Volume
1.	Tucumcari	Quay	AGS-Crop	267,863
2.	Tucumcari	Quay	AGS-Feedlot	60,000
3.	Santa Fe	Santa Fe	AMU-Golf Course	700,450
4.	Las Vegas	San Miguel	AMU-Golf Course	500,000
5.	Rio Rancho	Sandoval	AMU-Golf Course	1,750,000
6.	Las Cruces	Dona Ana	AMU-Golf Course	1,320,000
7.	Santa Fe	Santa Fe	Amusement/Recreation Service	418,000
8.	Gallup	Mckinley	Amusement/Recreation Service	1,250,000
9.	Pueblo of San Juan	Rio Arriba	Correctional Facility	12,500
10.	Santa Fe	Santa Fe	Correctional Facility	280,000
11.	Los Lunas	Valencia	Correctional Facility	6,000
12.	Hagerman	Chaves	Correctional Facility	48750
13.	Estancia	Torrance	Correctional Facility	122,500
14.	Las Cruces	Dona Ana	Correctional Facility	10,000
15.	Holloman Air Force Base	Otero	FED-Dept of Defense	288,000
16.	Cannon Afb	Curry	FED-Dept of Defense	1,132,130
17.	Gallup	Mckinley	Mobile Home Park/Subdivision	45,000
18.	Las Cruces	Dona Ana	Mobile Home Park/Subdivision	49,500
19.	San Rafael	Cibola	Mobile Home Park/Subdivision	40,425
20.	Ya-ta-hay	Mckinley	Mobile Home Park/Subdivision	37,130
21.	Santa Fe	Santa Fe	Mobile Home Park/Subdivision	1,400,000
22.	Gallup	Mckinley	Mobile Home Park/Subdivision	25,000
23.	Rio Rancho	Sandoval	Mortuary/Memorial Service	56,085
24.	Lake Arthur	Chaves	Municipality	49,500
25.	Sunspot	Otero	MUNI-Wastewater	10,000
26.	Albuquerque	Bernalillo	MUNI-Wastewater	210,000
27.	Gallup	Mckinley	MUNI-Wastewater	250,000
28.	Wagon Mound	Mora	MUNI-Wastewater	30,000
29.	Las Vegas	San Miguel	MUNI-Wastewater	520,000
30.	Santa Fe	Santa Fe	MUNI-Wastewater	500,750
31.	Truth Or Consequences	Sierra	MUNI-Wastewater	1,000,000
32.	Columbus	Luna	MUNI-Wastewater	144,000
33.	Eagle Nest	Colfax	MUNI-Wastewater	91,000
34.	Mosquero	Harding	MUNI-Wastewater	7,500
35.	Carlsbad	Eddy	MUNI-Wastewater	8,500,000
36.	Carrizozo	Lincoln	MUNI-Wastewater	180,000
37.	Albuquerque	Bernalillo	MUNI-Wastewater	7,500,000
38.	Roy	Harding	MUNI-Wastewater	40,000
39.	Gallup	Mckinley	MUNI-Wastewater	3,500,000

¹ Source: New Mexico Environment Department, Ground Water Quality Bureau. This list was culled from a database of ground water Discharge Permits. Although it does not list every project, it does identify the majority of the large municipal reuse facilities in New Mexico.

40.	Loving	Eddy	MUNI-Wastewater	325,000
41.	Rio Rancho	Sandoval	MUNI-Wastewater	667,000
42.	Las Cruces	Dona Ana	MUNI-Wastewater	1,400,000
43.	Angel Fire	Colfax	MUNI-Wastewater	3,000,000
44.	Tome	Valencia	MUNI-Wastewater	300,000
45.	Elephant Butte	Sierra	MUNI-Wastewater	600,000
46.	Chaparral	Dona Ana	MUNI-Wastewater	750,000
47.	Eunice	Lea	MUNI-Wastewater	400,000
48.	Edgewood	Santa Fe	MUNI-Wastewater	150,000
49.	Corona	Lincoln	MUNI-Wastewater	20,000
50.	Tucumcari	Quay	MUNI-Wastewater	1,200,000
51.	Alcalde	Rio Arriba	MUNI-Wastewater	12,600
52.	Deming	Luna	MUNI-Wastewater	3,000,000
53.	Rio Rancho	Sandoval	MUNI-Wastewater	8,640,000
54.	Alamogordo	Otero	MUNI-Wastewater	5,000,000
55.	Taos	Taos	MUNI-Wastewater	2,000,000
56.	Raton	Colfax	MUNI-Wastewater	1,000,000
57.	Artesia	Eddy	MUNI-Wastewater	3,000,000
58.	Roswell	Chaves	MUNI-Wastewater	7,500,000
59.	Santa Fe	Santa Fe	MUNI-Wastewater	13,000,000
60.	Silver City	Grant	MUNI-Wastewater	3,200,000
61.	Hobbs	Lea	MUNI-Wastewater	7,200,000
62.	Artesia	Eddy	MUNI-Wastewater	200,000
63.	San Jon	Quay	MUNI-Wastewater	46,000
64.	Jal	Lea	MUNI-Wastewater	400,000
65.	Lordsburg	Hidalgo	MUNI-Wastewater	600,000
66.	Santa Rosa	Guadalupe	MUNI-Wastewater	950,000
67.	Grants	Cibola	MUNI-Wastewater	1,800,000
68.	Clayton	Union	MUNI-Wastewater	150,000
69.	Santa Fe	Santa Fe	MUNI-Wastewater	402,335
70.	Clovis	Curry	MUNI-Wastewater	7,000,000
71.	Ranchos De Taos	Taos	MUNI-Wastewater	750,000
72.	Melrose	Curry	MUNI-Wastewater	51,000
73.	Los Alamos	Los Alamos	MUNI-Wastewater	1,400,000
74.	Tularosa	Otero	MUNI-Wastewater	500,000
75.	Lovington	Lea	MUNI-Wastewater	2,700,000
76.	Hobbs	Lea	MUNI-Wastewater	3,600,000
77.	Portales	Roosevelt	MUNI-Wastewater	2,500,000
78.	Los Alamos	Los Alamos	MUNI-Wastewater	820,000
79.	Moriarty	Torrance	MUNI-Wastewater	670,000
80.	Estancia	Torrance	MUNI-Wastewater	115,000
81.	Santa Fe	Santa Fe	Retail/Commercial	6,000
82.	Elephant Butte	Sierra	Retail/Commercial	23,250
83.	Santa Fe	Santa Fe	UNINCORP-Wastewater	400,000
84.	Thoreau	Mckinley	UNINCORP-Wastewater	60,000
85.	Sandia Park	Bernalillo	UNINCORP-Wastewater	260,000
86.	Albuquerque	Bernalillo	MUNI-Wastewater	5,600,000

OREGON WATER REUSE PROJECTS¹
As of January 2010

	Permittee Name	Permit Number	Expires	Permit Type	Comment
1.	COTTAGE GROVE WWTP	20306	May-00	NPDES	Proposed permit allows RWU
2.	CRESWELL WWTP	20927	Nov-03	NPDES	RWU
3.	DUNDEE WWTP	25567	Jul-04	NPDES	RWU
4.	AUMSVILLE WWTP	4475	Feb-05	NPDES	RWU
5.	MONMOUTH WWTP	57871	Jul-05	NPDES	RWU
6.	GRANTS PASS WWTP	34630	Nov-05	NPDES	Listed outfall but plant site only
7.	LANE COMMUNITY COLLEGE WWTP	48854	Dec-05	NPDES	RWU
8.	HIDDEN VALLEY HIGH SCHOOL WWTP	38625	May-06	NPDES	RWU
9.	JUNCTION CITY WWTP	44509	Nov-06	NPDES	RWU
10.	MWMC - EUGENE/SPRINGFIELD WWTP	55999	Dec-06	NPDES	RWU
11.	FLEMING MIDDLE SCHOOL WWTP	29920	Jul-07	NPDES	RWU
12.	BANDON DUNES WWTP	109895	Sep-07	WPCF	RWU
13.	HALSEY WWTP	36320	Oct-07	NPDES	RWU
14.	MEDFORD WWTP	55125	Nov-07	NPDES	RWU
15.	LINCOLN CITY WWTP	50677	Dec-07	NPDES	RWU
16.	WILLAMINA WWTP	97397	Apr-08	NPDES	RWU
17.	MYRTLE CREEK WWTP	59643	Sep-08	NPDES	RWU
18.	GRAND RONDE WWTP	100050	Oct-08	NPDES	RWU
19.	HARRISBURG LAGOON WWTP	105415	Nov-08	NPDES	RWU
20.	ASHLAND WWTP	3780	Dec-08	NPDES	RWU
21.	BUTTE FALLS WWTP	12800	Dec-08	NPDES	RWU
22.	JLR, LLC	32536	Dec-08	NPDES	RWU
23.	RIVIERA MOBILE PARK WWTP	75500	Dec-08	NPDES	RWU
24.	PREMIER RV RESORTS WWTP	20530	Feb-09	NPDES	RWU
25.	SHERIDAN WWTP	80920	May-09	NPDES	RWU
26.	DONALD WWTP	24600	Sep-09	WPCF	RWU
27.	DRAIN WWTP	25282	Nov-09	NPDES	RWU
28.	WOODBURN WWTP	98815	Nov-09	NPDES	RWU
29.	AMITY WWTP	2772	Dec-09	NPDES	RWU
30.	AURORA WWTP	110020	Dec-09	NPDES	RWU
31.	CARLTON WWTP	14195	Dec-09	NPDES	RWU
32.	GERVAIS WWTP	33060	Dec-09	NPDES	RWU
33.	LAKESIDE WWTP	48568	Dec-09	NPDES	RWU
34.	OPRD - VALLEY OF THE ROGUE SP	64770	Dec-09	WPCF	RWU
35.	SILVERTON WWTP	81395	Dec-09	NPDES	RWU
36.	USACOE - COTTAGE GROVE LAKE WWTP	90982	Dec-09	WPCF	RWU

¹ Source: Oregon Department of Environmental Quality.

37.	NORTH VALLEY HIGH SCHOOL WWTP	61850	Jun-10	WPCF	RWU
38.	OPRD - LOWELL PARK WWTP	51690	Jun-10	WPCF	RWU
39.	OPRD - STEWART STATE PARK WWTP	64736	Jun-10	WPCF	RWU
40.	USBLM - SHOTGUN CREEK WWTP	100100	Jun-10	WPCF	RWU
41.	WINSTON-GREEN WWTP	98400	Jun-10	NPDES	RWU
42.	RICHARDSON POINT PARK WWTP	75120	Jul-10	WPCF	RWU
43.	WEST COAST BANK	110785	Jul-10	WPCF	RWU
44.	R.U.S.A. ROSEBURG WWTP	76771	Sep-10	NPDES	RWU
45.	ADAIR VILLAGE WWTP	500	May-11	NPDES	RWU
46.	OAKLAND RV PARK WWTP	111137	May-11	WPCF	RWU
47.	TANGENT WWTP	87425	May-11	NPDES	RWU
48.	BROWNSVILLE WWTP	11770	Jun-11	NPDES	RWU
49.	VENETA WWTP	92762	Jun-11	NPDES	RWU
50.	OAKLAND WWTP	62855	Jul-11	NPDES	RWU
51.	PACIFIC HIGH SCHOOL WWTP	66310	Jul-11	NPDES	RWU
52.	USFS - HART-TISH PARK WWTP	90930	Jul-11	WPCF	RWU
53.	PIONEER VILLA WWTP	70000	Sep-11	WPCF	RWU
54.	SUTHERLIN WWTP	86662	Sep-11	NPDES	RWU
55.	EMIGRANT LAKE RECREATION AREA WWTP	27125	Nov-11	WPCF	RWU
56.	FREEWAY PROPERTIES	4238	Nov-11	WPCF	RWU
57.	HOWARD PRAIRIE RECREATION AREA WWTP	40260	Nov-11	WPCF	RWU
58.	USBLM - HYATT LAKE RECREATION WWTP	91005	Nov-11	WPCF	RWU
59.	WILLOW LAKE RECREATION AREA WWTP	97725	Dec-11	WPCF	RWU
60.	CAVE JUNCTION WWTP	15243	Jan-12	NPDES	RWU
61.	SALEM NRS	78140	Mar-12	WPCF	RWU
62.	OPRD - BEVERLY BEACH STATE PARK WWTP	64705	May-12	WPCF	RWU
63.	USFS - ANGELL JOB CCC	90926	Nov-12	WPCF	RWU
64.	USFS - CAPE PERPETUA CAMPGROUND	104547	Nov-12	WPCF	RWU
65.	WEDDERBURN WWTP	94335	Dec-13	WPCF	Emergency Land Irrigation only
66.	DELPHIAN SCHOOL	23800	Oct-14	WPCF	RWU
67.	ST PAUL WWTP	84076	Oct-14	WPCF	RWU
68.	OPRD - BULLARDS BEACH STATE PARK WWTP	64715	Nov-14	WPCF	RWU
69.	OPRD - SUNSET BAY STATE PARK WWTP	64735	Nov-14	WPCF	RWU
70.	OREGON DUNES KOA	103882	Nov-14	WPCF	RWU
71.	OUR LADY OF GUADALUPE WWTP	65532	Dec-14	WPCF	Emergency Land Irrigation only
72.	ODOT - COW CREEK REST AREA WWTP	64718	Apr-15	WPCF	RWU
73.	OPRD - BEACHSIDE STATE PARK WWTP	64700	Jun-15	WPCF	RWU
74.	EMERALD VALLEY DEVELOPMENT	27115	Feb-17	WPCF	RWU

TEXAS WATER REUSE PROJECTS¹
As of March 2010

Direct Reuse Authorizations²

	Types of Projects	Permitted or Approved	Design Capacity
1.	INDUSTRIAL RECLAIMED WATER REUSE	105 permitted facilities	10.19 million gallons per day are authorized for reuse under this program.
2.	DOMESTIC RECLAIMED WATER REUSE	251 permitted facilities	~2321 million gallons per day are authorized for reuse under this program

Indirect Reuse Authorizations³

	Project Name	Permit Number	Use Type	Design Capacity (acre-feet/yr) ⁴	Year Authorization Issued
1.	CITY OF LLANO	1655	irrigation	180	1914
2.	CITY OF COLEMAN	1703	irrigation	500	1974
3.	LAVACA-NAVIDAD RIVER AUTHORITY	2095	municipal/domestic, industrial	10,400	1996
4.	SAN ANTONIO WATER SYSTEM	2153	irrigation, other	13,000	1981
5.	CITY OF SAN ANTONIO	2162	municipal/domestic, industrial	37,000	1967
6.	JOHN B FAIR	2341	irrigation	4	1954
7.	NORTH TEXAS MWD	2410	municipal/domestic, industrial	229,275	1985, 1989, 2000, 2002, 2005
8.	CITY OF DALLAS	2456	municipal/domestic, industrial, irrigation, recreation	97,200	2001
9.	CITY OF DALLAS	2462	municipal/domestic, industrial, agriculture, mining, hydroelectric, recreation	150,000	2001
10.	TEXAS WATER DEVELOPMENT BOARD, CITY OF HOUSTON and BRAZOS RIVER AUTHORITY	2925		(1)	2002
11.	CITY OF LAMESA	3122	irrigation	750	1975
12.	TEXAS PARKS & WILDLIFE DEPT	3176	irrigation	(2)	1978
13.	ATHENS MUNICIPAL WATER AUTHORITY	3256	other	2,677	2003
14.	TRINITY RIVER AUTHORITY	3404	municipal/domestic, industrial, irrigation	4,368	2004
15.	CITY OF LUBBOCK	3985	industrial, irrigation	22,910	1983
16.	CITY OF CEDAR PARK	4007	municipal/domestic, industrial, irrigation	5,600	1983
17.	CITY OF TAFT	4092	irrigation	600	1983

¹ Source: Texas Commission on Environmental Quality.

² Direct reuse refers to the use of wastewater effluent that has been directly conveyed from the wastewater treatment plant to the place of use via pipelines, storage tanks, and other infrastructure.

³ Indirect reuse refers to water that is discharged into a watercourse and subsequently re-diverted for a beneficial purpose or use.

⁴ The amounts listed may be less based on special conditions in the water right.

	Project Name	Permit Number	Use Type	Design Capacity (acre-feet/yr) ⁴	Year Authorization Issued
18.	CITY OF CLEBURNE	4106	municipal/domestic, industrial, irrigation	8,400	2004
19.	CITY OF LUBBOCK	4146	irrigation	21,000	1981
20.	TRINITY RIVER AUTHORITY	4248	municipal/domestic, industrial, irrigation	246,219	2000
21.	CITY OF ABILENE	4266	irrigation	4,330	1997
22.	CITY OF IRVING	4799	municipal/domestic, industrial	31,600	2006
23.	CITY OF GAINESVILLE	4881	municipal/domestic	(3)	2002
24.	TARRANT REGIONAL WATER DISTRICT	4976	municipal/domestic, industrial, irrigation	90,799	2000
25.	NORTH TEXAS MWD	5003		(1)	2005
26.	TRINITY RIVER AUTHORITY	5021	municipal/domestic	8,824	1997
27.	TARRANT REGIONAL WATER DISTRICT	5035	municipal/domestic, industrial, irrigation	105,019	2005
28.	CITY OF HOLLIDAY	5078	irrigation	8	1986
29.	CITY OF PARIS	5119	irrigation	300	1987
30.	APEX GOLF PROPERTIES CORPORATION	5666	irrigation	250	2000, 2001
31.	SAN ANTONIO WATER SYSTEM	5705	instream uses	(3)	2001, 2009
32.	CITY OF PEARLAND	5714	irrigation	116	2000
33.	CITY OF WEIMAR	5728	irrigation	23	2001
34.	BRAZOS RIVER AUTHORITY	5730	municipal/domestic, industrial, irrigation	(1)	2003
35.	SOMERVELL COUNTY WATER DISTRICT	5744	municipal/domestic, industrial, irrigation	(2)	2001
36.	CITY OF NAVASOTA	5748	irrigation	430	2003
37.	COLEMAN ISD	5772	irrigation	12	2002
38.	UPPER TRINITY REGIONAL WATER DISTRICT	5778	municipal/domestic, industrial	9,664	2002
39.	CITY OF ALBANY	5802	irrigation, recreation	50	
40.	SAN JACINTO RIVER AUTHORITY	5809	municipal/domestic, industrial	49,944	2003
41.	CITY OF WACO	5840	industrial, irrigation, mining	42,175	2004
42.	TERRABROOK CINCO RANCH SOUTHWEST LP	5849	irrigation	408	2004
43.	SAN ANTONIO RIVER AUTHORITY	5917	municipal/domestic, itrial, agriculture, environmental flows	2526	no priority date authorized

(1) Subject to Owner applying for future authorizations.

(2) Unquantified secondary reuse.

(3) Recirculation of reuse water in stream, unspecified quantity, includes carriage loss calculation.

UTAH WATER REUSE PROJECTS¹
As of June 2010

	Project Name	Permitted or Approved	Type	Average Daily Flow	Avg. Reuse Water Production Per Year	Year Operation Began
1.	Central Valley WRF	Approved	Golf Course irrigation & pond water	0.6 mgd	672 acre-ft/ yr	1990
2.	Tooele WRF	Approved	Golf Course Irrigation	0.60 mgd	1,904 acre-ft/ yr	1995
3.	Ash Creek SSD	Approved	Agricultural irrigation	0.90 mgd	1,008 acre-ft/ yr	
4.	Blanding City WRF	Approved	Agricultural irrigation	0.20 mgd	<10 acre-ft/yr	
5.	Cedar City WRF	Approved	Agricultural irrigation	2.10 mgd	2,352 acre-ft/yr	
6.	Enterprise City WRF	Approved	Agricultural irrigation	0.24 mgd	<40 acre-ft/ yr	
7.	Heber Valley SSD	Approved	Agricultural irrigation	1.40 mgd	1,568 acre-ft/ yr	
8.	Roosevelt WRF	Approved	Agricultural irrigation	0.51 mgd	571 acre-ft/ yr	
9.	St. George City WRF	Approved	Golf Course & Ag. Irrig.	2.44 mgd	2,224 acre-ft/ yr	2005
10.	Santaquin City WRF	Approved	Agricultural irrigation	0.37 mgd	<128 acre-ft/ yr	
11.	Payson City WRF	Approved	Power Plant cooling	1.5 mgd	1,714 acre-ft/ yr	

¹ Source: Utah Division of Water Quality.

WASHINGTON REUSE PROJECTS¹
As of April 2010

	Project Name	Permit Number	Type	Design Capacity MGD	Avg. Reuse Water Production Per Year	Year Operation Began
1.	Blaine, City of	WA0022641	A	1.54	n/a	
2.	Cardinal Glass	ST 6210	Industrial Reuse	0.01	n/a	2006
3.	Chehalis, City of	WA0021105	A and C	3.5	n/a	2007
4.	Cheney, City of	ST8057	D	2.7	n/a	1994
5.	Carnation, City of	ST7450	A	0.4	n/a	2009
6.	Ephrata, City of	ST8031	A	1.12	n/a	2000
7.	Everett, City of: Kimberly Clark cooling water	WA0024490	Industrial Reuse	0.2	n/a	2005
8.	Holmes Harbor Sewer Dist.	ST7353	A	0.1	n/a	1995
9.	King County – South Plant	ST7445	A	1.3	n/a	1997
10.	King County – West Point	WA0029181	A	0.7	n/a	1997
11.	LOTT Alliance: 1st Satellite Plant	ST6206	A	2	n/a	2006
12.	LOTT Alliance: Budd Inlet Plant Reclaimed Water Expansion	WA0037061	A	1.5	n/a	2005
13.	Medical Lake, City of	WA0021148	A	1.85	n/a	2001
14.	North Bay/Case Inlet: Mason County	ST 6039	A	0.37	n/a	2000
15.	Quincy, City of	ST5278	A	1.54	n/a	2002
16.	Royal City, City of	ST5294	A	0.5	n/a	1999
17.	Sequim, City of	WA0022349	A	0.8	n/a	1999
18.	Shelton, City of	ST6216	A	0.4	n/a	2009
19.	Snoqualmie, City of	WA0022403	A	2.15	n/a	1998
20.	Sunland Sewer Dist.	ST6003	D	0.16	n/a	1999
21.	Tenino, City of	ST6221	A and C	0.228	n/a	2009
22.	Warden, City of	ST5380	A	0.474	n/a	2010
23.	Walla Walla, City of: Upgrade	WA0024627	A	9.6	n/a	2008
24.	Yelm, City of	WA0040762	A	1	n/a	1999
	Total Design Capacity statewide			34.142		

¹ Source: Washington Department of Ecology, Water Quality Program.

WYOMING WATER REUSE PROJECTS¹
Data Current as of June 2010

	Project Name	Permitted or Approved	Type	Design Capacity	Avg. Reuse Water Production Per Year	Year Operation Began
1.	Cheyenne water reclamation	YES	Tertiary treatment to provide Class A water	4 mgd	500 acre feet	2006
2.	Wheatland Ag irrigation	YES	Ag irrigation using Class B water	300 af of storage, .3 mgd	335 acre feet	2008
3.	Chugwater WWTP landscaping	YES	Drip irrigation of WWTP landscaping	.03 mgd	25 acre feet	2004
4.	Cody – Riverside Golf Course	06-046	--	250 gpm	--	
5.	Cowley – Irrigated Pasture	--	--	--	--	1970 (approx.)
6.	Big Horn National Forest – Shell Falls Wastewater Reuse	--	--	--	--	1995
7.	City of Rock Springs	Yes	Treated Domestic Sewage For Irrigation	60 acres	45.7 million gallons per year	1980's
8.	City of Evanston	Yes	Treated Domestic Sewage For Irrigation	Unknown	Unknown	1980's
9.	EnCana Oil and Gas ManCamp	Yes	Treated Domestic Sewage For Gas Well Drilling	350 persons	Unknown	2008-2009

¹ Source: Wyoming Department of Water Quality, Water Quality Division.

Appendix C



WESTERN STATES WATER COUNCIL

5296 Commerce Drive, Suite 202, Murray, Utah 84107, (801) 685-2555, FAX (801) 685-2559

Web Page: www.westgov.org/lwswc

To: State Water Reuse Regulators
From: WSWC Water Reuse Subcommittee
Date: December 4, 2009
RE: Water Reuse Report Survey

SURVEY INTRODUCTION & INSTRUCTIONS

The Western States Water Council has commissioned a report on water reuse that will highlight water reuse efforts in member states and describe those issues that encourage or discourage water reuse. For each state, the report will include a section that will describe: (1) its water reuse standards for using treated wastewater; (2) how it regulates water reuse; (3) the legal, political, technical, and institutional issues that impact water reuse; (4) existing public and private water reuse projects; and (5) available funding options for water reuse activities.

To assist WSWC staff in gathering information for this report, the WSWC has created a Water Reuse Subcommittee consisting of water reuse regulators in four states, which has developed the above framework and the attached survey.¹ Please complete the survey and return it to WSWC Legal Counsel, Nathan Bracken, via email at nbracken@wswc.utah.gov by September 30. For the purposes of the survey, please also note:

- The term “water reuse” refers to recycled water or reclaimed water from surface or groundwater sources. Water reuse water **does not** include water that is merely reused on a specific site without being treated or reconditioned.
- Please include statutory, administrative, or case law authority to support your answers. Where applicable, please also provide citations, electronic copies, or website addresses for any authority or documents mentioned in your answers.
- Please include the name, title, and contact information for the person(s) answering this survey.

Your cooperation in completing this survey is greatly appreciated. If you have any questions, please contact Nathan at (801) 685-2555 or via email at the above address.

¹ The Subcommittee consists of: Tracy Hofmann, New Mexico State Engineer’s Office; Rick Huddleston, Idaho Department of Environmental Quality; John Kennington, Utah Division of Water Quality; and Jim McCauley, Washington Department of Ecology.

SURVEY QUESTIONS

A. Water Reuse Standards

1. How does your state define “water reuse” (reclaimed water, recycled water, or synonymous term)? Does your state recognize water reuse as a “beneficial use or purpose?” If not, how is it recognized? Are there any additional activities where water may be recycled or used again which are not called or regulated as “water reuse?”
2. Please describe any statutes, regulations, guidance documents, and landmark case law that may govern water reuse activities, including any enabling statutes.
3. Are there any interstate or federal water compacts, allocations, or state water rights that conflict with your state’s water reuse laws and regulations? Conversely, what effect might reuse activities have on federal or interstate compacts, or water rights law, etc.? Please explain how your state resolves or has resolved such conflicts.
4. Please describe any legal questions (e.g., definitions, approvals and operation of water reuse projects, etc.) that are unresolved in your state.

B. Water Reuse Regulation

1. Please describe how your state permits, approves, and/or prohibits the operation of private and public water reuse activities. If your state has not adopted specific laws, rules, or guidance for water reuse, how does it regulate these activities?
2. Please name the state agencies, departments or entities that have jurisdiction over water reuse and describe what aspects of water reuse they regulate (e.g., water quality, water quantity, public health concerns, etc.). Are there any aspects of water reuse that are unregulated?
3. Are water reuse activities with an agricultural water source or industrial water source permitted differently than activities with domestic wastewater sources?
4. How does your state monitor private and public water reuse activities? Please indicate the frequency and scope of any monitoring efforts.
5. Please describe any formal water reuse program that your state may sponsor.

C. Water Reuse Issues

1. What are the most important issues regarding water reuse in your state?
2. How common is reuse in your state? Is it increasing?
3. Does your state’s legal and regulatory framework, including water rights issues, encourage or inhibit water reuse? Please elaborate.
4. Are there any other political, regulatory, financial, or other factors that encourage or inhibit water reuse?

5. How does your state promote or encourage water reuse, including programs to overcome the public misunderstanding and fear of reuse? How is this program implemented? Please elaborate.
6. Has your state experienced or expect to experience any negative environmental, societal, or fiscal effects from past, existing or future water reuse activities?
7. What type of financial or other incentives would you like to see adopted at a federal, state or local government level to promote water reuse?
8. What has your state done to address organic contaminants in reclaimed water (e.g., microconstituents, emerging contaminants, pharmaceuticals, personal care products, endocrine disrupting compounds, etc.)?

D. Water Reuse Projects

1. Please use the attached table to provide an inventory of permitted or approved water reuse projects in your state. Please include the type, design capacity, average reuse water production per year, and year when operation began on each project.
2. Were there any water reuse projects that your state considered in the past but were not implemented or approved? Please explain.

E. Funding

1. How are water reuse activities typically funded in your state? Please describe any challenges.
2. Does the state provide financial assistance in the form of grants or loans? If so, how much funding is typically available?

F. Misc. Questions

1. Please provide copies of any water reuse plans included in your state's overall water plan.
2. What changes, if any, would you make to your state's existing water reuse statutes and regulations? What are the chances that these changes would be enacted?
3. Is there anything else with regard to water reuse in your state that is not addressed in the above questions, but is important in understanding your state's position regarding reuse?

TABLE: WATER REUSE PROJECT INVENTORY

Project Name	Permitted or Approved	Type	Design Capacity	Avg. Reuse Water Production Per Year	Year Operation Began