Implementation of Reclaimed Water Use

2007 Report to the Governor and State Legislature

Fulfilling Requirements from 2006 and 2007 Session Law amending:

Reclaimed Water Use Act, Ch. 90.46 RCW

Water Resources Act of 1971, Ch. 90.54 RCW

Watershed Planning Act, Ch. 90.82 RCW

December 2007

Publication Number 07-10-098

Washington State Department of Health
Division of Environmental Health
Office of Shellfish and Water Protection

Washington State Department of Ecology

General Administration
State of Washington

Implementation of Reclaimed Water Use

2007 Report to the Governor and State Legislature

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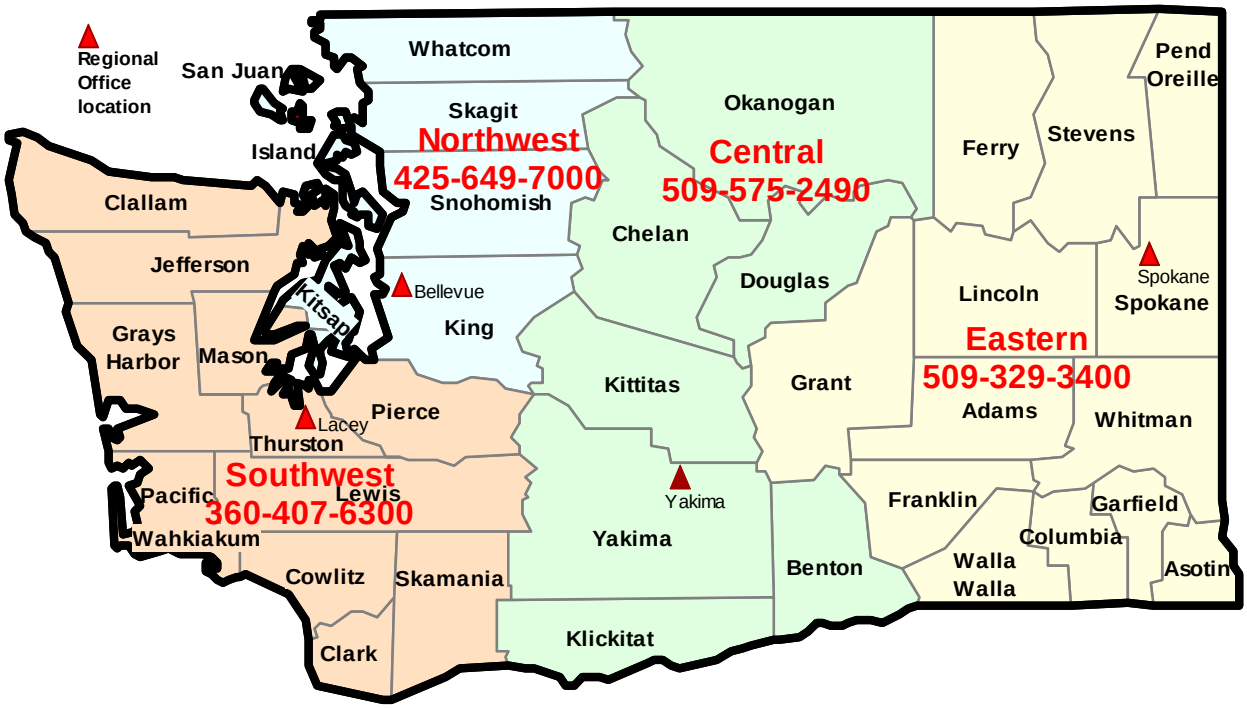

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Introduction

Reason for This Report

Major legislation in 2006 and 2007 elevated the importance of reclaimed water use within the state of Washington. As a direct result of this scale-up of activity, ten reports related to implementation of the state's reclaimed water program are due by January 1, 2008. The law requires additional reporting by January 1, 2009. Ecology compiled all ten required reports into a single document for ease of reference.

The 2006 Engrossed Substitute House Bill 2884 (ESHB 2884) amended the state's Reclaimed Water Use Act (Ch 90.46 RCW) directing the Department of Ecology (Ecology) to adopt rules addressing all aspects of reclaimed water use by December 31, 2010. The law also directs Ecology to coordinate this effort with the Department of Health (DOH) and a stakeholder advisory committee.

The 2007 Engrossed Second Substitute Senate Bill 6117 (E2SSB 6117) reaffirmed the state's commitment to reclaimed water and recognized the importance of the following benefits of reclaimed water use:

- Consistent, reliable water supply as Washington faces climate change challenges.
- Reduced discharge of treated wastewater into Puget Sound and other sensitive areas.
- More water in our rivers and streams for salmon recovery and other benefits.
- Comprehensive water planning integrating water and wastewater management.

The Governor vetoed Section 4 of the 2007 legislation related to changes to water rights impairment provisions to avoid a potential for unintended consequences. She directed Ecology to work with legislative leadership to address this issue and to assure effective implementation of the planning requirements under new law.

The 2007 Capital Budget provided an additional $5.4 million dollars to support implementation of the highest priority reclaimed water projects in Puget Sound.

Report Organization

This combined report consists of eight Ecology reports, one DOH report, and one report from the Department of General Administration (GA) organized into ten chapters. Executive summaries of each report are included in a special front section for those seeking an overview of all topics. General Appendices follow the chapters. Each chapter provides a more detailed discussion on the assigned topic as follows:

Chapter 1. Rule development activity status (Ecology).

Chapter 2. Interim report from the barriers subtask force created to identify and recommend solutions to reduce barriers to the use of reclaimed water (Ecology).

Chapter 3. Recommendations from the funding subtask force created to develop a strategy for long-term funding support for reclaimed water projects (Ecology).

Chapter 4. Report on implementation of reclaimed water use in water conservation and water reuse plans (Ecology).

Chapter 5. Implementation of reclaimed water in watershed plans (Ecology).

Chapter 6. Recommendations to harmonize new reclaimed water planning requirements with other state laws (Ecology).

Chapter 7. Recommendations to address water right impairment issues related to reclaimed water use (Ecology).

Chapter 8. Implementation of reclaimed water permit fees, greywater use, implementation in water plans, and information on public health risks and public information needed to encourage acceptance (DOH).

Chapter 9. Administration of $5.4 million in capital funding for reclaimed water projects that benefit Puget Sound (Ecology).

Chapter 10. Recommendations for a demonstration project to use reclaimed water at the Capitol Campus (GA).

Acknowledgements

The 2007 session law provided a very short schedule to meet the assignments by the December 31, 2007 deadline. With funding received in July 2007, Ecology and DOH hired staff, contracted facilitators, convened three new advisory groups, and began work on the various assignments.

Ecology wants to acknowledge the work of all stakeholder committees including the Reclaimed Water Rule Advisory Committee, the Removing Barriers Subtask Force, the Long-term Funding Subtask Force, and the Water Rights Impairment Advisory Committee. The intense pace required exceptional dedication of time, personal funds, and energy from these volunteer stakeholder advisors. We could not have accomplished as much without their interest, support, and willingness to contribute.

Ecology wishes to thank the Puget Sound Partnership, Jay Austin, Adam Schempp, and Lang Marsh of the Environmental Law Institute, and Dr. James Crook for providing third party information to help us through these tasks.

Ecology also recognizes and appreciates the major time commitment from staff at Ecology, DOH, GA, City of Olympia, and the Office of the Attorney General to support our efforts. Staff researched information requested by the Legislature; led and supported advisory committees and subtask force activities; and coordinated, wrote, reviewed, edited, and published these reports.

The authors would especially like to acknowledge the dedicated work of Alissa Ferrell for getting this report from draft to final production in a very short time. The contributing authors for these reports, in alphabetical order under their agency, are:

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Lynn Coleman
Katharine Cupps
Dan Filip
Melissa McEachron
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Rule Advisory Committee, Water Rights Advisory Committee, Removing Barriers Subtask Force, and Long-Term Funding Subtask Force Members:

RECLAIMED WATER USE - RULE ADVISORY COMMITTEE

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Scott Redman	Puget Sound Partnership	State Agency
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Michael Barber	WSU Water Research Center
Bob Barwin	Ecology - Water Resources
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Scott Redman	Puget Sound Partnership	State Agency
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Heather Trim	People for Puget Sound	Environmental
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Representative	Organization	Stakeholder Interest
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Gary Chandler	Association of Washington Business	Business and Private Industry
Hal Schlomann	Washington Water and Sewer District Association	Water and Sewer District Association

Executive Summaries

Executive Summary of Chapter 1

Status of Reclaimed Water Rule Development

This interim report describes the Department of Ecology's progress toward rule development for reclaimed water. When completed, Chapter 173-219 of the Washington Administrative Code (WAC) will be the first regulation for reclaimed water use in the state of Washington.

Assignment

In 2006, the Legislature directed the Department of Ecology (Ecology) to adopt final rules addressing all aspects of reclaimed water use by December 31, 2010. Additional legislation in 2007 expanded the scope of work for rule development and asked Ecology to recommend changes to state law that would encourage reclaimed water use for consideration during the 2009 legislative session.

Key Messages

Ecology made good progress on rule development during the first year. In July 2007, Ecology modified the schedule of work to include the assignments from the 2007 legislation.

The requested recommendations will propose changes to state law for consideration during the 2009 legislative session. If the Legislature amends the reclaimed water statute in 2009, these amendments may also alter the final content of the rule under development.

Ecology is currently determining the best way to address these possibilities while still getting the needed framework for program administration (permits, submittals, standards) in place as quickly as possible. Ecology remains on schedule for rule adoption by December 31, 2010.

Status

During the first year of rule development, Ecology, in coordination with the Department of Health (DOH):

- Completed the state requirements to initiate rule making.
- Convened the Reclaimed Water Rule Advisory Committee that meets monthly.
- Developed a scope of work with four major sections - permit process, technical standards, submittals and reports, and other topics of interest.
- Completed input on the permit process and began work on the technical standards.
- Established a website and listserv to communicate with the public.
- Invited out-of-state experts and co-sponsored a workshop attended by 250 people.
- Incorporated and began work on additional assignments from the 2007 legislation.

Executive Summary of Chapter 2

Status of Removing Barriers Subtask Force Activities

This is the first progress report on tasks assigned to Removing Barriers Subtask Force of the Reclaimed Water Rule Advisory Committee (RW-RAC). The subtask force continues through 2008.

Assignment

The 2007 session law–Engrossed Second Substitute Senate Bill 6117 (E2SSB 6117), Section 5–directed Ecology to establish and chair this subtask force to investigate and recommend ways to reduce barriers to reclaimed water use. Specific assigned tasks include evaluating state agency resources and organizational structure, considering other names to describe reclaimed water, addressing unresolved legal issues relevant to reclaimed water use and completing any additional tasks assigned by the RW- RAC. The subtask force received an additional assignment to address issues related to reclaimed water planning.

Key Messages

This subtask force began in August 2007, met three times in the fall of 2007–and will continue working, on a monthly schedule, through 2008. Ecology and the Subtask Force prioritized the assigned tasks into a work plan for 2008.

The subtask force agreed to address the work most likely to include recommendations for legislative changes (planning and incentives) during the first half of 2008. Ecology will combine these recommendations with other proposed statutory changes for consideration during the 2009 legislative session.

The subtask force recommends keeping the generic name "reclaimed water." Many other states use this term and most Washingtonians are now familiar with it. Using the term "reclaimed water" gives local utilities flexibility to create local brand names for their product.

Status

Ecology and the subtask force completed the following tasks in 2007:

- Researched and evaluated a list of appropriate names for reclaimed water.
- Reviewed information on the organizational structure, staffing, and the flow of project oversight between Ecology and DOH.
- Reviewed available information to identify barriers to reclaimed water use and agreed to review information included within these 2007 reports and appendices.
- Prepared a preliminary work plan to accomplish assignments during 2008.
- Agreed to coordinate and integrate solutions to reduce barriers with the work of other reclaimed water committees and subtask forces.

Executive Summary of Chapter 3

Recommendations for Long–Term Funding Program

This report provides recommendations from a long–term funding subtask force of the Reclaimed Water Rule Advisory Committee (RW-RAC). It fulfills the reporting requirement for January 1, 2008.

Assignment

The 2007 session law–Engrossed Second Substitute Senate Bill 6117 (E2SSB 6117), Section 10–directed Ecology to establish and chair a subtask force of the RW-RAC. The subtask force assignment is to recommend a dedicated competitive funding program for reclaimed water infrastructure. The program must include eligibility requirements, funding priorities, and grants for high priority areas. The statute directs the subtask force to coordinate the development of the long-term reclaimed water funding program with existing state funding programs for environmental and public health infrastructure.

Funding priorities must consider readiness to proceed, local support, local use ordinances or executed user contracts, and projects providing broader public benefits to environmental water quality or water resource needs such as Puget Sound restoration and promoting Columbia River water management strategies.

Key Messages

Existing state and federal funding sources for wastewater treatment are insufficient. Conservatively low estimates of wastewater treatment and water reclamation funding needs in Washington identified in the 2004 Clean Watershed Needs Survey reported to Congress are $3.8 billion. Likewise, a recent Ecology survey showed a low estimate need projection of $294 million for reclaimed water facilities by 2016.

The subtask force recommends an initial funding program of $50 million dollars per biennium, starting in 2009 with phased increases in subsequent biennia. Reclaimed water funding should focus on post-treatment needs such as storage, distribution systems, and environmental benefits. Funding should not compete with existing wastewater needs. It should fill the funding gap required to integrate water and wastewater management toward the best solutions.

Potential revenue sources include a tax on bottled water, soft drinks, increasing the public utility tax, dedicating the existing tax to reclaimed water, and sales tax exemptions.

Status

This report completes the funding subtask force assignment to develop recommendations for a dedicated long-term funding program to support reclaimed water use. The proposed program includes all required components including eligibility and provisions for grants and loans. The program considers the grant funding needs for financial hardship and for high priority areas.

The report provides a detailed evaluation system consistent with all criteria outlined in the legislative assignment. The funding subtask force notes that this is an initial program. It recommends immediate implementation followed by additional review of effectiveness and need within four to six years.

The Legislature should consider the reclaimed water funding need as part of the broader evaluation of local government infrastructure financing by the Infrastructure Funding Study Committee formed by Section 6026 of Engrossed Substitute House Bill 1092 session law (State 07-09 Capital Budget appropriation).

Executive Summary of Chapter 4

Report – Reclaimed Water Implementation in Local Plans

This report provides information the 2007 Legislature requested regarding the consideration of reclaimed water use within existing conservation and water reuse plans. It fulfills the reporting requirement for January 1, 2008.

Assignment

In addition to the recommendations for a long-term funding program (Chapter 3), the 2007 session law–Engrossed Second Substitute Senate Bill 6117 (E2SSB 6117)–directed Ecology and the subtask force created under Section 10 to complete:

Task 1 - Review existing conservation and water reuse plans or programs for cities, counties, and districts and provide a report to the appropriate legislative committees regarding the number, general nature, and extent of conservation and reclaimed water use proposed or included within the plans.

Task 2 - Recommend additional provisions for reclaimed water use requirements under water system planning, regional water plans, and conservation plans and ordinances.

Key Messages

Beginning in August 2007, Ecology focused on completion of Task 1. Most local plans are in three major categories (general sewer plans, water supply plans, watershed management plans).

To gather additional information quickly, Ecology created a questionnaire for stakeholder input. Questionnaire results found that:

- Most city and local water plans and ordinances identify water conservation. However, reclaimed water is not a part of all local plans or ordinances.
- Ecology found a positive attitude and interest in reclaimed water use. Over 50 percent of facilities reviewed indicated that they are planning to use reclaimed water in the future.
- Several organizations requested additional options and resources to facilitate the use of reclaimed water.

Status

With input from legislative staff and stakeholder advisors, Ecology assigned Task 2 to the Removing Barriers Subtask Force in conjunction with other planning related activities. The Removing Barriers Subtask Force will consolidate the information and report to the Legislature with recommendation for the 2009 legislative session.

Executive Summary of Chapter 5

Report on Implementation in Watershed Planning

This report provides an advance summary of the information the Legislature requested about the use of reclaimed water in watershed management plans. Ecology's Shorelands and Environmental Assistance program will include this information in their more comprehensive annual report on Watershed Planning.

Assignment

The Legislature tasked the Department of Ecology (Ecology) to review watershed management plans and to report on:

1. The number of watershed management plans using reclaimed water as potential source or strategy to meet future needs.
2. Provisions in any watershed implementation plans that discuss barriers to implementation of the water reuse elements of those plans.
3. Potential costs of reclaimed water facilities.
4. Potential sources of funding for reclaimed water facilities

Key Messages

Ecology reviewed 32 watershed management plans and found that all the plans uniformly identify reclaimed water, water reuse, and water conservation. However, the depth of the discussion on those water topics varied widely from plan to plan.

Ecology identified and reviewed seven watershed implementation plans. Four of those seven implementation plans included references to reclaimed water use. Many implementation plans are now in production or have yet to be developed.

Costs for reclaimed water facilities vary widely. These costs are dependent on the class of water reclaimed, the size of the facility, and the complexity of the reclaimed water distribution system.

Status

In January 2008, Ecology will provide a separate report on the status of watershed planning (as required under Ch 90.82 RCW. The annual Watershed Planning Report will include any additional information on reclaimed water use in watershed management plans.

Executive Summary of Chapter 6

Status Report - Harmonizing Statutory Planning Requirements

In 2007, amendments to the Reclaimed Water Use Act (RCW 90.46.120) extended planning requirements to consider reclaimed water in regional watershed planning and land use statutes. This report provides the Department of Ecology's (Ecology) recommendations to harmonize these new planning requirements with the other state statutes referenced under the law.

Assignment

In signing Engrossed Second Substitute Senate Bill 6117 (2007) into law, Governor Gregoire noted that the new Section 3 requirements for considering reclaimed water during watershed planning and land use decisions needed to be harmonized with other statutes to ensure effective implementation. She directed Ecology to work with legislative leadership to address reclaimed water planning and provide a report and recommendations to the Governor and appropriate standing committees of the Legislature by January 1, 2008.

Key Messages

Ecology requested legal support from the Office of the Attorney General (AG) to identify and recommend statutory changes to increase clarity.

The AG's office recommended:

- A combination of a simple amendment to each of the statutes referenced and minor revisions to the language in RCW 90.46.120.
- Because of other issues related to the Growth Management Act and other statutes, Ecology should get additional stakeholder input before proposing recommendations to amend these statutes.

Status

Ecology assigned the task to review the AG recommendations to the Removing Barriers Subtask Force (Chapter 2). Ecology and the subtask force will complete this review and propose any recommendations for statutory changes in time for the 2009 legislative session.

Executive Summary of Chapter 7

Interim Report on Water Right Impairment Issues

This interim report describes the Department of Ecology's (Ecology) progress in addressing key water right issues related to reclaimed water use. Ecology will deliver a final report late in 2008 for consideration during the 2009 legislative session.

Assignment

In 2007, the Legislature proposed a change to the water right impairment standard in the Reclaimed Water Use Act, RCW 90.46.130. The Governor vetoed the legislative changes stating a concern for unintended consequences. She recognized the need for additional study and directed Ecology to work with legislative leadership to address water right impairment from water reuse projects. Impairment addresses the rights of reclaimed water facilities versus the rights of existing water right holders when water availability is limited.

Key Messages

Ecology and stakeholder advisors reached agreement on the following:

- It will take additional time to provide useful recommendations for statutory changes. The issues are complex and it is important to consider the broad range of perspectives. Stakeholder advisors will look for consensus on as many aspects as possible. Where consensus is not reached, positions and perspectives of the stakeholders will be provided to the Legislature in the 2008 report.
- Construction of any reclaimed water project currently discharging to the Puget Sound estuary or other marine waters would "automatically" not impair existing water rights. This includes approximately 90 percent of the existing wastewater flows in the Puget Sound area.
- Water right holders with out-of-stream uses and in-stream flows set by rule may be impacted by new consumptive uses of reclaimed water. Policy choices for both types of water rights will be important.

Status

In July 2007, Ecology convened a stakeholder advisory committee (Reclaimed Water and Water Rights Advisory Committee) to help address impairment. Ecology and the committee met five times in 2007. The advisory committee:

- Reviewed other states' approaches to water rights impairment and reclaimed water.
- Examined case studies to understand the legal and physical differences across the state.
- Developed a list of priority questions needing resolution.

Ecology and the advisory committee will continue meeting during 2008 to address these issues and provide recommendations in time for the 2009 legislative session.

Executive Summary of Chapter 8

Report from Department of Health on Related Public Health Issues

This report provides the information the 2007 Legislature requested from the Department of Health (DOH) related to reclaimed water program implementation status, grey water implementation status, and public health issues.

Assignment

In 2007, session law–Engrossed Second Substitute Senate Bill 6117 (E2SSB 6117), Section 7–directed DOH to:

- Report the status of greywater standards and guidelines development.
- Report the status of commercial and industrial permit fee development for reclaimed water use.
- Report on DOH analysis of reclaimed water in water system planning.
- Identify potential public health risks associated reclaimed water.
- Identify public information and acceptance programs for reclaimed water.

Key Messages

DOH is on schedule to adopt rules for greywater use by December 2010. DOH currently has guidance on greywater use available on their website. Local health and county agencies issue permits for greywater use.

DOH intends to consider permit fees in conjunction with the Department of Ecology. The goal is to work toward achieving one permit fee system regardless of which agency issues the permit.

Since 2003, 100 percent of the coordinated water system plans submitted to DOH and 78 percent of the individual systems required to do so in their water system plans addressed reclaimed water use. DOH has found that 30 percent of the water plans identified active and targeted reclaimed water projects.

Water systems consider reclaimed water from the consumer rather than the producer perspective since most do not have a wastewater facility. Most water systems identified barriers to reuse. The most frequently mentioned are the costs to treat and deliver to customers, the limited availability of reclaimed water supply, a lack of infrastructure to deliver it, low customer demand, and public acceptance.

DOH contracted with an international expert, Dr. James Crook to evaluate potential public health risks. If reclaimed water is properly treated, distributed, and used, it poses no significant public health risk.

Public information and outreach are key ways to gain public acceptance of reclaimed water projects. Proponents must provide accurate information and response to public concerns. The Environmental Protection Agency and others have assembled model programs. Most local agencies lack expertise in this area—support from state agencies is necessary.

Executive Summary of Chapter 9

Report on Capital Budget Provisions for Funding Puget Sound

The 2007-09 Biennium Capital Budget for the Department of Ecology (Ecology) provided $5.4 million dollars for grants to complete reclaimed water projects in the Puget Sound area. This report describes Ecology's progress in administering these funds.

Assignment

In 2007–Engrossed Substitute House Bill 1092, Section 3044–the budget directs Ecology to administer these funds solely for grants to local governments in Puget Sound to complete reclaimed water projects. The budget specifies that Ecology give funding priority to two types of projects where reclaimed water use will:

- Replace other water sources in water short areas.
- Restore important ecosystem functions in Puget Sound.

Ecology, with stakeholder assistance, defined water short areas as areas where available freshwater cannot meet demands of intended uses. Ecology developed a competitive, outcome-based application and evaluation process that also focused on these two criteria to evaluate projects.

Key Messages

Although limited only to the Puget Sound area, the competition for the $5.4 million of funding was high. Local governments outside the Puget Sound also expressed the serious need for funding assistance to, for example, safely recharge aquifers and provide adequate streamflow.

Ecology received 23 applications with a combined grant request of $17.5 million. Total project costs were approximately $100 million. Evaluators are selecting highest priority construction projects and feasibility studies for proposed funding. Ecology will likely meet the program goal to fund 3-6 construction projects and 3-6 feasibility studies. Feasibility assessments are rated according to the same criteria as construction projects, but they are ranked on different lists.

Ecology anticipates that all of the funded projects will begin by mid 2008. Feasibility assessments will take about one year to complete. Construction projects should be operational within three years.

The success of this initial program demonstrates the value of continuing funding support for reclaimed water use projects throughout the state.

Status

Beginning in June 2007, Ecology responded quickly to administer the new funds.

Ecology used two task forces and the Water Quality Program's Financial Assistance Council to develop a competitive application and evaluation system. Ecology accepted applications through September 28, 2007, and completed evaluations in November 2007.

Ecology is currently preparing a draft offer and applicant list for posting to the website in December 2007. Before posting, Ecology will notify all applicants and provide a two-week

comment period. Ecology will prepare a final offer and applicant list with offer letters by early January 2008.

Beginning in January 2008, Ecology's Project Management Team will use information from the funding proposal, including measurable objectives and budgets, to develop grant agreements.

Executive Summary of Chapter 10

Campus-wide Plan for Reclaimed Water Use on the State Capital Campus

This report summarizes a proposal to serve the state of Washington's Capitol Campus with reclaimed water. The project would demonstrate the state's leadership in increasing the visibility of reclaimed water use.

Assignment

In 2007, session law–Engrossed Second Substitute Senate Bill 6117, Section 11–directs the Department of General Administration (GA) to coordinate with the City of Olympia (Olympia) and report on the infrastructure, cost, and potential funding sources required to use reclaimed water for irrigation and related outdoor uses at the state's Capitol Campus by December 2007.

Key Messages

GA and Olympia began work on this proposal in September 2007. GA and Olympia evaluated three options to achieve their legislative task. The recommended approach will cost approximately $2.32 million. The proposal recommends using the existing irrigation system for distribution of reclaimed water to help reduce construction costs. Other infrastructure needed includes a 200,000 gallon underground storage tank, two pump stations, upgrades to existing distribution lines, and severing the potable water lines from the irrigation system.

Since Olympia charges only 70 percent of potable water rates for the reclaimed water, this project would save both potable water supply and utility rate costs. The savings include:

- An additional 12 million gallons of potable water each year.
- Approximately $40,000 in annual water costs.

GA and Olympia identified the following potential funding sources. For 2009, Olympia has approximately $750,000 available for this project. GA has $100,000 available through the State Building Construction Account. GA has identified about $80,000 dollars would be eligible for performance-based contracting. The total amount available to the project is $930,000 leaving a need for $1,390,000 in new money.

Status

This report completes the preliminary planning requirement. Both GA and the Olympia recommend Option 2 described in Chapter 10. GA estimates the cost for this option to be $2.32 million. There is a deficit in project need of $1.39 million. GA and Olympia are prepared to execute the project immediately with additional funding. They are looking forward to the opportunity to serve the Capitol Campus with reclaimed water in such an environmentally sustainable way.

Chapter 1

Status of Reclaimed Water Rule Development

Fulfilling requirements under RCW 90.46.015

2007 Reclaimed Water Use Legislative Report

Prepared by:

Washington State Department of Ecology
Water Quality Program

December 2007

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Reclaimed Water Rule Development

Summary

In 2006, the Legislature enacted Engrossed Substitute House Bill 2884 (ESHB 2884) directing Department of Ecology (Ecology) to adopt final rules for reclaimed water use. This interim report updates the status of the Ecology's work to develop these regulations by December 31, 2010. When completed, Chapter 173-219 Washington Administrative Code (WAC) will be the first regulation for reclaimed water use in the state of Washington.

This report summarizes the steps Ecology has taken to date, in coordination with the Department of Health (DOH), stakeholder participation, and the topics considered by Ecology.

By November 2006, Ecology completed the state requirements to initiate rulemaking, the Pre-proposal Statement of Inquiry (form number CR-101). On October 11, 2006, Ecology convened the Reclaimed Water Rule Advisory Committee (RW-RAC) which meets monthly.

Ecology received both formal and informal input from advisors on rule content. Ecology divided the input into four major areas of interest:

1. Permit process.
2. Technical standards.
3. Submittals and reports.
4. Other topics of interest.

With agreement from the RW-RAC, Ecology decided to begin work on each topic separately. In January 2007, Ecology and DOH focused on the permit process, and completed preliminary recommendations on this topic in July 2007. In August 2007, Ecology requested the Office of the Attorney General to review the RW-RAC proposals for the reclaimed water permit process while the agencies and advisors focused on other topics of interest. Additional work detailing the rule content for the permit process section will begin in mid-2008.

Meanwhile, major legislation in 2007 greatly expanded the scope of work for rule development and re-prioritized some of the tasks. The new work may include recommendations for proposed changes to state law in the 2009 legislative session. Changes to the reclaimed water statute may also alter content of the proposed rule. Therefore, it is important to provide options for rule language consistent with various potential legislative outcomes.

With the added workload, both agency staff and external advisors re-scheduled and temporarily delayed some of the work. This re-prioritization occurred in August and September 2007 as the subtask forces began work on the new assignments.

On October 11, 2007, Ecology focused the RW-RAC work on the second major category, updating the technical standards. To remain on schedule for rule adoption by December 31, 2010, Ecology is also considering the advantages of creating smaller technical workgroups on specific issues.

Brief History of Reclaimed Water Standards and Procedures

1992–The Washington State Legislature passed the Reclaimed Water Act of 1992 directing the DOH and Ecology to jointly develop reclaimed water standards for commercial and industrial uses and land application uses (irrigation) of highly treated municipal wastewater.

1995–The Legislature amended Reclaimed Water Act (Senate Bill 5606) adding requirements to include standards for environmental uses including wetlands, streamflow augmentation, and groundwater recharge. Ecology and DOH developed a memorandum of agreement to accomplish the work.

1997–The Legislature amended Reclaimed Water Act (Senate Bill 5725) to address water rights, fund demonstration projects, and require DOH to develop standards for greywater use. In September 1997, Ecology and DOH completed final reclaimed water standards as guidance (web site: http://www.ecy.wa.gov/programs/wq/reclaim/standards.pdf).

1999–The Legislature funded positions at DOH and Ecology to expedite implementation and technical assistance.

2001–The Legislature amended the Reclaimed Water Act (Senate Bill 5925) to add agricultural industrial process water as a new reuse category (90.46.150 Revised Code of Washington).

2002–The Legislature amended Reclaimed Water Act (House Bill 2993) to add another new category–industrial reuse water (90.46.160 Revised Code of Washington).

2005–Amendments to Reclaimed Water Act (Substitute House Bill 1891) allow state regulatory agencies to issue permits to private utilities for direct uses of reclaimed water. Gives state regulatory agencies authority to require evidence of financial, technical, and managerial viability before issuing a permit (RCW 90.46.030 and 040).

2006–Amendments to Reclaimed Water Act (ESHB 2884) direct Ecology to:

- Adopt final reclaimed water rules as soon as possible and no later than December 31, 2010.
- The rule must address all aspects (uses) of reclaimed water. The rulemaking process must:
    - Identify funding sources.
    - Develop permitting process.
    - Develop permit fee structure.
    - Identify non-potable uses.

    - Identify barriers to reclaimed water use.
    - Identify public health concerns.
    - Identify resources to promote reclaimed water to the public.
- Coordinate with DOH to:
    - Develop reclaimed water rules.
    - Develop permit process.
    - Develop fee structure.
    - Identify criteria to determine lead agency role.
- Clarify and delineate state agency permitting and regulatory roles.
- Harmonize the new regulations with other state statutes and regulations including:
    - Parties that will produce or use reclaimed water.
    - Members with technical expertise and knowledge of new advancements.
    - Parties potentially impacted by rule.

2007–Amendments to Reclaimed Water Act (E2SSB 6117) expand the scope of rule advisory committee to:

- Address organizational structure, staffing.
- Address implementation barriers and recommend incentives.
- Provide planning tools to local governments.
- Develop recommendations for dedicated long-term funding program.
- Identify and recommend action on other issues.
- Consider more appropriate names for the program.
- Address aquifer storage and recovery (ASR) under reclaimed water permit.

The Need for Rule Development

Washington's reclaimed water program has progressed from initial pilot and demonstration phases to much broader implementation. Both stakeholders and regulatory agencies seek a streamlined, comprehensive, and effective program for several reasons:

- Beneficial use of reclaimed water can be an important element to the state's Water Resource Management Plan.
- As needs for improved water quality and water supply increase, more utilities have expressed an interest in using reclaimed water.
- Less expensive advanced treatment technologies make reclaimed water more affordable.
- Existing reclaimed water standards are not rules. The standards are defined in guidance.

They are more than ten years old, and they do not address today's advanced treatment technologies. Today's projects propose creative solutions to complex water management problems not envisioned a decade ago. Agencies need to be responsive to new issues and ideas.

- Existing processes need revision to manage the increasing workload effectively. Roles and responsibilities between regulatory agencies require additional clarification for efficiency.
- Stakeholders requested regulations as the appropriate place to address the need for consistent administrative procedures and better integration with other state requirements.

Ecology and Rule Advisory Committee Work

Advisory Committee Members

The members of the Reclaimed Water Rule Advisory Committee (RW-RAC) include state and local government, public utilities, business associations, private sector environmental professionals, and environmental groups. Table 1 lists RW-RAC members, Ecology staff charged with rule development, and DOH staff supporting this effort. Most member organizations also have a designated alternate.

Beginning in October 2006, the RW-RAC held meetings on the second Wednesday of each month except for: December 2006, May 2007, and August 2007. Participation in meetings remains high with most members attending or sending alternates to each meeting.

Initial Advisory Committee Meeting

At the October 2006 kick-off meeting, Ecology's Water Quality Program Manager, Dave Peeler, provided introductory remarks and described three key areas to remember while developing the rule:

- Update standards to support new technologies and proposed uses.
- Streamline and clarify both technical review and permit procedures.
- Attract and retain customers for reclaimed water.

Ecology staff provided an overview of:

- Rule development process and the Administrative Procedures Act requirements.
- History of reclaimed water use in Washington.
- Examples of other regulations in Washington State.

Ecology began to identify and prioritize topics of interest for the rule making process and to schedule the RW-RAC calendar for the remainder of the year.

TABLE 1 - RECLAIMED WATER USE - RULE DEVELOPMENT

Katharine Cupps, P.E., Agency Lead, Reclaimed Water, Department of Ecology
Melissa McEachron, Rule Analyst, Department of Ecology
Maryanne Guichard, Department of Health, Director, Office of Shellfish and Water Protection
Dave Lenning, Department of Health Manager, Office of Shellfish and Water Protection

Members: Reclaimed Water Rule Advisory Committee

Representative	Organization	Stakeholder Interest
Nancy Winters	Department of Ecology	Water Quality Program
Lynn Coleman, P.E.	Department of Ecology	Water Resources Program
Craig Riley, P.E.	Department of Health	Office of Shellfish and Water Protection
Tom Fox, P.E.	Seattle Public Utilities	City
Hal Thomas	City of Walla Walla	City
Bill Peacock, P.E.	City of Spokane	City
James Bay	City of Sequim	City
Tikva Glantz	City of Olympia	City
Peggy Leonard	King County	County
Bruce Rawls, P.E.	Spokane County	County
Keith Folkerts	Kitsap County	County
Karla Fowler	LOTT Alliance	Regional Utility
Don Perry, P.E.	Lakehaven Utility District	Regional Utility
Ginger Desy	Sno-King Alliance	Regional Utility
Judy Nelson	Cascade Water Alliance	Regional Utility
Clint Perry	Evergreen Valley Utilities	Private Utility
Walt Canter	Washington Water & Sewer District Association	Water & Sewer District Association
John Kounts	Washington Public Utility District Association	Public Utilities Association
Bonne Beavers	The Center for Justice	Environmental
Heather Trim	People for Puget Sound	Environmental
James Hagstrom, P.E.	Carollo Engineers	Pacific Northwest Clean Water Association.
Chris McCabe	Association of Washington Business	Business and Private Industry
Michael Barber, PhD, P.E.	Washington State University	Washington Water Research Center
Ann Wick	Department of Agriculture	State Agency
Scott Redman	Puget Sound Partnership	State Agency
Douglas Raines	Washington Dept. of Corrections	State Agency

Prioritizing Topics of Interest

By November 2006, Ecology and the RW-RAC had constructively discussed and prioritized a list of topics of interest–summarized in Appendix B. To focus efforts on the new rule effectively, Ecology divided the work into four major groups:

Permit Process

The permit process includes administrative procedures to apply for and receive a permit for reclaimed water treatment, distribution, and use. The RW-RAC expressed particular interest in the application process, a streamlined method to add users or new uses to the permit, operator certification, monitoring requirements, recordkeeping and reporting. RW-RAC members also noted a need to harmonize requirements with wastewater discharge permits.

Technical Standards

Technical standards include required technologies; water quality limits and performance standards; reliability; and best management practices and restrictions for distribution, storage, and use. The RW-RAC expressed interest in new information regarding the potential effects of pharmaceuticals, personal care products, and other microconstituents. The RW-RAC wanted to include new treatment technologies, decentralized treatment potential, and additional uses not included in the 1997 standards.

Plan Evaluation and Reports

Submittal requirements include review standards, timing and regulatory approvals, planning and feasibility studies, private utility viability, water right impairment assessments, and various engineering approvals for design and construction.

Other Topics

This includes a wide variety of items such as definitions, restrictions, prohibitions, exemptions, and the relationship of the new rule to other regulations.

Focus on the Permit Process Development

From January until July 2007, Ecology focused the committee on the reclaimed water permit process addressing the following:

1. When is a Reclaimed Water Use Permit required?
2. Exceptions - When is a permit not required?
3. Who receives the permit?
4. Which state agency issues the permit and how does it relate to other permits?
5. How to apply for a permit.
6. Permit fees.
7. Permit duration and replacement.
8. Transferring a permit to another party.
9. What to include in a Permit Fact Sheet.
10. How to handle confidential information required for a permit.
11. Notifying the public about a permit.
12. Notifying other agencies about a permit.
13. Public access to information.
14. Public hearings.
15. Notice of public hearings.
16. How to appeal a permit.
17. Permit requirements for reclaimed water quality, distribution, and use.

17a. Permit requirements for source control and pretreatment.

18. Contracts and agreements with distributors and water users.
19. Procedures for facility operation and maintenance.
20. Operator certification and minimum staffing requirements.
21. Laboratory accreditation.
22. Requirements for monitoring and recordkeeping.
23. Procedures for monitoring and frequency required.
24. Reporting requirements.
25. Additional permit requirements.
26. Site access for inspection.
27. Regulatory action for noncompliance.
28. Establishing schedules to return to compliance.
29. Procedures to modify, suspend, or revoke a permit.
30. Formal enforcement procedures.

Ecology incorporated the preliminary input presented by the RW-RAC on the permit process in April 2007. Ecology and DOH continued to develop the permit process based on RW-RAC input. The agencies reported back to the RW-RAC in July, 2007, with a proposal including five key points:

1. Continue to issue joint permits from Ecology and DOH.
2. Designate one state agency as the lead permitting and oversight agency. Determine lead agency, as follows, based on existing divisions of responsibilities.
    - Department of Health
        - On-site uses from domestic on-site systems less than or equal to 100,000 gallons per day.
        - Commercial and industrial uses with zero effluent discharge.

    - Greywater use
  - Department of Ecology - all other reclaimed water facilities and uses.
3. Provide the applicant with one main point of contact (POC). The lead agency POC will coordinate all aspects of the permit process between both agencies to provide hassle-free service to the permittee.
4. Provide flexibility to either combine or separate the reclaimed water use permit from wastewater discharge permits.
5. Allow permits to be issued for up to 10 years, where possible.

Ecology received additional RW-RAC committee input at the July 11, 2007 meeting. Ecology subsequently requested that the Office of the Attorney General review these proposals to assure consistency with state laws while the RW-RAC began working on other topics.

Ecology is beginning to draft rule language on the permit process and plans to present it to the RW-RAC for additional refinement by mid-2008. To facilitate the process, and try some of the recommendations before final rule adoption, Ecology and DOH are currently working on a memorandum of agreement (MOA) to delineate permitting roles and responsibilities. The MOA will be in effect until the final rulemaking is complete.

Workshop and Advice from Out-of State Experts

On June 12, 2007, the Pacific Northwest Clean Water Association (PNCWA), the National WateReuse Association, the Puget Sound Action Team (now Partnership), Ecology, DOH, and the King County Department of Natural Resources co-sponsored a one-day multi-track reclaimed water workshop held at the SeaTac Hilton.

RW-RAC Participation at June 12, 2007 Workshop

Ecology encouraged RW-RAC members to attend the workshop and held the RW-RAC meeting at the same location the following day. Over 250 people attended the workshop including:

- Local government planners.
- Water and wastewater utility managers.
- Environmental advocates.
- Public works directors.
- Water and wastewater utility operators.
- Consultants.
- Elected officials.
- Individuals interested in sustainable solutions.

Jay Manning, Director of the Washington Department of Ecology, Ron Sims, King County Executive, and Gregg Grunenfelder, Assistant Secretary of Environmental Health at DOH provided introductory comments supporting reclaimed water use. In their remarks, they invited all conference participants to sign a proclamation of support for reclaimed water.

The workshop included three tracks geared to the following interests: (1) treatment and operations, (2) water purveyors, and (3) policymakers and managers.

Most workshop presentations are available for review on the PNCWA Water Reuse Committee Reclaimed Water Workshop webpage.

RW-RAC Meeting on June 12, 2007

Ecology took advantage of the workshop to invite three out-of-state experts, all former state regulators for reclaimed water, to present information to Ecology and the RW-RAC on the following day. These experts included Dr. James Crook, author of both the first Environmental Protection Agency guidelines and the California standards; Dr. David York; Florida; and Mr. Mark Cullington, Oregon.

Adding New Tasks

In July 2007, Ecology hired additional staff and began focusing on the new tasks assigned during the 2007 legislative session. Ecology established three new subtask forces and scheduled work on the following priorities:

- Removing barriers
- Long-term funding
- Water rights impairment

Focus on Technical Standards Development

In September 2007, Ecology shifted the RW-RAC focus to begin work on updating the 1997 technical standards. This work is slightly behind schedule because of the new tasks assigned to the agencies and advisory committee members in the 2007 legislation.

At the October meeting, Ecology provided background information about the sources of contamination in water and wastewater, the parameters of highest concern for various uses, the effectiveness of treatment technologies, and various ways to monitor water quality. The RW-RAC members began reading the 1997 technical standards to answer a set of questions posed by Ecology.

In November 2007, DOH provided updated information on public health risks and concerns. Ecology provided links to regulations in other states and continued to refine the important questions and topics for detailed discussion in 2008.

The RW-RAC will focus efforts on the technical standards during the first half of 2008.

Next Steps

Major legislation in 2007, E2SSB 6117, greatly expanded the scope of work for rule development and reprioritized some of the tasks. The new work may include recommendations for proposed changes to state law in the 2009 legislative session. If the Legislature amends the reclaimed water statute, these amendments may also alter the final content of the rule.

Over the next few months, Ecology must determine the best way to address these possibilities while still getting the needed framework for program administration (permits, submittals, standards) in place as quickly as possible.

To remain on schedule for rule adoption by December 31, 2010, Ecology is considering the feasibility of creating smaller, technical workgroups to work on specific issues.

Further Reading

For additional reclaimed water information, consult Ecology's Water Reclamation and Reuse website at: http://www.ecy.wa.gov/programs/wq/reclaim/index.html.

For up-to-date developments on the reclaimed water rulemaking process visit Ecology's Reclaimed Water Rule Development web page at: http://www.ecy.wa.gov/programs/wq/reclaim/rule_develpmnt.html#rac.

Appendices

Appendix A

Topics of Interest
Scoping for Rule Development

Appendix A - Topics of Interest Scoping for Rule Development

RW-RAC Meeting October 11, 2006

TOPICS OF INTEREST
SCOPING FOR CH 173-219 WAC
RECLAIMED WATER USE

1. **General Information**
    - Scope from ESHB 2884 and for the Reclaimed Water Use act CH 90.46 RCW
    - Access to research in other states
    - Unintended barriers
    - Incentives for reuse (structural, etc.)
    - Terminology – water supply, resource or product vs. wastewater or effluent (definitions and liability issues)
    - Legal – attorney general office clarity
    - Restrictions, prohibitions, exemptions
    - Relations to other regulations

2. **Technical Standards (Reference: 1997 Standards)**

    A. Minimum Technical Standards for Adequate and Reliable Treatment
    - Treatment technology based requirements
    - Membrane filtration and other treatment technologies
    - Public Health Protection – pathogen reduction (virus removal)
    - Environmental Protection (newly detected substances – emerging
    - Chemicals and pharmaceuticals)
    - Reliability requirements
    - Process for equivalency determinations
    - Blending with stormwater facilities (or other supplies) quality issues

    B. Use-Based Requirements
    - Commercial and industrial uses (RCW 90.46.040)
    - Irrigation (land application) (RCW 90.46.040)
        - Agriculture
        - Urban uses
    - Groundwater recharge (and recovery)
        - Surface percolation (90.46.080)
    - Precipitation concerns for groundwater uses (addressed 1997 -HG documents)
    - Subsurface groundwater recharge (recharge in the vadose zone – standards)
    - Direct aquifer recharge (90.46.042)
    - Relation to UIC

- Relation to ASR
  - Wetlands (90.46.044 and 090)
  - Surface water augmentation (90.46.100)
  - Potable use?
  - Uses not listed
  - Revisiting classifications for use
  - Best management practices and use area restrictions

C. Small Decentralized Systems (Special Needs)
- Domestic on-site systems
- Affordability and protective.

3. Plan Evaluations and Reports

A. Roles of Ecology and DOH
- General submittal requirements
- Review standards

B. Coordinated Planning Process (90.46.120)
- Comprehensive planning between water supply planning and wastewater facility planning
- Especially when not the same entity
- Regional planning issues
- Timing, approvals, engineering reviews, permits

C. Finance and Economics
- Feasibility Studies - full cost accounting
  - Funding – who benefits and who pays?
- Financial, technical and operational viability (especially private utilities)
- Lack of alignment between costs and benefits

D. Water Rights
- Mitigation for new water rights
  - Credits for recharge – quantity
  - Standards for water right mitigation use
- Impairment of existing water rights 90.46.130
  - Water rights impairment (Ecology consistency)
- (Tribal) Inter-jurisdictional issues – cross boundary opportunities
- Exclusive right - broadens definition of water rights characterizations – net deficit on in-stream flows, relinquishment of water rights.

E. Engineering reports, design criteria, O&M manuals, construction documents (See Chapter E1 "Criteria for Sewage Works Design")[1]

[1] Criteria for Sewage Works Design, Ecology, 2007. Chaper E1 provides guidance for using adequately and reliably treated sewage treatment plant effluent (reclaimed water) for beneficial purposes. Found at: http://www.ecy.wa.gov/pubs/9837.pdf.

4. Permit Process (See 90.46.030 AND 040 and 1997 Standards)

A. Roles of Ecology and DOH

B. Procedures and Forms
- Application
- Modifications
- Adding uses or users

C. Monitoring and Operations
- Sampling and analysis
- Monitoring requirements
- Operator certification
- Operator protocols

D. Records and Contracts
- Contracts and agreements
- Recordkeeping
- Reporting, non-compliance and enforcement

E. Relationships to Other Permits
- NPDES
- Stormwater (blending)

Chapter 2

Status of Removing Barriers Subtask Force Activities

Fulfilling E2SSB 6117 Requirements–Section 5

2007 Reclaimed Water Use Legislative Report

Prepared by:

Washington State Department of Ecology
Water Quality Program

December 2007

Table of Contents

Removing Barriers Subtask Force

Introduction

The 2007 law, Engrossed Second Substitute Senate Bill 6117 (E2SSB 6117) expanded the Department of Ecology's (Ecology) work in reclaimed water. Under Section 5(3), Ecology must form a subtask force of the Reclaimed Water Rule Advisory Committee (RW-RAC). The statute assigns the subtask force to take an in-depth look at removing barriers to reclaimed water use. Ecology must provide status reports to the Legislature in 2007 and 2008. This report fulfills the requirement to provide the Legislature with an interim status report by the end of 2007.

In June 2007, Ecology established the Removing Barriers Subtask Force (subtask force). The Water Quality Program at Ecology chairs the subtask force in close coordination with the Department of Health (DOH). The subtask force met in August, October, and November 2007. Subtask force work will continue through the year 2008 to deliver a product that:

- Identifies the barriers that inhibit reclaimed water use.
- Recommends actions to increase and promote reclaimed water use.
- Provides feedback on issues that affect reclaimed water use to the RW-RAC and Ecology.

By October 2007, Ecology, the RW-RAC, and the subtask force completed one of their assigned tasks–considering a more appropriate name for reclaimed water. After proposing and evaluating several name choices, all groups recommended keeping the current term "reclaimed water use." Members believe the name is descriptive and that the public is comfortable with it. In addition, a number of other states–Arizona, Colorado, Florida, Virginia, and North Carolina–use the term "reclaimed water."

Legislative Tasks Assigned

The Legislature directed Ecology and the RW-RAC to provide specific assignments for the subtask force to evaluate. The 2007 law directed the subtask force to evaluate and make recommendations that would improve reclaimed water program implementation as related to:

- Having adequate Ecology and DOH staffing levels, roles, responsibilities, and resources.
- Refining and possible reorganization of agency organizational structures.
- Resolving legal issues that affect the use of reclaimed water.
- Recommending a more appropriate name than *reclaimed water*.

As time allows, the subtask force may also add other topics of interest.

Additional Assignment–Planning Recommendations

In addition to the tasks assigned specifically to this subtask force, Ecology requested this subtask to address issues related to consideration of reclaimed water in planning.

The 2007 legislation indicates in several places the importance of considering reclaimed water use in the earliest stages of planning. Other reports in this document provide background information related to the consideration of reclaimed water in various types of plans including:

- Chapter 4. Reclaimed Water Implementation in Local Plans.
- Chapter 5. Reclaimed Water Implementation in Watershed Planning.
- Chapter 6. Governor's Directive to Harmonize Statutory Planning Requirements.
- Chapter 8. Implementation in Water Supply Plans.

The subtask force will review the information provided in these reports and consider the topic of planning as a whole. The goal is to recommend appropriate statutory, regulatory, and policy provisions for consideration by the Legislature, Ecology, and DOH.

Progress Report for 2007

Removing Barriers Subtask Force Members

Section 5(3) of E2SSB 6117 restricts the group size to ten members. Members must be existing RW-RAC members or reclaimed water users. Ecology selected members from both categories. Table 1 below lists the names, organizations, and stakeholder interests of the subtask force members.

Table 1. Removing Barriers Subtask Force Members

Name	Organization	Stakeholder Interest
Tom Fox, P.E.	Seattle Public Utilities	City
Peggy Leonard	King County	County
Bill Peacock, P.E.	City of Spokane Wastewater Management	City
Tikva Glantz	City of Olympia	City
Clint Perry	Evergreen Valley Utilities	Private Utility
Scott Redman	Puget Sound Partnership	State Agency
Bill Clarke	Association of Washington Businesses	Business and Private Industry
Heather Trim	People for Puget Sound	Environmental
Walt Canter	WA Water and Sewer District Association	Water and Sewer District Association
Kathleen Collins Sarah Mack	WA Water Policy Alliance	Reclaimed Water Users-Business

Subtask Force Meetings

At the time of this report, the subtask force had three meetings–one in each of August, October, and November 2007.

August 2007

The subtask force held an initial meeting on August 8, 2007. The members reviewed the assignment from the Legislature and began organizing the work. Members decided to:

- Complete the task of considering a more appropriate name for reclaimed water.
- Request additional information from Ecology and DOH on existing staff resources: what are the roles, and who has responsibilities related to reclaimed water program implementation.
- Request input from the September RW-RAC meeting to help establish priorities.

October 2007

At the October 10, 2007 meeting, Ecology and DOH described existing staffing roles and responsibilities. The subtask force requested additional detail on the flow of information for project review, approval, and permitting.

The subtask force also reviewed input from the RW-RAC and discussed the relationships among all of the reclaimed water external advisory groups - the Rule Advisory Committee, the Removing Barriers Subtask Force, the Long-term Funding Subtask Force, and the Water Rights Advisory Committee.

Before completing a final work plan, this subtask force agreed to read the 2007 interim reports from the other groups to prevent duplication of effort and to identify:

- Needed scope of work and develop boundaries for each group's tasks.
- Existing overlap issues between the groups.
- High-visibility issues gaining attention from multiple groups.
- A method to communicate and coordinate effectively between groups.

November 2007

At the November 13, 2007 meeting, the subtask force scoped and prioritized the 2008 work plan. The 2008 work plan is attached as Appendix B.

Recommending an Appropriate Name

One of the Legislature's assigned tasks was to examine names describing reclaimed water and evaluate whether *reclaimed water* is the most appropriate name.

At the September 4, 2007 meeting, the larger RW-RAC generated a list of names for the subtask force to consider including:

- Reclaimed Water
- Recycled Water
- Water Reuse
- Restored Water
- Pre-owned Water
- Working Water
- Purple Pipe Water
- Renewed Water
- H2O4US
- NeWater
- Re-purified Water
- Tech Water
- Astronaut Water
- Designer Water

Ecology also visited websites of other states to determine the names they used in regulations. States using the term "reclaimed water" include Arizona, Colorado, Florida, Virginia, and North Carolina. Texas uses the term "reclaimed water" and describes beneficial use of reclaimed water as "water reuse." Idaho, New Mexico, and the Environmental Protection Agency primarily use the term "reuse" and refer to the treatment process as "reclamation." A few states chose the term "recycled water." California and Hawaii use the terms "recycled water" or "water recycling." Oregon proposes to change from "water reuse" to "recycled water."

Some members thought people would be confused because recycled water is also a term used to describe part of the water cycle and has little to do with treatment. In addition, the term "reclaimed water" supports the concept that the owner of the facility receives an exclusive right to the water's distribution and use. Several members noted that the state's use of reclaimed water allows utilities to create local brands. Utilities stated that they refer to their reclaimed water as Class A, WISER water, or other names that have a positive connotation with their users.

After evaluating several name choices proposed, subtask force members agreed with the larger RW-RAC's preference to keep the name as "reclaimed water."

Next Steps

For 2008, the subtask force will continue to make recommendations for the development of the reclaimed water rule to the RW-RAC. The subtask force may also receive additional assignments from the RW-RAC. To complete the subtask force work by December 2008, Ecology plans to continue monthly subtask meetings through 2008. Priorities for 2008 include:

- Use of the work plan to concentrate subtask force on the most important topics.
- Coordinate and integrate solutions with the other reclaimed water committees and subtask forces.
- Provide feedback to the Reclaimed Water Use Rule Advisory Committee.
- Provide any recommendations for statutory fixes in time for the 2009 legislative session.

Additional Information of Interest

Ecology informed the subtask force members about two reports (discussed below) that could provide helpful background for completing their assignments.

Water Reuse Planning for the State of Washington–2003

In June 2003, Ecology held a workshop facilitated by the National Water Research Institute. The workshop produced a report that documents the efforts of 33 workshop participants to address the question:

What issues must be addressed to enable the state of Washington to facilitate the development and implementation of a sustainable water reuse program?

The report provides detailed information on ten issues workshop participants rated as priorities for state action. The report is available online at: http://www.ecy.wa.gov/biblio/0310061.html.

Environmental Law Institute Report

In 2007, the Puget Sound Partnership and the Environmental Law Institute (ELI) provided funding for legal research to help support the agency's efforts on reclaimed water. ELI is an independent, non-partisan, environmental education and policy research center. ELI conducted research on subjects of interest including water rights impairment, long-term funding strategies and incentives, and liability and indemnification concepts for reclaimed water use. Appendix A of this report includes the ELI memo on liability and indemnification.

Further Reading

Ecology's website http://www.ecy.wa.gov/programs/wq/reclaim/removing_barriers.html provides additional detail on this subtask force's meetings and topics of interest.

Appendices

Appendix A

Environmental Law Institute Memorandum Comparative Survey of Liability and Indemnification Concepts for Reclaimed Water

Appendix A - Environmental Law Institute Memorandum

Comparative Survey of Liability and Indemnification Concepts for Reclaimed Water

ENVIRONMENTAL LAW INSTITUTE®

AN INDEPENDENT, NON-PARTISAN ENVIRONMENTAL EDUCATION AND POLICY RESEARCH CENTER

MEMORANDUM

TO: Katharine Cupps, Washington Department of Ecology

FROM: Jay Austin and Adam Schempp, ELI

RE: Comparative Survey of Liability and Indemnification Concepts for Reclaimed Water

DATE: October 17, 2007

I. Introduction

The "Removing Barriers" Sub-Task Force of the Reclaimed Water Use Rule Advisory Committee is charged with considering "unresolved legal issues specific to reclaimed water use."[1] One group of issues identified by Advisory Committee members was the liability and indemnification rules for production, distribution, and use of reclaimed water. ELI agreed to provide comparative research on these issues as part of its collaboration with the Advisory Committee, the Department of Ecology, and the Puget Sound Action Team/Partnership. This memorandum highlights relevant liability and indemnification concepts in key states.[2]

On the one hand, the baseline legal regime for reclaimed water is not radically different than for water treatment and supply generally. Parties engaged in the production, distribution, and use of reclaimed water (1) must meet applicable regulatory standards; (2) may – and in some cases must – contract with one another to assign responsibility for meeting those standards down the water supply chain; (3) may be subject to tort liability for violating certain duties of care to each other or to third parties; and (4) may seek contractually to limit or be indemnified from such liability. In practice, since the development of water reclamation projects has tended to precede development of specialized legal rules for reclaimed water, these

[1] Washington Senate Bill 6117, Section 5(d).

[2] As with ELI's other work product on reclaimed water, the research here is intended to inform the ongoing discussion in Washington State. It does not purport to offer binding legal analysis or advocate a specific outcome.

standard tools provide the basis on which many existing projects have been initiated and are currently operating.

On the other hand, the emergence of separate legislation and regulations for reclaimed water – coupled with public perceptions and a more restricted array of end uses – suggests that a slightly modified legal climate may help accommodate any special characteristics of, or potential concerns about, water reuse. This memorandum focuses primarily on state laws and regulations that make specific reference to reclaimed water. It assumes working knowledge of, and does not attempt to analyze in depth, the broader regime of regulatory, contract, and tort law under which wastewater treatment plants and water providers must operate in any event.

II. Regulatory Liability

The vast majority of states have some form of regulation governing water reclamation and reuse. A 2002 U.S. EPA inventory of state laws and regulations found that forty-one states have enacted either regulations or guidelines pertaining to reuse, with varying degrees of detail and allowable uses.[3] At that time, Washington already was noteworthy for being the only state in the nation to have made some provision for each of the reuse categories being tracked by EPA, including urban, agricultural, recreational, environmental, industrial, groundwater recharge, and indirect potable reuse.[4]

These state laws and regulations can be broadly grouped into three types: water-quality standards that govern the level of treatment, contaminant limits, and/or monitoring requirements for different classes of reclaimed water; design and construction standards for reclaimed water facilities and distribution networks; and standards or best practices for handling and application of reclaimed water. Some states, including Washington, use a combination of all three types, as applied respectively to wastewater treatment facilities, reclaimed water providers, and end users. Other states rely more heavily on a single type, presumably leaving any gaps to be filled by more general water-quality regulations, contracts, or the tort system.

Reclaimed water regulations of course vary in content and stringency from state to state, but their implementation reveals some common themes. For present purposes, the most relevant questions are: (1) who is responsible for ensuring

[3] U.S. EPA, *Guidelines for Water Reuse*, EPA Pub. No. 625R04108 (September 2004), Chapter 4. The nine states listed as having no regulations or guidelines were Connecticut, Kentucky, Louisiana, Maine, Minnesota, Mississippi, New Hampshire, Rhode Island, and Virginia.
[4] *Id.* at 152, Table 4-1.

compliance with regulatory standards along the water supply chain; and (2) how compliance (or non-compliance) with regulatory standards may affect potential common-law liability.

A. Compliance With Regulatory Standards

1. In Washington

The Washington State Legislature has delegated authority over reclaimed water to the Departments of Ecology and Health, and directed those agencies to adopt rules addressing "all aspects of reclaimed water use."[5] Pending development of new rules, the two Departments have jointly produced standards that govern most reclaimed water applications.[6] These standards set out water-quality requirements for specific classes and uses of reclaimed water;[7] engineering, operation, design, and reliability requirements;[8] and use-area requirements.[9] Their terms are tailored to specific projects and incorporated into a reclaimed water permit that is jointly issued by the Departments to the producer of reclaimed water.

The current standards document places primary responsibility for compliance on the permit holder: "The permittee shall maintain control over, and be responsible for, all facilities and activities inherent to the production of reclaimed water to ensure that the reclamation plant operates as approved by the Washington Departments of Health and Ecology."[10] If the use area is under the permittee's direct control, the permittee also must "ensure that the entire reuse system operates as approved."[11] Where the distribution system or use area is not under the permittee's direct control, responsibility shifts to "the person(s) who distributes reclaimed water, owns, or otherwise maintains control over the use area," and there must be "a binding agreement among the parties involved … to ensure that construction, operation, maintenance, and monitoring meet all requirements."[12]

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[5] Wash. Rev. Code § 90.46.015(1).
[6] Washington State Departments of Ecology and Health, *Water Reclamation and Reuse Standards*, Pub. #97-23 (September 1997).
[7] *Id.*, Articles 1-7 and Table 1.
[8] *Id.,* Articles 8-11.
[9] *Id.,* Article 12.
[10] *Id.,* Article 9, Section 6(a).
[11] *Id.*, Section 6(b).
[12] *Id.,* Sections 6(c)-(d).

This arrangement can be readily illustrated with an existing water reclamation project. The LOTT Wastewater Alliance and its partner jurisdictions (Thurston County and the cities of Lacey, Olympia, and Tumwater) have entered into a "General Interlocal Agreement" governing the distribution and use of reclaimed water.[13] Under that agreement, the LOTT Alliance owns, operates, and holds the state permits for Class A water reclamation facilities, and is responsible for ensuring regulatory compliance for production of reclaimed water and its distribution to designated delivery points.[14] From there, the individual LOTT partners assume responsibility for distribution of the water, whether for their own use or further distribution to other end users.[15]

Any such resale to end users requires two additional steps: adoption by the LOTT partner jurisdiction of a reclaimed water ordinance, including enforcement authority; and a binding end-user agreement that is "materially identical … as to permit and regulatory compliance," and that sets forth "terms and conditions including legal rights and responsibilities; regulatory compliance provisions required by the Washington State Departments of Health or Ecology; provisions enabling enforcement action as necessary to ensure regulatory compliance; and other necessary or appropriate terms and conditions."[16]

These terms and conditions are incorporated into the end-user agreement, by reference to applicable federal, state, and local laws and the Washington Water Reclamation and Reuse Standards, by enumeration of specific end-use requirements in the agreement, or both.[17] Through this trail of legal documentation, regulatory standards and the responsibility for complying with them follow reclaimed water through the supply chain, from the state level down to local use.

2. In Other States

Other Western states have similarly carved up regulatory responsibility among reclaimed water producers, distributors, and users, as illustrated below.

Texas. Texas spells out the division of responsibility directly in its state regulations, requiring reclaimed water *producers* to:

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[13] General Interlocal Agreement Between the LOTT Wastewater Alliance, Thurston County and the Cities of Lacey, Olympia and Tumwater for Distribution and Use of Reclaimed Water (January 16, 2004).
[14] *Id.*, Sections 1.5, 1.8, 1.13, 3.1, 4.5(a).
[15] *Id.*, Sections 2.3, 3.7, 4.5(b).
[16] *Id.*, Section 5.
[17] *E.g.*, City of Olympia, [Model] Class "A" Reclaimed Water Service Agreement, Section 8 and Attachment.

> (A) transfer reclaimed water of at least the minimum quality required … at the point of delivery to the user for the specified use; (B) sample and analyze the reclaimed water and report such analyses …; and (C) notify the executive director [of the Texas Commission on Environmental Quality] in writing within five days of obtaining knowledge of reclaimed water use not authorized by the executive director's reclaimed water use approval.[18]

Reclaimed water *providers* must assure that construction of reclaimed water distribution lines or systems is in accordance with standards, and also are required to notify the Commission of any unauthorized use of reclaimed water.[19] Upon discovering misuse, the provider will not be found in violation of the regulations "if transfer of such water is shut off promptly upon knowledge of misuse regardless of contract provisions."[20] Finally, the reclaimed water *users* are required to use the water in accordance with regulations, and to maintain and provide records of their use.[21]

Oregon (current). Like the Washington standards, Oregon regulations hold sewage treatment system owners "solely responsible and liable to the Department [of Environmental Quality] for meeting the requirements of these rules and the sewage treatment system owner's permit for any and all water that passes through the owner's treatment plant."[22] Release of reclaimed water for use on property not under the treatment plant owner's control "shall be allowed only if there is a legally enforceable contract between the treatment plant owner and the user."[23] The regulations require that these contracts include, among other things:

- a statement specifying the parties responsible for compliance with the rules and the sewage treatment system permit;

- a provision allowing the sewage treatment system owner to cease providing reclaimed water if the Department or the owner determine that the regulatory requirements are not being met; and

[18] Tex. Admin. Code § 210.6(1).
[19] *Id.*, § 210.6(2)(A) & (C).
[20] *Id.*, § 210.6(2)(D).
[21] *Id.*, § 210.6(3)
[22] Or. Admin. Rules, § 340-055-015(9).
[23] *Id.*

- a condition that requires the user of reclaimed water to report to the sewage treatment plant owner any and all violations of the terms of the rules or the contract.[24]

This contracting process must be repeated for any additional links down the supply chain, all the way to the end user.[25]

Oregon (proposed). However, Oregon is in the process of revising its reclaimed water regulations, including a potentially significant change to the responsibility structure. Under the proposed revisions, any person "having control over the treatment or distribution or both" of reclaimed water would be required to "take all reasonable steps" to ensure that the water gets used in accordance with the standards and requirements.[26] The regulation also would explicitly require reclaimed water users to comply with the standards and requirements.[27]

By replacing the current express contract requirement with "reasonable steps," the draft language appears to grant treatment plants and distributors more flexibility to determine how to enforce state standards down the supply chain, whether through ordinances, local permits, best practices, or other tools. This change was endorsed both by reclaimed water distributors and by the Oregon Attorney General's office, who feel the present system of contracts is burdensome to administer, especially for smaller municipal utilities.[28] But by introducing the general language of "reasonableness," the new regulation could, in the event of a mishap, expose treatment plants and distributors to litigation to determine precisely what that term means in practice and in law.

Colorado. Colorado has perhaps the most detailed regulation of the Western states studied, supplanting these contract-based systems with enforceable plans that, like permits, can be directly enforced by the state's Water Quality Control

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[24] *Id.*, § 340-055-015(9)(e)-(g).
[25] See *id.*, § 340-055-015(10):

> In cases where reclaimed water is transferred from one user to another, each succession of ownership of the reclaimed water shall be governed by a legally enforceable contract on file with the owner of the sewage treatment system and which notifies the succeeding reclaimed water user of the requirements of this Division and the permit for the sewage treatment system. The contract shall also require the succeeding user to so contract with any additional succeeding reclaimed water users.

[26] Oregon Dept. of Env. Quality, Draft Regulations on Recycled Water Use, § 340-055-12(1) (June 2007).
[27] *Id.*, § 340-055-12(2).
[28] Conversation with Judy Johndohl, Oregon Dept. of Env. Quality (May 14, 2007).

Division.[29] Under this regulation, a reclaimed water producer must prepare a "reuse system management plan" that includes:

> … a description of the proposed reclaimed water treatment and transmission systems; a description of the treater's program to inform and educate users on the requirements of this regulation; a description of the treater's plan to oversee the use of reclaimed water by users to ensure, to the maximum extent practicable, that users attain and maintain compliance with this regulation; and evidence of the treater's legal ability (regulation, ordinance, contract, or other acceptable mechanism) to terminate service to a user if the user fails to comply with this regulation.[30]

Colorado's regulatory structure assumes that the producer "is in a better position to oversee the operations of the applicator and can generally resolve violations without Division intervention as part of their routine program activities."[31]

The reclaimed water producer must also develop and submit, in cooperation with each of its users, a "User Plan to Comply" that includes express rules and conditions for end use.[32] These are spelled out directly in the regulation, and include general conditions and design standards, as well as additional rules and a requirement of "best management practices" for certain uses such as landscape irrigation and fire protection.[33] The user or its legal representative must also certify that it agrees to comply with the requirements of the regulation, and to grant the reclaimed water producer and the Water Quality Control Division "reasonable access" to the use site to determine compliance.[34]

Based on the proposed reuse system management plan and user plans, the Division issues or denies a separate "Notice of Authorization" (NOA) to the producer and the users. These NOAs require implementation of the plans and best management practices, and include terms for modification, revocation, or termination; required monitoring to be performed by the user; reporting and record-keeping requirements; and a statement of applicable civil and criminal

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[29] Colo. Dept of Pub. Health and Env., Water Quality Control Commission, "Reclaimed Water Control Regulation," 5 Colo. Code Reg. 1002-84 (2005). The detailed Colorado scheme for reclaimed water regulation was patterned on the Commission's biosolids regulation. *Id.*, § 84.21(A)-(B).
[30] *Id.*, § 84.6(A)(4).
[31] *Id.*, § 84.21(G).
[32] *Id.*, § 84.6(A)(6).
[33] *Id.*, § 84.9(A)-(C).
[34] *Id.*, § 84.9(D).

penalties.[35] They are enforced by requiring both producers and users to report any violations to the Division within specified time periods.[36] Each of the parties is "solely responsible for its compliance with the terms and conditions imposed upon it"; however, a producer who is aware of and fails to report a user violation may be subject to enforcement action for failure to report, and vice versa.[37]

Each of these three legal schemes – Texas' general regulation, Oregon's combination of regulations and contracts, and Colorado's detailed plans – serve the same goal as Washington's current system of standards, permits, and user agreements: setting a fair, practicable division of labor and responsibility between reclaimed water producers, distributors, and users. The main differences are in the balance between the degree of detail specified in the regulations, and the amount of flexibility left to the parties to make individualized arrangements for compliance. By proposing to forego specific contractual agreements in favor of an open-ended "reasonable steps" requirement, Oregon's draft regulation could, if enacted, go the farthest in the direction of flexibility, at the potential expense of decreased regulatory certainty and increased litigation.

[35] *Id.*, § 84.6(4)-(12).
[36] *Id.*, § 84.10(C)(1) (reporting period of up to sixty days for most violations, but within 24 hours for "more serious violations" that threaten public health or the environment).
[37] *Id.*, § 84.12.

B. Regulatory Compliance as Safe Harbor

With regulatory requirements being spelled out in great detail through standards, permits, contracts, and other instruments, the question arises whether compliance with these requirements would be sufficient to shield reclaimed water producers, providers, and users from other forms of legal liability – or, conversely, whether a violation of regulatory requirements could also be cited as evidence of a breach of common-law duties of care. As in other areas of environmental law, a statutory "safe harbor" provision might clarify the relationship between reclaimed water statutes and regulations and the larger body of tort law.

In practice, there appear to be few express legislative pronouncements on this topic, in Washington or elsewhere, and almost no case law specific to reclaimed water. This points to the conclusion – elaborated in the next section – that reclaimed water operations likely are subject to the same forms of common-law liability as any other types of wastewater treatment, distribution, or application.[38] A few limited examples to the contrary are discussed below.

1. In Washington

Washington's statute on reclaimed water use expressly states that it is *not* intended to supplant other provisions of state law:

> The authority and duties created in this section are *in addition to* any authority and duties already provided in law with regard to sewage and wastewater collection, treatment, and disposal for the protection of health and safety of the state's waters. Nothing in this section limits the powers of the state or any political subdivision to exercise such authority.[39]

While this section arguably focuses on the state and local governments' "authority" to administer a reclaimed water program alongside other forms of wastewater regulation, the inclusion of the term "duties" suggests the regulated community's legal obligations are also being kept intact. Further, the language "provided in law"

[38] However, the law of governmental immunity also may shield wastewater or reclaimed water treatment plants, distributors, or users from common-law liability, where these actors are municipalities or other government entities. Examination of this complex legal doctrine is beyond the scope of this memorandum.

[39] Wash. Rev. Code § 90.46.030(5) (industrial and commercial reuse) (emphasis added). Similar language appears in § 90.46.040(5) (land application).

is quite general, and could easily be read to extend to common-law liability as well as statutory and regulatory requirements.

Conversely, the Washington State Legislature did expressly create a safe harbor for reclamation on one specific occasion, when it amended the reclaimed water statute in 1997 to authorize five demonstration projects around the state. That amendment provided that:

> No irrigation district, its directors, officers, employees, or agents operating and maintaining irrigation works for any purpose authorized by law, including the production of food for human consumption and other agricultural and domestic purposes, is liable for damages to persons or property arising from the implementation of the demonstration projects in this section.[40]

This provision appears to grant near-total immunity from damages suits to the irrigation districts and personnel involved in distributing irrigation water generated by the demonstration projects. Its language is fairly clear, and its existence could be cited to argue that the Legislature knows how to create immunity or safe harbors when it chooses – and that it has not yet done so for other instances of water reclamation.

2. In Other States

Florida. Florida has a statutory safe harbor for spray irrigation with wastewater. Its state code provides that:

> Any person who in good faith accepts from any owner or operator of a permitted wastewater treatment or disposal plant any wastewater permitted and intended to be used for disposal through spray irrigation is not liable for any civil damages as a result of the acceptance and disposal of such wastewater through approved spray irrigation practices.[41]

This provision is found in the code chapter dealing with wastewater generally, but by its terms would appear to apply to reclaimed water use for irrigation. The immunity it provides is limited, however, and does not extend to acts of

[40] *Id.*, § 90.46.110(6). The demonstration projects were located in Ephrata, Lincoln County, Royal City, Sequim, and Yelm.
[41] Fla. Stat. § 403.135(1).

"negligence, gross negligence, or reckless, wanton, or intentional misconduct," nor to "improper management and use of the wastewater" after it is delivered.[42] Significantly, Florida's statute is a safe harbor only for wastewater users, and does not exempt treatment plant owners or operators for damages caused by irrigation.[43] Nor does it prevent a government entity "from taking such action within its jurisdiction as may be necessary to protect the public health, safety, or welfare or the environment."[44]

The fact that the Washington and Florida safe-harbor provisions relate only to irrigation suggests they were drafted to alleviate fears of liability to the ultimate consumer of the crops. In these limited instances, the legislature is making a policy judgment that the benefits of reclaimed water use outweigh the potential risk that water produced or used under the regulatory standards, properly followed, might somehow lead to public health or environmental problems.

III. Common-Law Liability

Absent an express safe harbor, water reclamation presumably is subject to the same kind of common-law liability that attaches to water treatment and supply generally. To the extent that most everyday performance issues – whether of water quantity, water quality, or end use – can be anticipated in enforceable distribution agreements, this should not result in much additional legal exposure; the parties can set clear expectations, assign responsibility among themselves, and fall back on litigation only as a last resort. But no agreement can cover all situations between the parties, or the extraordinary situation of harm to persons that are not party to the agreement.

There are several common-law theories under which third-party liability could arise. As applied to reclaimed water, these remain largely theoretical, in the sense that there has been little significant case law in that specific context. Nevertheless, it may be prudent to anticipate them, especially as reclaimed water use increases in Washington. Many of the legal theories relevant to reclaimed water production, distribution and use have been catalogued in an article by California attorney Carolyn Richardson.[45] While her discussion leans on California

[42] *Id.*, § 403.135(2)(a)-(b).
[43] *Id.*, § 403.135(2)(c).
[44] *Id.*, § 403.135(3).
[45] Carolyn S. Richardson, "Legal Aspects of Irrigation with Reclaimed Water in California," in IRRIGATION WITH RECLAIMED MUNICIPAL WATER: A GUIDANCE MANUAL (G. Stuart Pettygrove & Takashi Asano eds., 1984).

law and precedent, it also states general principles of tort law that likely exist, or might arise, in Washington as well.

A. Negligence Theory

Richardson begins with the basic idea that violation of a statute or administrative rule designed to protect against a particular risk could result in liability for injuries to members of the protected class. In her view (and under California law),

> [i]f any of the quality criteria or management regulations are violated in the treatment, delivery, or application of reclaimed wastewater, negligence would be presumed. Violation of the treatment standards would raise a presumption of negligence against the wastewater treatment facility. Violation of management standards in the application of the wastewater would raise a presumption only against the irrigator, unless the treatment facility has violated a specific duty to inspect the irrigation operation or was negligent in entrusting the wastewater to this operation.[46]

In essence, the same division of responsibility that applies when reclaimed water operators must answer to regulators, or to one another, applies when they answer to third parties for negligence: the reclaimed water producers are responsible for violations of water-quality standards, and the reclaimed water users are responsible for violations of management and application standards.

In practice, though, the division is unlikely to be this neat. Many of the regulations and distribution agreements described above do in fact create specific duties that require the parties to inspect and to report on each other, and failure to do so could expose them to liability for one another's violations. Further, injured tort plaintiffs generally have every incentive to sue all the parties along the supply chain, and to link the parties' actions wherever possible, in an attempt to maximize their possibility of success and full recovery of damages. On the positive side, Richardson also reports that "[t]he safety record of reclamation projects is excellent. Based on this record, casualty underwriters consider the risk of third party claims to be low; irrigators have not reported difficulty in expanding their insurance coverage to include these risks."[47]

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[46] *Id.* at 11-11.
[47] *Id.* at 11-26, n.32.

B. Product Liability and Warranty Theories

In addition to negligence, Richardson also notes a number of legal theories based on reclaimed water's status as a commercial product. Under *product liability* theory, manufacturers and distributors of a "defective" product may be held strictly liable for resulting damages, either to persons or their property. Richardson speculates that this theory could be applied to reclaimed water that injures human health or crops: "A manufacturing defect in treated wastewater might be found if it failed to meet the regulatory water-quality standards; a design defect might be found if water that met all applicable water-quality standards nonetheless caused damage."[48] She notes that application of this theory may depend on water reclamation being deemed by courts to be more like the manufacture of a good, rather than provision of a service.[49]

Treating reclaimed water as a commercial good also could give rise to tort claims for *breach of warranty*. The existence of state reclaimed water standards, along with any other assurances of safety made in the course of marketing and distributing reclaimed water, could be interpreted by courts as an *express* warranty of quality, which could be enforced by anyone who is damaged by its breach.[50] There also may be *implied* warranties, such as the warranty of fitness for a particular purpose – for example, irrigation – that generally can be enforced only by parties to the relevant agreement. In Richardson's opinion, this implied warranty of fitness "would arise in every wastewater supply contract because of the necessarily detailed knowledge of the buyer's use and because of the active role in advising the buyer which is imposed by law upon the treatment facility."[51]

C. Contractual Limitation and Indemnification

As already seen above, the parties to an agreement may contract among themselves to assign responsibility in various ways. They may also attempt to limit their liability to each other or to third parties, and/or to indemnify one another from third-party claims. Such limitation and indemnification clauses likely would be interpreted under general rules of tort and contract law, and subject to any public-policy exceptions that have emerged from the legislature or the courts.

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[48] *Id.* at 11-11 to 11-12.
[49] *Id.* at 11-12.
[50] *Id.* at 11-12 to 11-13.
[51] *Id.*

1. In Washington

The LOTT Wastewater Alliance provides a good example of *contractual limitation*. In its General Interlocal Agreement, the Alliance's partner jurisdictions have agreed that "[t]he Parties expressly do not intend to create any right, obligation or liability, or promise any performance, to any third party"; and that "the Parties have not created any right for any third party to enforce this General Agreement."[52] While this language purports to be comprehensive as to the effect of the Agreement, it likely cannot wholly extinguish third-party claims arising from tort theories that are external to the agreement – such as a negligence claim based on regulatory violations. Thus, the ultimate enforceability of such limitation clauses will depend not only on the details of Washington tort law, but also on the nature of the claims.

The LOTT Alliance agreement also includes an express *indemnification* clause:

> To the maximum extent permitted by law, each Party shall protect, defend, indemnify and hold harmless each other Party and their officials and employees from and against all claims, demands, suits, actions, costs, damages, liability or loss of any kind whatsoever arising from the acts or omissions of the indemnifying Party and its officials, employees, agents and contractors…. In the case of joint negligence, any damages allowed shall be levied in proportion to the percentage of negligence attributed to each Party. This indemnification shall survive the termination of this General Agreement.

Under this language, each Alliance partner agrees to be responsible for the actions of its own personnel, and to indemnify the other partners from any claims arising from those actions. This indemnification appears to apply both laterally, among the four county and city governments who are distributing reclaimed water; and vertically, between any of the four governments and the Alliance itself, in its role as the reclaimed water producer.

Similarly, the LOTT end-user agreement specifies that:

[52] General Interlocal Agreement, *supra* note 13, Section 12.2.

> To the extent permitted by law, the End User shall hold harmless, indemnify, and defend the City, whether acting as a separate municipal entity or as a member of the LOTT Alliance, from any claims, suits, actions, losses, penalties, judgments, awards for damages of any kind arising out of, or in connection with, the use of Class A Reclaimed Water provided under this Service Agreement, except to the extent arising out of the negligence or other fault of the City.[53]

This provision attempts to ensure that end users will be responsible for claims arising from their own actions, and indemnify the water distribution utilities from these claims.

Here again, the degree to which such indemnification clauses will be enforceable depends both on Washington tort law and the factual circumstances of specific claims. In each agreement, the phrase "to the extent permitted by law" is key, acknowledging that the parties do not have the absolute ability to exempt themselves from every form of liability, especially third-party liability, that might arise.

2. In Other States

California. Richardson lists a number of specific ways in which liability can be limited contractually under California law, at least as between the parties to an agreement. As in current Washington and Oregon practice, she notes that the reclaimed water supply contract itself "can minimize the treatment facility's exposure to negligence claims…. by clarifying the division of management responsibilities between the parties in the contract and by preserving evidence that the user was fully instructed in all regulatory requirements."[54] She lists possible common-law defenses, including "misuse" and "assumption of risk," which might defeat an end-user's claim as long as the proper uses and potential risks were clearly spelled out in the contract.[55] And she cautions that while express disclaimers of warranty may work in some cases, the very technical, regulatory nature of water reclamation means that "disclaimers in these contracts are particularly susceptible to judicial disapproval."[56]

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[53] [Model] Reclaimed Water Service Agreement, *supra* note 17, Section 6.
[54] Richardson, *supra* note 45, at 11-15.
[55] *Id.* at 11-16. Richardson points out, however, that "[a] prudent irrigator would probably object to an assumption clause completely exculpating the facility from any responsibility for not meeting the agreed non-statutory quality standards." *Id.* at 11-31, n.64.
[56] *Id.* at 11-17.

Richardson's analysis of California tort law confirms that such contractual devices are much less effective against third-party claims, leaving indemnification as the final option for reclaimed water providers who hope to avoid liability. Under California law, indemnification clauses not only are enforceable, "[t]hey may even provide for indemnification against damages resulting from negligent violations of law, such as failure to meet the regulatory water-quality standards, but such an agreement must be explicit, because any doubt will be resolved against the supplier."[57] Even so, she also points out the inherent weakness of any indemnification clause, in any context – it can only be effective if the indemnifying party has sufficient resources to pay a final judgment. Clause or no clause, if "the water user is unable to pay, the water supplier will be responsible for the full amount of the claim."[58]

IV. Conclusion

As outlined above, reclaimed water facilities must operate under a body of regulatory, contract, and tort law that conceptually is quite similar to the law that governs water treatment and supply generally. Reclaimed water poses particular challenges and is subject to somewhat more restrictive regulations, and the potential for violation of these regulations or other mishaps could translate into an additional risk of legal liability. However, this situation need not be cause for alarm. As with any worthwhile enterprise – and as Washington practice already demonstrates – these risks can be anticipated, managed, and minimized with careful planning and legal advice.

If Washington practitioners conclude that more is needed on this front, there are at least two possible leverage points. First, the Departments of Ecology and Health can consider whether the pending reclaimed water rule should codify the existing structure for responsibility, or move it in a different direction – toward Colorado's detailed regulation and plans, if greater control is desired; or toward Oregon's proposed language of "reasonable steps," if greater flexibility is the goal. Second, the Washington State Legislature could consider whether the baseline system of common-law liability remains adequate, or whether the statutes should be amended to further encourage and immunize reclaimed water operations – a step that should not be taken lightly, and not without considering the potential for unintended consequences for the general public and the tort system as a whole.

[57] *Id.* at 11-18.
[58] *Id.* at 11-19.

Ultimately, the most certain guarantee against liability, and the one most under reclaimed water producers' control, will be the quality of the water itself.

Appendix B

Removing Barriers Subtask Force
2008 Work Plan

Appendix B - Removing Barriers Subtask Force 2008 Work Plan

Meeting Topics

January – 2008 Focus:

- Planning activity work (from 2007 Legislature report)–scope and prioritize:
    - Chapter 4: Reclaimed Water Implementation in Local Plans.
    - Chapter 5: Reclaimed Water Implementation in Watershed Planning.
    - Chapter 6: Governor's Directive to Harmonize Statutory Planning Requirements.
    - Chapter 8: Implementation in Water Supply Plans.
- Staffing levels, resources, and roles for Department of Ecology (Ecology) and Department of Health (DOH)–present and discuss additional information.
- Optimizing state agency organizational structure (Ecology and DOH)–identify information gaps.
- Track initial (fledgling) recommendations.

February – 2008 Focus:

- Planning Activities from 2007 Legislature Report–present information and discuss options.
- Staffing levels, resources, and roles (Ecology and DOH)–present and discuss additional information.
- Optimizing state agency organizational structure (Ecology and DOH)–present and discuss additional information.
- Ecology and DOH MOU–present information.
- Develop tool to track fledgling recommendations.
- Refine and add to initial options/recommendations.

March – 2008 Focus:

- Planning activities from 2007 Legislature Report–present information and discuss options.

- Staffing levels, resources, and roles (Ecology and DOH)–discuss options.
- Optimizing state agency organizational structure (Ecology and DOH)–discuss options.
- Follow-up on Ecology and DOH MOU.
- Introduce and scope marketing topic(s).
- Introduce and scope incentives topic(s).
    - ELI report.
    - Other information.

April – 2008 **Focus:**

- Planning activities from 2007 Legislature report–present information and discuss options.
- Optimizing state agency organizational structure (Ecology and DOH) - review initial recommendations and discuss options.
- Staffing levels, resources, and roles (Ecology and DOH)–review initial recommendations and discuss options.
- Marketing topic(s)–information review.
- Incentives topic(s)–information review.

May – 2008 **Focus:**

- Planning activities from 2007 Legislature report–prepare draft Legislative change recommendations.
- Staffing levels, resources, and roles (Ecology and DOH)–prepare draft Legislative change recommendations.
- Optimizing state agency organizational structure (Ecology and DOH)–prepare draft Legislative change recommendations.

June – 2008 **Focus:**

- Planning activities from 2007 Legislature Report–finalize recommendations.
- Optimizing state agency organizational structure (Ecology and Doh)–finalize recommendations.
- Staffing levels, resources, and roles (Ecology and DOH)–Finalize recommendations.
- Prepare feedback on recommendations for the Rule Advisory Committee.

July – 2008 Focus:

- Marketing topics–check on progress.
- Incentives–check on progress.
- Legislative session–results discussion (if needed).
- Certification program–introduce topic.
- Permitting–check on progress from rule advisory committee.
- Unresolved legal issues topics–update and introduce topics.

September – 2008 Focus:

- 2008 Legislative Report–discuss and draft initial recommendations.
- Marketing topics–check on progress and identify information gaps.
- Incentives–check on progress and identify information gaps.
- Certification program–check on progress.
- Permitting–check on progress from rule advisory committee.
- Unresolved legal issues topics–present and discuss information.

October – 2008 Focus:

- 2008 Legislative Report–refine recommendations.
- Marketing Topics–present information and discuss options.
- Incentives–present information and discuss options.
- Certification program–check on progress.
- Permitting preview and develop initial feedback for Rule Advisory Committee.
- Unresolved legal issues topics–present and discuss information.

November – 2008 Focus:

- 2008 Legislative report–review draft chapter.
- Marketing topics–present information and discuss options (if ready).
- Incentives–present information and discuss options (if ready).
- Certification program–discuss options.
- Permitting–review and provide feedback for Rule Advisory Committee.
- Unresolved legal issues topics–present and discuss information (as needed).

Chapter 3

Recommendations for Long-Term Funding Program

Fulfilling E2SSB 6117 Requirements – Section 10

2007 Reclaimed Water Use Legislative Report

Prepared by:

Washington State Department of Ecology
Water Quality Program

December 2007

WASHINGTON STATE
DEPARTMENT OF
ECOLOGY

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Recommendations for Long-Term Funding Program

Summary

The 2007 Legislature directed the Department of Ecology (Ecology) via Section 10 of Engrossed Second Substitute Senate Bill 6117 (E2SSB 6117)[2], to establish a subtask force charged with recommending provisions for a long-term funding source for water reclamation facilities. This "Long-Term Funding Subtask Force" (funding subtask force) met monthly beginning in August 2007. The funding subtask force worked quickly to address all the issues the Legislature raised in Section 10. It developed a detailed framework for the newly proposed long-term water reclamation funding program.

Having investigated many potential revenue sources, the funding subtask force focused on approximately five means to provide revenue to fund the long-term reclaimed water program pending further discussions with the staff of the Office of Financial Management and appropriate Legislative committees. Although the funding subtask force made no specific recommendations for tax revenue, it narrowed the options. The five options identified include bottled water, soft drinks, public utility tax increases, public utility tax diversion away from the general fund, and sales tax exemptions as an incentive to help communities complete water reclamation facilities.

Legislative Recognition of Water Reclamation Funding Need

The funding subtask force believes the Legislature, by enacting E2SSB 6117, acknowledged that all state and federal funding available is only able to provide financial assistance to a very small portion of the water reclamation facilities needed. These funding programs include, but are not limited to, the Ecology-administered Centennial Clean Water and Water Pollution Control Revolving Funds, Community Trade and Economic Development's Public Works Trust Fund (managed by the Public Works Board) and Community Development Block Grants Program. Federal funding programs were also investigated but could not substantively help with water reclamation.

All these programs currently receive requests for water reclamation project funding. However, unless water reclamation is needed to meet very strict public health or water quality standards required for specific reasons, governments proposing water reclamation are not generally offered funding. Due to limited state and federal funding, these programs target the need for adequate wastewater treatment as a high priority. Further, most of the money available comes in the form of loans, which only provide limited financial assistance.

Under a separate bill passed by the 2007 Legislature, Engrossed Substitute House Bill 1092, Section 6026, (ESHB 1092, Sec. 6026) a study committee on public infrastructure programs and funding structures was established. This "Public Infrastructure Study Committee" was charged with looking at efficiencies that could be gained by

[2] E2SSB 6117 (including its partial veto) citation reflects the fact that the law to date, is pending codification. It will be codified as a section of Chapter 90.46 RCW, *1992 Reclaimed Water Act.*

consolidating community and economic development related infrastructure programs. The committees' recommendations are due to the Legislature on January 1, 2008. The funding subtask force recognizes that its recommendations for reclaimed water facilities funding need to be consistent with the recommendations of the Public Infrastructure Study Committee.

There are many identified wastewater treatment and reclaimed water needs in the state of Washington. The federally required *Clean Watersheds Needs Survey,* reported to the United States Congress in 2004, estimated a need of **$3.8 billion** in the state of Washington for wastewater treatment projects. Because of federal limitations, this four-year-old survey was **not** inclusive of all needs in the state. Another similar survey will be conducted in 2008. Ecology anticipates an even higher need due to factors such as higher water quality standards, population growth throughout the state, and the Puget Sound Initiative.

An analysis of all funding programs showed they are woefully under-funded to meet current wastewater treatment demands. It is unlikely these programs will be able to provide additional financial assistance to help communities construct reclaimed water facilities. Due to project complexities and changing water quality standards it is difficult to provide accurate estimates of project need. Because of this, project estimates tend to be less than actual costs.

Goals and Objectives

As noted in the E2SSB 6117, "By January 1, 2008, the funding subtask force shall submit to the appropriate legislative committees a recommendation for a long-term dedicated funding program to construct reclaimed water facilities." E2SSB 6117 further directs the funding subtask force to provide a recommendation that will provide a comprehensive funding, loan and grant program for reclaimed water.

The legislative directive can be viewed in E2SSB 6117, Section 10, which is included in the Global Appendix.

Funding Subtask Force

The funding subtask force convened in July 2007 and was comprised of various stakeholders from local, county, and state governments, business associations, private industry, and public and private utilities (see table next page). It developed a method for meeting the legislative directives and established a meeting schedule to address its tasks.

Available Funding Programs

The Legislature directed the funding subtask force and Ecology staff to research programs highlighted in the *Inventory of State Infrastructure Programs* report by the state of Washington Joint Legislative and Review Committee (JLARC). The Legislature wanted the funding subtask force to evaluate funding programs that currently fund water reclamation projects and those program limitations. This JLARC report is available at: http://www1.leg.wa.gov/reports/06-11a.pdf.

Membership of the Long-term Funding Subtask Force

Representative	Organization	Stakeholder Interest
Steve Carley	Chair of Funding subtask force, Department of Ecology (Ecology)	Ecology
Mike Dexel	Department of Health (DOH)	DOH
Tom Fox, P.E.	Seattle Public Utilities	City
Tom Lienesch	King County	County
Bruce Rawls, P.E.	Spokane County	County
Karla Fowler	Lacey, Olympia, Tumwater, Thurston County (LOTT) Alliance	Regional Utility
John Kounts	Washington Public Utility District Association	Public Utilities Districts
Kathleen Collins	Washington Water Policy Alliance	Reclaimed Water Users-Business
Gary Chandler	Association of Washington Business	Business and Private Industry
Hal Schlomann	Washington Water and Sewer District Association	Water and Sewer Districts

Ecology identified water reclamation funding sources in the JLARC report to include:

- Centennial Clean Water Fund.
- Water Pollution Control Revolving Fund.
- Community Trade and Economic Development's (CTED) Public Works Trust Fund.
- Community Development Block Grants.

Ecology also evaluated other programs not included in the JLARC report:

- United States Department of Agriculture's Rural Development (USDA-RD) funding program. Detailed information about the program is available at: http://www.infrafunding.wa.gov.
- The Environmental Law Institute's (ELI) research and preparation of a detailed report describing water reclamation funding methods used in other states (see Appendix A).
- *US EPA Guidelines for Water Reuse 09-29-2004;* available at: http://www.epa.gov/ord/NRMRL/pubs/625r04108/625r04108.pdf.
- *Funding Water Reuse Systems,* Chapter 6; available at: http://www.epa.gov/ord/NRMRL/pubs/625r04108/625r04108chap6.pdf.

Need for Legislative and Interagency Funding Coordination

E2SSB 6117 requires the funding subtask force to use model funding programs as it develops a coordinated funding program. For many years, all of the agencies administering the funding programs noted above (Ecology, CTED, USDA-RD, and EPA) and the state Department of Health have been members of the Infrastructure Assistance Coordinating Council and collaborate and coordinate in the funding and provision of technical assistance for water reclamation and wastewater treatment projects.

The Legislature directed[3] a study committee to evaluate public infrastructure programs and funding structures be established to investigate the need for long-term funding for reclaimed water. The committee is to:

"…make recommendations regarding a comprehensive funding structure and systematic approach to support the integration, consolidation, and standardization of processes and procedures for community and economic development-related infrastructure programs."

To help in this effort, the Legislature directed the study committee to:

- "Review state public community and economic development-related infrastructure programs, funds, and the purposes each serve using the November 29, 2006, inventory of state infrastructure programs compiled by the Joint Legislative Audit and Review Committee.
- Review community and economic development infrastructure-related programs, fund implementation, or subscription rates.
- Identify overlaps or gaps in types of public community and economic development-related infrastructure projects supported through state programs or funds."

Ecology, through the funding subtask force, evaluated the water reclamation funding program and looked for opportunities for project consolidation with economic development infrastructure programs as directed by ESHB 1092, Sec. 6026.

Progress to Date

Having investigated and reported on available funding programs, Ecology and other agency staff researched and provided the funding subtask force with information on:

- The background of water reclamation funding and key elements of the *FY 2008 Reclaimed Water Grants Program*. At $5,455,000 in total, it is considered a "pilot" program.
- The specific similarities and differences between water reclamation and wastewater treatment and process terminology for common understanding.
- Surveys of water reclamation needs and consideration of funding level to request.
- Potential revenue sources and amounts generated from these sources.

[3] Section 6026 of the 2007-09 Capital Budget (ESHB 1092.SL).

- Water reclamation component eligibility.
- Proposed financial assistance structure.
- Priority criteria noted in and associated with the bill.
- Development of a list of those issues requiring further consideration.

Background and Existing Funding Programs and New Initiatives

Washington State's Legislature has long recognized the importance and benefits associated with the reclamation of wastewater. The Washington *1992 Reclaimed Water Act* (Chapter 90.46 RCW) provided technical, but not financial assistance to use water reclamation to help replace drinking water for non-potable purposes. Reclaimed water use serves as a fundamental element of our state's strategy to provide sustainable water supplies that will meet our future needs.

The *1992 Reclaimed Water Act* cited the following goals:

- Encourage and facilitate reclaimed water use.
- Provide new basic water supplies to meet future needs.
- Protect public health and safety.
- Protect and enhance our environment.
- Gain public confidence and support for reclaimed water.
- Find cost-effective solutions.

To help address the pressing funding need, the 1997 State Legislature directed Ecology and the Department of Health (DOH) to establish and administer a reclaimed water "demonstration program." The Legislature provided $10 million from the Centennial Clean Water Fund. Ecology administered the program and used it to help fund five demonstration projects.

In accordance with RCW 90.46.110, *Reclaimed water demonstration program--Demonstration projects*, the demonstration projects consisted of a feasibility study in Lincoln County and four water reclamation and reuse facility demonstration projects in the cities of Ephrata, Royal City, Sequim and Yelm.

As with the latest bill provisions that encouraged Ecology and DOH to maximize efficiencies of its programs, ten years later Ecology provided these projects with over $18 million in loans from the State Water Pollution Control Revolving Fund (Revolving Fund).

Further, one of Ecology's several partner agencies, the United States Department of Agriculture's Rural Development (USDA-RD), provided $4 million in loans and $300,000 in grants. These projects are profiled in the publication, *Water Reclamation and Reuse - The Demonstration Projects* available at: http://www.ecy.wa.gov/pubs/0010062.pdf.

Capital Budget Appropriation for 2007-09 Biennium

The 2007 Washington State Legislature passed the Capital Budget for the 2007-09 biennium with grant funds to assist local governments with reclaimed water needs. The Legislature designated $5,455,000 for grants to local governments in the Puget Sound region to complete reclaimed water projects. Priority was given to projects in water short areas (defined as areas where available freshwater cannot meet demands of intended uses) and areas where reclaimed water will restore important ecosystem functions in the Sound.

For details on the development and implementation of the FY 2008, Reclaimed Water Grants Program, see Chapter 9: Capital Budget Provisions for Puget Sound Water Reclamation Projects.

Based on the initial appropriation of $5,455,000 for reclaimed water projects described above, the funding subtask force considers the FY 2008 grant program to be a "pilot" level program. Regardless, Ecology manages the program as a competitive program with some of the same financial assistance provisions, eligibility, and evaluation considerations that the funding subtask force recommends in this report for the long-term program.

Through this program, the funding subtask force and Ecology are acquiring insight into some of the anticipated reclaimed water issues and are developing solutions to those issues that present impediments to reclaimed water use. The process described in Chapter 9 should assist the Legislature and should help with direct development of the new long-term reclaimed water program.

Purpose of the Proposed New Long-term Funding Program

In accordance with E2SSB 6117, the funding subtask force believes the program should be aimed at providing public bodies with a stable long-term funding source. This report contains recommendations from the funding subtask force and Ecology for a long-term reclaimed water project funding program.

Funding will help public bodies complete water reclamation facilities for clearly needed, existing beneficial uses of water reclamation facilities. All public bodies receiving financial assistance offers must be ready to proceed when money is available. Priority is to be given to projects where reclaimed water will address one or more of the following:

- Restore and protect water quality.
- Restore and protect important ecosystem functions.
- Provide a new or enhanced source of water where reclaimed water is used to replace other water sources.
- Address flow needs in water short areas via a number of water reclamation means.
- Provide critical recharge of groundwater and wetland areas.

Water Reclamation and Wastewater Treatment Applicable Terminology

The specific similarities and differences between water reclamation and wastewater treatment and process terminology are outlined below. Common terms used in the wastewater and water reclamation industry today include:

- Primary treatment: Pretreatment and short-term gravity settling of raw wastewater. Approximately 30 to 60 percent of sewage solids are removed along with 30 to 35 percent of oxygen-demanding organic material.
- Secondary treatment: Biological treatment combined with settling to destroy or remove organic compounds. Usually, about 85 to 95 percent of both oxygen-demanding organic material and sewage solids are removed. This includes disinfection.
- Tertiary treatment: Treatment beyond secondary for non organic pollutants and nutrient removal. Nutrients cause biological growth that eventually decays and robs the water of oxygen. The need is usually based on total daily maximum load (TMDL) waste load analyses or other analyses designed to improve water quality in the receiving water. Typically, either chemical or physical processes will remove metals, salts, ammonia, nitrogen, phosphorus, and other pollutants secondary treatment cannot remove.
- Water reclamation: Further treatment of wastewater to address the public health risks for beneficial uses such as fishponds, aquifer and wetland recharge, and irrigation of golf courses. Reclaimed water treatment processes, such as membrane filtration or enhanced disinfection may be added to or incorporated into secondary or tertiary treatment plants.
- Scalping plant: Water reclamation facilities which intercept and treat a portion of the total sewage flow that would otherwise enter the main treatment facility. Primary, secondary, tertiary, and reclaimed water and solids removal processes are typically all included at these plants.

Eligible Applicants

The funding subtask force has recommended that public bodies be eligible to receive this financial assistance. A public body means any county, city or town, conservation district, other political subdivision, municipal corporation, quasi-municipal corporation in the state of Washington, and those Indian tribes now or hereafter recognized by the federal government. All applicants must comply with water quality and public health standards of the state of Washington.

Public bodies may use financial assistance to provide loans to private parties for reclaimed water projects for beneficial uses that have identifiable environmental progress to the general public.

Funding Needed

Ecology conducted a quick financial analysis of reclaimed water reclamation needs, included as Appendix B. Ecology will updated this analysis through the end of 2007. The analysis of reclaimed water needs was compiled from a combination of sources:

- Data was obtained from a June 12, 2007 workshop sponsored by the Pacific Northwest Clean Water Association
- In September 2007, Ecology polled some of their regional staff members for information they had regarding pending or proposed reclaimed wter projects.
- Ecology staff contacted several prominent consulting engineering firms for their input regarding projects they were proposing to clients and estimated costs.

This analysis provides a conservative estimate for municipal reclaimed water construction projects, in the 2010-16 timeframe, at approximately $294 million for construction of reclaimed water components. Ecology derived this estimate from a study of the totals of feasibility assessment and facilities planning and design phase estimates (see Appendix B).

Ecology, in conjunction with EPA, will also conduct the *Clean Watersheds Needs Survey* in 2008 and report their findings to the United States Congress. The survey, conducted every four years, includes wastewater treatment and water reclamation needs required under the federal Clean Water Act. This assessment will continue through much of 2008.

Projected needs for water reclamation financial assistance will substantially exceed the following matrix, which shows presently proposed funding needed from the Legislature for the long-term water reclamation program:

Upcoming Biennia	**Proposed Funding Requested**
2010-12	$50 million
2012-14	$75 million
2014-16	$100 million
Six Year Total	**$225 million**

Ecology based the biennium funding increases on estimated reclaimed water projects associated with such factors as:

- Total projected six-year period need of approximately $294 million. Ecology obtained this extremely low-sided conservative estimate from Appendix B.
- Projected increase in population growth that will further drive demand in water short areas of the state.
- Climate change may further accelerate increased water demands.

- More stringent water quality limits for wastewater effluent will encourage a conversion from surface water discharges to reclaimed water projects for beneficial uses.

The Legislature should consider setting appropriation levels to meet this critical demand and help account for construction cost inflation.

For easier readability, Appendix B was listed in order of:

- Project type (feasibility assessment, facilities planning, and design).
- Public body by year in alphabetical order.

Appendix B was **not directly** cross-referenced to the "Funds Proposed" matrix above. However, by mid-way through the period (2012), costs for reclaimed water needs will already have reached at least a **$245 million** backlog of the **$294 million** estimated on the low side for 2016. A total of $365 million has already been projected from phased "build out" projects for the 2026 timeframe.

For example, the LOTT Alliance (Lacey-Olympia, Tumwater, and Thurston County), embraced an extremely aggressive reclaimed water program. It includes:

• 2004	LOTT Alliance: First Satellite Plant		$49.2 million
• 2015	LOTT Alliance: Second Satellite Plant		$42.4 million
• 2022	LOTT Alliance: Budd Inlet Plant Reclaimed Water Expansion		$52 million
• 2023	LOTT Alliance: Expansion to First Satellite Plant		$16 million

All presently known costs are captured in Appendix B. However, only the four costs listed below are projected which is why costs in Appendix B are so conservative:

• 2009	Phase 1/Phase 2 (2023)	City of Shelton Satellite Plant	$3 million
• 2010	Phase 1/Phase 4 (2026)	Irondale/Port Hadlock County	~$7 million
• 2015	Second Satellite Plant	LOTT Alliance:	$42 million
• 2022	LOTT Alliance: Budd Inlet Plant Reclaimed Water Expansion		$52 million

Revenue Sources for the Long-term Funding

The process used by the funding subtask force to address existing and new revenue sources has three elements. The process involved:

1. Discussing where to focus funding needs priority between:
   - Maintaining a strong association between revenue raised and waterborne pollution. For example, water from bottled water and soft drinks ultimately must be treated and reclaimed.
   - Diverting a portion of existing revenues from the general fund.
   - The potential need for more than one source of revenue.

2. Creating a list of potential revenue sources.
3. Identifying the advantages and disadvantages of proposed revenue sources and revenue estimates by the Washington State Department of Revenue (DOR).

DOR staff provided, at the funding subtask force's request, revenue estimates for taxes imposed *at the wholesale level* on detergents, beer, bottled water, canned and bottled soft drinks, toilet and tissue paper, over-the-counter and prescription drugs. The estimates included various funding ideas related to the sewage collection and water distribution classification of the public utility tax.

DOR also provided an estimate of the revenue impact if the construction of reclaimed water facilities had the same tax structure as public road construction. DOR prepared a report: *Taxes and Potential Funding Sources for the Construction of Reclaimed Water Facilities* (included as Appendix C).

One proposed new tax example is a tax on bottled water. For example, a tax rate of 0.002 cents per ounce would generate revenue on a 20-ounce bottle of water equal to four cents. Projected revenues from this source alone would meet the currently recommended initial request of $50 million per year when the reclaimed water program is fully developed.

The funding subtask force narrowed the options to approximately five revenue sources for further discussion, including but not limited to:

- Bottled water.
- Soft drinks.
- Public utility tax adjustments.
- Public utility tax diversion away from the general fund.
- Sales tax exemptions as incentives for public bodies to complete water reclamation.

E2SSB 6117 Section 10 (2) directed Ecology to provide a recommendation for a water reclamation project funding and grant program to include:

- Eligibility requirements for funding (included in this report).
- A competitive process for funding.
- Priorities for funding targeting reclaimed water projects that:
    - Are ready to proceed.
    - Have local support for the project.
    - Are in areas that have adopted mandatory use ordinances or letters of intent to execute user contracts.
    - Provide broader public benefits to environmental water quality or water resource needs such as Puget Sound restoration.
    - Promote Columbia River water management strategies.
    - Promote water quality improvements.
    - Enhance wetlands habitat.
    - Enhance in-stream flows.
    - Provide benefits that clearly extend beyond utility ratepayers.
- A grant program for high priority areas.

Eligible and Ineligible Projects

Projects for planning, design, and construction of water reclamation facilities are eligible if public bodies document their intent to make use of reclaimed water for beneficial uses at the time water reclamation projects are completed. As a requirement for eligibility, public bodies must be ready to proceed at the time money is available. They will be required to make measurable steps toward achieving the milestones, objectives, and overall goals of the project, e.g., within 16 months of the publication of the final offer and applicant list. Project types and component eligibility and financial assistance available are shown in Table 1.

Table 1 also includes a brief rationale statement for most determinations. Eligibility determinations represent a reasonable attempt to pair appropriate types of financial assistance to different classes of projects equitably, and in a fiscally responsible manner. For example, loans are used in part to:

- Create a self-sustaining program.
- Provide local "ownership" of the reclaimed water resources.

Table1: Eligible and Ineligible Projects and Component Facilities, and Financial Assistance Available [4]

Item	Project and component facilities	Elig. Y/N	Type of Assist.[5]	Conditions; (Unless the demand for funds is limited)	Rationale, and Comments
1	Feasibility assessment	Y	Grants or Loans	$250,000 Ceiling	Build capacity/ identify costs
2	Facilities planning	Y	Grants or Loans	$350,000	Identify costs for the cost-effective alternative.
3	Combinations of feasibility assessment & facilities planning	Y	Grants or Loans	$400,000 Ceiling	Build capacity/ identify costs for the cost-effective alternative.
4	Engineering Reports	N	Neither	N/A[6]	Most other funding programs require "facilities planning," so funds sources can be blended. Funding sources cannot be combined if applicants just complete "engineering reports." See additional detail in the "Engineering Reports" vs. "Facilities Plans" section immediately following this table.
5	Design	Y	Loans	10% of total yearly portion of appropriation ($5 million [initial biennium])	Statewide equity, costs are refined, and public bodies would transition from grants to self-sustaining loans.
6	Design/Construct	Y	Loans[7]	$12 million.	Relatively small projects.
7	Construction AND Alternative Contracting (e.g., design/build)	Y	Loans	25% of total yearly portion of appropriation.	Statewide equity balanced with substantive funds. Recipients may reapply for unmet needs each year.
8	Wastewater treatment for discharge	N	Neither	N/A	Contrary to purpose of program.

[4] Subject to change during the development of the final program.
[5] Grants, where applicable are proposed to be 50% and loans may be for up to 100% of eligible project costs.
[6] N/A: Not applicable.
[7] Loans for design/construct, construction, and alternative contracting will have "hardship" provisions for the construction phase for very low interest and substantive grant support based on the level of hardship.

Table1: Eligible and Ineligible Projects and Component Facilities, and Financial Assistance Available (continued)

Item	Project and component facilities	Elig. Y/N	Type of Assist.[8]	Conditions (Unless the demand for funds is limited)	Rationale, and Comments
9	Water reclamation (including 20 years of reserve capacity for acceptable growth); may be in combination with wastewater treatment, including, but not limited to, "Scalping" plants.	Y	Loans	No more than 25% of biennial appropriation can go to one public body.	Statewide fairness, and up to 20 years of flow growth from population projections in accordance with the Growth Management Act or equivalent planning process projections. Costs for relatively small flows, e.g., 10 % from a single industry may be eligible, but are to be consistent with other Ecology programs; policy is presently under consideration.
10	Transmission and distribution to public property.	Y	Grants or loans		
11	Transmission to private property line	Y	Grants or loans		
12	Distribution system on private property or industry	N	Neither	N/A	Responsibility of private party accepting resource.
13	Storage on public property	Y	Grants or loans		To create beneficial use(s) for reclaimed water produced by the industries and/or nearby public bodies.
14	Storage on private property	N	N/A		Responsibility of private party accepting resource.
15	Public body programs to develop incentives to industries that promote water reclamation	Y	Grants and loans.		
16	Creation of environmental areas (e.g., wetlands, fish ponds)	Y	Loans		

[8] Grants, where applicable are proposed to be 50% and loans may be for up to 100% of eligible project costs.

Engineering Reports vs. Facilities Plans

"Engineering Reports" and "Facilities Plans" are different.

An engineering report is defined under Chapter 90.48 RCW as:

- A document that identifies a technically adequate alternative that protects the quality of the state's waters.
- However, engineering reports are not required to identify the most cost-effective alternative or perform federal level environmental review.
- Engineering reports are needed, under Chapter 90.48 RCW, to develop any design of reclaimed water or wastewater treatment facilities (regardless of whether or not the project is to receive state of Washington funds).

A "facilities plan" is an engineering report with additional elements required to obtain funding through Ecology sources (and several other funding) programs. A facilities plan selects the most cost effective solution to a water quality problem, and includes an environmental review component. Proponents completing facilities plans must:

- Identify and recommend the most cost effective solution (both monetary and environmental/social) of all the alternatives considered. Those who research and write facilities plans accomplish this by completing a "cost-effective analysis."
- Perform a thorough environmental review, including compliance with federal statutes and regulations (such as the Endangered Species Act and the National Historic Preservation Act). The environmental information must also include a plan to minimize or mitigate impacts to the environment as the public body constructs and maintains the project. The elements of the plan become requirements of Ecology's funding agreement.

For efficiencies, Ecology attempts to blend its funds with those of other funding agencies that also require facilities plans. Because of the clear differences between level of cost analyses of these two types of documents, Ecology requires the notably advantageous facilities planning document to be completed.

Overview of Financial Assistance Provisions

In the bill, the Legislature stated: "To minimize the administrative burden, the funding subtask force shall work toward a coordinated effort with the current clean water state revolving fund and centennial clean water fund integrated program under which reclaimed water projects with a water quality benefit are currently eligible…"

The eligibility criteria, application, offer, award, and administration processes for both the Centennial Clean Water Fund (grants and loans) and the Water Pollution Control Revolving Fund (loan only) programs were combined in the mid 1990s for greater efficiency and seamless financial assistance delivery. Furthermore, this combination provides for substantive grants to public bodies when local residential ratepayers would otherwise face unacceptable fees for wastewater treatment and water reclamation projects.

These existing programs are nationally recognized as models of efficiency. They are also noted to be very effective at lowering the financial burden to ratepayers. For these reasons, these two existing programs are used as a model for financial assistance provisions for the proposed water reclamation program.

For program initiation, there is a relatively heavy reliance on grants; yet, the funding subtask force recognizes the need for and has directed Ecology staff to work toward a self-sustaining program. The long-term program is to be built mostly on revolving loans to maintain a viable water reclamation funding program in perpetuity.

The bill also called for: *"A proposed grant program for projects in identified high priority areas."*

The long-term water reclamation program proposed will provide:

- A clear provision for grants in high priority areas.
- Grants and low-interest loans to lessen financial hardships.

Detailed descriptions of loan and grant provisions, including high-priority-area grants, follow.

Loan Provisions

As noted above in Table 1, loans may be issued for the existing residential population, some commercial and industrial flows, and up to 20 years reserve capacity to serve population projections in accordance with the Growth Management Act or equivalent planning process projections.

Interest rates for loans awarded under the program are based on the average market interest rate. The average market interest rate is based on the daily market rate published in the bond buyer's index for tax-exempt municipal bonds for the period from thirty to sixty days before the funding application cycle begins. Loan terms and interest rates are as follows:

Repayment Period	Interest Rate*	Rates**
Up to 5 years.	30% of the average market rate.	1.4%
Between 5 and 20 years.	60% of the average market rate.	2.7%

* (Based on need for substantive assistance balanced with maintaining the fund in perpetuity)
** (In FY 2009)

Financial Hardship Assistance Grant and Loan Provisions

Financial hardship assistance in the form of lower-interest loans and potentially high-percentage grants is available. Hardship assistance is considered for public bodies with a service area population of 25,000 or less, and if issued loan funds, the project would otherwise cause a relatively high user charge as noted in Tables 2 and 3. Normally, the loan interest rate is 60 percent of the market rate.

The following financial hardship provisions are presented:

- Hardship loan rates vary from 0 percent to 40 percent of the market rate (see Table 2: Loan Hardship Funding Continuum).

- Regardless of the hardship determination, loan assistance will fund up to 20 years reserve capacity.
- Hardship grant assistance is to be provided for existing residential needs and limited industrial and commercial needs, consistent with policy considerations now underway.
- Hardship grant assistance will be provided, as funds are available, for the existing need at the time of application (see Table 3: Grant Hardship-Funding Continuum).
- Additional capacity that exceeds allowable commercial and industrial flows is not eligible for hardship assistance. However, the capacity that public bodies need for much of these flows is eligible for loan funding at 60 percent of market rate (See Table 1).

For example, a public body applies for $10 million to finance water reclamation facility construction costs: $6 million is for existing need and $4 million is for reserve capacity for 20 years of flow growth that is exclusively for residential and allowable industrial and commercial flows. Based on this scenario, the applicant may be eligible for the following in loan and grant funding:

Need: Water Reclamation	**Cost**
Total project cost:	$10,000,000
Loan eligible amount	$10,000,000
Costs for up to 20 years reserve capacity for growth	$ 4,000,000
Hardship grant eligible amount	$ 6,000,000

The financial burden for the sewer ratepayer is determined by calculating the residential sewer user fee as a percent of the median household income (MHI). The residential sewer user fee is calculated using the following:

- Estimated construction cost.
- Projected future operation and maintenance costs for the total facility.
- The applicant's current and future debt service on the project.
- Grants.
- Existing annual operation, maintenance, and equipment replacement costs.
- Total number of households existing at the time of application that will be served by the project.

The total user rate caused by the addition of water reclamation facilities and existing facilities as a percentage of the MHI is the basis for the grant and loan hardship-funding continuum, shown in Tables 2 and 3.

The grant hardship-funding continuum is used to determine the percent of grant awarded. There is a grant funding ceiling of $5 million per project.

Table 2: Loan Hardship-Funding Continuum

Sewer User Fee divided by MHI	**Below 2.0%**	**2.0% and above, but below 3.0%**	**3.0% and above, but below 5.0%**	**5.0% and above**
Hardship Designation	***Non-hardship*** (Low sewer user rates in relation to MHI) (Not funded with grant dollars)	***Moderate Hardship***	***Elevated Hardship***	***Severe Hardship*** (Very high sewer user rates in relation to median household income (MHI))
Loan Hardship-Funding Continuum	Loan at 60% of market rate	Loan at 40% of market rate	Loan at 20% of market rate	Loan at 0% interest

Table 3: Grant Hardship-Funding Continuum

Sewer User Fee divided by MHI	**Below 2.0%**	**2.0% and above, but Below 3.0%**	**3.0% and above, but below 5.0%**	**5.0% and above**
Hardship Designation	***Non-hardship*** (Low sewer user rates in relation to MHI) (Not funded with grant dollars)	***Moderate Hardship***	***Elevated Hardship***	***Severe Hardship*** (Very high sewer user rates in relation to median household income (MHI))
Grant Hardship-Funding Continuum	**0% Grant**	**60% Grant** (up to five million dollars)	**75% Grant** (up to five million dollars)	**100% Grant** (up to five million dollars)

Evaluation Criteria for Highest Priority Project Selection

The following criteria matrix (Table 4) that lists the Legislature's framework for a priority system, and also includes other useful considerations, contains accompanying percentages of total points proposed to fairly and justifiably determine highest priority projects for financial assistance by the proposed program.

Table 4: Matrix of Priority Considerations and Evaluation Percentages

Consideration Criteria	Percentage of Evaluation Points*
Broad public benefits to water quality and water resource needs (for example, Puget Sound restoration, Columbia River water management strategies). Special consideration will likely be given for water short areas (defined by Ecology and others as areas where available freshwater cannot meet demands of intended uses), and areas where reclaimed water will restore important ecosystem functions: • Water quality improvements • Ecological benefits (e.g., directly addressing endangered and threatened species) • Wetland habitat • Streamflow improvement • Groundwater and wetland hydraulic recharge • Projects that directly replace potable water used in non-potable applications • Financial impacts on ratepayers • Public benefits clearly extending beyond ratepayers	50%
Quantitative goals for measurable outcomes	20%
Mandatory use ordinances or documented intent to execute contracts to use reclaimed water	10%
Local support	10%
Readiness to proceed	10%

* The Subtask Force suggested these draft percentages by consensus, but percentages may be refined.

Grants for High Priority Areas

The 2007 Legislature required that a grant program be developed for high priority areas. Grants for high priority areas are to be completely independent of financial hardship grant provisions outlined above. However, ceiling amounts still apply. Grants will be offered to eligible public bodies in such areas. These areas will be distinguished from other areas, with highest priority likely given to projects especially in water short areas where available freshwater cannot meet demands of intended uses and areas where reclaimed water will restore important ecosystem functions.

Need for Water Reclamation Funding for State Agencies and Universities

The major target of this program is communities. However, there are reclaimed water needs identified for state agencies and institutions of higher education. In accordance with the capital budget process, agencies should request funds through the Governor and Legislature to meet water reclamation project needs that have a very broad public benefit. Where possible, the Legislature should provide funds to meet these needs.

Crosscutting Issues Still Requiring Resolution

Continued discussion is needed among the staff of other taskforces responsible for completing recommendations required by other sections of the bill and, as appropriate, the Governor's office, the Office of Financial Management, committees of the Legislature, and other fiscal and natural resources agencies before final recommendations are submitted to the Legislature. The issues needing to be addressed include, but are not limited to:

- Additional financial assistance appropriations for wastewater treatment independent of and up to water reclamation.
- Appropriate revenue sources for the long-term water reclamation funding program.
- What constitutes adequate water reclamation standards, especially for flow augmentation-eligible vs. discharge-ineligible.
- Water rights considerations needed to evaluate water reclamation proposals.

Appendices

Appendix A

Environmental Law Institute Report

Appendix A – Environmental Law Institute Report

Report on Funding and Financing for Reclaimed Water Facilities

Report on Funding and Financing for Reclaimed Water Facilities

November, 2007

Langdon Marsh for the Environmental Law Institute

I. Introduction

The "Long-Term Funding Sub-Task Force" of the Reclaimed Water Use Rule Advisory Committee was created by the 2007 Washington Legislature to recommend provisions for a long-term funding source for water reclamation facilities.[1] As part of the process for addressing the Legislature's direction, the Sub-Task Force was interested in learning how other states funded or financed reclaimed water ("RCW") facilities, and what innovative sources of financing existed that might be adapted to paying for water reclamation facilities.

This report reviews financing tools for RCW projects that are in used in other states, especially Arizona, California, Florida and Texas. It also looks at various funding sources used in other states for a variety of environmental purposes that might be adapted by Washington to finance reclaimed water and related projects. A separate report for the "Removing Barriers" Sub-Task Force" will examine potential incentives that have been used elsewhere for RCW and other purposes.

Except where noted otherwise, this report does not include discussion of existing Washington programs or analysis of Washington law. If there is interest in any of the options from other states, a separate review of Washington programs, law and practices would be needed.

II. Financing Reclaimed Water Facilities in Other States

Other states and utilities that have implemented water reclamation projects use a variety of financing tools, including

1. Federal grants,
2. State bond issues supporting loans and grants,
3. State revolving funds (SRF),
4. Dedicated revenues from specific taxes;
5. Direct appropriations from state, county or city funds,
6. Utility fees and charges, and other self-generated revenues,
7. Funds borrowed by utilities on capital markets, and
8. Private capital where a project benefits a specific business.

[1] Washington Senate Bill 6117, Section 10.

Appendix A contains tables showing the principal funding and financing sources used in selected states, with examples of specific projects. By comparison, Appendix B summarizes how Washington projects have been financed, based on *Case Studies in Reclaimed Water Use* by the Department of Ecology's Kathy Cupps and Emily Morris.[2]

A. State grants and loans

Leading states finance RCW facilities through state revolving loan programs, other grant and loan programs and direct appropriations. Some of these states have financed projects in innovative ways.

Florida has a unique system to help finance reclaimed water and other water resource projects. The state has created five water management districts that can encourage and direct water users and utilities to use reclaimed water and implement reuse programs. In addition to disbursing state funds, the districts have been granted the authority to levy *ad valorem* taxes from landowners and use the proceeds to make grants to local water suppliers for alternative water supplies and conservation activities.

Florida has also enacted a funding program specifically for water reclamation and other alternative water supply projects. The Water Protection and Sustainability Program, enacted in 2005, requires the five water management districts to promote alternative water supply projects. The law provides significant annual recurring state funding. Funds are administered and matched by the water management districts. During the first two years of the program, it helped fund 238 projects with a total construction cost of approximately $2.5 billion. Projected costs of all reclaimed water projects over the next 20 years exceed $9 billion, of which $1.2 billion is projected to come from state funds.[3]

California has adopted a Water Recycling Funding Program (WRFP) to promote the beneficial use of treated municipal wastewater to augment fresh water supplies in California. Currently, the WRFP administers 49 construction projects and 33 facility planning studies. The funding program consists of the State Revolving Loan Fund and a grant and loan fund created from bond laws passed from 1978 and 2002. Some state general funds have also been used for state grants. Nearly $650 million in State grants and loans has been provided through these programs through September 2006.[4]

The **Texas** Water Development Board includes as principal sources of financial assistance for reclaimed water, the Clean Water State Revolving Fund and:

- A deferred interest loan program (State has a temporary ownership interest in a facility. State's ownership is purchased by applicant as their customer base grows.), and

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[2] http://www.ecy.wa.gov/biblio/0510013.html
[3] *Tapping New Sources*, Annual Status Report on Regional Water Supply Planning, Florida Department of Environmental Protection, March 2007.
[4] http://www.dep.state.fl.us/water/waterpolicy/docs/RWSP_ASR_2006.pdf

- A water and wastewater loan program for planning, acquisition and construction of water related infrastructure, for political subdivisions and nonprofit water supply corporations.[5]

B. Sources of information about Grants and Loans

There are excellent sources of information about grants and loans available for water reclamation projects. On a national level, the most comprehensive source of information specific to water reclamation projects is Chapter 6 of *EPA's Guidelines for Water Reuse*, September 2004.[6] In addition to listing common sources of Federal and State grants and loans, it discusses private capital contributions and internally generated funding alternatives. Interestingly it highlights Washington's "rather innovative" Public Utility Tax levied on gross income of public and private utilities, with partial exemptions for favored reclaimed water services. There is a suggestion that many variations on this incentive theme could be adopted by states, such as imposing a utility tax directly on large water users and granting exemptions for reclaimed water use.

There is an even more comprehensive list of Federal and private sources of financing for water infrastructure generally in *EPA's Guidebook of Financial Tools: Paying for Sustainable Environmental Systems*, April 1999.[7] This compendium is a bit outdated but is now being updated. However, it has a very complete list of Federal and non-Federal programs that have been used to fund water related projects. Similar to those used by the Washington Department of Revenue, it enumerates nine criteria to compare various financial tools that states, municipalities or utilities might adopt. The criteria are:

1. Actual use
2. Revenue stability
3. Revenue size
4. Revenue cost/savings
5. Administrative ease
6. Equity
7. Cost/benefit relationship
8. Financial leveraging
9. Environmental benefits

It evaluates tools for raising revenue, including a wide variety of general and special taxes, fees, special charges, fines and penalties. It also evaluates tools for acquiring capital, including bonds, loans, grants, credit enhancements, and tools for building public-private partnerships.

More specific to the Northwest is a searchable database called the Directory of Watershed Resources maintained by the Environmental Finance Center at Boise State

[5] http://www.twdb.state.tx.us/assistance/financial/financial_main.asp#public
[6] http://www.epa.gov/nrmrl/pubs/625r04108/625r04108.pdf
[7] http://www.epa.gov/efinpage/guidebook/guidebooktp.htm

University.[8] The Directory includes information on funding programs available from federal, state, private, and other sources. For example, a search for state programs available in Washington for funding water quality capital projects yields thirty results including program descriptions, eligibility and contact information. A search for Federal programs results in 14 programs.

The availability of these and similar tools indicates that there are adequate resources for finding all existing sources of Federal and state programs for financial assistance. In some cases, creativity will be needed to make water reclamation fit, but policy appears to be headed in the direction of making it easier. For example, a recent draft report from EPA's Office of Wastewater Management emphasizes that a wide range of reuse projects are eligible for State Revolving Loan Fund financing, including projects before, at and after a publicly owned treatment works, including gray water systems, higher levels of treatment, piping to the property line, etc[9]. While applicable only to interpretation of the Clean Water Act, it is likely that EPA's direction will be influential with other Federal programs.

C. Self-financing of Reclaimed Water Projects in Other States

Self-generated funds that utilities in other states often use include dedicated capital funds for new construction, cash reserves, existing operating revenues, increases in user fees, special assessment or tax district revenues and bonds, revenue bonds, developer agreements, impact fees, connection fee charges, and general fund advances.[10] In a typical example of self financing of reclaimed water projects, the San Antonio Water System used a combination of revenues, revenue bonds, tax–exempt commercial paper and capital recovery fees (impact fees and other fees) to finance one of its projects.[11]

The main source of capital for the portion of project costs that are not subsidized by Federal or state grants is borrowed funds, either from public finance sources such as the SRF or accessing capital markets, using tax exempt financing whenever available. The key issue for Reclaimed Water (RCW) projects, as with other infrastructure, is how the debt service will be paid off. In determining who should pay how much for the debt service, some of the vital considerations are:

1. User Pays

Should the users of reclaimed water pay all or a substantial portion of the costs of treatment and delivery of the reclaimed water? In the City of Longboat Key, Florida, for example, the end users pay for the entire cost of the system.[12] This straightforward allocation is relatively rare because of the usual desire to attract customers to use

[8] http://efc.boisestate.edu/watershed/

[9] *The Clean Water State Revolving Fund Program: Tapping its Untapped Potential. EPA Draft*, 2007.

[10] See *USEPA Guidelines*, *supra*.

[11] http://www.saws.org/

[12] *USEPA Guidelines for Water Reuse*, *supra*, p. 211.

reclaimed water with a subsidized rate. In Washington, the Snoqualmie project was fully financed by the Weyerhaeuser Corporation.[13]

2. Allocation Among Ratepayers

To what extent should costs in excess of grants be shared among wastewater, water and user ratepayers? Utilities' decisions on how to allocate costs fairly and equitably across all classes of users are highly dependent on policy objectives. For example, the costs of tertiary treatment could be shared among water and wastewater customers based on the extent to which treatment was needed for water quality purposes or for providing reclaimed water. If incentives are desired to attract new customers for reclaimed water, it might be appropriate to subsidize the cost of reclaimed water by surcharging peak demand for both conservation and subsidy objectives. In the East Valley Water Recycling project in California, for example, the non-grant funded portion of the total cost is being funded by water ratepayers through special conservation and reclamation rate adjustments. [14]

There has been a growing emphasis on the role of economic analysis in justifying RCW as the least cost option and justifying allocation among ratepayers. The recent project of the Water Reuse Foundation develops an economic framework that is designed to estimate and communicate a full range of benefits associated with water reuse projects.[15] These benefits include enhanced wetlands, in-stream flows, recreation, cultural and aesthetic values, better reliability and deferred costs of water supply development. To the extent that they can be quantified or even monetized, they can not only provide more justification for water reuse projects, but can also be used to justify allocation of costs among different ratepayers and the general taxpayer. A 2002 California Recycled Water Task Force called for the development of a mechanism for identifying equitable capital and operational funding schemes, based on the allocation of the benefits and costs in an economic analysis.[16] This could provide useful tools for utilities willing to incorporate economic analysis.

3. Affordability Issues

How should rate adjustments deal with affordability issues? The upward adjustment of rates of either water or wastewater customers to pay either for the full costs of service delivery or for additional costs of improvements such as reclaimed water projects will almost always be limited by the inability of some customers to be able to pay for any increase. Some customers may be unable to pay existing charges and are or have been in default, adding the costs of collection and cut off. This is an individual household problem, not, as it is usually characterized, a community affordability problem. It doesn't have to be a political problem if careful attention is paid to dealing

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[13] Case *Studies in Reclaimed Water Use, supra.*

[14] See generally, *Allocation of Recycled Water Costs* Robert S. Grantham, Carollo Engineers, Walnut Creek, California. See also, *EPA Guidelines, supra*, pp. 206-9.

[15] *An Economic Framework for Evaluating the Benefits and Costs of Water Reuse*, Robert S. Taucher, 2006

[16] http://www.owue.water.ca.gov/recycle/docs/ExecSummary.pdf

with affordability in rate design. A recent publication by EPA's Environmental Financial Advisory Board offers some practical suggestions for clearly identifying and dealing with affordability. It acknowledges that some subsidy for some customers will be necessary. It evaluates four possible sources and weighs the advantages and disadvantages of each. It also recommends a thorough job be done to identify the customers truly needing a subsidy and to target only them.[17]

IV. Potential Sources of direct revenue or capitalization of Grant and Loan funds for Reclaimed Water projects

While existing sources of grants and loans and self financing for RCW projects may likely continue to be the major means of financing future ones, the Washington legislature has asked for options for a long term funding strategy to support RCW projects. The Long-Term Funding Sub-Task Force with the assistance of the Department of Revenue has considered a variety of proposals to raise additional revenues and/or to provide incentives to utilities to build reclaimed water facilities.

This portion of the report examines sources other states have used or considered or some experts have advocated for funding water and wastewater or other facilities, sometimes including reclaimed water. If there is interest in any of these sources, a next step would be to research Washington law, including debt and other constitutional limits, to see whether they are practically available without major changes in fundamental law.

A. Bond issues

General obligation bonds issued with the full faith and credit of the states, usually with statewide voter approval, can be used in several ways. They 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 state revolving funds for water and wastewater. Over a number of years starting in 1978, California has passed several bond laws and has created a fund, which provided loans and grants for planning and construction of water recycling projects.[18] New York has passed a number of bond issues for eligible water quality projects.[19]

B. Dedicated revenues

A number of states have passed laws, some approved by voters, which dedicate designated sources of revenue for specific environmental purposes. In the current fiscal year, New York's Environmental Protection Fund will receive $225 million from the real property transfer tax for various environmental purposes. By law, the amount will

[17] *Affordability Rate Design for Households*, February 2006. http://www.epa.gov/efinpage/Affordibility_Rate_Design_report.pdf
[18] http://www.swrcb.ca.gov/recycling/fundingsources.html
[19] See, e.g., New York Environmental Conservation Law, Article 56, providing for implementation of the Clean Water/Clean Air Bond Act of 1996.

increase in the two subsequent fiscal years to $300 million.[20] Maryland's Program Open Space has produced hundreds of millions of dollars over nearly 30 years to acquire lands that protect water quality, conserve natural areas, and create parks. The funds come from a 0.5% transfer tax on the sale of real estate. Over $95 million has been appropriated for fiscal 2008.[21] A number of states also use lottery, fines and penalties, surpluses, hunting and fishing fees or other dedicated sources to fund specific programs. Oregon dedicates a portion of its lottery fund for parks and salmon restoration.[22] Nebraska allocates 44.5% of its lottery proceeds to the Environmental Trust Fund which funds a broad list of environmental purposes including actions to conserve water and/or efficiently and effectively manage water use.[23]

C. Legislative appropriations from general tax revenues

The North Carolina Clean Water Management Trust Fund is supported by appropriations from the legislature.[24] Over $700 million has been granted to projects, about one-third of which are water quality related.

D. Tax/fee on water users

In 2005, Maryland adopted an annual "flush fee" of $30, or $2.50 a month, to the utility bills of property owners who use the public sewer system and also a fee on septic tank owners.[25] The money collected from public sewer system users is used to upgrade wastewater treatment facilities. The money collected from septic tank owners is split, with 60% of it used to fund grants for septic system improvements and 40% used for a program that encourages farmers to plant crops that reduce nutrient loading in Chesapeake Bay. Maryland expects to raise about $65 million a year from public system users and $12.6 million a year from septic tank users. Maryland will use the $65 million from sewage treatment plant users to back more than $700 million in revenue bonds. These bonds will partially fund nearly $1 billion in capital projects at 66 major sewage treatment plants.

Taxes or fees on water withdrawals are not widely used and are controversial. For example, Minnesota collects a water use fee that generated about $2.5 million for the state's general fund in 2001. Businesses pay more than 60% of the money raised. A water tax on industrial and commercial users proposed by a gubernatorial candidate in 2002 to close the state's budget gap would have produced substantial revenue, but got no traction.

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[20] See Assembly Bill Summary A08339. The new law allows for additional deposits to be made to the environmental protection fund. http://assembly.state.ny.us/leg/?bn=A08339

[21] http://www.mdredbookonline.com/redbkpublic/template.asp

[22] http://www.oregonlottery.org/general/2bil.php

[23] http://www.environmentaltrust.org/about_the_trust/our_priorities.htm

[24] http://www.cwmtf.net/2006cwmtfar.pdf

[25] http://www.cga.ct.gov/2007/rpt/2007-R-0248.htm

Some utility districts collect both a user charge from the consumers and a water and sewerage tax from the property owners.[26]

There is growing support for taxes or deposits on bottled water however, which suggests that the historical public antipathy toward taxing what many members of the public believe should be a free commodity may be eroding. A recent proposal to impose a tax of anywhere from 10 to 25 cents on the cost of every bottle of water sold in Chicago got positive support from the Mayor.[27]

A carefully targeted state tax on water withdrawals or consumption, with appropriate exemptions for health related consumption, especially by lower income households, could conceivably be justified by the historical under-pricing of water. It would be politically challenging, but Maryland's recent experience with adopting a flush fee shows that the right balance of modest rates and clearly identified uses of revenue raised, a consensus based coalition in support and a sense of imminent crisis can overcome basic consumer resistance. Reclaimed water would likely be only one of a series of water related purposes to which the revenues would be directed. A cost-effectiveness test on proposed projects might make the proposal more acceptable.

E. Voluntary contributions by ratepayers

Tom Fox and Jim Hagstrom[28] have proposed that utilities collect a voluntary surcharge from rate payers and funnel the proceeds into a capital fund to invest in sustainable water infrastructure. The idea has not been fully developed, but it is based on existing green energy voluntary surcharges collected by many utilities around the country. In those programs, 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. An alternative model is one pioneered by The Bonneville Environmental Foundation, a non-profit organization. The Foundation sells carbon offsets as renewable energy certificates, which it calls *Green Tags,* to replace polluting sources of electricity with solar and wind sources. The advantage of a nonprofit is that the amounts paid for the Green Tags may be tax deductible to the consumer.

A water or wastewater utility could devise a similar program, allowing customers to add varying percentages to their bill to invest in sustainable (green) infrastructure, including reclaimed water projects. One issue would be defining exactly what projects would qualify for certification as sustainable. The Foundation uses a panel of outside experts to certify projects as meeting Green Tag criteria.

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[26] See e.g., Chennai (India) Metropolitan Water and Sewerage Board http://www.chennaimetrowater.com/finance/financemain.htm

[27] http://www.suntimes.com/news/politics/509503,water081407.article

[28] Both members of the Reclaimed Water Use Rule Advisory Committee

F. Financial guaranty

Using the guaranty authority of the State Revolving Fund can expand the number of projects financed. The Federal Clean Water and Safe Drinking Water Acts both allow states "to guarantee, or purchase insurance for, local obligations where such action would improve credit market access or reduce interest rates."[29] Using this authority would not be a new source of revenue but could extend the overall capacity of the SRF's to finance local projects.[30]

G. Maximum leveraging of State Revolving Funds

A number of states have acted to leverage the capacity of their State Revolving Loan Funds ("SRF"). For an SRF using a leveraged loan approach, loans to finance qualifying projects at below market rates are funded in whole or in part with borrowed money ("leveraged loans") as opposed to being limited to the Fund's equity. With leveraged loans, the capacity of the SRF to make loans for qualifying projects will exceed the amount of the SRF's equity. An advantage of the leveraged approach is the ability to provide subsidized loans for a significantly greater amount of qualifying project costs. Another is the ability to increase the loan capacity of the fund up to several times depending on the level of interest subsidy provided. Washington Department of Ecology is looking at the pros and cons of leveraging the Washington Clean Water State Revolving Fund.

H. State Revolving Fund priorities

States have considerable discretion in establishing priorities for investments in projects. While the overall emphasis of SRF's is to meet clean and drinking water quality requirements, EPA is encouraging states to make maximum use of existing eligibilities. A recent draft paper from EPA's SRF office re-emphasizes that water reuse projects are eligible for SRF financing.[31] Massachusetts awards points in part on the extent to which a project is consistent with local and regional growth plans.[32] Similarly, a state could grant priority points for projects that incorporate reclaimed water.

I. Private activity bonds

Private activity bonds (PAB) are often used to develop infrastructure in designated redevelopment areas. Private activity bonds are a financing tool that local government can employ to provide debt financing for projects that significantly benefit

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[29] FWQA (P.L. 100-4), Title VI, Sec. 603(d)(3); FSDWA (P.L. 104-182), Sec. 1452(3)(f).

[30] See *Conceptual Framework for Understanding the Direct and Leveraged SRF Approaches,* draft paper presented to the Environmental Financial Advisory Board, August 16, 2007. See also *Unleashing the SRF Guaranty Authority*, Presentation of James T. Gebhardt, CFO, NYS Environmental Facilities Corporation, at US EPA Environmental Financial Advisory Board Meeting, March 15, 2005.

[31] *The Clean Water State Revolving Fund Program: Tapping its Untapped Potential*, *supra*.

[32] http://www.mass.gov/dep/water/wastewater/cwsrf.pdf

private users, such as water and sewer projects. These bonds are often used for redevelopment projects in areas designated for redevelopment. Private activity bond financing normally results in reduced financing costs, since interest on the bonds is not subject to federal income taxes. The state or local government does not generally pledge its credit for payment of the bonded debt. Private activity bonds are normally payable solely from payments made by the private user of the property financed. A number of states have used PAB's for building or upgrading wastewater and drinking water facilities.[33] A state or municipality might choose to favor or even require reclaimed water facilities as a condition of making private activity bonds available. There are Federal caps on the total amount of private activity bonds a state can issue. A state might prioritize caps on PAB's to favor projects that incorporate reclaimed water.

J. Tax Increment Financing

Many states, including Washington, allow local communities to use the taxes resulting from the increase in taxable valuation caused by the construction of new industrial or commercial facilities to provide economic development incentives. Tax Increment Financing (TIF) may be used to offset the cost of public improvements and utilities, including water and sewer facilities. TIF is a method of facilitating development or redevelopment of defined areas of property by utilizing future tax revenues to pay for some of the necessary improvements. TIF allows local officials to designate an area ("TIF District") for improvement and then earmark any future growth in property tax revenues in that district to pay for the predetermined development expenditures in that district. Constitutional and statutory restrictions in Washington have limited the effectiveness of tax increment financing here. The Local Infrastructure Financing Tool (LIFT) Program, adopted in 2006, is intended to provide funding for local infrastructure using sales tax, property tax and selected other excise tax increases generated by an economic development project as part of a revenue development area designated by the sponsoring local government.[34] The LIFT Program allows selected local governments to take advantage of tax revenue generated by private investment in a Revenue Development Area (RDA) to make payments on bonds used to finance public infrastructure improvements, including water and sewer. Incremental revenue increases in the RDA and revenue from other local public sources are used to match state money and must also be used to repay the same bonds.

K. State pension funds

State pension funds have enormous and growing capacity. There is some interest in using them to invest in innovative projects that could include reclaimed water and other water conservation technologies. The California State Treasurer has proposed that California's public pension funds invest up to $15 billion in urban, smart growth infrastructure projects.[35] It would provide a new source of capital for state and local

[33] See *Private Activity Bonds and Financing Water Infrastructure in Texas*, Jim Forte and Andrew Shaw at http://ncppp.org/resources/papers/shea_pab.pdf
[34] http://www.cted.wa.gov/site/999/default.aspx
[35] http://treasurer.ca.gov/news/releases/2006/20060403_calbuild.pdf

infrastructure projects, supplementing the financing available from tax-exempt bonds and other traditional government financing mechanisms. Potential investments would include water-supply and conservation projects that would generate income from sources such as user fees. While the pension funds need to achieve a reasonable rate of return for investors and may not offer a significant direct subsidy to these projects, the investment they make may be on more favorable terms than might otherwise be available from private sources, especially if the transaction were structured such that the overall return was satisfied by other aspects of a larger project the pension fund was investing in. This will require some flexible and innovative thinking from both the utility and the pension fund.

L. Impact fees

The use of impact fees imposed by a utility on new development to finance RCW is well established. One use which might be explored is financing RCW retrofits as part of inner city or suburban redevelopment.

M. Brownfields/Superfund

In areas where RCW 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 RCW project, both on and off site. Responsible parties and oversight agencies may agree to implement an RCW project as a more cost effective use of funds than requiring treatment of contaminated groundwater to drinking water standards. One major company that is a responsible party at numerous sites nationwide is looking at this possibility.

N. Creative use of Federal and State infrastructure funds

Federal highway funds can be used to deal with water quality issues in conjunction with projects. If an RCW project is planned in the vicinity of a federally funded project and it could meet the required mitigation criteria, some of the project funds might be allocated to assist with RCW funding. Similarly, state departments of transportation control federal Congestion Mitigation and Air Quality funds, which are often used for transit-oriented or other smart-growth developments. While it may only occasionally occur that an RCW project would be in an area where a highway, congestion mitigation or redevelopment project supported by Federal funds is being developed, a utility that is planning an RCW project should explore any possible synergies with those developing the other project.

O. Tax credits

The Federal New Markets Tax Credit Program permits taxpayers to receive a credit against Federal income taxes for making qualified equity investments in designated Community Development Entities (CDE's). Investments have been primarily in the form of loans to businesses in low-income communities,

chiefly for constructing and rehabilitating commercial real estate, to purchase fixed assets for businesses and to provide working capital for businesses. The NMTC Program has generated $6.2 billion of investments in low-income communities throughout the country. Where reclaimed water projects are planned in areas where there is an active CDE, there may be an opportunity to work with the CDE and target businesses to finance RCW compatible infrastructure in their projects. Washington is among the top ten states in terms of the number of projects benefiting from the NMTC program.[36]

P. Affinity credit cards.

Many nonprofit organizations use affinity cards to raise funds for their programs. Government supported environmental funds have been designated to receive funds from such credit card purchases. In Connecticut, for example, People's Bank has donated 0.5% of the interest on all purchases made with its Long Island Sound Affinity Credit Card to the Long Island Sound Fund.[37] The Fund is used for a variety of education, research, public access and habitat restoration projects benefiting the Sound.

Q. License plates.

A number of states use special license plate sales to fund environmental programs. The Connecticut Department of Environmental Protection's Long Island Sound License Plate Program contributes to the Long Island Sound Fund.[38] Maryland has established the Chesapeake Bay Trust, a private nonprofit grant-making organization dedicated to restoring and protecting the Bay and its tributaries. Most of the Trust's revenue comes from the Chesapeake Bay and Endangered Species Fund check-off on the state income tax form and from sales of a specialty license plate. In 2006, more than $1.2 million was raised through the check-off.[39] In 2005, license plate sales raised more than $819,000 for Chesapeake Bay restoration projects.[40]

Conclusion

The foregoing is a sample of innovative sources of funding for RCW facilities or for similar environmental purposes. The Long-Term Funding Task-Force may wish to suggest any of them for further exploration by or for the Legislature and the Partnership for Puget Sound.

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[36] See generally http://www.cdfifund.gov/what_we_do/programs_id.asp?programID=5
[37] http://www.ct.gov/dep/cwp/view.asp?A=2705&Q=323536
[38] http://www.ct.gov/dep/cwp/view.asp?a=2705&q=323786&depNav_GID=1635
[39] http://www.cbtrust.org/site/c.enJIKQNoFiG/b.2028375/k.5BFC/Contribute_at_Tax_Time.htm
[40] http://www.bayplate.org/atf/cf/%7BBA3A79C4-5D59-49CC-878E-3B8B50C9515D%7D/Marylanders%20Support%20the%20Chesapeake%20and%20Purchase%20Plates.doc

Appendix A
Financing mechanisms in selected states

ARIZONA

Finance mechanisms

- **Federal Grants** (e.g. Federal Emergency Management Agency, Environmental Protection Agency, Army Corps of Engineers, Bureau of Reclamation, U.S. Fish and Wildlife Service, U.S. Department of Housing and Urban Development)
- **State Bond Issues Supporting Loans and Grants**
- **State Revolving Fund** (Arizona's Clean Water Revolving Fund)
- **Municipal Bond Issues Supporting Loans and Grants**
- **Direct Appropriations from State Funds** (e.g. Arizona Division of Emergency Management, Arizona Department of Transportation, Arizona Department of Environmental Quality, Arizona State Historic Preservation Office, Arizona Department of Water Resources, State Water Protection Fund, State General Fund)
- **Direct Appropriations from City General Fund**
- **Utility Fees and Charges, Developer Impact Fees**

Examples

Butler Drive Water Reclamation Facility (Peoria, AZ)
$121 million (including land acquisition)
State and municipal bonds (59%), developer impact fees (30%), pay-as-you-go capital (11%)
http://www.peoriaaz.com/BuildingPeoria/BP_UTIL_ButlerWRF.asp,
http://www.azwifa.gov/QuickLinks/2006CWIUP.pdf

Kearny Water Reclamation Facility (Kearny, AZ)
$2.6 million
Approval and funding from: Federal Emergency Management Agency, Arizona Division of Emergency Management, Arizona Department of Transportation, Arizona Department of Environmental Quality, Environmental Protection Agency, Army Corps of Engineers, Arizona State Historic Preservation Office, U.S. Fish and Wildlife Service, Arizona Department of Water Resources
http://www.rcegleberry.com/kearnywater.htm

CALIFORNIA

Finance mechanisms

- **Federal Grants** (e.g. Border Environmental Cooperation Commission)
- **State Bond Issues Supporting Loans and Grants** (e.g. through state's "Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Bond Act," state general

obligation bonds)

- **Municipal Bond Issues Supporting Loans and Grants** (e.g. Eastern Municipal Water District)
- **State Revolving Fund**
- **State Grant and Loan Programs** (e.g. Water Recycling Facilities Planning Grant Program, Water Recycling Loan Program, and Water Recycling Construction Program)
- **Low-interest Municipal Loans**
- **Utility Fees** (e.g. Los Angeles Water District's "Environmental Assessment Fee" on water users, Regional Sewage Program Funds)

Examples

Carbon Canyon Recycled Water Project (Regional Facilities)
$110 million
Federal and state grants, state low-interest loans, Metropolitan Water District Local Resources Program Rebates, Regional Sewage Program funds
www.scag.ca.gov/rcp/pdf/uwmp/SanBernardino/InlandEmpireUtilities2005UWMP.pdf

San Luis Obispo Water Treatment Plant (San Luis Obispo, CA)
$11.8 million
Grant and low-interest loan from City
http://www.sloreuse.org/history.html

COLORADO

Finance mechanisms

- **State Grants**
- **State Revolving Fund**
- **State Loans**
- **Utility Fees and Charges** (e.g. customer rates)
- **Private Capital** (e.g. fees from primary users where a project benefits a specific business)

Examples

Denver Water Recycling Plant (Commerce City, CO)
$154 million
Potable water customer rates
"Tap fee" from primary user, Xcel Energy's Cherokee Power Plant ($10 million)
http://72.14.253.104/search?q=cache:TK_L5DaRxqsJ:www.crgov.com/Files/TM6-Reclaimed%2520Water%2520Structure%2520and%2520Funding%2520Approaches.pdf+%22Denver+Water+Recycling+Plant%22+fund+cost&hl=en&ct=clnk&cd=4&gl=us&client=firefox-a (page 14)

Drake Water Reclamation Facility (Fort Collins, Colorado)
Anheuser-Busch (following agreement to have plant treat brewery wastewater)
Customer rates
http://www.ci.fort-collins.co.us/wastewater/history.php

J.D. Phillips Water Reclamation Facility (Colorado Springs, Colorado; u*nder construction*)
$65 million
Customer rates
http://findarticles.com/p/articles/mi_qn4191/is_20070708/ai_n19354259
http://www.rmwea.org/rmwea/committees/Joint/jtac_luncheon_schedule.htm

FLORIDA

Finance mechanisms

- **Federal Grants** (e.g. U.S. Environmental Protection Agency, Federal State and Tribal Assistance Grants)
  See www.oeconline.org/publications/reportsandstudies/or-untapped and
  http://sjr.state.fl.us/programs/waterprotectsustain.html
- **State Grants** (e.g. Florida Communities Trust, Florida Department of Environmental Protection, Water Supply Restoration, Water Protection and Sustainability Trust Fund, SFWMD Alternative Water Supply Grant Program)
  See www.oeconline.org/publications/reportsandstudies/or-untapped and
  http://sjr.state.fl.us/programs/waterprotectsustain.html
- **State Revolving Fund loan program**
- **Water Management District Grants** (e.g. South Florida Water Management District)
- **Utility Fees and Charges, Impact Fees**
- **Private Capital – Developer Contributions**

Examples	**Kanapaha Water Reclamation Facility** $14 million (original plant), plus $1.2 million (expansion) Federal grants (Regional Utilities Board (GRU's predecessor) and the Environmental Protection Agency (EPA)) http://www.gru.com/YourHome/ProductsServices/WaterWastewater/kanapahaHistory.jsp **City of West Palm Beach Wetlands-Based Water Reclamation Project** $37.7 million project Federal and state grants: U.S. Environmental Protection Agency ($10.8 million) Florida Communities Trust ($2 million) South Florida Water Management District ($1.32 million) Florida Department of Environmental Protection ($280,000) http://www.cityofwpb.com/News/downloads/06-11-06CityofW.P.B.Wetlands-BasedWaterReclamationProject.pdf

OREGON

Finance mechanisms

- **Federal Grants** (e.g. Bureau of Reclamation)
- **State Bonds** (e.g. general obligation bonds backed by tax revenues, revenue bonds backed by user fees, and "double-barrel bonds," backed by both tax revenues and user fees) See www.oeconline.org/publications/reportsandstudies/or-untapped, p. 28
- **State Revolving Fund**
- **Municipal General Funds** (e.g. Portland, Oregon's municipally operated water and wastewater utility)
- **Utility Fees and Charges**

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Examples	**Woodburn Treatment Plant's Wastewater Reuse Facility** (Woodburn, OR) http://www.nesc.wvu.edu/ndwc/articles/OT/WI05/reuse.pdf **Winston-Green Wastewater Treatment Plant Upgrade and Reuse Planning** (near Roseburg, OR) http://www.carollo.com/360/section.aspx/302

TEXAS

Finance mechanisms	• **Federal Grants** (e.g. U.S. Bureau of Reclamation, U.S. Economic Development Administration) • **State Bonds** (e.g. revenue and general obligation bonds) See www.gao.gov/cgi-bin/getrpt?GAO-02-134 and http://www.lib.utexas.edu/taro/tslac/30034/tsl-30034.html • **State Revolving Fund** (e.g. Texas Water Development Board's Clean Water State Revolving Fund) • **Utility Fees and Charges**
Examples	**San Antonio Water System's Water Reclamation Facilities** (El Paso): **Medio Creek, Leon Creek, and Dos Rios** Financed through State Revolving Fund See http://www.saws.org/our%5Fwater/recycling/centers/

Appendix B
Financing of Washington Projects

Place	Project	Finance mechanism	Amount	Remarks
Sequim*	RW '98 treatment plant	State Revolving Fund (SRF) loan	$5.3 million	
	RW distribution system and park features	Legislative appropriation for park demo	$3.4 million	
Sunland Clallam Co.	Irrigation water	SRF loan for design	$76,000	
		Public Works Trust Fund loan for Construction/engineering	$935,000	
North Bay/Case Inlet Mason Co.	Forest irrigation; aquifer recharge.	DOE $5,000,000 grant,$9,000,000 loan; USDA $3,740,000 grant $5,200,000 loan	$22 million	Debt service paid from residential sewer rates, development charges, and connection fees
LOTT Budd Inlet	Irrigation at parks/facilities; various other uses	Bonds	$2.8 million	Bonds repaid from residential rates
LOTT's Hawks Prairie satellite	Wetland ponds and ground water recharge	Customer hook up fees and existing monthly sewer rates	$30 million	
City of Yelm*	Seasonal urban landscape irrigation. Cochrane Memorial Park water features. Recharging ground water. Treatment plant	Centennial Clean Water Fund Grant (Legislative Appropriation) $3,398,500 US Department of Agriculture Rural Development Loan $3,857,000 US Department of	$9.6 million	Yelm adopted a local reclaimed water ordinance establishing the conditions of reclaimed water use. The ordinance

	equipment process water. Fire fighting. Street cleaning. Dust control. Power generation	Agriculture Rural Development Grant $344,449 Utility Local Improvement District $2,000,000 City Funds $30,901		includes a "mandatory use" clause allowing Yelm to require construction of reclaimed water distribution facilities as a condition of development approval. Yelm reclaimed water rates are approximately 80 percent of their drinking water rate
King County	Upgraded regional treatment plants to reclamation facilities	Regional funding system – with "fair" rate structure and a capacity charge.	$2.24 million: South Treatment Plant upgrade $300,000: West Point Treatment Plant	
City of Snoqualmie	Upgraded to a Class A reclamation plant	Fully funded by Weyerhauser Development Corporation (WEYCO)	$18 million	Charges for the reclaimed water at the same cost as drinking water supplies
Holmes Harbor Sewer District	Collection system and treatment facility	Holmes Harbor formed a ULID to finance the facility through sewer revenue bonds and property assessments.	$3.7 million	
City of Ephrata	Facility produces Class	Centennial Clean Water Fund grant and a Clean	$6.8 million	

	A reclaimed water	Water State Revolving Fund loan.		
City of Royal City	Construction of a Class A reclamation facility	US Department of Agriculture Rural Development Grant $1.8 million US Department of Agriculture Rural Development Loan $640,000 Centennial Clean Water Fund Grant $985,000 Community Development Block Grant $750,000 Clean Water State Revolving Fund Loan $245,525 City Funds $79,585	$3.7 million	Royal City used a Clean Water State Revolving Fund loan of $73,845 for planning
City of Quincy and Earth Tech	To upgrade two plants, Quincy leveraged city finances by taking advantage of the design-build option offered under Washington's Water Quality Joint Development Act (Ch. 173.240 RCW)	A USDA Rural Development loan for $2.7 million provided some of the costs of the upgrade. Quincy further reduced debt by refinancing loans at a lower interest rate through the Clean Water State Revolving Fund loan in 2001 for the amount of $2.5 million.	$5.90 million	
City of Walla Walla and Operations Management	Upgraded treatment facility to meet the state's Class A	Financing: Public Works Trust Fund $5,159,197	$33.1 million total (Phase 1	Connection fees are paid by the developer and assessed per

International	reclaimed water standards		$20 m, Phase 2 $6.1 m, Phase 3 $7 m)	foot of pipe.
City of College Place	Constructed an advanced wastewater treatment facility that meets Class C reclaimed water quality requirements.	$210,000 low interest loan to enhance the watershed. Financial Assistance amount Public Works Trust Fund Loan - $7 million Centennial Clean Water Fund Grant- $2.5 million Clean Water State Revolving Fund Loan - $5.6 million	$16.4 million	
City of Medical Lake	Upgraded two wastewater treatment facilities and an aging lagoon system	Public Works Trust Fund Design Loan - $96,000 Centennial Clean Water Fund Grant - $2.5 million Public Works Trust Fund - $1.5 million Capital Improvement Fund from City - $1.0 m DSHS - $9.0 million	$14 million	Residential Sewer Rates: Monthly Rate $30.00 Connection Fee $1,250
City of Cheney	Construction of a Class D treatment plant.	Centennial Clean Water Fund Grant - $3.0 million US EPA Innovative and Alternative Treatment Grant - $6.0 million Public Works Trust Fund Loan - $4.0 million USDA Rural Development Loan, (Later Refinanced with Clean Water State	$13-$15.7 million	

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		Revolving Loan) - $2.7 million		

*one of four small community demonstration projects.

Appendix B

Survey of Water Reclamation Needs

Appendix B – Survey of Water Reclamation Needs

Appendix B: Survey of Water Reclamation Needs (Conducted in September and October 2007)

Facility Name and Type	Total Wastewater Project Cost Estimate (Million $)	Estimated Cost to meet Reclaimed Water Stds. (Million $)	Design Capacity in Million Gallons per Day (MGD)	Estimated Year Finish Construction	Ownership
Presently at the Feasibility Assessment and Facilities Planning Stage (Estimated costs VERY likely to escalate) **Please Note: This survey shows a "low-side" estimate for water reclamation construction for municipal needs.**					
Bothell, City of: bus parks, irrig. + industrial reuse (no const. cost estimate)	$0.19	$0.19		2008	Municipal
Coupeville, City of: Class A w/ irrig. (no const. cost estimate)	$0.17	$0.17	0.5	2008	Municipal
Penn Cove WSD: Class A irrig. (no const. cost estimate)	$0.05	$0.05	0.0	2008	Municipal
Stanwood, City of: instream Q augmentation & Gw recharge (no const. cost estimate)	$0.18	$0.18		2008	Municipal
Bremerton, Port of: SEED business park (no const. cost estimate)	$0.25	$0.25		2008	Municipal
Freeland Water Dist. (Whidby Isl.)MBR & irrigation	$14.78	$3.00	0.7	2009	Municipal
Holmes Harbor Sewer Dist. Capacity expansion + dist.	$2.00	$0.40	0.10 Xp 0.2	2009	Municipal
Kitsap Co. - Kingston (no const. cost estimate)	$0.25	$0.25		2009	Municipal
Medical Lake, City of: Streamflow augment Expand irrig. use	$14.00	$2.00	1.9	2009	Municipal
Silverdale WD Class A W. Dyes Inlet (no const. cost estimate)	$0.25	$0.25		2009	Municipal
Tacoma, City of (no const. cost estimate)	$0.25	$0.25		2009	Municipal
Dosewallips State Park/Brinnon TP	$2.00	$0.40	0.0	2009	State
Fort Flagler State Park	$2.00	$0.40	0.0	2009	State
Kopachuck St. Park: MBR + toilet + irrig	$2.00	$0.40		2009	State
Shelton, City of Satellite Plant, Phase 1	$15.00	$3.00	0.4 Xp 0.8	2009	Municipal
WSU golf course/Pullman	$13.00	$2.60	1.3	2009	State
College Place, City of: Existing Class C augments Garrison Ck new use for poplars but impairment issues	$20.00	$4.00	1.7	2010	Municipal
Ephrata, City of – Addn use + water right	$1.00	$1.00	1.2	2010	Municipal

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Facility Name and Type	Total Wastewater Project Cost Estimate (Million $)	Estimated Cost to meet Reclaimed Water Stds. (Million $)	Design Capacity in Million Gallons per Day (MGD)	Estimated Year Finish Construction	Ownership
Ephrata, City of – Addn use + water right	$1.00	$1.00	1.2	2010	Municipal
Hoodsport	$7.50	$1.50	~0.05	2010	Municipal
King County – South Plant – irrig need new uses	$2.24	$2.24	1.3	2010	Municipal
Lacey, City of: instream aug. + GW	$2.74	$2.74		2010	Municipal
Orting, City of: Class A w/instream Q + school & park irrig.	$0.25	$0.25	3.4	2010	Municipal
Sultan, City of - MBR	$4.00	$0.80		2010	Municipal
Sunland Sewer Dist.: SBR + new golf course irrig.	$1.10	$0.90	0.2	2010	Municipal
Cedar Ck Corrections: MBR +toilet + irrig or GW recharge	$3.00	$0.60		2010	State
Irondale/Port Hadlock County TP, Phase 1	$33.70	$6.70	0.25 Xp 1.0	2010	Municipal
Mission Ck Corrections: MBR +toilet + irrig (large onsite alt)	$3.00	$0.60		2010	State
Park Junction: Golf course irrign	$2.70	$0.50	0.2	2010	Private
Pleasant Harbor Marina and Gulf Resort TP	$2.00	$0.40	0.1	2010	Private
SEH America	$2.00	$0.40	1.2	2010	Private
Potlatch	$7.50	$1.50	~0.05	2010	Tribal
Burlington, City of: park irrig	$3.00	$0.60		2011	Municipal
Covington, City of: Satellite Plant + golf irrig +sports park	$10.00	$2.00		2011	Municipal
Granite Falls, City of: Irrigation	$5.80	$1.20		2011	Municipal
Lakehaven Utility Dist Groundwater recharge Oasis ASR project	$20.00	$4.00		2011	Municipal
Liberty Lake, City of: WSD Reuse dist.	$7.20	$1.44	1.0	2011	Municipal
Pierce County	$60.00	$12.00		2011	Municipal
Quincy, City of - Additional dist for landscape irrig + yahoo server facility	$1.00	$1.00	1.5	2011	Municipal
Royal City, City of –Additional dist. for parks, toilets, & industrial use	$1.00	$1.00	0.3	2011	Municipal
Sedro Wooley, City of: dist. designed	$25.00	$5.00		2011	Municipal

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Facility Name and Type	Total Wastewater Project Cost Estimate (Million $)	Estimated Cost to meet Reclaimed Water Stds. (Million $)	Design Capacity in Million Gallons per Day (MGD)	Estimated Year Finish Construction	Ownership
Snoqualmie, City of – Expand capacity & storage for addn development	$3.00	$3.00	2.1	2011	Municipal
Tenino, City of: collection & treatment [ab]	$30.00	$6.00		2011	Municipal
Evergreen Valley ASR + land app.	$2.00	$0.40	<1	2011	Private
Carlsborg, City of: (lack of water rights)	$20.00	$4.00		2012	Municipal
Connell, City of - Tullamoor land appl.	$12.00	$2.40	0.4	2012	Municipal
Duvall, Town of – MBR looking for uses	$0.71	$0.71		2012	Municipal
Skagit Co Sewer #2 (Big Lake): MBR to replace river discharge & upland recharge	$3.34	$0.67		2012	Municipal
Spokane County: TMDL driver Irrig parks, fair grounds, golf, wetland	$150.00	$30.00	8.0	2012	Municipal
Spokane, City of: TMDL driverReuse potential	$160.00	$32.00	56.0	2012	Municipal
Skokomish Tribe	$7.50	$1.50	~0.05	2012	Tribal
Approximate backlog needs for FY 2012:	**$680.65**	**$146.84**			
Birch Bay County W&SD: Dist. for industrial reuse	$3.00	$0.60	1.0	2014	Municipal
Approximate backlog needs for FY 2014:	**$683.65**	**$147.44**			
Clinton WD Option 4 WWTP	$0.20	$0.04		2015	Municipal
King County – West Point – New uses + dist.	$5.00	$5.00	0.7	2015	Municipal
LOTT Alliance: 2nd Satellite Plant	$42.40	$42.40	1.0	2015	Municipal
Cascadia (Orting) new develop.	$3.00	$0.60		2015	Private
Approximate backlog needs for FY 2015:	**$734.25**	**$195.48**			
Sequim, City of: addn. capacity + new distribution	$9.76	$3.00	2.2	2020	Municipal
LOTT Alliance: Budd Inlet Plant Reclaimed Water Expansion	$52.00	$52.00	3.0	2022	Municipal
LOTT Alliance: Expansion to 1st Satellite Plant	$16.00	$16.00	3.0	2023	Municipal
Shelton, City of Satellite Plant, Phase 2 *(portion of $3.0M from Phase 1)*	$15.00		0.4 Xp 0.8	2023	Municipal

Appendix B: Survey of Water Reclamation Needs (Conducted in September and October 2007)

Facility Name and Type	Total Wastewater Project Cost Estimate (Million $)	Estimated Cost to meet Reclaimed Water Stds. (Million $)	Design Capacity in Million Gallons per Day (MGD)	Estimated Year Finish Construction	Ownership
Irondale/Port Hadlock County TP, Phase 4 *(portion of $6.7M from Phase 1)*	$33.70		0.25 Xp 1.0	2026	Municipal
Total project costs (feasibility assessments and facilities planning)	**$860.71**	**$266.48**			
Design Phase (Estimated construction costs are likely to escalate)					
Cheney, City of – const. wetlands Upgrade to Cl A +park, school, EWU irrig	$10.10	$5.00	2.2	2008	Municipal
Tukwila, City of: golf course irrig	$0.24	$0.24		2008	Municipal
Walla Walla, City of: Upgrade to Class A (irrig. crops since 1927) Direct recharge to Mill Creek	$37.10	$7.40	9.6 (5.7 reclaimed)	2008	Municipal
King Co. (Carnation): Wetland enhancement	$12.80	$0.80	1.3	2009	Municipal
Lake Stevens Sewer Dist: MBR uses not identified	$60.00	$2.00		2009	Municipal
Sequim, City of: upgrade conv. Aeration w/MLE + new disinfection	$14.80	$5.00	1.8	2009	Municipal
Warden, City of: Infiltration basin	$8.50	$1.70	0.4	2009	Municipal
Airway Heights, City of: plant + GW recharge + ASR + reuse	$36.30	$7.30	2.0	2010	Municipal
Blaine, City of: MBR Some dist. Installed; hotel +golf course + park	$38.45	$7.70	3.0	2010	Municipal
Karcher Ck. SD (Port Orchard) MBR distribution pre-design irrig. + stream aug.	$21.50	$4.30		2010	Municipal
Alderwood WWD upgrade	$31.00	$6.20		2011	Municipal
King Co. (Brightwater): Dist pipeline to north King + Snohomish	$280.00	$39.00	5.0	2011	Municipal
Arlington, City of: Stillaguamish TMDL is driver – wetlands or irrig	$37.10	$4.70	3.4	2012	Municipal
Belfair, City of : MBR + irrig. Class A	$24.60	$5.00	0.4	2012	Municipal

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Facility Name and Type	Total Wastewater Project Cost Estimate (Million $)	Estimated Cost to meet Reclaimed Water Stds. (Million $)	Design Capacity in Million Gallons per Day (MGD)	Estimated Year Finish Construction	Ownership
Buckley, City of: Park & cemetery irrg	$5.00	$1.00	0.5	2012	Municipal
Sumner, City of: Irrig park, golf, landsp	$6.00	$1.20	3 Xp 6	2012	Municipal
Approximate backlog needs for design in FY 2012:	**$623.49**	**$98.54**			
Approximate TOTAL backlog needs for FY 2012:	**$1,304.15**	**$245.39**			
Approximate TOTAL backlog needs for FY 2016:	**$1,357.74**	**$294.02**			
Total project costs (2008-2026)	**$1,484.20**	**$365.02**			

* In cases where a breakdown of the reclaimed water incremental costs beyond necessary discharge requirements are unknown, a 20% multiplier was applied to the cost of wastewater treatment alone.

*Xp, Expands to

Appendix C

Taxes and Potential Funding Sources

Appendix C – Taxes and Potential Funding Sources

for the
Construction of Reclaimed Water Facilities
Legislation & Policy Division
Department of Revenue

Introduction - Role of the Department of Revenue

Section 10 of E2SSB 6117 (chapter 445, Laws of 2007) directs the Department of Ecology to establish the Long-Term Funding Subtask force. The funding subtask force has been tasked with preparing a report for the Legislature making recommendations for a long-term dedicated funding program to construct reclaimed water facilities.

For purposes of assisting with identifying and evaluating various long-term funding options, the funding subtask force asked the Department of Revenue to serve as a resource on taxes.

During its August meeting, the funding subtask force brainstormed various ideas for long-term funding. Together, staff from the Departments of Ecology and Revenue have reviewed these ideas that relate to the imposition of taxes and narrowed the list to those ideas that are realistic candidates as a long-term funding source.

This paper:

- Discusses criteria to consider in evaluating the ideas;
- Explains each idea;
- Provides the revenue impact for each idea;
- Identifies advantages and disadvantages associated with each idea; and
- Identifies and explains why various other tax ideas or options were eliminated.

Evaluation criteria for potential revenue sources

Over time, economists and tax administrators have come to recognize various principles that are associated with sound tax policy. The following principles of sound tax policy should be considered when evaluating funding ideas to increase a current tax rate or impose a new tax:

- Adequacy;
- Simplicity;
- Equity and fairness; and
- Economic neutrality.

Adequacy is the ability to raise sufficient revenue to cover costs. Adequacy requires that the amount of revenue collected over time be relatively constant, predictable, and capable of producing the desired revenue.

Simplicity requires that a tax be easy to understand and economical for both taxpayers and state government to administer. The greater the complexity, the greater the burden is on both

taxpayers who must comply with the tax and the agency that administers the tax. Taxpayers will spend more time and money to determine reporting obligations and how to reduce the tax burden. The administering agency will require additional resources for administration, such as increased staff, enforcement, collection, and potential litigation.

Equity and fairness includes the elements of horizontal equity, vertical equity, and benefits received. Horizontal equity requires that similarly situated taxpayers receive the same treatment. Vertical equity is a person's ability to pay the tax and is related to whether a tax is progressive or regressive, or proportional. The concept of benefits received is that the taxes paid by a taxpayer are matched by the benefits that the taxpayer receives. This concept is generally associated with the idea that there is a link between the imposition of a tax and the program or activities that are funded by the tax.

Economic neutrality means that market conditions and economic efficiency dictate business decisions rather than tax law. In other words, economic neutrality prevents behavior distortion by individuals and businesses. A tax that is broad-based with a low tax rate helps to achieve economic neutrality. A broad-based tax is one that has few exemptions, deductions, and credits.

Ideas, estimates, and advantages/disadvantages

The Department of Revenue has provided its assistance with identifying funding ideas and preparing revenue estimates. It must be understood, however, that the Department of Revenue does not endorse any of these ideas. The Department reserves its right to determine the position, if any, it will take if any of these ideas are introduced for legislative consideration.

Ideas proposed for funding reclaimed water facilities focused on three areas: taxes imposed at the distributor/wholesaler level, public utility taxes, and retail sales taxes.

Taxes at the wholesale level. A tax at the wholesale level can be structured as a tax on persons first possessing the specific product in this state or it can be structured as a tax on wholesale sales with a credit for previously taxed product so that the tax is imposed only once.

- **Bottled Water.** A tax imposed on wholesalers of bottled water would be imposed on a per ounce basis. For example, at a tax rate of 0.001113 cents per ounce, the tax on a 20 ounce bottle of water would equal two cents.

Bottled Water	Tax Rate Per Ounce	FY 2009	FY 2010	FY 2011
	0.001113	$25,000,000	$26,000,000	$27,000,000
	0.002227	$50,000,000	$52,000,000	$54,000,000
	0.003340	$75,000,000	$78,000,000	$81,000,000
	0.004454	$100,000,000	$103,900,000	$108,000,000

- **Canned and bottled carbonated beverages.** A tax imposed on wholesalers of canned and bottled carbonated beverage would be imposed on a per ounce basis. For example, at a tax rate of 0.000552 cents per ounce, the tax on a 2 liter bottle of pop would equal four cents.

Canned & Bottled Carbonated Beverages	Tax Rate Per Ounce	FY 2009	FY 2010	FY 2011
	0.000552	$25,000,000	$26,000,000	$27,000,000
	0.001105	$50,000,000	$57,100,000	$59,300,000
	0.001657	$75,000,000	$77,900,000	$80,900,000
	0.002209	$100,000,000	$103,900,000	$108,000,000

- **Beer.** Brewers and distributors are currently subject to the beer excise tax, which is imposed for the privilege of manufacturing or selling beer in Washington. The tax is administered by the Liquor Control Board. A revenue estimate for an increase in the beer excise tax should be obtained from the Liquor Control Board.

- **Toilet and tissue paper.** A tax imposed on wholesalers of toilet and tissue paper would be based on the wholesale value of the products. A specific disadvantage with this funding idea is that a nominal tax rate will not generate a significant amount of revenue.

Toilet and Tissue Paper	Tax Rate	FY 2009	FY 2010	FY 2011
	12%	$24,290,000	$25,020,000	$25,800,000
	24%	$48,570,000	$50,030,000	$51,500,000
	36%	$72,860,000	$75,050,000	$77,300,000
	49%	$99,170,000	$102,150,000	$105,200,000

- **Detergents.** A tax imposed on wholesalers of detergents would be based on the wholesale value of the products. A specific disadvantage with this funding idea is that a nominal tax rate will not generate a significant amount of revenue.

Detergents	Tax Rate	FY 2009	FY 2010	FY 2011
	22%	$25,580,000	$26,340,000	$27,100,000
	44%	$49,990,000	$54,490,000	$53,000,000
	64%	$74,410,000	$76,640,000	$79,000,000
	86%	$99,980,000	$102,980,000	$106,100,000

- **Over-the-Counter Drugs.** A tax imposed on wholesalers of over-the-counter drugs would be based on the wholesale value of the products. A specific disadvantage with this funding idea is that a nominal tax rate will not generate a significant amount of revenue.

Over the Counter Drugs	Tax Rate	FY 2009	FY 2010	FY 2011
	4%	$25,000,000	$27,500,000	$30,300,000
	9%	$50,000,000	$55,000,000	$60,500,000
	14%	$75,000,000	$82,500,000	$90,800,000
	18%	$100,000,000	$110,000,000	$121,000,000

- **Prescription Drugs.** A tax imposed on wholesalers of prescription drugs would be based on the wholesale value of the products. A specific disadvantage with this funding idea is that a nominal tax rate will not generate a significant amount of revenue.

Prescription Drugs	Tax Rate	FY 2009	FY 2010	FY 2011
	1.4%	$25,000,000	$27,500,000	$30,300,000
	2.7%	$50,000,000	$55,000,000	$60,500,000
	4.0%	$75,000,000	$82,500,000	$90,800,000
	5.2%	$100,000,000	$110,000,000	$121,000,000

Advantages	Disadvantages
• An administrative framework exists from Department's administration of similar past taxes.	• Taxes imposed at the wholesale level may not be sufficient to fund program at higher levels. • To address potential commerce clause concerns, credit must be allowed for similar taxes paid in another state. Even so, there is a concern that these taxes may discriminate against interstate commerce because few states impose such taxes. • Narrow tax base, which can make the tax volatile. • Imposes additional tax reporting burden on businesses. • Would require mandatory e-file because there is insufficient space to add reporting line(s) to the Combined Excise Tax Return. • Potential that tax may be viewed as punishing industries that use large amounts of water. • Potential that a tax on the first possession of an article could be challenged in court as a non-uniform property tax. • A tax at the wholesale level is not transparent to the consumer, who ultimately bears the burden of the tax.

Public Utility Tax. Under current law, gross income derived from the distribution of water and the collection of sewerage is subject to the state public utility tax (PUT). The public utility tax is imposed in lieu of the business and occupation (B&O) tax. Like the B&O tax, the PUT is imposed on the seller of the service. The PUT generally does not pyramid, which is a basic feature of the B&O tax. Consumers often view the PUT as being similarly to the sales tax because the tax is often itemized on utility bills.

Currently, the public utility tax rate imposed on sewerage collection activities is 3.852 percent while the rate imposed on water distribution activities is 5.029 percent. The difference in tax rates for the two activities is the result of changes that occurred during 1985. At that time, sewerage collection activities were taxable under the B&O tax rather than the public utility tax. The activities were subject to the service and other activities B&O tax classification at a rate of 1.5 percent. At the same time, water distribution activities were taxable under the public utility tax at a rate of 3.852 percent.

Beginning July 1, 1985, ESSB 4228 (chapter 471, Laws of 1985) increased the public utility tax rate for water distribution activities to 5.029 percent. The same legislation made sewerage

collection activities taxable under the public utility tax at a rate of 3.852 percent. Thus, the tax rate imposed on sewerage collection activities more than doubled.
Under the 1985 legislation, income from sewerage-related activities, such as interception, transfer, treatment, and disposal, remained subject to the service and other activities B&O tax classification at a rate of 1.5 percent. Thus, persons who provide both sewerage collection and sewerage-related services (e.g., sewerage treatment) must segregate the income attributable to each activity.

The same 1985 legislation established the public works assistance account and directed that certain revenue streams would be dedicated to the account "to make loans and to give financial guarantees to local governments for public works projects." To this day, 20 percent of the moneys collected under the water distribution classification and 60 percent of the moneys collected under the sewerage collection classification are deposited to the public works assistance account.

Current law allows cities to impose a municipal tax on utility services. Such local utility taxes are administered by the city that imposes the tax. A 2006 survey by the Association of Washington Cities indicates that 159 cities impose a tax on water distribution activities with the average rate being 8.29 percent. The same survey also indicates that 148 cities impose a tax on sewer utility activities with the average rate being 8.19 percent.

- **Tax sewerage-related services the same as sewerage collection activities.** This funding idea would make those sewerage-related activities that are currently subject to the service and other activities B&O tax classification at a rate of 1.5 percent taxable under the public utility tax at a rate of 3.852 percent. Sewerage-related services include sewerage interception, treatment, or disposal services.

Tax Sewerage-Related Activities under the Public Utility Tax at the 3.852 percent rate*	FY 2009	FY 2010	FY 2011
Current B&O Tax Rate is 1.5%			
	$10,600,000	$11.400,000	$12,200,000

*Revenue estimate does not reflect amounts transferred to the public work assistance account.

Advantages	Disadvantages
• Simplifies the taxation of sewerage-related and sewerage collection activities by eliminating the current bifurcation. • Increases revenue dedicated to the public works assistance account. • Continues ability of public sewerage utilities that contract to receive sewerage collection and/or sewerage-related services from other public sewerage utilities to deduct amounts paid for services.	• Eliminates use of RCW 82.04.4291, which allows a city, county, or town that provides sewerage-related services to another city, county, or town to deduct the income received for providing those services. The public utility tax does not provide a comparable deduction. Thus income that is not taxable under current B&O tax law would become taxable under the public utility tax. This could be mitigated by providing a comparable public utility tax deduction.

- **Increase the state PUT on sewerage collection activities and dedicate the increase to fund reclaimed water facilities.** A specific disadvantage with this funding idea is that a nominal rate increase will not generate a significant amount of revenue.

Increase Tax Rate on Sewerage Collection Activities* **Current Rate is 3.852%**	FY 2009 Additional Revenue	New Tax Rate
	$2,000,000	4.744%
	$5,000,000	6.084%
	$10,000,000	8.318%
	$15,000,000	10.551%
	$20,000,000	12.785%
	$25,000,000	15.018%
	$50,000,000	26.185%
	$75,000,000	37.352%
	$100,000,000	48.518%

*Revenue estimate does not reflect amounts transferred to the public work assistance account.

- **Dedicate percentage of current sewerage collection PUT to reclaimed water facilities.** Sixty percent of the moneys collected from the sewerage collection PUT are already deposited to the public works assistance account. The remaining moneys are deposited to the general fund.

Dedicate Portion of Current Tax on Sewerage Collection* **Current Collections are $8.6 million**	FY 2009 Dedicated Percent	Dedicated Amount
	5%	$431,100
	10%	$862,200
	15%	$1,293,300
	20%	$1,724,300
	25%	$2,155,400
	30%	$2,586,500

*Revenue estimate does not reflect amounts transferred to the public work assistance account.

- **Increase the state public utility tax rate on water distribution activities and dedicate the increase to fund reclaimed water facilities.** A specific disadvantage with this funding idea is that a nominal rate increase will not generate a significant amount of revenue.

Increase Tax Rate on Water Distribution Activities* **Current Rate is 5.029%**	FY 2009 Additional Revenue	New Rate
	$2,000,000	5.301%
	$5,000,000	5.715%
	$10,000,000	6.404%
	$15,000,000	7.093%
	$20,000,000	7.782%
	$25,000,000	8.472%
	$50,000,000	11.918%
	$75,000,000	15.364%
	$100,000,000	18.810%

*Revenue estimate does not reflect amounts transferred to the public work assistance account.

- **Dedicate percentage of current water distribution PUT to program.** Twenty percent of the moneys collected from the water distribution PUT are already deposited to the public works assistance account. The remaining moneys are deposited to the general fund.

Dedicate Portion of Current Tax on Water Distribution Activities* Current Collections are $36.5 million	FY 2009 Dedicated Percent	Dedicated Amount
	5%	$1,822,800
	10%	$3,645,500
	15%	$5,468,300
	20%	$7,291,000
	25%	$9,113,800
	30%	$10,936,500

*Revenue estimate does not reflect amounts transferred to the public work assistance account.

Advantages	Disadvantages
• The public utility tax is an existing tax and would not impose additional administrative burdens on taxpayers. • Any increase in the administrative burden on the Department of Revenue would be nominal. • Almost everyone who uses water and contributes to the wastewater problem pays. • Stable funding source.	• Water and sewerage collection services are necessary household expenditures. • The public utility tax is regressive in nature because it disproportionately affects low-income households.

Retail sales and use tax. Washington's retail sales tax is imposed on sales to consumers of most articles of tangible personal property. Consumers are generally the end users of the tangible personal property. For example, a reclaimed water facility that purchases nuts and bolts from the local hardware store is a consumer of those nuts and bolts.

Sales tax also applies to services that are specifically defined as retail sales. For the purposes of this conversation, a sale of retail services includes the sale of or charge made for labor and services rendered in respect to the following activities:

- Installing, repairing, cleaning, altering, imprinting, or improving of tangible personal property of or for consumers.
- Constructing, repairing, decorating, or improving of new or existing buildings or other structures under, upon, or above real property of or for consumers. This also includes the installation or attachment of any article of tangible personal property, land clearing, or earth moving.

For example, a reclaimed water facility is a consumer of a retail service if the facility contracts to have its parking lot repaved.

Use tax complements the retail sales tax because the tax applies, at the same rate as the sales tax, to the value of most tangible personal property and some services when used in this state, if retail sales taxes were not collected when user acquired the property or services. For example, a

reclaimed water facility owes use tax if the facility purchases nut and bolts from an out-of-state seller that is not required to collect Washington's sales tax.

The state, most cities, and all counties impose the retail sales and use taxes. The state tax rate is 6.5 percent. Depending on the location of sale, local tax rates vary from 0.5 percent to 2.4 percent. The average local tax rate is 2.0 percent, for an average combined state and local tax rate of 8.5 percent.

Business and occupation (B&O) tax. The B&O tax is imposed on all persons who engage in taxable business activities in this state. The tax rates and classifications are determined by law. For example, the income derived from sales that are defined as sales at retail are subject to the retailing classification at a rate of 0.471 percent. Professional services and activities that are not otherwise classified are subject to the service and other activities B&O tax at a rate of 1.5 percent.

Tax the construction of reclaimed water facilities the same as public road construction. This proposal does not provide a revenue source for reclaimed water facilities. Rather, it reduces the cost of constructing or otherwise improving the facilities.

The definition of a retail sale specifically excludes the construction of public roads other than for the state of Washington. A person who performs public road construction activities is subject to the public road construction B&O tax at a rate of 0.484 percent. Under the law, a public road contractor is a consumer of all tangible personal property that becomes a component or ingredient of the public road. As a consumer, a public road contractor must pay retail sales tax when purchasing the property or use tax if the property is acquired without sales tax. When billing for public road construction activities, the contractor builds the cost of the property into the contract, but does not collect sales tax. This is true regardless of whether the contractor is the prime contractor or a subcontractor. The effect of taxing public road construction activities in this manner is that the materials are subject to sales tax while the labor is not.

Tax construction of reclaimed water facilities the same as public road construction activities	FY 2009	FY 2010	FY 2011	FY 2012
Sales tax savings on labor (represented as a decrease to the general fund)	(263,900)	(484,120)	(497,120)	(710,840)
Increase in B&O Tax	15,608	17,472	46,488	28,075

Advantages	Disadvantages
• Reduces the cost of construction. • Any increase in the administrative burden on the Department of Revenue would be nominal. • Difference between the retailing and public road construction B&O tax rates results in a slight offset of the revenue loss from sales tax.	• Does not provide a funding source for constructing reclaimed water facilities. • Potential difficulties with determining where water pollution control facilities end and wastewater treatment facilities begin.

- **Tax the construction of water pollution control facilities the same as public road construction.** If taxing the construction of reclaimed water facilities the same as public road construction activities are taxed is a desirable option, consideration should be given to extending the same tax treatment to the construction of water pollution control facilities. Doing so would provide consistency and simplicity.

  The estimate below does not reflect the potential use of the retail sales and use tax exemptions for manufacturing machinery and equipment. RCW 82.08.02565 provides a retail sales tax exemption for sales to a manufacturer or processor for hire of machinery and equipment used directly in a manufacturing operation. RCW 82.12.02565 provides a comparable use tax exemption. A sewerage collection business that processes sludge into class EQ biosolids and composts for sale is a manufacturer. The purchase of some machinery and equipment used to produce these products may be exempt from retail sales and use tax. Data used by the Department in preparing the estimate did not indicate which, if any, future projects might produce these products.

Tax construction of water pollution control facilities the same as public road construction activities	FY 2009	FY 2010	FY 2011	FY 2012
Sales tax savings on labor (represented as a decrease to the general fund)	(1,951,040)	(2,184,000)	(5,811,000)	(3,509,350)
Increase in B&O Tax	19,510	21,840	58,110	35,094

- **Divert retail sales and use tax paid on tangible personal property and/or the retailing and service B&O taxes to a dedicated fund for the construction of reclaimed water facilities. This is consistent with the current diversion of retail sales and use tax for the construction of water pollution control facilities.** RCW 82.32.390 requires the transfer into the water quality account all state sales and use tax moneys received from the sale or use of tangible personal property to or by a consumer that becomes an ingredient or component of new or existing water pollution control facilities. Amounts currently being diverted from the general fund to the water quality account have greatly lessened over time.

Advantages	Disadvantages
• Allows a portion of the sales and use tax revenue attributable to wastewater treatment facilities to continue to be used to fund the program.	• The diverted sales and use tax moneys are not a stable source of revenue because they depend on the level of funding for the facilities. • Potential difficulties with determining where water pollution control facilities end and wastewater treatment facilities begin. • Administration of the diversion of funds is burdensome.

The Department is reviewing the joint administration of RCW 82.32.390 by the Departments of Revenue and Ecology. The purpose is to determining if the statute is being administered in a manner that is consistent with the state's retail sales and use tax laws. Regardless, the Department has concluded that the current administration is

burdensome and believes that RCW 82.32.390 could be amended to reduce the administrative burden.

Incentives for the use of reclaimed water

Members of the Long-Term Funding Subtask force have asked about providing financial incentives to encourage the use of reclaimed water. The funding subtask force specifically suggested providing a retail sales and use tax exemption for people making the infrastructure changes necessary to allow the use of reclaimed water.

Further discussion is necessary before determining whether it is advisable to provide a retail sales and use tax exemption for infrastructure by potential users of reclaimed water. While it sounds conceptually easy, serious issues must be considered. The Department of Revenue would have concerns about the ability to audit to ensure that only infrastructure for the use of reclaimed water was exempted by the seller. Also, if local governments were able to claim the exemption, the Department would have concerns about the State's ability to collect retail sales and use tax from contractors working on construction projects for the federal government. The state indirectly taxes the federal government on materials incorporated in federal government construction contracts. A contractor who installs or incorporates the materials is considered the consumer and pays sales tax (or use tax) when purchasing or acquiring the materials. The state's current method of taxing federal government contracting activities may be at risk if a local government were able to claim an exemption for infrastructure. This is because a tax exemption for reclaimed water infrastructure would result in a more favorable tax treatment for local governments than for the federal government.

The distribution of reclaimed water is an activity subject to the water distribution classification of the public utility tax. Another incentive for the use of reclaimed water would be to provide a public utility tax exemption for the distribution of reclaimed water. The distribution activity could be exempt from the tax for a stipulated period, such as 10, 15, 20 years or until the use of reclaimed water reaches a predetermined level. This incentive would have a limited revenue impact on the state public utility tax and local utility taxes imposed by municipalities because of the current limited distribution and use of reclaimed water.

Ideas eliminated

Several ideas brainstormed by the Funding subtask force were eliminated:

- ***Additional sales taxes on specific products.*** The state of Washington has been working to achieve full conformity with the Streamlined Sales and Use Tax Agreement (the Agreement), which provides for a simpler and more uniform sales tax system across the nation. SSB 5089 (chapter 6, Laws of 2007) allows the state to fully conform to the Agreement.

  One aspect of the Agreement requires states that impose sales and use tax to use a single state rate, with certain exceptions not relevant for this discussion. The state would not be in compliance with the Agreement if specific products, such as toilet paper, golf balls, or other items were subject to an increased rate of retail sales or use tax.

- ***Taxes on tribal casinos.*** Under federal law, states are preempted from imposing taxes on Indians, Indian business activities, and Indian tribes in Indian Country. This includes gaming by Indian tribes, which is regulated by the federal Indian Gaming Regulatory Act. In addition, states are preempted from imposing tax on nonmembers who operate or manage Indian gaming operations.

- ***Income tax.*** Article VII, section 1 of the State Constitution provides that all taxes must be uniform on the same class of property. The Washington State Legislature and Washington voters have considered income tax proposals in the past. In 1933, the Washington State Supreme Court (*Culliton v. Chase*, 174 Wash. 363, 289 P.2d 81 (1933)) overturned a graduated state income tax that was approved the year before by initiative. The tax was overturned on the basis that income is property, and a graduated income tax violates the uniformity provisions of Article VII, section 1 of the State Constitution. Other income tax proposals have been submitted to the voters over the years, but were disapproved by large majorities.

- ***Motor vehicle fuel and special fuel taxes.*** The 18th Amendment to the State Constitution requires all excise taxes collected by the state on the sale, distribution, or use of motor vehicle fuel to be used exclusively for highway purposes.

- ***Property tax on unused purple pipe.*** Purple pipe that has been installed is currently subject to property tax as real or personal property, if not owned by a public agency. Pipe is considered an improvement to real property and is taxed as such if ownership of the pipe and the underlying real property are vested in the same person. The pipe is considered personal property if ownership vests in someone other than the owner of the real property.

  Article VII, section 1 of the State Constitution provides that all taxes must be uniform on the same class of property within the taxing district. Real property is one class of property while personal property is another. Taxing real property differently based on the absence or presence of purple pipe is not authorized under the State Constitution.

- ***Impose a new tax on rounds of golf based on a specific dollar amount per round.***

- ***Impose a tax at the distributor and wholesaler level on golf balls and/or other golf equipment.*** The funding subtask force determined that it would be counter-productive to impose a tax on the golfing population when it is hoped that golf courses will become consumers of reclaimed water.

Chapter 4

Report on Implementation in Local Plans

Fulfilling E2SSB 6117 Requirements–Section 10(1)

2007 Reclaimed Water Use Legislative Report

Prepared by:

Washington State Department of Ecology
Water Quality Program

December 2007

WASHINGTON STATE
DEPARTMENT OF
ECOLOGY

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Reclaimed Water Implementation in Local Plans

Introduction

The 2007 session bill–Engrossed Second Substitute Senate Bill (E2SSB 6117, Section 10(1) (lines 5-19)–directs the Department of Ecology (Ecology) to provide information about the consideration of reclaimed water use within existing conservation and water reuse plans. The Legislature directed Ecology to work with the Reclaimed Water Rule Advisory Committee and provide recommendations for improved implementation.

Washington State has more than 280 cities and towns[9], 39 counties[10], more than 170 water and sewer districts[11], and 28 different public utility districts[12]. Ecology and the Department of Health (DOH) staff reviewed a sub-sample of the existing plans including water supply plans, watershed plans and sewage plans.

Ecology also created a questionnaire and asked stakeholder organizations to send it to their members for a quick response. To get the widest distribution, Ecology staff enlisted the help of the:

- Coalition for Clean Water.
- Association of Water and Sewer Districts.
- Public Utility Districts,
- Association of Washington Cities.
- Washington State Association of Counties.

Ecology sent the questionnaire out via email on September 25, 2007. Ecology staff received the responses back by email from the members on October 5, 2007. Appendix B lists the questionnaire respondents. Ecology received 39 completed questionnaires out of 73 emailed questionnaires. From the initial data received, most communities in Washington State have water conservation requirements in their plans and at least some level of evaluation of reclaimed water use options.

With input from stakeholder advisors, Ecology decided to assign the task of considering and recommending provisions for conservation and water reuse plans to the Removing Barriers Subtask Force (subtask force). The subtask force will include this work in their 2008 report to the Legislature.

[9] http://www.awcnet.org/portal/StudioNew.asp?ChannelLinkID=1132&ArticleID=0&webid=1&mode=B1
[10] http://www.wacounties.org/wsac/about_members.htm
[11] https://www.waswd.org/s_organization.asp?p=district&s=section
[12] http://www.wpuda.org/pudinfo.htm

Legislative Assignments under Section 10(1)

Section 10(1) (lines 5-19) of E2SSB 6117 assigns the Long-term Funding Subtask Force (funding subtask force) an additional assignment to provide information about reclaimed water in conservation and water reuse plans in Washington State. This assignment has three tasks:

1. Review current water conservation and water reuse plans or programs of cities, counties, and districts. Report to the Legislature on the:
   - Number of plans.
   - General nature of those plans.
   - The extent the plans identify or incorporate water conservation or reclaimed water use.
2. Consider and recommend provisions on including reclaimed water use criteria or requirements as an element of water use efficiency requirements and water systems or plans (RCW 70.119A.180, Chapters 43.20 and 70.119 RCW).
3. Consider and recommend provisions on the current and potential use of the following planning requirements or methods to address reclaimed water:
   - Water conservation plans or ordinances.
   - Water conservation measures in regional watershed plans.
   - Water conservation programs, where the DOH does not require potable water.

Action Plan

Ecology consulted with the funding subtask force members and legislative staff to determine the best approach to accomplish these additional assignments.

Task 1 - Review Information and Report

The funding subtask force agreed that Ecology and DOH were in the best position to gather information and review the various plans.

Task 2 and 3 – Evaluating Information and Making Recommendations

Ecology decided to assign the tasks of considering and recommending provisions to the Removing Barriers Subtask Force for three reasons:

- The funding subtask force needed to focus on its main assignment to identify potential funding sources for reclaimed water use projects and complete task work by December 2007.
- Ecology and DOH needed to complete Task 1, gathering and reporting on existing information, before the funding subtask force could consider the information and make recommendations.

- The Removing Barriers Subtask Force (subtask force) continues through 2008. Since this subtask force will assess other recommendations related to planning, Ecology, with subtask force concurrence, transferred this assignment to its work plan.

Review of Existing Plans

Both Ecology and DOH staff looked at the number, types, and location of these plans. The staff discovered hundreds of references to water conservation and reclaimed water use to varying degrees in local and regional water plans. Different types of water conservation and water reuse plans and programs for potable and non-potable water uses fit the criteria the Legislature identified. More importantly, water conservation and water reuse are often components of other county, city, water district or public utility district plans or programs. Some examples of plans fitting the criteria include:

- Water supply plans (reviewed by DOH).
- General sewer plans (reviewed by Ecology).
- Watershed management plans (reviewed by Ecology).

Ecology and DOH reviewed a portion of the plans in each category.

General Sewer Plans

Initially, Ecology staff reviewed several general sewer plans for cities and one county in southwestern Washington. As required under RCW 90.48.112, all plans reviewed included an evaluation of reclaimed water.

The reviewed plans evaluated opportunities for reclaimed water use on factors such as:

- Conservation-based water rates to reduce consumption.
- Various treatment options and reclaimed water uses based on advantages, disadvantages and life cycle costs.
- Environmental and ecological considerations of using reclaimed water.
- Potential customers interested in using reclaimed water.
- Analysis of reclaimed water treatment and distribution costs versus the cost of potable water (including new water rights).

Watershed Management Plans

Ecology's electronic review of watershed management plans on file showed that most watershed plans include conservation requirements and many plans include reclaimed water use.

See *Chapter 5, Reclaimed Water Implementation in Watershed Planning* in this combined report for additional detail on implementation in watershed plans.

Water Supply Plans

DOH reviewed water supply plans. Conservation requirements appear in many of the existing plans and state law requires their inclusion in water system plans. Reclaimed water options or requirements are included in the plans less often. One of the possible reasons is the water supply tracking system does not yet specifically include a reclaimed water element. See pages 8-8 through 8-13 in Chapter 8 of this combined report for details.

The Legislature tasked Ecology with reviewing water reuse and water conservation plans. Ecology noted that most plans reviewed contain water conservation or water reuse elements. However, staff did not review each plan or program for the over 280 cities and towns, 39 counties, more than 170, and 27 different Public Utilities Districts.

Ecology needed a method to get accurate information in a very short time period and determined that a questionnaire was the most efficient method to obtain the information. Ecology relied on responses to the questionnaire to provide general answers to the Legislature's questions about reclaimed water use, reuse and water conservation in local conservation and water reuse plans or programs.

Both departments found that most organizations had looked at reclaimed water as a strategy to preserve or enhance potable water supplies. And both had found similar barriers to reclaimed water use, citing high reclaimed water project and distribution costs, little or no demand, and limited infrastructure.

Ecology and DOH found similarities and differences in how reclaimed water use is incorporated into local conservation and water planning documents versus water supply plans. The differences may be due to how wastewater treatment plants and water suppliers view themselves. Water suppliers consider themselves as consumers of reclaimed water rather than providers and would have very different needs, perspectives, and responsibilities than those of water purveyors.

Comparisons of the DOH and Ecology studies were beyond the scope of the assigned legislative tasks. Given the different data sets, perspectives of the users, the studies time constraints, and the various levels of commitment to reclaimed water use, any comparisons of the DOH and Ecology studies would provide little in the way of meaningful analysis.

Ecology Reclaimed Water Questionnaire

Ecology had little information available to answer the questions asked by the Legislature. Ecology staff designed a questionnaire to collect additional insight into local planning efforts (See Appendix A for the PowerPoint presentation of the questionnaire). Ecology wanted general information from municipalities, wastewater treatment plants, and sewer districts about their use of reclaimed water in planning documents. Member distribution lists of stakeholder organizations were used to distribute the questionnaire; Ecology determined this would be the quickest and most direct way to collect the needed information from municipalities, public utility districts, and water and sewer districts in the time allotted for the task. Ecology used this information to provide general answers to the questions asked by the Legislature.

Ecology requested the following stakeholder organizations to distribute the questionnaire to their members:

- Coalition for Clean Water (an information clearinghouse for large sewer and stormwater utilities)
- Association of Water and Sewer Districts
- Public Utility Districts
- Association of Washington Cities
- State Association of Counties

Ecology emailed the questionnaire to the stakeholder groups on September 25, 2007. Ecology compiled the results of the questionnaire on October 5, 2007 and presented the findings to the Reclaimed Water–Rules Advisory Committee (RW-RAC) on October 11, 2007.

Because the collected information was general in nature, any analysis of the information will provide generalizations about reclaimed water use in planning efforts in Washington State. Specific trends and other rigorous analysis were beyond the scope of this questionnaire. Ecology will use the information collected from this questionnaire as a design guide for future reclaimed water studies, as needed.

Questionnaire Responses and Preliminary Results

Ecology received 53.4 percent response to the questionnaire. Responses came from a mix of public utility districts, water purveyors, sewer districts, combined systems, cities and towns, and health departments. Ecology received responses from both the east and west sides of the state (See Appendix B for the list of entities responding).

Ecology asked several questions specifically related to water conservation and water reuse plans and ordinances. Ecology also asked other questions related to funding, size of communities served by reclaimed water and reclaimed water project drivers.

Overall, 39 organizations responded from a variety of community sizes. Most plans and ordinances incorporate water conservation or reclaimed water requirements. The level of emphasis varies, with more placed on conservation requirements than reclaimed water or water reuse.

The data collected reveal over 53 percent of the respondent organizations either use or are planning to use reclaimed water. The reclaimed water facilities and the corresponding percentage of affirmative use or planning of reclaimed water use fall into one of the following categories:

- 18 percent of facilities are in operation.
- 14 percent of facilities are in construction.
- 68 percent of facilities are in some stage of planning.

As importantly, the preliminary results also revealed the top reasons communities produce reclaimed water. In priority, communities chose reclaimed water to:

- Create or enhance water rights.
- Comply with permit requirements.
- Reduce potable water consumption.

What Did Ecology Learn?

Ecology learned two key points from the initial reviews and the questionnaire:

- Hundreds of water conservation and water reuse plans exist.
- Overall attitudes about reclaimed water are positive.

Most plans fall into three major categories (general sewer, water supply, watershed management plans). In addition, local ordinances and plans often contain water conservation or reuse criteria and requirements. However, not all local plans or ordinances include reclaimed water or water reuse.

More of the plans emphasize water conservation than reclaimed water. However, most communities in Washington view reclaimed water as potential way to meet future water use needs.

Work Remaining

In 2008, Ecology plans to consider and recommend provisions to:

- Include reclaimed water use criteria or requirements as an element of water use efficiency requirements and water systems or plans (RCW 70.119A.180, Chapters 43.20 and 70.119 RCW).
- Evaluate the current and potential use of the following planning requirements or methods to address reclaimed water:
    - Water conservation plans or ordinances.
    - Water conservation measures in regional watershed plans.
    - Water conservation programs, where the DOH does not require potable water.

Ecology will transfer responsibility for the remaining tasks to the Removing Barriers Subtask Force.

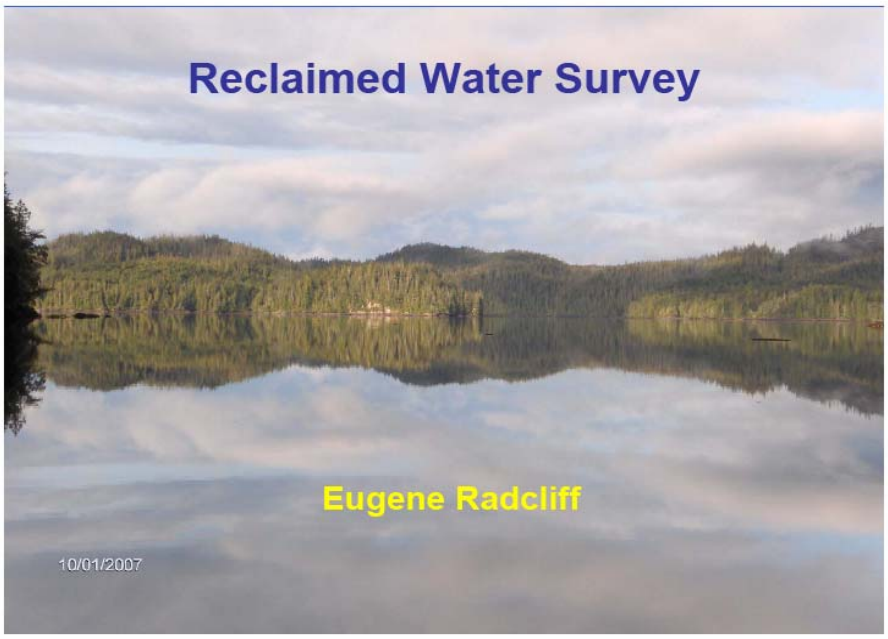
Appendices

Appendix A

2007 Reclaimed Water Questionnaire Power Point Presentation

Appendix A - 2007 Reclaimed Water Questionnaire Power Point Presentation

http://www.ecy.wa.gov/programs/wq/reclaim/advisory_committee/101107/RWSurvey_2%20101807.pdf



Purpose of Survey

The Legislature directed Ecology to:

- The extent that reclaimed water and water conservation mentioned in current local water plans.

Other issues Ecology looked at:

- Preferred funding mechanisms for reclaimed water projects.
- Is reclaimed water being considered in water infrastructure planning.
- Why are organizations are considering reclaimed water projects.
- The size of communities looking at reclaimed water projects.
- Determine the general attitude towards reclaimed water.
- Potential for cooperation between organizations.

Survey Questions

1. Does your organization produce or plan to produce reclaimed water?
2. If your organization does produce (or plans to produce) reclaimed water, what was the reason for that decision?
3. If your organization does not produce reclaimed water, why not?
4. Does your organization mention reclaimed water, water reuse, or water conservation in any of its water plans or local ordinances?

Survey Questions

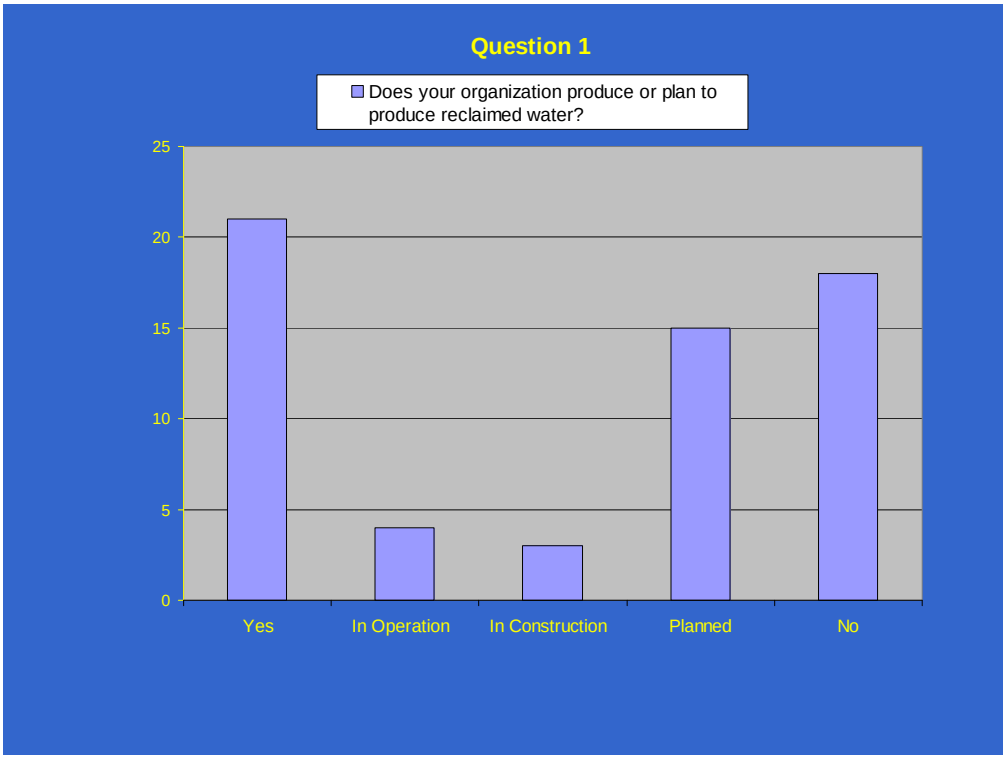
5. To what degree does your organization's water plans or local regulations emphasize reclaimed water or reused water?
6. To what degree does your organization's water plans or local regulations emphasize water conservation?
7. Size of population served by your organization?
8. If your facility serves a small community, would it be willing to form a local or regional alliance to produce, distribute, and use reclaimed water?

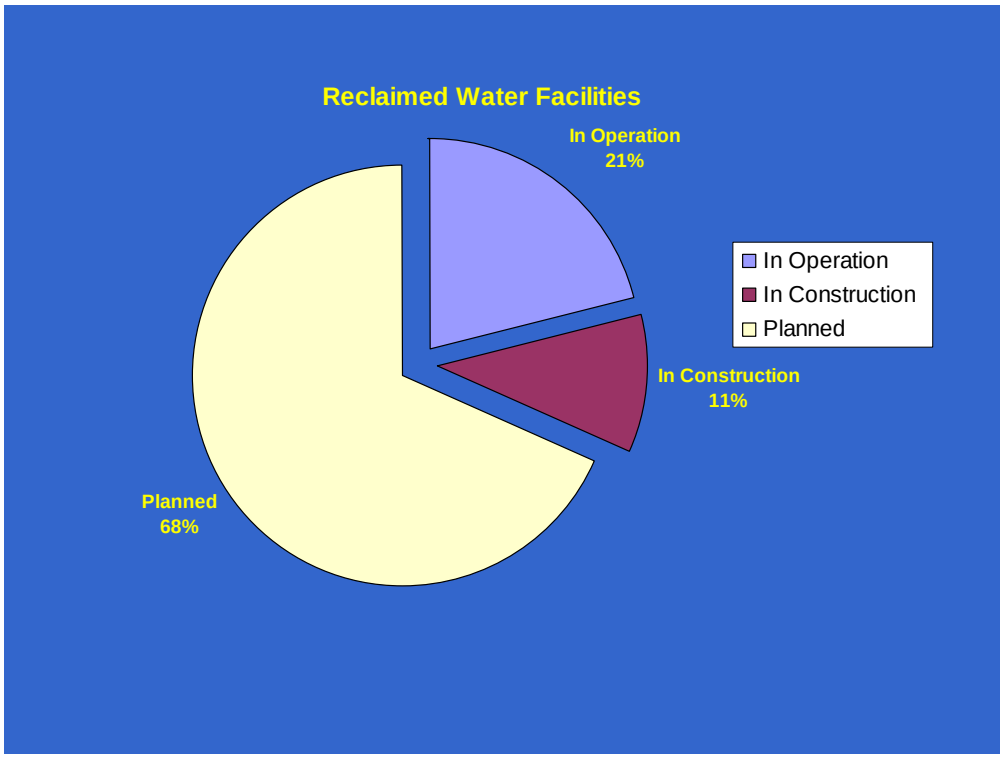
Survey Questions

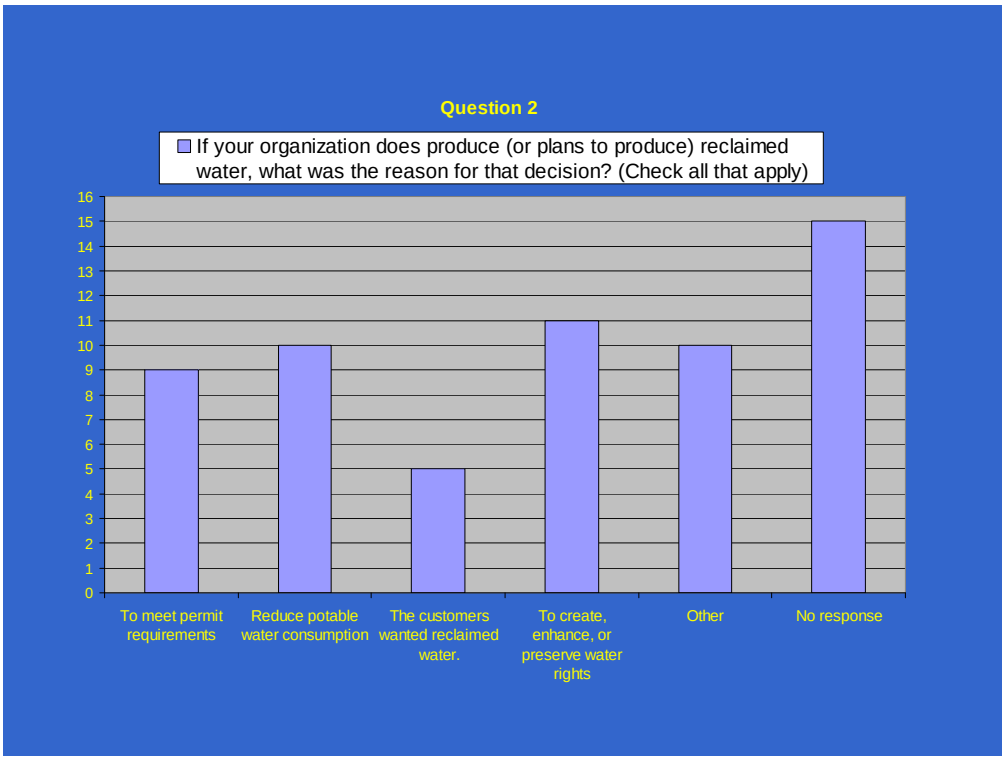
9. If no, what would it take to get your organization to change its mind about joining a reclaimed water alliance?
10. What types of financing tools would be useful in funding a reclaimed water plant or distribution system?
11. In general, how does your organization feel about the production, distribution and use of reclaimed water?

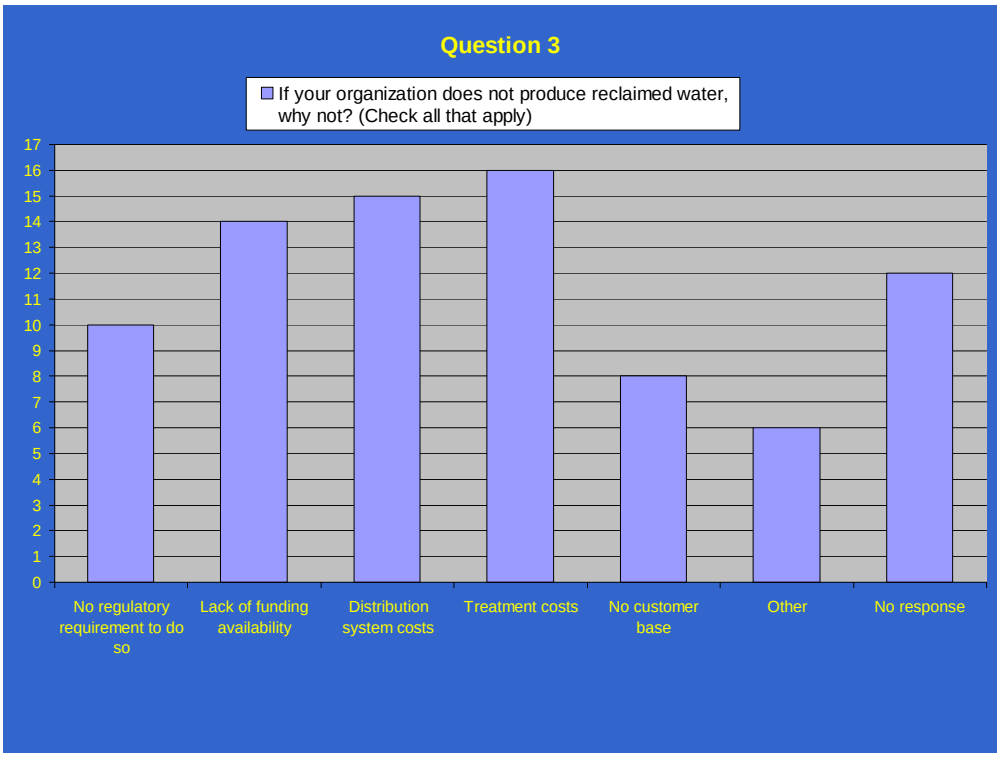
Reclaimed Water Survey Results

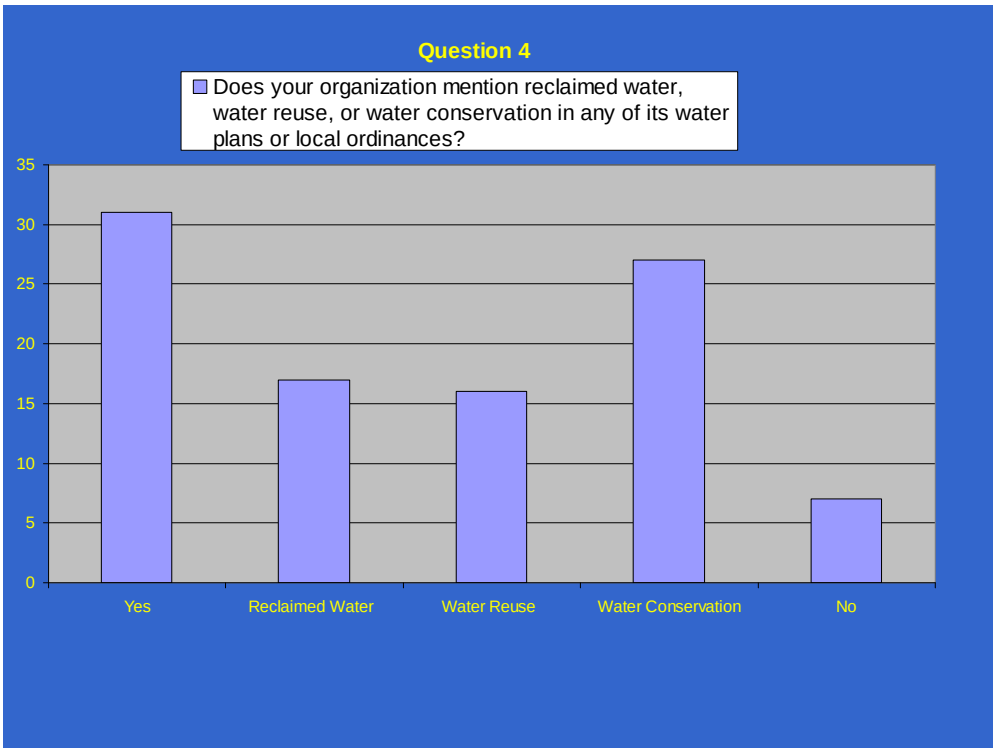
							Response
Number of Responses:	39	out of	73	PUDs, Water Supply Districts, Wastewater Systems, or Health Depts			53.4%
1. Does your organization produce or plan to produce reclaimed water?	Yes	In Operation	In Construction	Planned	No		
	21	4	3	15	18		
2. If your organization does produce (or plans to produce) reclaimed water, what was the reason for that decision? (Check all that apply)	To meet permit requirements	Reduce potable water consumption	The customers wanted reclaimed water.	To create, enhance, or preserve water rights	Other	No response	
	9	10	5	11	10	15	
3. If your organization does not produce reclaimed water, why not? (Check all that apply)	No regulatory requirement to do so	Lack of funding availability	Distribution system costs	Treatment costs	No customer base	Other	No response
	10	14	15	16	8	6	12
4. Does your organization mention reclaimed water, water reuse, or water conservation in any of its water plans or local ordinances?	Yes	Reclaimed Water	Water Reuse	Water Conservation	No	No response	
	31	17	16	27	7	1	
5. To what degree does your organization's water plans or local emphasize reclaimed water of reused water?	Great Degree	Little Degree	None	No response			
	10	14	11	4			
6. To what degree does your organization's water plans or local emphasize water conservation?	Great Degree	Little Degree	None	No response			
	20	9	6	4			
7. Size of population served by your organization?	< 10,000	10,001 – 50,000	50,001 – 100,000	> 100, 000			
	14	15	6	4			
8. If your facility serves a small community, would it be willing to form a local or regional alliance to produce, distribute, and use reclaimed water?	Yes	No	Does not apply	No response			
	13	5	13	8			
9. If no, what would it take to get your organization to change its mind about joining a reclaimed water alliance? (Check all that apply)	Regulatory requirement	Funding availability	Growth / development	Decreasing supply of potable water	Other	No response	
	3	11	2	6	5	24	
10. What types of financing tools would be useful in funding a reclaimed water plant or distribution system? (Check all that apply)	Grants	Bonds	Cost Share	Low Interest Loans	Taxes	User Fees	No response
	34	7	18	20	8	15	4
11. In general, how does your organization feel about the production, distribution and use of reclaimed water?	Generally positive	Generally negative	Don't care	No response			
	30	2	2	5			

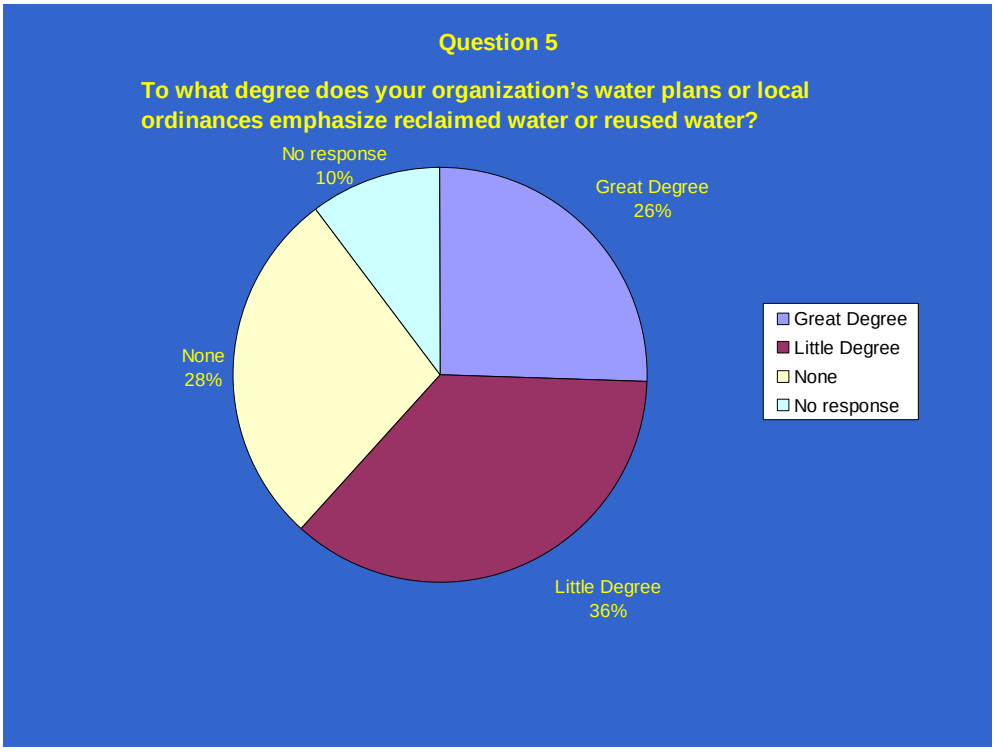

Question 1
Does your organization produce or plan to produce reclaimed water?
25
20
15
10
5
0
Yes
In Operation
In Construction
Planned
No

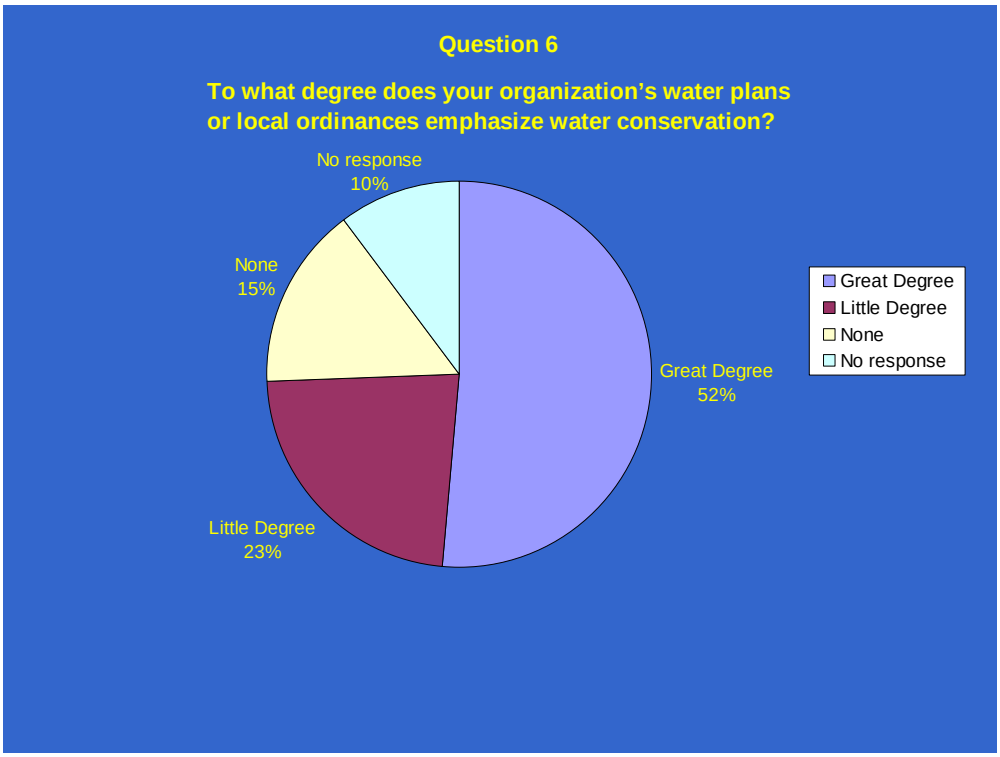

Reclaimed Water Facilities
In Operation 21%
In Construction 11%
Planned 68%
In Operation
In Construction
Planned

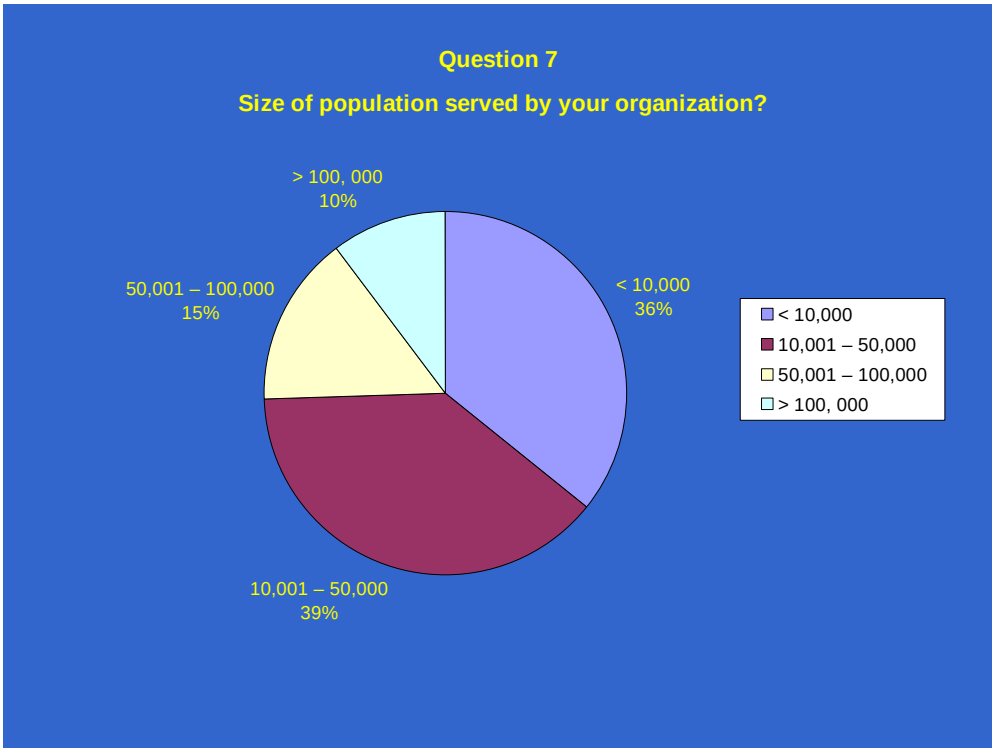

Question 2
If your organization does produce (or plans to produce) reclaimed water, what was the reason for that decision? (Check all that apply)
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
To meet permit requirements
Reduce potable water consumption
The customers wanted reclaimed water.
To create, enhance, or preserve water rights
Other
No response


Question 3
If your organization does not produce reclaimed water, why not? (Check all that apply)
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
No regulatory requirement to do so
Lack of funding availability
Distribution system costs
Treatment costs
No customer base
Other
No response


Question 4
Does your organization mention reclaimed water, water reuse, or water conservation in any of its water plans or local ordinances?
35
30
25
20
15
10
5
0
Yes
Reclaimed Water
Water Reuse
Water Conservation
No

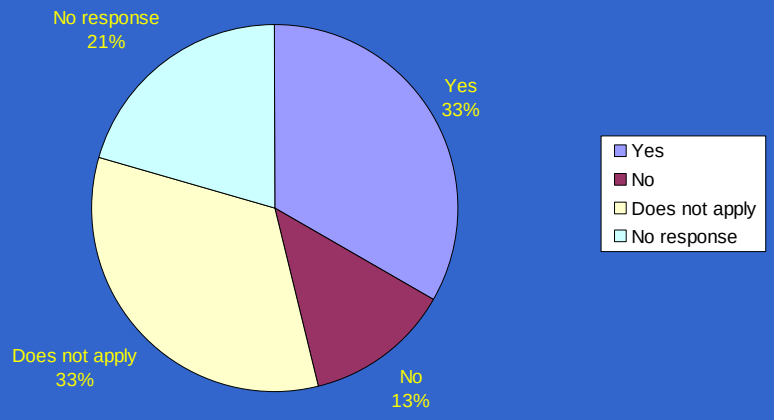

Question 5
To what degree does your organization's water plans or local ordinances emphasize reclaimed water or reused water?
No response
10%
Great Degree
26%
None
28%
Little Degree
36%
Great Degree
Little Degree
None
No response


Question 6
To what degree does your organization's water plans or local ordinances emphasize water conservation?
No response 10%
None 15%
Great Degree 52%
Little Degree 23%
Great Degree
Little Degree
None
No response


Question 7
Size of population served by your organization?
> 100, 000 10%
50,001 – 100,000 15%
< 10,000 36%
10,001 – 50,000 39%
< 10,000
10,001 – 50,000
50,001 – 100,000
> 100, 000

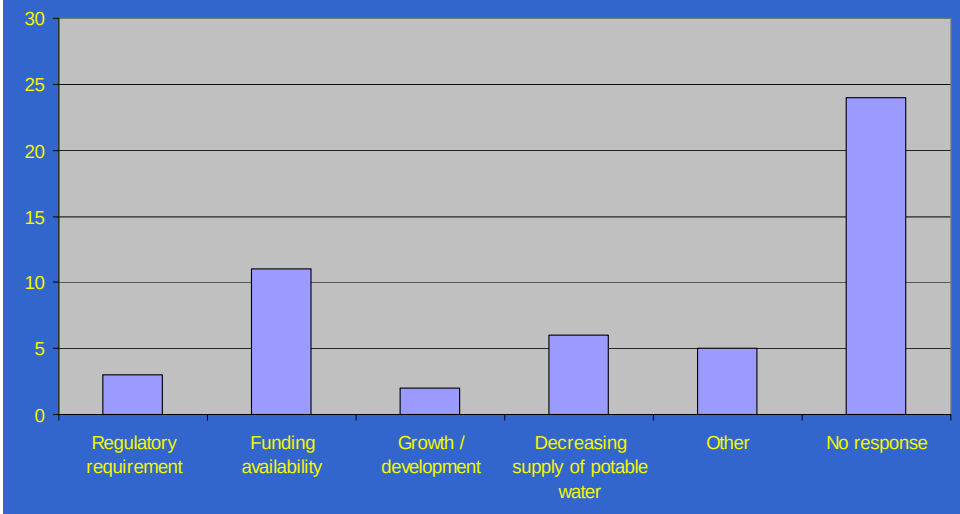
Question 8

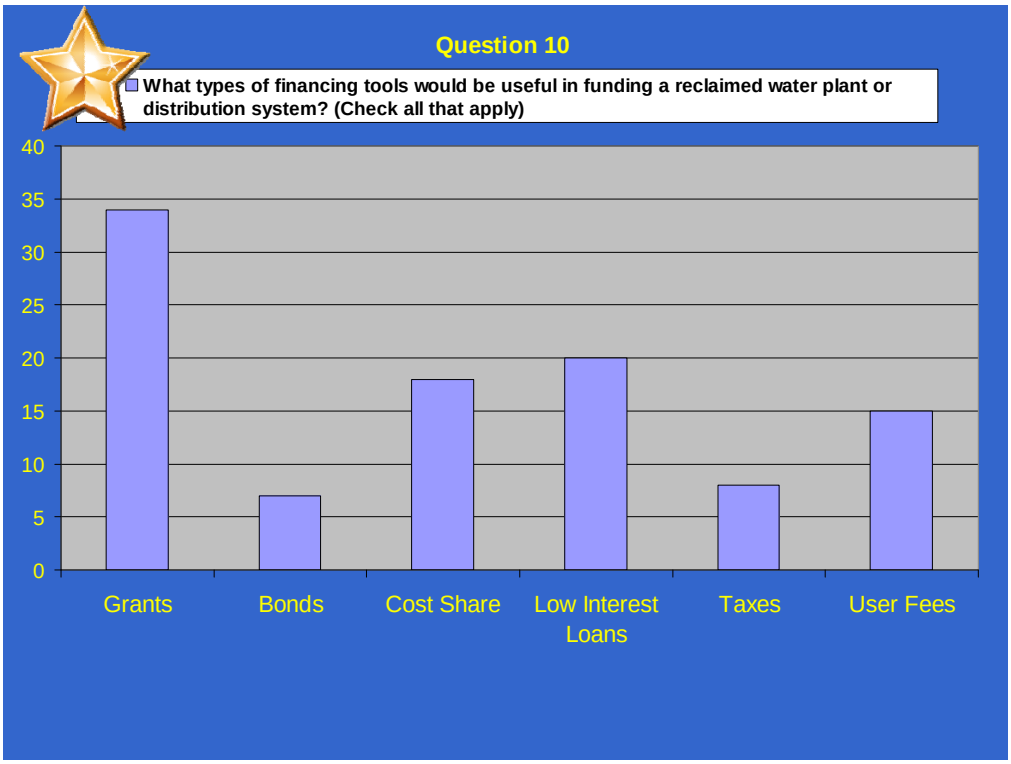
If your facility serves a small community, would it be willing to form a local or regional alliance to produce, distribute, and use reclaimed water?

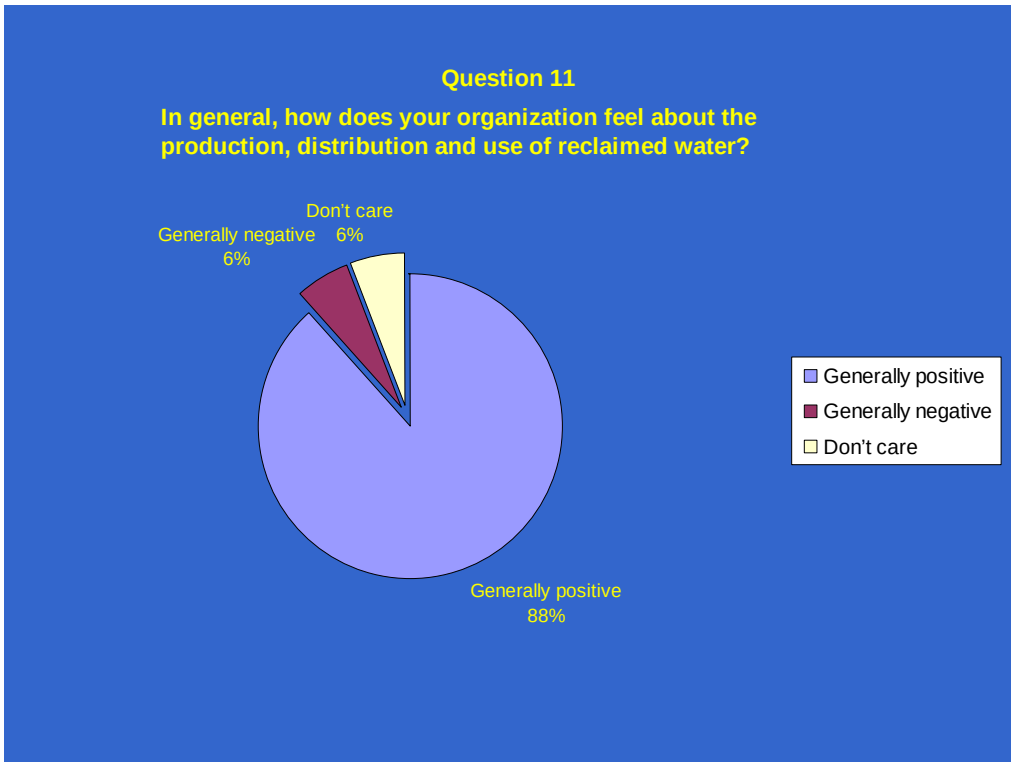


Question 9

If no, what would it take to get your organization to change its mind about joining a reclaimed water alliance? (Check all that apply)




Question 10
What types of financing tools would be useful in funding a reclaimed water plant or distribution system? (Check all that apply)
40
35
30
25
20
15
10
5
0
Grants
Bonds
Cost Share
Low Interest Loans
Taxes
User Fees


Question 11
In general, how does your organization feel about the production, distribution and use of reclaimed water?
Don't care 6%
Generally negative 6%
Generally positive 88%
Generally positive
Generally negative
Don't care

Respondents		
Organization	Population Size	Type of Facility
Liberty Lake Sewer and Water District	< 10,000	WS, WW
Woodinville Water District	10,001-50,000	WS
Snohomish County PUD	10,001-50,000	PUD
Public Works: Wastewater Division	< 10,000	WW
Silverdale Water District	10,001-50,000	WS
Penn Cove Water and Sewer District	< 10,000	WS, WW
King County DNRP/WTD	> 100,000	WW
Clark County PUD	> 100,000	PUD
Water and Waste Management	< 10,000	WS, WW
PUD #1 of Jefferson County	< 10,000	PUD
Chelan County PUD	< 10,000	PUD
Asotin County Public Utility District	10,001-50,000	PUD
Spokane County Utilities	50,001-100,000	U
Kitsap PUD (Water)	10,001-50,000	WS
Stevens County Public Utility District No. 1	10,001-50,000	PUD
Kitsap County Public Works	> 100,000	WW, SW
Clallum County PUD	< 10,000	PUD
Northshore Utility District	50,001-100,000	UD
Public Utility District #1 of Whatcom County	< 10,000	PUD
Southwest Suburban Sewer District	50,001-100,000	WW
Sammamish Plateau Water and Sewer District	50,001-100,000	WS, WW
Northeast Sammamish Sewer and Water District	10,001-50,000	WS, WW
Lake Stevens Sewer District	10,001-50,000	WW
Grays Harbor County	< 10,000	U
Cowlitz County PUD Water System	10,001-50,000	PUD
City of Shelton	< 10,000	WW, SW
Sunland Water District	< 10,000	WS
City of Port Townsend	< 10,000	WW
Columbia County	< 10,000	PW
Jefferson County	10,001-50,000	WW
Cedar River Water and Sewer District	10,001-50,000	WS, WW
Surface Water Management	> 100,000	WW
Clark Public Utilities	50,001-100,000	WS
Holmes Harbor Sewer District	< 10,000	WW
Karcher Creek Sewer District	10,001-50,000	WW
Columbia County	< 10,000	WW
San Juan County Health &Community Services	10,001-50,000	HD
Clallum County Health Department	10,001-50,000	HD
Lewis County Development Department	50,001-100,000	DD
Development Department	DD	
Health Department	HD	
Public Utility District	PUD	
Public Works	PW	
Stormwater	SW	
Utility District	UD	
Utility	U	
Water Supplier	WS	
Wastewater Treatment	WT	

Questions?

Appendix B

Table 1: Questionnaire Respondents

Appendix B - Table 1: Questionnaire Respondents

Organization	Population Size	Type of Facility
Liberty Lake Sewer and Water District	< 10,000	WS, WW
Woodinville Water District	10,001-50,000	WS
Snohomish County PUD	10,001-50,000	PUD
Public Works: Wastewater Division	< 10,000	WW
Silverdale Water District	10,001-50,000	WS
Penn Cove Water and Sewer District	< 10,000	WS, WW
King County DNRP/WTD	> 100,000	WW
Clark County PUD	> 100,000	PUD
Water and Waste Management	< 10,000	WS, WW
PUD #1 of Jefferson County	< 10,000	PUD
Chelan County PUD	< 10,000	PUD
Asotin County Public Utility District	10,001-50,000	PUD
Spokane County Utilities	50,001-100,000	U
Kitsap PUD (Water)	10,001-50,000	WS
Stevens County Public Utility District No. 1	10,001-50,000	PUD
Kitsap County Public Works	> 100,000	WW, SW
Clallum County PUD	< 10,000	PUD
Northshore Utility District	50,001-100,000	UD
Public Utility District #1 of Whatcom County	< 10,000	PUD
Southwest Suburban Sewer District	50,001-100,000	WW
Sammamish Plateau Water and Sewer District	50,001-100,000	WS, WW
Northeast Sammamish Sewer and Water District	10,001-50,000	WS, WW
Lake Stevens Sewer District	10,001-50,000	WW
Grays Harbor County	< 10,000	U
Cowlitz County PUD Water System	10,001-50,000	PUD
City of Shelton	< 10,000	WW, SW
Sunland Water District	< 10,000	WS
City of Port Townsend	< 10,000	WW
Columbia County	< 10,000	PW
Jefferson County	10,001-50,000	WW
Cedar River Water and Sewer District	10,001-50,000	WS, WW
Surface Water Management	> 100,000	WW
Clark Public Utilities	50,001-100,000	WS
Holmes Harbor Sewer District	< 10,000	WW
Karcher Creek Sewer District	10,001-50,000	WW
Columbia County	< 10,000	WW
San Juan County Health &Community Services	10,001-50,000	HD
Clallum County Health Department	10,001-50,000	HD
Lewis County Development Department	50,001-100,000	DD

Development Department	DD
Health Department	HD
Public Utility District	PUD
Public Works	PW
Stormwater	SW
Utility District	UD
Utility	U
Water Supplier	WS
Wastewater Treatment	WW

Appendix C

Specific Questions

Appendix C - Specific Questions

Engrossed Second Substitute Senate Bill 6117 (E2SSB 6117 directed Ecology to review current water conservation and water reuse plans or programs of cities, counties, and districts and report to the Legislature on the:

- Number of plans.
- General nature of those plans.
- The extent the plans identify or incorporate water conservation or reclaimed water use.

The reclaimed water questionnaire was designed to quickly collect information related to different sections of E2SSB 6117. Questions 4, 5, 6, and 11 asked questions designed to provide answers to the topics listed above. The questionnaires were sent out by email to the Coalition for Clean Water, Association of Water and Sewer Districts, Public Utility Districts, the Association of Washington Cities, and the Washington State Association of Counties. These groups sent the questionnaire out to their memberships. Seventy-three questionnaires were sent out via email; 39 completed surveys came back to Ecology. Ecology also received responses from 2 county health agencies and a county development department.

The type and number of organizations responding are as follows:

County Development Department	-	1
Health Department	-	2
Public Utility District	-	9
Public Works	-	1
Stormwater	-	2
Utility District	-	1
Utility	-	2
Water Supplier	-	11
Wastewater Treatment	-	10

The number and population size of the organizations responding:

15	< 10,000
14	10,001-50,000
6	50,001-100,000
4	> 100,000

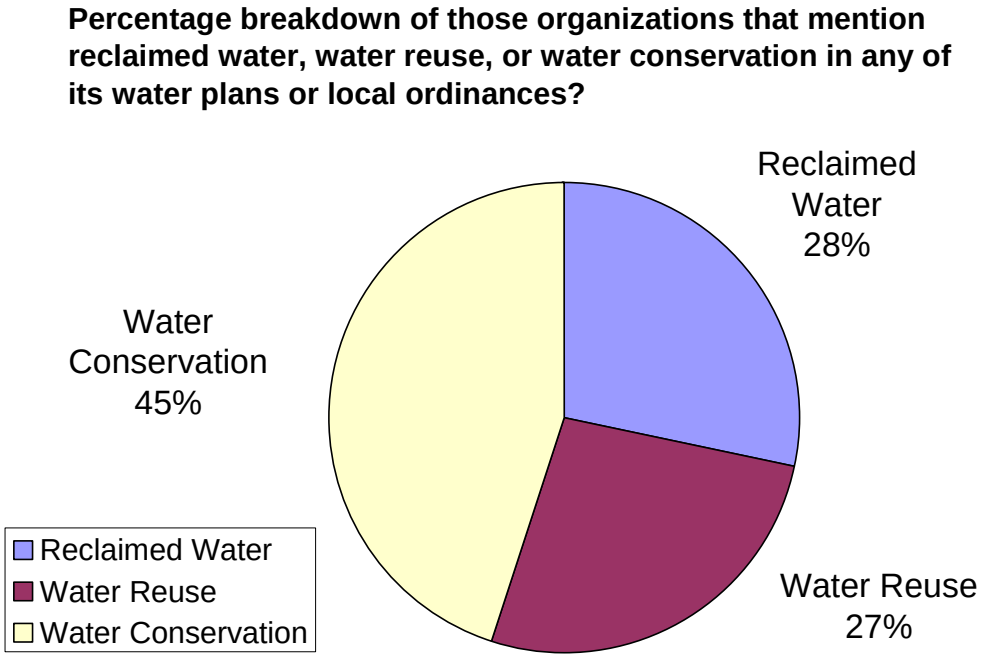
Question 4 was designed to collect information about how many plans referenced reclaimed water, water reuse, or water conservation and how those plans referenced those water issues. Ecology found 79% of the respondents reference reclaimed water, water reuse, or water conservation in their water plans and policies. Ecology found (of respondents answering yes to question 4) 45% referenced water conservation, 28 % referenced reclaimed water, and 27% referenced water reuse.

Question 4: ***Does your organization mention reclaimed water, water reuse, or water conservation in any of its water plans or local ordinances?***

Of the 39 questionnaires returned to Ecology, the responses were:

Yes	Reclaimed Water	Water Reuse	Water Conservation	No	No response
31	17	16	27	**7**	**1**

The following chart shows the breakdown of the yes responses:



Note: Reclaimed water and water reuse may be used to describe the same type of water or process.

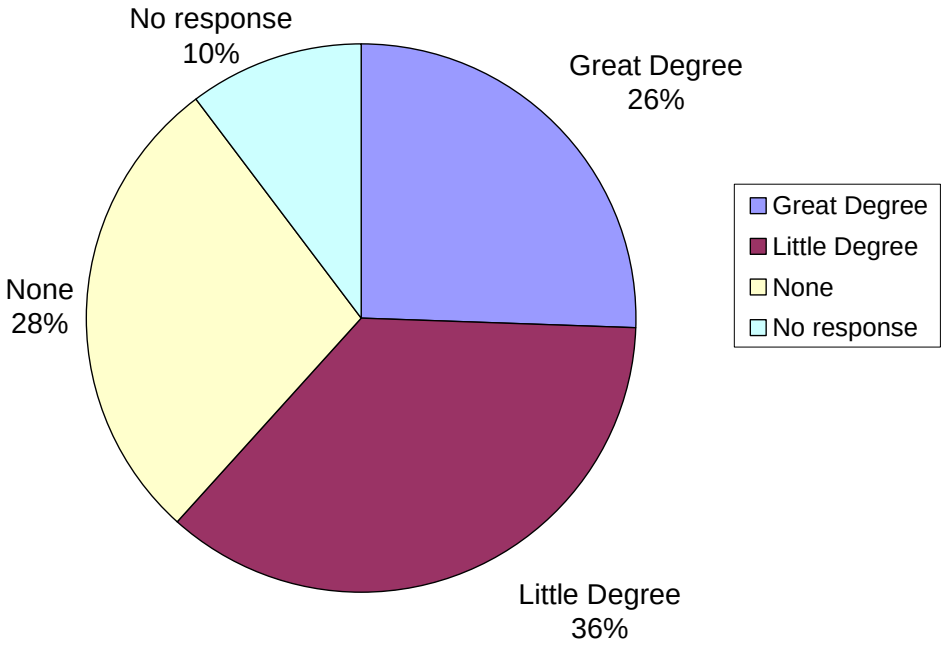
Question 5: ***To what degree does your organization's water plans or local ordinances emphasize reclaimed water of reused water?***

The survey responders replied that they emphasized reclaimed water or water reuse to a:

Great Degree	Little Degree	None	No response
10	**14**	**11**	**4**

Question 5

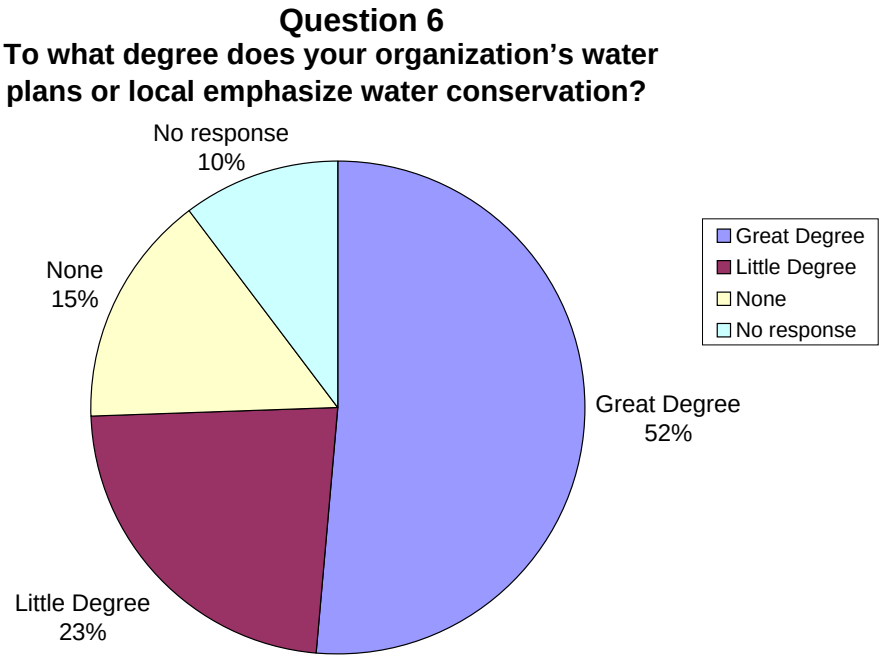
To what degree does your organization's water plans or local emphasize reclaimed water of reused water?



Question 6: ***To what degree does your organization's water plans or local ordinances emphasize water conservation?***

The survey responders replied that they emphasized water conservation to a:

Great Degree	Little Degree	None	No response
20	**9**	**6**	**4**



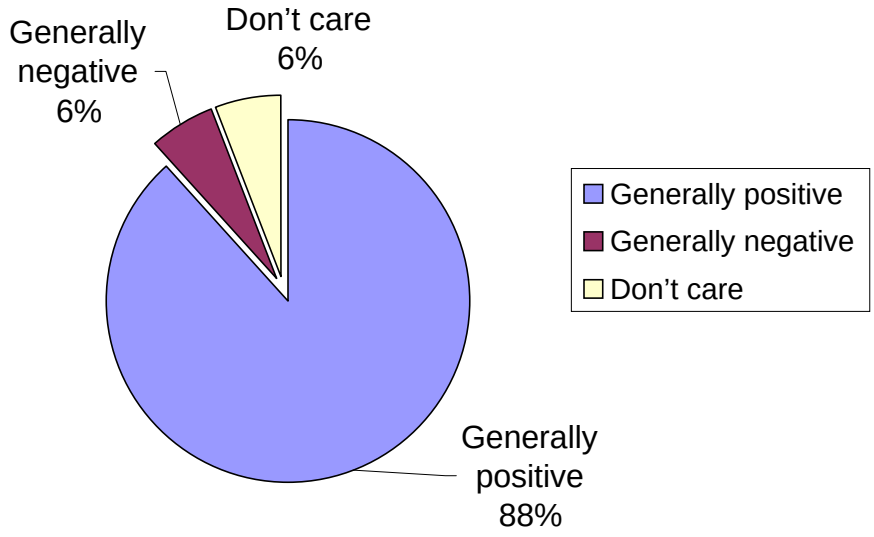
Question 11: ***In general, how does your organization feel about the production, distribution and use of reclaimed water?***

The survey responders replied that their attitude towards reclaimed water was:

Generally positive	Generally negative	Don't care	No response
30	**2**	**2**	**5**

Question 11

In general, how does your organization feel about the production, distribution and use of reclaimed water?



Chapter 5

Report on Implementation in Watershed Planning

Fulfilling E2SSB 6117 Requirements - Section 6

2007 Reclaimed Water Use Legislative Report

Prepared by:

Washington State Department of Ecology
Shorelands & Environmental Assistance Program

December 2007

Table of Contents

Reclaimed Water Implementation in Watershed Planning

Introduction

Under Section 6 of Engrossed Second Substitute Senate Bill (E2SSB 6117), the Department of Ecology (Ecology) must include in the annual watershed planning report to the Legislature, the following information related to reclaimed water:

1. The number of watershed plans using reclaimed water as potential source or strategy to meet future needs.
2. Provisions in any watershed implementation plans that discuss barriers to implementation of the water reuse elements of those plans.
3. Potential costs of reclaimed water facilities.
4. Potential sources of funding for reclaimed water facilities.

Summary

This report summarizes the watershed plan information obtained to date. Ecology will provide a complete and separate report on the status of watershed planning under Engrossed Second Substitute Senate Bill (ESHB 2514)[13] in early January 2008.

Reclaimed Water Identified in Watershed Plans

Ecology reviewed 32 watershed plans to find the extent that reclaimed water had been identified in watershed plans as a potential source or a strategy to meet future water needs. Ecology found that reclaimed water had been addressed in all 32 plans (Table 1). Plans indicated that reclaimed water had been identified as a potential way to:

- Recharge aquifers.
- Enhance or create a new water right.
- Plan for growth.

[13] Engrossed Second Substitute Senate Bill 2514 (1998)

Provisions in Watershed Implementation Plans

Ecology also reviewed seven watershed management implementation plans to determine if the plans identified barriers to using reclaimed water. Of the implementation plans found online, Ecology found no reference to "barriers" to reclaimed water use in any of the plans reviewed.

Capital Costs of Proposed Projects

Between 1996 and 2004, 15 reclaimed water facilities began operation in Washington State. Ecology gathered information from these projects to evaluate project costs for:

- Total estimated capital construction.
- Capital costs of proposed projects.
- Estimated incremental capital costs associated with wastewater treatment plant upgrades.
- Distribution costs.

In 2005, Ecology compiled the "Case Studies in Reclaimed Water Use[14]" and prepared a summary report of the studies to brief senior Ecology management on the completed reclaimed water project costs. This summary report is included in Appendix A. Ecology used the actual project costs incurred for the completed reclaimed water projects to provide a scale of costs for future reclaimed water projects (Table 1). Table 2 provided estimated costs for proposed reclaimed water projects.

Ecology included in this summary report, an excerpt of a 1998 report by Asano Takashi that referenced construction cost estimates (Tables 3), wastewater treatment plant upgrade cost estimates (Table 4), and water distribution cost estimates (Table 5) for California reclaimed water projects. Ecology used these estimates to provide a scale of cost to reclaimed water project estimates. The cost estimates used in the 1998 Asano report are in 1996 current dollars.

Ecology used the 2005 summary report estimates rather than the 2007 estimates because the Chapter 3 estimates were not available.

As expected, reclaimed water project costs vary with the size of the project and the level of water produced. Ecology found that reclaimed water capital construction costs for completed projects in Washington State ranged from $2.1 million to $8.2 million dollars (Table 1). Proposed reclaimed water project capital costs ranged from $4 million to $20 million dollars (Table 2). Reclamation treatment facilities average capital construction costs for Class A water were estimated at $7.4 million dollars for a 1 million gallon per day (mgd) reclaimed water facility and $32.7 million dollars for a 10 mgd facility (Table 3). Estimated incremental capital costs associated with wastewater treatment plant upgrades ranged from a low of $1.5 million dollars for a 1 mgd facility upgrade to $9.6 million dollars for a 10 mgd facility upgrade (Table 4). Reclaimed water distribution costs for a new distribution system were estimated to be $2.49 cost

[14] Cupps, Katharine; Morris, Emily (2005). Case Studies in Reclaimed Water Use (Publication Number: 05-10-013). Lacey, WA: Department of Ecology.

per hundred cubic feet (ccf) (Table 5). For a retrofitted facility, the estimated costs were $4.98 per ccf. Appendix A provides a more in-depth discussion of costs.

Potential Funding Sources

Financial vehicles used for funding these projects came from a variety of sources including but not limited to: the Centennial Clean Water Fund, Clean Water State Revolving Fund, Utility Local Improvement District, and private financing[15]. Chapter 3, Long-Term Capital Funding, provides for a more comprehensive examination of potential funding sources.

Ecology and the task force will continue to work with legislative leadership to provide appropriate recommendations for any needed statutory changes for the 2009 legislative session.

[15] Cupps, Katharine; Morris, Emily (2005). Case Studies in Reclaimed Water Use (Publication Number: 05-10-013). Lacey, WA: Department of Ecology.

TABLE 1. RECLAIMED WATER REFERENCED IN WATER PLANS

WATER RESOURCE INVENTORY AREAS (WRIA) WATERSHED MANAGEMENT PLANS

WRIA	#	2514 Watershed Plans	Status	References Reclaimed or Reused Water	References Water Conservation	Implementation Plan	Year of Plan
WRIA 1	1	Yes	Draft	Yes	Yes	No	2005
WRIA 2	2	Yes	Final	Yes	Yes	No	2004
WRIA 3	3	No					
WRIA 4	4	No					
WRIA 6	6	Yes		Yes	Yes	No	2005
WRIA 7 Non-2514	7	No					
WRIA 10 Upper Puyallup	10	No	Action	Yes	Yes	Yes	2002
WRIA 11	11	Yes	Final	Yes	Yes	No	2003
WRIA 12	12	No	Action	Yes	Yes	Yes	1999
WRIA 13	13	Yes	Draft	Yes	Yes	No	2004
WRIA 14	14	Yes	Draft	Yes	Yes	No	2006
WRIA 15	15	Yes	Final	Yes	Yes	No	2005
WRIA 16	16	Yes	Final	Yes	Yes	No	2006
WRIA 17	17	Yes	Final	Yes	Yes	No	2003
WRIA 18	18	Yes	Final	Yes	Yes	No	2005
WRIA 19	19	No					
WRIA 20	20	Yes	Draft	Yes	Yes	No	2007
WRIA 22	22	Yes	Final	Yes	Yes	No	2004
WRIA 23	23	Yes	Final	Yes	Yes	No	2004
WRIA 25	25	Yes	Final	Yes	Yes	No	2006
WRIA 26	26	Yes	Final	Yes	Yes	No	2006
WRIA 27	27	Yes	Final	Yes	Yes	No	2006
WRIA 28	28	Yes	Final	Yes	Yes	No	2006
WRIA 29	29	No					
WRIA 30	30	No					
WRIA 31	31	No					
WRIA 32	32	Yes	Final	Yes	Yes	Yes	2005
WRIA 34	34	Yes	Draft	Yes	Yes	No	2007
WRIA 35	35	Yes	Final	Yes	Yes	No	2007
WRIA 37/38/39	37	Yes	Draft	Yes	Yes	Yes	2002
WRIA 37/38/39	38	Yes	Draft	Yes	Yes	Yes	2002
WRIA 37/38/39	39	Yes	Draft	Yes	Yes	Yes	2002
WRIA 40	40	No					
WRIA 43	43	Yes	Final	Yes	Yes	No	2006
WRIA 44/50	44	Yes	Final	Yes	Yes	No	2004
WRIA 45	45	Yes	Final	Yes	Yes	No	2006
WRIA 46	46	Yes	Final	Yes	Yes	No	2004
WRIA 48	48	No					
WRIA 49	49	No					
WRIA 44/50	50	Yes	Final	Yes	Yes	No	2004
WRIA 54	54	No					
WRIA 55	55	Yes	Final	Yes	Yes	No	2006
WRIA 56	56	Yes	Final	Yes	Yes	No	2005
WRIA 57	57	Yes	Final	Yes	Yes	No	2006
WRIA 59	59	No					
WRIA 60	60	No					
WRIA 62	62	Yes	Final	Yes	Yes	Yes	2005

Appendices

Appendix A

Informational Paper on
Capital Costs for Water Reclamation Facilities (2007)

Appendix A - Capital Costs for Water Reclamation Facilities

Capital costs for water reclamation facilities varies widely depending upon factors including the Class of reclaimed water achieved, the facility size, whether the facility is new or upgraded, the type of distribution system, and the end uses. Most of the reclaimed water facilities proposed in the state of Washington have been Class A facilities with a design capacity of 1.0 mgd or less.

Table 1 presents total capital cost information for several constructed Class A reclaimed water demonstration projects in Washington State.

Table 1. Washington Projects Capital Facilities Costs

City	Flow	Cost	Description
Ephrata	1.12 mgd	$6,843,000	Includes infiltration basins and uses at plant.
Yelm	1.0 mgd	$8,177,741	Includes distribution system and wetland park.
Sequim	0.67 mgd	Facility upgrade: $5,300,000 Total project cost: $8,700,000	The additional $3.4 million for upland distribution and use.
Royal City	0.25 mgd	$3,661,668	Includes infiltration basins and uses at plant.
Quincy	1.54 mgd	Facility upgrade $2,100,000	Class A for ground water recharge.
North Bay/Case Inlet	0.4 mgd	Facility $5,300,000 Total project: $21,000,000	Class A for land application on forest land and ground water recharge.

Table 2 represents costs of several proposed projects in Washington State. Costs vary widely depending on project specific factors.

Table 2. Capital Costs of Proposed Projects in Washington State

City	Flow	Cost	Use
King County	2-3 mgd	$20,000,000	Class A satellite facility & distribution
LOTT	1.0 mgd	$4,000,000	Class A upgrade at Budd Inlet facility
Pullman/WSU	2.0 mgd	$7,000,000	Class A irrigation use
Cascadia/Orting	4.0 mgd	$20,000,000 for total facility $4,000,000 water reclamation	Class A for golf course and landscape irrigation uses.
Cowlitz Regional	2.3 MGD	$9,200,000 upgrade	Class A plus for energy generation

Wastewater Reclamation and Reuse, Asano, 1998,[16] provides an estimate of the capital costs of reclaimed water for a larger number of projects in California. Table 3 provides a summary of this information. The average capital cost for a 1.0 mgd, Class A facility is $7,362,500 which similar to the costs of the projects shown in Table 1. Costs to produce Class B, C, or D reclaimed water would be closer to costs for secondary treatment facilities, approximately $6.1 million for a 1.0 mgd facility.

Table 3. Total Estimated Capital Construction Costs for Reclamation Treatment Facilities

Level of Treatment	1.0 mgd	5.0 mgd	10.0 mgd
Primary Treatment	$2,950,000	$5,300,000	$7,550,000
Secondary	6,100,000	14,400,000	24,900,000
	6,500,000	15,200,000	26,100,000
	5,700,000	13,200,000	24,950,000
Average	**$6,100,000**	**$14,133,333**	**$25,316,667**
Class A Reclaimed	8,400,000	18,400,000	35,300,000
	6,900,000	15,700,000	30,000,000
	7,050,000	16,650,000	30,900,000
	7,100,000	18,100,000	34,500,000
Average	**$7,362,500**	**$17,212,500**	**$32,675,000**

Table 4 presents information on the incremental costs to add Class A reclaimed water capability to the effluent of an existing secondary wastewater treatment plant. For a 1.0 MGD facility, costs average between $1.5 and $2.5 million. This is between 21% and 36% of the total facility cost.

[16] Asano, Takashi, Ph.D., P.E., editor Wastewater Reclamation and Reuse, Water Quality Management Library – Volume 10, Technomics Publishing Company, 1998.

Table 4. Estimated Incremental Capital Costs Associated with WWTP Upgrades from Secondary to Class A – Add Coagulation and Filtration, More Disinfection (Asano 1998) 1996 Dollars

Class A Reclaimed	1.0 mgd	5.0 mgd	10.0 mgd
Conventional	$2,650,000	$5,050,000	$9,550,000
Direct Filtration	1,450,000	2,950,000	5,450,000
In-line Filtration	1,550,000	3,650,000	6,100,000

Table 5 presents rough estimates of distribution costs from Asano (1998) averaged over a number of projects. Costs of retrofitting distribution lines are roughly twice the costs of new construction. Distribution costs also vary widely depending upon the size and extent of a distribution system, soil conditions and the type of materials that must be used.

Table 5. Distribution costs (Source: Asano 98)

Type of System	Cost/acre foot	Cost/ccf
New systems (master planned communities)	$175/acre-foot	$2.49 per ccf
Retrofits (urban areas)	$350/acre-foot	$4.98 per ccf

The 2000 Report of the Reclaimed Water Task Force, convened by the King County Department of Natural Resources, contained detailed analysis of several reclaimed water proposals. According to that analysis, "the cost per hundred cubic foot (ccf) of reclaimed water varies between $4.01 and $10.33. As a means of comparison, potable water rates charged to large irrigation users by utilities in the general project areas ranges from $2.04 and $4.28/ccf."

The 2001 report from the Central Puget Sound Water Supplier's Forum similarly concluded that "For reclaimed water to be used on a large scale … it must be made available throughout the region at a price that appeals to potential users." Their analysis found that unit costs for reclaimed water projects ranged from $11,000 to over $13 million per mgd or $0.02 to $68.84 per ccf. Unit costs for traditional potable water supply options ranged from $225,000 to $1.5 million per mgd ($0.12 to $3.07 ccf).

The high and low projects analyzed may however represent statistical outliers. Taking out the high and low projects, the cost of other analyzed projects ranged from $100,000 to $924,000 per mgd ($0.50 to $4.20 per ccf). Review of the background information associated with the projects analyzed found that lower cost options tended to require very limited distribution facilities and produced class C or D reclaimed water. Furthermore, the one very high cost option was to serve the Crystal Mountain Ski Resort. The costs of this project are likely driven up by the location of the project and the proposed use of the water for snowmaking.

Chapter 6

Preliminary Recommendations to Harmonize Planning Statutes

Fulfilling the Governor's Directive Requirements Related to 2007 RCW 90.46.120 Amendments

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2007 Reclaimed Water Use Legislative Report

Prepared by:

Washington State Department of Ecology
Water Quality Program

December 2007

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Harmonizing Statutory Planning Requirements

Summary

This report provides the Department of Ecology's (Ecology) recommendations to harmonize new water supply planning requirements for reclaimed water with other state statutes. Governor Gregoire directed Ecology to provide these recommendations to her and to the Legislature by December 31, 2007. In 2007, Section 3 of Engrossed Second Substitute Senate Bill (E2SSB 6117) amended the state's Reclaimed Water Use act (RCW 90.46.120 (2)) to require consideration of reclaimed water during watershed planning and land use decisions.
In signing the new law, Governor Gregoire emphasized the importance of harmonizing these new water supply planning requirements with other statutes to ensure effective implementation. The Governor's directive asks Ecology to work with legislative leadership and provide recommendations to the Governor and the Legislature by December 31, 2007.

Approach

Ecology reviewed correspondence to the governor and the statutes referenced in RCW 90.46.120 (2) to determine the need for further harmonization. Statutes referenced include:

- Growth Management Act (Ch. 36.70A RCW)
- State Subdivision Act (Ch. 58.17 RCW)
- Public Water System Coordination Act, (Ch. 70.116 RCW)
- Water System Planning (Ch. 43.20 RCW)
- Regulation of Public Ground Water (Ch. 90.44 RCW)
- Watershed Planning (Ch. 90.82 RCW)

Ecology also reviewed the language previously added to the Water Pollution Control Act (RCW 90.48.112) requiring consideration of reclaimed water in sewerage plans.

Ecology, in consultation with appropriate legislative staff, developed the following six-step plan of action:

1. Review any letters submitted to the governor expressing concern about implementation of the new planning requirements.
2. Contact staff within various Ecology programs and at other state agencies with statutory requirements that may need coordination with the new law.
3. Consult with the state Office of Attorney General (ATG) for initial recommendations to best harmonize the statutes.
4. Review ATG recommendations.

5. Assign follow-up work to the reclaimed water advisory subtask force created under Section 5 of E2SSB 6117.
6. Propose any recommended statutory changes for the 2009 session – in conjunction with other recommendations to implement reclaimed water use.

This report summarizes Ecology's progress to date.

Implementation

Before signing Section 3 of E2SSB 6117 into law, Governor Gregoire received three letters with specific comments regarding the new planning requirements. Ecology reviewed the letters and noted the following highlights:

> King County Executive, Ron Simms expressed King County's support for including reclaimed water in regional planning processes. King County believes that regional planning processes should be the first place to discuss feasibility of reclaimed water use.
>
> Washington Association of Sewer and Water Districts (WASWD) Executive Director, Hal Schlomann, expressed WASWD concern that the intent of the new language was unclear. Although the WASWD letter supported signing Section 3 into law, they also expressed a concern that this may open the door to mandatory reclaimed water use. WASWD indicated a desire to continue working to improve the statutory language.
>
> Washington Water Policy Alliance (WWPA) Executive Director, Kathleen Collins, expressed WWPA concerns with Section 3 related to regional planning requirements and planning under the State Subdivision Act (RCW 58.17). WWPA believes that the direction was unclear and questioned the wisdom of imposing requirements to other statutes by amending a section of the Reclaimed Water Use Act. WWPA believes the amendment required additional work and requested a veto of Section 3.

Staff contacts for the following state agencies familiar with the various planning statutes referenced in Section 3 of E2SSB 6117 include:

> Ecology Water Quality Program –Katharine Cupps, Agency Lead for Reclaimed Water
> Ecology Water Resources Program – Lynn Coleman
> Ecology Shorelands and Environmental Assistance Program – Lauren Driscoll
> Community Trade and Economic Development – Lynn Kohn
> Department of Health – Ginny Stern

Ecology asked the staff contacts to suggest specific names from the Office of the Attorney General (ATG) who would be knowledgeable about the various planning statutes. The agency staff suggested the following:

> Ecology Water Quality – Sonia Wolfman
> Ecology Water Resources – Barbara Markham
> Ecology Shorelands and Environmental Assistance – Maia Bellon and Brian Fowler

Community Trade and Economic Development – Alan Copsey
Department of Health – Dori Jaffe

Next, Ecology requested legal support to respond the Governor' directive related to Section 3 of E2SSB 6117. Specifically, Ecology asked the ATG to:

1. Identify any potential conflicts, concerns about clarity or uncertainty between the new planning requirements and other referenced statutes.
2. Provide recommendations for harmonizing the implementation of the statutes.

Recommendations from the Office of the Attorney General

In response to Ecology's request, the Office of the Attorney General (ATG) provided information and recommendations in October 2007. This report divides the response into the four sections as defined by the ATG:

Increasing Clarity

Based on ATG legal advice, the new planning provisions in the Reclaimed Water Use Act (RCW 90.46.120) are constitutional. However, the ATG suggested two basic ways to increase clarity for more effective implementation:

1. Direct amendment to each of the statutes referenced.

   This is the best way to assure coordination between the various types of regional planning. According to the Washington Code Reviser, this amendment could be as simple as inserting the phrase "[e]xcept as provided in RCW 90.46.120" into the appropriate section of each of the referenced statutes.

2. Minor revisions to the Reclaimed Water Use Act, RCW 90.46.120.

   Increasing the clarity within RCW 90.46.120 may help ensure consistency and coordination in planning for reclaimed water use. For example, does the section require addressing reclaimed water in all plans or in one of the referenced plans?

Requirements Related to the Regulation of Public Ground Water

The planning requirements under the Regulation of Public Ground Water Act, Chapter 90.44 RCW that should address reclaimed water use include RCW 90.44.400(2) designating groundwater management areas or sub-areas and RCW 90.44.410 requiring that the management programs identify:

- Water resources and the allocation of the resources - RCW 90.44.410(1)(c).
- Policies and/or practices that may impact groundwater recharge - RCW 90.44.410(1)(e).
- Land use and other activities that may impact the use of ground water, including waste disposal - RCW 90.44.410(1)(f).

RCW 90.44.430 provides that Ecology, DOH, and local governments must be guided by the adopted program when reviewing plans that may impact program implementation.

Watershed Planning

Under the Watershed Planning Act, the language in RCW 90.82.070(2) is not clear as to whether consideration of reclaimed water in watershed plans is optional or required. One way to assure consistency with the new reclaimed water planning coordination requirements is to add the words "[e]xcept as provided in RCW 90.46.120 (2) and (3), the assessment shall include . . ." to RCW 90.82.070(1).

Cautionary Notes

Ecology should get stakeholder input regarding any proposed recommendations to amend the statutes. Ecology should consider other options for clarifying language that may be more acceptable to stakeholders than the Code Reviser's suggested phrase. In particular, other issues regarding the Growth Management Act might make it politically difficult to accomplish a revision.

Next Steps

To complete this assignment in time for the 2009 legislative session, Ecology plans to:

1. Review the suggestions from the ATG with the reclaimed water advisory subtask force created under Section 5 of E2SSB 6117.
2. Obtain and consider recommendations from the Removing Barriers Subtask Force (subtask force). The Legislature assigned this subtask force to identify legal barriers including unresolved legal issues and recommend actions to support reclaimed water use.
3. Continue to work with legislative leadership. Provide any recommended statutory changes for consideration during the 2009 legislative session.

Appendices

Appendix A

Governor's Directive
(E2SSB 6117 Section 4 Veto)

Appendix A – Governor's Directive (E2SSB 6117 Section 4 Veto)

VETO MESSAGE ON E2SSB 6117

May 11, 2007

To the Honorable President and Members,
The Senate of the State of Washington

Ladies and Gentlemen:

I am returning, without my approval as to Section 4, Engrossed Second Substitute Senate Bill 6117 entitled:

"AN ACT Relating to reclaimed water."

Section 4 of this bill would establish procedures for determining when a water reuse project would impair existing water rights, and would change the standard for mitigating any such impairment. Based on legal advice, I believe this section could have unintended consequences to existing water rights. The remainder of Section 4 of the bill would also create a new task force to address the state's water reuse program, including water right impairment issues.

I have vetoed Section 4 of Engrossed Second Substitute Senate Bill 6117 because of that portion of it that changes the standard for mitigating impairment of existing water rights.

Section 3 of the bill establishes new requirements for considering reclaimed water during watershed planning and land use decisions, which will eventually need to be harmonized with other statutes in order to ensure effective implementation. I believe this work is still needed and important to accomplish. Accordingly, I am directing the Department of Ecology to work with legislative leadership to address water right impairment from water reuse projects, reclaimed water planning and other issues raised in Sections 3 and 4 of the bill and to provide a report and recommendations to the Governor and appropriate standing committees of the legislature by December 31, 2007.

With the exception of Section 4, Engrossed Second Substitute Senate Bill 6117 is approved.

Respectfully submitted,
Christine O. Gregoire
Governor

Chapter 7

Interim Report on Water Rights Impairment Issues

Fulfilling E2SSB 6117 Requirements - Section 4

2007 Reclaimed Water Use Legislative Report

Prepared by:

Washington State Department of Ecology
Water Resources Program

December 2007

WASHINGTON STATE
DEPARTMENT OF
ECOLOGY

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Water Rights Impairment Issues

Summary

Introduction

This interim report provides an update on the Department of Ecology's work in identifying and addressing key water right issues related to reclaimed water use. Ecology convened a stakeholder Reclaimed Water and Water Rights Advisory Committee in July 2007 to assist in addressing these key issues.

Ecology will deliver a final report late in 2008 for consideration during the 2009 legislative session. The report will cover key water right policy issues, stakeholder consensus recommendations to the Legislature, and the range of perspectives to inform the Legislature on the policy choices where no consensus is reached.

Key Issues

Reclaimed water in Washington involves water quality, water quantity, and human health concerns. Water resources issues are evolving as the reclaimed program matures and new situations arise. Ecology has developed initial guidance on impairment, but needs to clearly define a process for a broader range of reclaimed water situations. Existing impairment guidance can be found at: http://www.ecy.wa.gov/programs/wr/rules/rwrac.html.

In its initial discussions, the stakeholder advisory group has identified a number of water rights issues related to reclaimed water projects. These may be organized under two broad categories; (1) impairment of existing water rights, and (2) the use of reclaimed water as mitigation for new water rights. Most of the attention and discussion to date has focused on impairment rather than the second issue.

Impairment

Impairment addresses the fundamental question of the rights of reclaimed water facilities versus the rights of existing water right holders when water availability is limited.

In some situations, a utility may want to reclaim water in order to have additional water supply. However, that "new" supply may already be used by another downstream water right holder. Wastewater from municipal sewage treatment plants and other sources has historically been treated to a standard which allows it to be discharged to freshwater streams. In eastern Washington and in upland areas of western Washington, the discharged water becomes part of the water budget used for further out-of-stream and in-stream purposes. The advent of new technology, continued growth in demand for new water supply, and difficulty or impossibility of getting new water rights in heavily appropriated basins have led to proposals to reclaim the water for new out-of-stream consumptive uses.

The removal of this water from the water budget raises impairment concerns among holders of out-of-stream and in-stream water rights. Again, this is an issue for eastern Washington and for the inland areas of western Washington. Conversely, in the Puget Sound area, most of the wastewater treatment plants flows go to marine water and do not have the issue of impairment to in-stream flows or out-of-stream water rights.

The desire to improve water quality is also an important driver for reclaimed water. Wastewater dischargers, consistent with the core objective of the Clean Water Act (CWA), are encouraged to reduce and ultimately eliminate their discharge of pollutants. This situation also raises questions about balancing differing objectives. In particular, how should that desire to improve water quality be balanced with the potential decrease in flow in the receiving water and potential impairment of out-of-stream rights and in-stream flows?

Use of Reclaimed Water As Mitigation For New Water Rights

A number of parties have expressed an interest in use of reclaimed water to mitigate for new water rights; i.e. use reclaimed water to prevent depletion of a water body so that new water rights might be issued. For example, reclaimed water that would have been discharged to Puget Sound could be used to recharge an aquifer. A water utility might then be interested in applying for new water rights from that aquifer since water is added to the groundwater rather than being discharged into Puget Sound.

Under current law, two linked permits are required to use reclaimed water as mitigation for a new right if none of the reclaimed water itself is used. In this situation, reclaimed water is added to the system, but it is substituted for "new" state water used under the new water right rather than the reclaimed water itself being reused. In these situations, two permits are required; one permit is under the Water Code for the use of "new" state water and the other under the Reclaimed Water Act for regulating the quality and use of the reclaimed water. The committee will consider the following policy questions. When is use of reclaimed water as mitigation for new water rights appropriate? Should statutory authority under RCW 90.46 for a single permit be recommended? What are the criterion and processes for review of such a project?

In summary, reclaimed water is not uniformly beneficial to either in-stream or out-of-stream uses. Details of each situation vary and must be considered in order to make decisions. However, there are a number of situations where it is very clear that the use of reclaimed water is a good choice such as preventing direct discharges to Puget Sound, non-consumptive uses, or reduction of diversions from an overstressed river.

This committee will make recommendations about impairment and reclaimed water situations and provide them to the Legislature and Ecology for consideration during the 2009 legislative session.

Background

Reclaimed water use is relatively new in Washington and involves water quality, water quantity, and human health concerns. Initial legislation authorizing reclaimed water passed in 1992.

Development of the water resource aspect of the reclaimed water program is still in progress. There are several reasons for this.

1. Water resource issues are not clear-cut or simple. Many variations exist on source of water, consumptive (water taken out of the system and not recovered) versus non-consumptive (water stays in the system) use of water, current discharge location, and other factors which affect water resource aspects of reclaimed water.
2. The reclaimed water program is still relatively young and new situations are arising.
3. Ecology used its limited water resources staff time on the specifics raised by actual projects, leaving other issues for development as time permitted.
4. Based on direction given by the Legislature, the agencies focused initially on water quality and human health standards. Therefore, these aspects are further along in the development process than water quantity aspects.
5. The reclaimed water program has matured over time to consider not just direct use of reclaimed water by sending it through purple pipes from the reclaimed water facility to the place of use, but also for:
    1) Use of groundwater to store and convey reclaimed water.
    2) Use of surface water to store and convey reclaimed water.

In addition, more utilities are now examining the feasibility of reclaimed water. This is due to a number of factors including:

1. Wastewater dischargers, consistent with the core objective of the CWA, are encouraged through regulation and technological advances to reduce and ultimately halt their discharge of pollutants.
2. Water supply utilities have few new source opportunities and many are reaching the limits of their existing water rights.
3. Legally, water and wastewater utilities must evaluate reuse opportunities in their system planning.
4. Department of Natural Resources (DNR) aquatic land easements require the consideration of alternative/upland disposal methods to existing marine discharges.
5. The cost of advanced treatment is decreasing.

Continued development is appropriate to complete the Ecology guidance and recommend potential statutory improvements.

History of Water Rights Issues Related to Reclaimed Water

1992 – Reclaimed Water Use act passed, Chapter 90.46 RCW.
The original law, a joint program between the departments of Ecology and Health, encouraged reclaimed water use consistent with environmental and public health protection. The law was silent on the issue of water rights.

1995 - Stakeholder experience showed that the lack of certainty over the right to use reclaimed water impeded use. The two most controversial points were the rights of:

1. Contributors of the sanitary sewage versus wastewater treatment facilities to the reclaimed water.
2. Wastewater treatment facilities versus the rights of downstream users to the discharged effluent.

In response, the agencies developed a proposal to address reclaimed water right issues but did not receive funding.

1996 – Based on stakeholder input, Ecology convened a volunteer workgroup of attorneys to address the issues. The workgroup developed a list of key issues and questions. Individual attorneys were assigned to survey and report on statutes, case laws, state regulations, policies, and practices for reclaimed water rights in individual states. Staff from Ecology, DOH, and the Attorney General's Office provided oversight through a steering committee.

The report focused on the issue of rights of treatment facilities versus the rights of downstream users. The survey found that the range of states' approaches to addressing rights of downstream users fell between two theoretical extremes: strict adherence to prior appropriation requirements and the absolute right to reuse water.

In the fall of 1996 and winter of 1997, Ecology convened a Reclaimed Water Rights Policy Work Group to build on the foundation laid by the attorney's work group.

1997 - At the same time, the Legislature adopted ESSB 5725, which provides:

1. Reclaimed water from municipal wastewater facilities[17], permitted under the Reclaimed Water Use act, belongs to the owner of the treatment facility.[18]
2. The generation and distribution of reclaimed water is exempt from the water right permitting process.[19]
3. Facilities that reclaim water must "not impair any existing water right downstream from any freshwater discharge points of such facilities unless compensation or mitigation for such impairment is agreed to by the holder of the affected water right."[20]

2003 – Katharine Cupps, Ecology's reclaimed water lead, convened a joint agency, staff-level work group to address the various water quality, public health, and water right impairment issues. Because of the number and complexity of questions and limited staff time, the workgroup focused on priorities requiring a timely response to implement actual reclaimed water projects.

2001 – SSB 5925 grants the authority for agricultural processing plants to reuse process water. It contains a water right impairment clause similar, but not identical to, the existing municipal

[17] This did not include private industrial or commercial facilities. These are addressed in 2001 and 2002 legislation.
[18] Codified as RCW 90.46.120(1)
[19] RCW 90.46.120(1)
[20] RCW 90.46.130(1)

impairment clause. This law recognizes impairment only for water rights within the same water source as the source of water supply for the agricultural processing plant. That is, the law does not consider water rights dependent on wastewater effluent derived from other sources of supply – foreign flows – as impaired. This is consistent with basic concepts in western water law and case law in Washington. In addition, the law considers impairment only for water rights downstream from the facility's wastewater discharge point and existing on July 22, 2001 (the date of legislation).[21]

2002 – EHB 2993 grants authority for industrial plants to reuse process water and adds the same impairment language as used for the agricultural processing plants in 2001. Water rights that could be impaired are limited to those downstream of the industrial processing facility wastewater discharge points existing on June 13, 2002 (date of legislation).[22]

For water rights impairment, the workgroup addressed the following:

1. Defining impairment.
2. Clarifying Ecology's role in determining impairment.
3. Considering both in-stream flows and out-of-stream diversions.
4. Including groundwater in hydraulic continuity with surface water (i.e., flow passes from one to the other).

2006 – The Legislature enacted ESHB 2884 requiring Ecology to adopt rules addressing all aspects of reclaimed water. The bill required Ecology to form an advisory committee to provide technical assistance in the development of standards, procedures, and guidelines required under the bill. Ecology convened the Reclaimed Water Use Rule Advisory Committee in October 2006 for this purpose.

Ecology reassigned Katharine Cupps to work on the Rule Advisory Committee and to develop the rule, and put the staff workgroup efforts on hold. Ecology 'issued' the draft impairment guidance based on work completed to date.

2007 – The Legislature enacted E2SSB 6117 to reaffirm the state's commitment to reclaimed water use. The legislation expanded the role of the rule advisory committee to address further issues and required extensive agency reporting. The water right aspects included:

1. Changes to the impairment standard.
2. Changes to the process in the water right impairment guidance document.
3. Requirement that Ecology convene a task force to review issues related to reclaimed water and water right impairment.
4. Authority to permit aquifer storage and recovery of reclaimed water under Chapter 90.46 RCW.

[21] RCW 90.46.130(2) and RCW 90.46.150.
[22] RCW 90.46.130(2) and RCW 90.46.160.

The Governor vetoed the section of the legislation on items 1 through 3 above. Her veto retained existing standards and processes and recognized the need for further work. She directed Ecology to work with legislative leadership to address water right impairment from water reuse projects, reclaimed water planning, and other issues raised in Sections 3 and 4 of E2SSB 6117.

While the veto removed the legislative mandate to convene a task force, Ecology determined it important to assure a broad representation of stakeholder viewpoints and convened the Reclaimed Water and Water Rights Advisory Committee. Appendix A lists the representatives attending one or more meetings.

In 2007, Ecology also received funding for a staff position to chair the staff workgroup. The group reconvened in September 2007.

Reviewing Approaches Used in Other States

The Puget Sound Partnership and the Environmental Law Institute (ELI) provided funding for legal research to help support the agency's efforts on reclaimed water. ELI is an independent, non-partisan, environmental education and policy research center. ELI provides background information but does not make recommendations for changes in Washington's laws. ELI conducted research updating the 1996 survey of other states' approaches to address reclaimed water and water right impairment. A copy of the report is in Appendix B.

The report states on page 1:

> "As a general matter, states such as Washington that have had recent input from their Legislature on water reclamation and reuse have tended to leave the prior appropriation system intact. Conversely, due to the authority of courts to determine what is and is not a violation of the prior appropriation scheme, states that have left the issue to common-law have tended to evolve certain exceptions that favor reclamation and reuse. Under either legal system, however, there remains some flexibility in the amount of protection provided for right holders. States starting with a baseline of strict appropriation requirements have streamlined their procedures for reclaimed water permits, or even shifted the burden of identifying and proving water right impairment to the downstream user. States closer to the 'right to reuse' side of the spectrum do not always allow reuse of sewage effluent outside of the municipal borders stated in the original water right, or for beneficial uses different from the one listed in the original right.
>
> Distinct from this policy decision are several other concepts that shape the legal landscape and potentially influence the ability to reuse wastewater effluent. The common-law doctrine of 'capture and reuse' traditionally is limited to irrigation waters, but the expansion of the 'wastewater rule' in several western states suggests that a broader interpretation could be possible."

The report also found that states have varied approaches on procedural roles and responsibilities. For example:

- Whether notification of downstream water right holders is required?

- Who bears the burden of "triggering" an analysis? That is, are existing water right holders responsible for raising the issue of potential impairment or must the reclaimed water facility automatically complete some type of analysis to show that the use of water will not impair other water rights?
- Who bears burden of doing the analysis?

Addressing Key Issues

The Reclaimed Water and Water Rights Advisory Committee is fleshing out issues including those raised by E2SSB 6117 or the Reclaimed Water Rule Advisory Committee. These may be organized under two broad categories: (1) impairment of existing water rights and (2) the use of reclaimed water as mitigation for new water rights.

Impairment

Some parties on the Water Rights Advisory Committee believe the existing impairment process is working reasonably well for reclaimed water facilities, while others believe it to be a significant barrier in some cases. There are concerns about the existing process, how the water supply should be allocated, and how to improve water quality.

Process

The current guidance requires reclaimed water faculties to evaluate whether existing water right holders might be impaired by new consumptive uses of the reclaimed water. This is called an impairment analysis or evaluation. Ecology prefers this to be done early in the planning process to allow time to resolve any issues. The evaluation is then submitted to Ecology for review and approval.

This is different from processing for new water rights, transfers, or changes. In those situations, parties must wait in line until their permit is processed and evaluated by Ecology to determine whether the water right would impair existing water right holders based on information provided by the project proponent.

It is also different than processing a change for moving a regular wastewater treatment discharge. Here, no evaluation of impairment is completed unless someone raises a claim of impairment.

The differences in requirements have come about based on which law is used for the permitting and what the prime responsibility of that statute is. That is, water quality permits focus on improvement of the quality of a receiving water and water rights permits focus on allocating water between users.

It is important to note that in-stream flows as well as out-of-stream water rights can be impaired. An in-stream flow is a water right held by the state which prohibits additional consumptive appropriation of water because of low flow conditions during certain times of the year unless Ecology determines it is in the overriding consideration of public interest to do so.

An additional process concern is that the existing guidance does not provide a clear path for entities that may impair in-stream flow and the options that they mighty have to address the situation.

Additional Water Supply as the Driver for Reclaimed Water

Several drivers may prompt a utility to consider reclaimed water including the desire for new water supply, the desire for improved water quality, or both. In each case, a reclaimed water facility that increases the consumptive use of water or moves the water to a new use or location may affect existing water right holders.

Water availability is limited throughout the state of Washington at varying times. Consequently, wastewater and return flows play a role in ensuring that water remains available in a river or stream–both to support aquatic life and to satisfy other downstream users. In that sense, most water already undergoes some form of reuse, as downstream interests rely on returned water continuing its journey to the ocean. New consumptive uses of water may change the water budget and the subsequent availability of water downstream. A "water budget" describes which users get water, when, and how much.

The use of reclaimed water for new purposes or in different locations raises impairment concerns among holders of out-of-stream and in-stream water rights. That is, a wastewater that was once discharged and available to other users is no longer discharged. Customers of the reclaimed water facility now use it. The issue becomes "how should the desire for additional water supply and the rights of existing water right holders be balanced?"

In western Washington, most of the wastewater treatment flows go to marine water and do not have the issue of impairment to in-stream flows or out-of-stream water rights since there is no one downstream.

Water Quality Improvement as the Driver for Reclaimed Water

A number of reclaimed water facilities have been built in response to the need to decrease or stop discharge of a pollutant to a water body. Here, there is a water quality driver for reclaimed water.

When a facility is directed to cease the discharge of the pollutant, their options may include:

1. Advanced treatment and discharge.
2. Reclaimed water and beneficial use.
3. Land treatment.
4. Moving the effluent discharge to a more favorable water location.
5. Connecting to a regional sewerage system discharging to another location.

By explicitly requiring an impairment analysis for reclaimed water, but not for other options to divert or consumptively use the wastewater effluent, reclaimed water may be more difficult to achieve than other options. This can be true even when the impacts on downstream water rights

are the same or potentially worse. This is a concern for wastewater treatment facilities who want to consider the full range of options for addressing water quality pollutants.

Use of Reclaimed Water as Mitigation for New Water Rights

Under current law, two linked permits are required to use reclaimed water as mitigation for a new water right if none of the reclaimed water is recovered and used. In this situation, reclaimed water is added to the system, but it is substituted for "new" state water used under the new water right rather than the reclaimed water itself being reused. In these situations, two permits are required. One permit is under the Water Code for use of "new" state water and the other under the Reclaimed Water Act for regulating the quality and use of the reclaimed water. The committee will consider the following policy questions. When is use of reclaimed water as mitigation for new water rights appropriate? Should statutory authority under RCW 90.46 for a single permit be recommended? What are the criterion and processes for review of such a project? How can the process be streamlined?

Appendix C contains a detailed list of the questions that the advisory committee is addressing relative to these two broad categories of issues.

Solutions

After several meetings, review of projects, and discussion with various stakeholders, issues and solutions appear to fall into two basic categories.

1. Review and improve the existing process to evaluate and address impairment. For example:
    - How can the existing definition of impairment be improved?
    - Who should bear the burden of "triggering" the process and evaluating impairment?
    - What options should exist when an in-stream flow would be impaired? Show a clear path for considering these options.
    - What options should exist when out-of-stream rights would be impaired. Show a clear path for "just compensation" and other issues.
    - Should reclaimed water have different requirements than other changes in discharge location or consumptive use?
    - How can Ecology improve coordination internally and with other entities such as the Office of Regulatory Assistance (ORA).
2. Address the use of reclaimed water for mitigating new water rights. Under current statute, two linked permits (one under Chapter 90.03 or 90.44 RCW and one under Chapter 90.46 RCW) are required for project proponents wishing to use reclaimed water as mitigation for a new appropriative right.
    - When is use of reclaimed water as mitigation for new water rights appropriate?
    - Should statutory authority under Chapter 90.46 RCW for a single permit be recommended?
    - What should the criteria and process be for review of such a project?

Work Plan to Address Key Issues

1. The committee will refine the current list of issues or questions.
2. Ecology or other committee members will provide information on each issue.
3. The committee will discuss each issue.
4. The committee will try to reach consensus on each issue. If consensus is not possible, Ecology will document the different options and rationales.
5. Ecology will complete a draft report. Background and either a recommendation or options will be provided for each issue.
6. The draft report will be shared with a broader audience.
7. Ecology will revise the report to include other viewpoints.
8. Ecology will submit the final report to Legislature and Governor in late 2008. *Intent is to provide consensus recommendations and adequately inform decision makers on the different perspectives where consensus cannot be reached.*
9. Ecology's Water Resources Program will amend guidance as approved by program management.
10. Ecology to propose rule language as needed.

Current Recommendations

1. Follow work plan to address issues and complete a final report.
2. Defer any legislation on reclaimed water and water rights until 2009.

Appendices

Appendix A

Water Rights Advisory Committee

Appendix A - Water Rights Advisory Committee

Name	Organization
Barb Anderson	Ecology - Water Resources (note taker)
Jay Austin	Environmental Law Institute
Michael Barber	WSU Water Research Center
Bob Barwin	Ecology - Water Resources
Carla Carlson	Muckleshoot Tribe
John Charba	House Republican Caucus
Lynn Coleman	Ecology - Water Resources
Kathleen Collins	Washington Water Policy Alliance
Katharine Cupps	Ecology - Reclaimed Water Lead (Water Quality)
Pat Deneen	Land developer
Mike Dexel	Department of Health
Jaclyn Ford	House Committee on Agriculture & Natural Resources
Curt Gavigan	Senate Committee on Natural Resources, Ocean and Recreation
Eric Johnson	Association of Counties
Barbara Markham	Assistant Attorney General
Chris McCabe	Association of Washington Business
Michael Mayer	Washington Environmental Council
Dave Monthie	King County
Tom Mortimer	Snohomish River Regional Water Authority
Char Naylor	Puyallup Tribe
Rachael Osborn	Center for Environmental Law and Policy
Clint Perry	Evergreen Valley Utilities
Terese Richmond	GordonDerr
Tom Ring	Yakama Nation
Mike Schwisow	Washington State Water Resources Association
John Stuhlmiller	Farm Bureau
Kelly Susewind	Ecology - Water Quality
Karen Terwilliger	House Democratic Caucus
Angie Thomson	Advisory committee facilitator
Gary Wilburn	Senate Democratic Caucus Policy Staff Director
Patrick Williams	Center for Environmental Law and Policy
Dawn Vyvyan	Yakama Nation and Puyallup Tribe

Appendix B

Water Right Impairment in Reclamation and Reuse: How Other Western States Can Inform Washington Law

Appendix B - Water Right Impairment in Reclamation and Reuse: How Other Western States Can Inform Washington Law

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Water Right Impairment in Reclamation and Reuse

How Other Western States Can Inform Washington Law

OCTOBER 2007

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Introduction

Conserving and recovering Washington's aquatic ecosystems will require numerous efforts, not least of which is addressing the quality and quantity of water in the state. Water reclamation and reuse offers an opportunity to limit polluting discharges from municipal wastewater treatment plants and other sources to Washington's surface waters and directly to the Puget Sound. However, the nature of western water law and the statutory variations specific to Washington present barriers to this endeavor. Water rights under the prior appropriation system are based upon the flows available at the time of initial appropriation, which can include return flows, seepage, and wastewater. Therefore, a downstream water user's right, and the very stability of the water distribution scheme, may depend on continued releases by upstream users. Washington's statutory protection against "impairment" of the rights of downstream users reinforces this common-law concept. Such protection of downstream water rights can make upstream water reuse difficult, since additional upstream consumption can result in impairment of existing rights in highly allocated basins.

Western states have balanced reclamation policies and water rights in different ways, guided by the laws and politics of the state.[1] For example, as between the rights of treatment facilities and the rights of contributors to their sewage flow -- such as multiple municipal water services contributing to a single treatment facility -- both Washington and California have vested the rights to reclaimed water, once treated, to the treatment facility owner. In other states, such as Utah, the original appropriators retain their rights until the water reaches a public watercourse. As between reclaimers and downstream users, states have established policies and procedures that lie somewhere on a theoretical spectrum between, at one end, a strict adherence to appropriation requirements, and on the other, an absolute right to reuse.

As a general matter, states such as Washington that have had recent input from their legislature on water reclamation and reuse have tended to leave the prior appropriation system intact. Conversely, due to the authority of courts to determine what is and is not a violation of the prior appropriation scheme, states that have left the issue to common-law have tended to evolve certain exceptions that favor reclamation and reuse. Under either legal system, however, there remains some flexibility in the amount of protection provided for right holders. States starting with a baseline of strict appropriation requirements have streamlined their procedures for reclaimed water permits, or even shifted the burden of identifying and proving water right impairment to the downstream user. States closer to the "right to reuse" side of the spectrum do not always allow reuse of sewage effluent outside of the municipal borders stated in the original water right, or for beneficial uses different from the one listed in the original right.

[1] The western states analyzed in this paper were selected through discussions between Washington Department of Ecology staff and the Environmental Law Institute. The information gathered was drawn from statutes, regulations, and personal interviews with key staff from the various states. ELI is solely responsible for the interpretation of these materials expressed here.

Distinct from this policy decision are several other concepts that shape the legal landscape and potentially influence the ability to reuse wastewater effluent. The common-law doctrine of "capture and reuse" traditionally is limited to irrigation waters, but the expansion of the "wastewater rule" in several western states suggests that a broader interpretation could be possible. Further, the original source of the water can determine a user's rights in some states. In Washington and elsewhere, the original appropriator of foreign flows cannot be compelled to continue discharges of water from that source by downstream users. In California, the same is true for water originating from an aquifer.

The Washington State Legislature and Department of Ecology face the challenge of reconciling these legal limits and previous legislative pronouncements with the policy goal of encouraging and increasing water reclamation and reuse where it is appropriate. But even within the existing water rights framework, there are realistic options to restate and further streamline Washington's water reuse application procedures.

Water Rights Impairment

A. Brief Background on Water Rights

Following the European notion that water is a natural resource held in common for the public good, the State of Washington has declared, in both its Constitution and statutes, that water is held in trust for the people of the state.[2] However, individuals have the right to put this public resource to private use. Theories on how to allocate this individual use right took two dominant forms in the United States, and created a mixed system in Washington in its early history.

The riparian doctrine ties rights to a particular body of water to the land adjacent to it.[3] In this doctrine's classic form, multiple landowners adjacent to the same waterbody have equal rights to the water, and in times of shortage, each user's share is reduced proportionately.[4] Because the riparian doctrine is most appropriate in areas with plentiful water and where most people are adjacent to a waterbody, development in the western United States, specifically mining, brought about the prior appropriation doctrine.[5] Often explained as "first in time, first in right," the classic form of this doctrine prioritizes individual's rights, the earliest appropriator being "senior" to all subsequent, or "junior," appropriators. Hence, "junior" users would be prohibited from diverting water if such usage would prevent "senior" users from exercising the full amount of their water rights.[6]

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[2] JAMES K. PHARRIS & P. THOMAS MCDONALD, WASHINGTON STATE OFFICE OF THE ATTORNEY GENERAL, AN INTRODUCTION TO WASHINGTON WATER LAW 1-2 (2000).
[3] *Id.* at 2.
[4] *Id.*
[5] *Id.* at 3.
[6] *Id.*

Originally, Washington courts followed California's lead in determining the nature of these individual use rights: prior appropriation law was used for rights on unpatented federal lands, and the riparian doctrine was used in all other cases.[7] However, the Washington Legislature favored the prior appropriation doctrine, eventually passing the first comprehensive water code in 1917, which adopted the prior appropriation standard for water rights issuances and adjudications.[8] The courts gradually withdrew from the riparian doctrine, ultimately melding riparian rights into the prior appropriation doctrine by requiring beneficial use of riparian rights and prioritizing those rights in the same manner as appropriated rights.[9] While Washington remains a "mixed" water rights system to this day, in practice it is governed by the doctrine of prior appropriation.[10]

Definition of "Impairment"

Under the prior appropriation doctrine, a water right holder has a right to a predetermined amount of water as against all others except those to whom the user is junior. Impairment of this right violates Washington state law.[11] For purposes of reclaimed water applications, the Washington Department of Ecology presently defines "impairment" as:

> [A] condition caused by someone or something other than a natural condition where a water right holder cannot carry out the beneficial use(s) for which the right was perfected using reasonable care and diligence. Ecology considers a reclaimed water impairment analysis in the same context as the issuance of a new water right pursuant to RCW 90.03.290 and RCW 90.44.060.[12]

When considering the legal implications of reclaiming water, the potential for water right impairment is a critical issue. While reclaiming water can increase the quantity of usable water in one location, it may impair water rights of others if the water is consumptively used.

Reclaimers' Rights Against Contributors

While water right impairment in the reclaimed water context most commonly concerns upstream reuse threatening to impair the rights of senior downstream users -- an issue discussed below -- the rights of treatment facilities as against their wastewater contributors also can be contentious. Before the recent advancement of treatment technology, wastewater, particularly municipal effluent and industrial process water, was viewed as a pollution problem rather than a natural resource. At that time, treatment plants performed a service, and parties rarely had an interest in the resulting water prior

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[7] *Id.*
[8] *Id.* at 4.
[9] *Id.*
[10] *Id.*
[11] *See* WASH. REV. CODE §§ 90.03.290(3), 90.42.040(4), 90.44.100(2).
[12] WASH. STATE DEP'T OF ECOLOGY, WATER RIGHTS IMPAIRMENT ANALYSIS GUIDANCE FOR RECLAIMED WATER FACILITIES 2 (2006).

to its release into the nearest waterbody. However, with water supplies increasingly unable to satisfy the demand for water throughout the West, treated wastewater has become widely viewed as a viable commodity. This has created conflict over who owns the rights to the treated effluent.

On one hand, leaving the water rights with the original holders until the water is released back into a waterbody is an analytically simple solution and the most consistent with the prior appropriation system. However, from a policy perspective, this legal structure allows contributors to a wastewater stream to reclaim the water themselves or demand rights to or compensation for the subsequently treated water, which would deter investment in the technology needed to treat to high-level reuse standards. These issues can be settled through contract, but established treatment plants seeking new markets for their discharge could suffer from parties holding out for a share of the proceeds.

On the other hand, vesting treatment plants with rights to treated water removes the possibility of claims by wastewater contributors. However, this policy is less defensible within the prior appropriation doctrine and does not necessarily alleviate concern over contributors reclaiming the water themselves or diverting wastewater prior to its arrival at the treatment plant.

A. In Washington

The Washington Legislature has decided on the latter option, vesting certain categories of wastewater treatment facilities with an "exclusive right" to the water they treat. Most important, regarding "water and wastes discharged from homes, businesses, and industry to the sewer system,"[13] the state code provides that "[t]he owner of a wastewater treatment facility that is reclaiming water with a permit issued under this chapter has the exclusive right to any reclaimed water generated by the wastewater treatment facility."[14] (Separate code provisions targeted at industrial and agricultural industrial water reclamation contain parallel "exclusive right" language.)[15] Given that municipal wastewater effluent is the primary arena for producing reclaimed water, and for potential arguments over the rights of contributors versus treatment plant owners, this provision goes a long way toward encouraging and protecting investment by utilities or other treatment plant owners.

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[13] WASH. REV. CODE § 90.46.010(20).
[14] *Id.* § 90.46.120(1).
[15] WASH. REV. CODE §§ 90.46.150, 160. Section 90.46.150 states, "The owner of the agricultural processing plant who obtains a permit under this section has the exclusive right to the use of any agricultural industrial process water generated from the plant and to the distribution of such water through facilities including irrigation systems." Section 90.46.160 states, "The owner of the industrial plant who obtains a permit under this section has the exclusive right to the use of any industrial reuse water generated from the plant and to the distribution of such water." These appear to be valuable as enabling provisions for their respective sectors, but unlike the municipal provision, they do not seem to change the rights landscape, since there are no analogous upstream contributors to the industrial process water, and since (as discussed below) WASH. REV. CODE § 90.46.130(1) continues to protect downstream users from impairment.

What this provision appears to leave open, however, is who has a right to the water prior to its treatment. A strict reading of the text might suggest that the treatment plant owner gains a right to the water only *after* the reclaimed water is "generated." On this reading, wastewater contributors may have full rights to withhold their wastewater and treat it themselves, potentially undermining distribution of reclaimed water by the downstream treatment plant. Thus, regardless of the present state of water rights law, contracts between the parties may be the most secure means of protecting investment in wastewater treatment technology.

B. In Other States

Other western states have addressed this issue in a definitive manner, but not all of them have come to the same conclusion. California has a statute very similar to Washington's: "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."[16]

Conversely, Utah requires that rights to reused water be based in an original water right, the beneficial use of which is generating wastewater as a by-product.[17] Water rights do not automatically attach upon treatment. Thus, a wastewater treatment plant either must privately contract for the right to use the reclaimed water[18] or, if there is unappropriated water in the source, it may get a reuse authorization contract in addition to filing an application for a water right.[19] The latter is rarely used, since most basins in Utah are fully appropriated; and if the one at issue is not, a user often will choose to appropriate the new water rather than treat used water.[20] Hence, this system is highly dependent on contracts. But, that dependence has made it work effectively, because it gives treatment plant owners confidence that they have rights to the treated wastewater.[21]

Reclaimers' Rights Against Downstream Users

Most of the controversy over water rights in the reclamation context relates to potential impairment of downstream water rights. Since its inception, the prior appropriation system has relied upon seepage, return flows, and surface runoff to fulfill the claims of downstream users. Due in large part to the specific uses, primarily agriculture and mining, and primitive technology in the early years of western settlement, the quantity of a water right holder's allocation greatly exceeded his actual consumptive use. In fully allocated rivers, this meant that downstream users relied upon the difference between allocation and consumptive use by upstream users for fulfillment of their water rights. Downstream users that are senior to an upstream user have full rights to their

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[16] CAL. WATER CODE § 1210.
[17] Telephone Interview with Jerry D. Olds, P.E., State Engineer, Utah Div. of Water Rights (July 31, 2007).
[18] UTAH CODE ANN. § 73-3c-202.
[19] *Id.*; Telephone Interview with Jerry D. Olds, *supra* note 17.
[20] Telephone Interview with Jerry D. Olds, *supra* note 17.
[21] *Id.*

allocated sums, even at the expense of the upstream junior user; however, the upstream user still may divert his full allocation so long as enough water is subsequently released to fulfill the rights of the downstream senior user. Seepage, return flows, and surface runoff can all play a role in ensuring that the senior downstream users' rights are not impaired. Similarly, junior downstream users theoretically founded their appropriative right on the water discharged by the senior upstream users. In both instances, maintaining the status quo of consumptive use by each right holder in the basin creates stability in the system.

But increased demand, more fully allocated waterbodies, and improved technology have put significant strain on the delicate structure of the prior appropriation system. Along with more efficient irrigation techniques, vastly improved wastewater treatment facilities have raised the prospect of greater consumptive use by upstream users and potential impairment of downstream water rights. Water reclamation and reuse improves efficiency and water quality, but prevents discharges to a waterbody that otherwise would have occurred.

If there is no consumptive use of the reclaimed water, for example, for use in toilets, and the water is later discharged to the original waterbody, then there is no net loss to the basin from the reclamation. Similarly, if water reclamation and reuse is coupled with a reduction in the amount of water diverted from the river equal to the amount being reclaimed, there is no net loss to the basin. However, both of these scenarios are rare, as indicated by the fact that reclaimed water is often used for park and golf course irrigation or otherwise viewed as an additional water source, leading to lower streamflows. The challenge faced by policymakers is to encourage water reclamation, but in a way that will prevent impairment of downstream water rights.

A. In Washington

In Washington as in other western states, the balance between encouraging water reclamation and reuse and protecting downstream water rights has been struck by simplifying permitting requirements for reclamation projects, while creating express statutory protection for downstream water rights.

First, Washington law completely exempts specific sources from the usual procedural requirements for obtaining a water right permit: "Use, distribution, and the recovery from aquifer storage of the reclaimed water by the owner of the wastewater treatment facility is exempt from the permit requirements of RCW 90.03.250 [the water appropriation permit] and 90.44.060 [the groundwater appropriation permit]."[22] Similarly, for agricultural production plants and industrial plants, "Use and distribution of the water by the owner is exempt from the permit requirements of RCW 90.03.250, 90.03.380, 90.44.060, and 90.44.100."[23] These provisions greatly ease the process of reclaiming water and distributing it, since no distinct water appropriation permits are required for that purpose. Instead, conditions on a water right for the use of the reclaimed

[22] WASH. REV. CODE § 90.46.120(1).
[23] *Id.* §§ 90.46.150, 160.

water are included in a single permit along with water quality and Department of Health provisions.[24]

Second, Washington law uses direct statutory language that protects the rights of downstream water users from potential impairment by water reclamation: "facilities that reclaim water under this chapter shall not impair any existing water right downstream from any freshwater discharge points of such facilities unless compensation or mitigation for such impairment is agreed to by the holder of the affected water right."[25] The statute is silent as to what constitutes "impairment" in this context, nor does it mention who determines whether there is impairment, or how or when this determination is made.

The Washington Department of Ecology has issued guidance concluding that a written analysis by the reclamation project proponent is necessary to evaluate the potential impairment of water right holders when a facility begins to reclaim water.[26] With technical assistance from the Department of Ecology, the project proponent must determine which downstream right holders may be affected by the proposed project given the hydrology of the basin and record low flow levels. This impairment self-assessment requirement places some burden on the project proponent and is a potential disincentive to water reclamation; but it as also creates an opportunity to be directly involved in the impairment determination, and still results in a more streamlined approval system than conventional water right permitting procedures.

B. In Other States: A Spectrum of Approaches

The Theoretical Extremes

Nearly all western states have established some balance between encouraging water reclamation and reuse and protecting downstream water rights, whether through legislation or court decisions. Analytically, the spectrum of options for striking this balance falls between two theoretical extremes: at one end, strict adherence to prior appropriation requirements, and at the other, an absolute right to reuse water.

Requiring reclamation projects to adhere to the procedural requirements for new water appropriations provides the maximum protection for rights holders, but little legal incentive for reclaiming water. Economically, the cost of water reuse, both in terms of treatment and infrastructure, may already make it a less-appealing option than obtaining additional water allocations, where available. If the law treats reclaimed water the same as a new water allocation, then applicants would simply get new allocations instead of reclaiming water, and reclamation projects would be limited to over-allocated basins.

On the other end of the spectrum, an absolute right to reuse water would offer the fewest procedural hurdles to reclaiming water and unparalleled certainty in the right to the reclaimed water, but also no protection of downstream users. Such an absolute right

[24] *Id.* § 90.46.030.
[25] *Id.* § 90.46.130(1).
[26] WASH. STATE DEP'T OF ECOLOGY, *supra* note 12.

to reuse would vest the reclaimer with full rights to use or sell the reclaimed water; in essence, if the source of the wastewater had the legal right to divert the water, subsequent reclamation and reuse of that water is deemed not to impair other water rights. Several jurisdictions have adopted common-law variants of this rule, as explained below, but a prominent theoretical argument supporting it was advanced by Stuart L. Somach in a 1984 issue of the *Pacific Law Journal*. Somach argues that rights to reclaimed water should be held exclusively by the treatment plant owner as against any up- or downstream rights holder, and that traditional water right concepts do not apply to treated wastewater return flows since they have been so substantially changed that they are now "foreign" waters.[27]

The Practiced Approaches

Most western states fall somewhere between these two extremes. Generally speaking, states that have had recent input from their legislature on water reclamation and reuse have tended to leave the prior appropriation system intact, while making certain legislative or regulatory accommodations to reclamation projects; whereas states that have left the issue to common-law have tended to evolve exceptions that favor reclamation and reuse. Within each type of legal framework, there are a variety of models. These are discussed below in an order ranging (roughly) from those most protective of water rights to those that more freely encourage reclamation and reuse.

Modified Permit Procedures

States, like Washington and California, that explicitly prohibit the impairment of downstream water users fall much closer to the "strict appropriation requirements" model than the "absolute right to reuse" model. In these states, legislative or agency accommodation of reclamation projects tends to take the form of streamlined permitting procedures or other procedural tools. Setting the requirements of a permit application, as well as who bears the burden of identifying impairment, can make a significant difference both in the difficulty of getting a reclamation permit, and in the level of protection for downstream users. In general, the more liberally a state deviates from strict appropriation requirements in water reclamation permitting, the greater the incentives it provides for reclamation.

Form of Application

The application requirements for water reclamation and reuse projects provide an initial opportunity to ease the process of obtaining a right to reclaim and reuse wastewater. While many states have adopted simplified application procedures, others actually have made their procedures somewhat more complex for water reuse than for appropriation of instream flows. But the rationale for the added protections tends to have as much to do with ensuring that the beneficial uses to which the reclaimed water is being put fit within the permitted uses as it does with protecting downstream users.

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[27] Stuart L. Somach, *Who Owns Reclaimed Wastewater?*, 25 PAC. L. J. 1087 (1984).

Utah. Utah simplifies its water reuse applications with regard to the amount of information required, but also mandates an application to the Water Quality Board, which is not a part of an application for streamflow appropriation.

First, a water reuse proponent must submit an application to the State Engineer that includes:

> (a) the name of the applicant; (b) a description of the underlying water right; (c) an evaluation of the underlying water right's diversion, depletion, and return flow requirements; (d) the estimated quantity of water to be reused; (e) the location of the POTW; (f) the place, purpose, and extent of the proposed water reuse; (g) an evaluation of depletion from the hydrologic system caused by the water reuse; and (h) any other information consistent with this chapter that is requested by the state engineer.[28]

Because many of the details required for streamflow appropriation applications are encapsulated in the description of the underlying water right in the reuse application, the data needed for a reuse application is somewhat less. On the other hand, unlike reuse applications, streamflow appropriation applications do not require an evaluation of hydrologic system depletion from the use.[29] This potentially could be an expensive and time-consuming endeavor for the applicant, but application submissions to date suggest that agency expectations are low for the level of technical sophistication and detail in these evaluations.[30]

Additionally, water reuse proponents must submit an application to the Utah Water Quality Board, which will review the proposal to ensure "that water reuse meet[s] standards and requirements for water quality set by the Water Quality Board."[31] This procedure was added by legislation in 2006 and coincides with a conscious effort in the state to ensure communication between the Water Quality Board and the State Engineer. Again, streamflow appropriation applications do not require this procedure,[32] making the application requirements for water reuse in Utah arguably greater than the requirements for appropriation applications.

Nevada. Nevada encourages water reclamation proponents to submit both a primary and secondary application, as opposed to a new appropriation application.[33] As outlined in Section 533.440 of the Nevada Revised Statutes, the primary application quantifies the total discharges of the sewage treatment facility, and the secondary

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[28] UTAH CODE ANN. § 73-3c-302(2).
[29] *See Id.* § 73-3-2.
[30] *See* Sewage Effluent Numbers NS001-NS012, http://www.waterrights.utah.gov/cgi-bin/wrprint.exe?Startup.
[31] *Id.* § 73-3c-301.
[32] *See Id.* § 73-3.
[33] Telephone Interview with Richard Lisle, Div. of Water Res., State of Nev. Dep't of Conservation and Natural Res. (August 16, 2007).

application details how much of the discharge will be beneficially reused, and how.[34] The applicant must also get approval from the Nevada Division of Environmental Protection (NDEP) regarding water quality issues. If the applicant receives NDEP approval for the primary application, the Division of Water Resources (DWR) almost always will approve the treatment plant discharges, since they are adding water to the system.[35] However, while NDEP approval substantially helps an applicant's chances of overall approval, DWR still performs a detailed inquiry into the finances and other capacities of the applicant to carry out the beneficial use.[36] Additionally, if the applicant is proposing to reuse effluent that historically has been discharged into a waterbody, DWR will determine if such a project would impair the rights of downstream users.

Despite this extensive application process, water reclamation proponents universally have chosen this procedure for the past ten to fifteen years, due in part to DWR encouragement but also for its flexibility and lack of notice requirements.[37] When applying for a new appropriation permit, whether surface water or effluent is the source, the applicant must specify the precise beneficial use and where it will take place.[38] Under the primary/secondary application procedure, an applicant may submit numerous secondary applications for one primary application, allowing multiple supplemental options for beneficial use of the reclaimed water. For example, a water reclamation proponent may submit a secondary application for reuse of the entire amount on a public park, and another secondary application for reuse of the entire amount for instream flow. Thus, when the water is needed for the park, up to the full amount may be diverted to that use; any remainder would be used for instream flows.[39] This flexibility in use is a significant incentive for water reclamation over new appropriation.

Additionally, new appropriation applications require formal notice in a newspaper, and these often attract significant opposition.[40] Primary applications also require notice in a newspaper, but these rarely attract opposition from a water quantity standpoint because they are adding water to the system.[41] Secondary applications, which pertain to the beneficial use of the reclaimed water, do not require notice of the application;[42] thus, opposition is rare. The DWR still thoroughly investigates the potential for water right impairment, but the lack of public opposition makes the application process easier for the reclamation proponent than a new appropriation application.

California. California protects downstream water rights from impairment through the procedures designed for changes in point of diversion, place of use, or purpose of

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[34] *Id.*
[35] *Id.*
[36] *Id.*
[37] *Id.*
[38] *Id.*
[39] *Id.*
[40] *Id.*
[41] *Id.*
[42] NEV. REV. STAT. 533.440(1).

use[43] rather than procedures for water appropriation. Section 1211 of the California Water Code states that, "Prior to making any change in the point of discharge, place of use, or purpose of use of treated wastewater, the owner of any wastewater treatment plant shall obtain approval of the board for that change."[44] This provision applies "to changes in the discharge or use of treated wastewater that … result in decreasing the flow in any portion of a watercourse."[45]

Theoretically, consumptive reuse, which decreases the amount of water discharged to the watercourse, is a change in discharge and can be a change in place and purpose of use. Also, change of use applications are designed to protect downstream users, ensuring that the new use, location, or point of diversion or discharge does not so affect other users as to cause impairment. Thus, complying with this process is a reasonable alternative to the more laborious streamflow appropriation applications. However, pursuing an appropriation application, or treating water reclamation applications the same as appropriation applications, has the benefit of positioning the reclaimed water within the chronological appropriation of rights. This is especially true in states like Washington and California, which legislatively vest the treatment plant owner with rights in reclaimed water, since it is not fully clear whether this reclaimed water retains the appropriation date of the original beneficial use. In Washington this is significant only in the case of a lawsuit because the owner of the treatment plant may sell or lease the reclaimed water without going through the permit system to which other water is subject.[46]

As one California lawyer explains, "in simply directing the SWRCB to review reclamation change petitions under a procedure originally designed for changes under existing appropriation permits, the Legislature did not provide a means for establishing a priority date or quantity for the new reclamation use."[47] Combined with the fact that "the Legislature did not state that water approved for reclamation under this procedure would no longer be available for appropriation by others," "These uncertainties may leave the wastewater treatment facility open to future challenges, even though it obtained Board approval to reclaim water under a petition for change."[48] As a result, "the wastewater treatment facility owner may find that the change petition procedure offers no significant short-cut to approval," and pursuing the appropriation right may be a legally prudent course of action.[49]

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[43] Andrew H. Sawyer, *Improving Efficiency Incrementally: The Governor's Commission Attacks Waste and Unreasonable Use*, 36 McGEORGE L. REV. 209, 228 (2005).
[44] CAL. WATER CODE § 1211(a).
[45] *Id.* § 1211(b).
[46] WASH. REV. CODE §§ 90.03.252, 90.44.062, 90.46.120(1).
[47] Carolyn S. Richardson, *Legal Aspects of Irrigation with Reclaimed Water in California*, *in* IRRIGATION WITH RECLAIMED MUNICIPAL WATER: A GUIDANCE MANUAL 11-7 (G. Stuart Pettygrove & Takashi Asano eds., 1984).
[48] *Id.*
[49] *Id.*

Oregon. Oregon completely exempts municipal wastewater reclamation and reuse from the application requirements for a water appropriation permit,[50] as long as three protective criteria are satisfied:

> (a) The use of reclaimed water is authorized by the national pollutant discharge elimination system or water pollution control facilities permit issued pursuant to ORS 468B.050 or 468B.053;
> (b) The Department of Environmental Quality, in reviewing an application for a permit pursuant to ORS 468B.050 or 468B.053, has consulted with the State Department of Fish and Wildlife on the impact to fish and wildlife to determine that the application of reclaimed water under ORS 537.130, 537.131, 537.132, 540.510 and 540.610 shall not have a significant negative impact on fish and wildlife; and
> (c) The Department of Environmental Quality has determined the use of reclaimed water is intended to improve the water quality of the receiving stream.[51]

This statute is unique in that, aside from the potential impact to fish and wildlife from reduced streamflows, all of these criteria concern water quality rather than quantity. Since the exemption is from appropriation permit requirements, which are primarily designed to protect senior users from subsequent appropriations, the measures required here for exemption do not seem to parallel the quantity-based procedures being bypassed.

Any person using or intending to use reclaimed water must file with the Water Resources Department (WRD) a reclaimed water registration form that includes:

> (a) Name and mailing address of the registrant; (b) The date the use of reclaimed water is initiated; (c) Source of reclaimed water supply, including a description of the location of the reclaimed water treatment facility and the name and mailing address of the owner and operator of the facility; (d) Nature of the use of the reclaimed water; (e) Amount of reclaimed water used or proposed to be used; (f) Location and description of the ditch, canal, pipeline or any other conduction facility used or to be used to transport the reclaimed water from the treatment facility to the place of use; (g) A statement declaring the existence of a written contract or agreement to provide reclaimed water including the name and address of the reclaimed water provider and the date and terms of such contract or agreement; (h) A description of the season of use and the place of use of the reclaimed water, and any restrictions applicable to the use of the reclaimed water; and (i) If the reclaimed water is used in lieu of using water under an existing water right, the application, permit and certificate number of such right, or if the right is granted pursuant to a decree of circuit court, the volume and page number setting forth the right.[52]

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[50] *See* OR. REV. STAT. § 537.131, 132(1).
[51] OR. REV. STAT. § 537.132(1).
[52] *Id.* § 537.132(2).

While this notifies the WRD of the reuse and provides the information necessary to consider impacts on existing water rights, the WRD does not directly approve or disapprove a project based on this information; it is a registration form, not an application for an appropriation.

Burden of Identifying Impairment

Determining which party is obligated to identify potential impairment is another means of raising or lowering the procedural hurdles faced by water reclamation proponents. The responsibility of discovering whether, and to what extent, a reclamation project impairs a water right can rest with the project proponent, the state agency, or the downstream user. Placing the burden on the proponent can increase the cost of the application process, and consequently lower the incentive to reclaim water. Placing the burden on the agency means that less time and hydrologic expertise is required of the applicant, but the applicant must wait for the agency to calculate the expected consequences to the hydrologic system, as well as compete for agency resources with other submitted applications. Placing the burden of identifying impairment on the downstream user may mean less upfront assessment of hydrologic consequences, but may also increase the chance of subsequent litigation, and result in less long-term security for water rights in general.

Washington. As explained above, Washington statutes prohibit water right impairment, but do not expressly dictate who must do the assessment.[53] The Washington Department of Ecology (DOE) has decided that a written analysis by the project proponent, with review by the DOE, is the preferred means of creating the assessment. The DOE has drafted a detailed guidance document on how to research and write an impairment assessment for a reclaimed water facility,[54] and agency support is also available if needed during this process.

Placing the burden of determining impairment in the hands of the project proponent conserves some agency resources, but also presents a potential conflict of interest. As seen in Washington, the state agency must carefully review the determinations of the proponent prior to making the final decision. Additionally, due to the legal and hydrologic expertise required for a complete impairment analysis of this sort, the state continues to provide guidance on how to perform assessments and technical assistance in completing them.

Utah. Utah takes an approach that places the majority of the burden of impairment assessments on the Office of the State Engineer (OSE), but that also asks for input from both project proponents and downstream rights holders. To begin the process, a water reuse proponent must submit to OSE an application that includes, among other information, "an evaluation of depletion from the hydrologic system caused by the water

[53] WASH. REV. CODE § 90.46.130(1).
[54] *See* WASH. STATE DEP'T OF ECOLOGY, *supra* note 12.

reuse."[55] Upon receipt of the reclamation and reuse application, the OSE provides notice to interested parties through publication in a newspaper local to the proposed project, and allows for a 20-day protest period.[56] The OSE conducts its own impairment assessment using the information from the proponent, any objectors, and other resources at its disposal.[57]

Utah's approach allows input from the proponent, but only with regard to how much the reuse would deplete the available water sources downstream. This does not require detailed consideration of the effects on downstream users or a sophisticated understanding of local hydrology, and thus is less burdensome than a self-assessment requirement. This approach also seeks input from objectors, but only prior to the impairment decision by the OSE; after the protest period has elapsed, proving impairment is much harder. This stops short of placing the entire burden on downstream users, as it provides them with notice of new reclamation and reuse projects and offers a forum for objections outside a courtroom. Yet, the OSE is burdened not only with making the impairment determination, but also with managing all of the aforementioned procedural requirements. Despite all of these process requirements, the structure for impairment assessments in Utah has been successful, primarily because of the certainty of the process and the security in the right to reuse water.[58]

Oregon. Oregon's process essentially relies on downstream users to raise impairment concerns, but it does not formally notify them of potential impairment in most cases. The Oregon reclamation statute only requires that:

> If a municipality has discharged waste water into a natural watercourse for five or more years, and the discharge represents more than 50 percent of the total average flow of the natural watercourse and if such discharge would cease as a result of the use of reclaimed water in accordance with the provisions of ORS 540.510 (3) and this section, the director of the department shall notify any persons who, according to the department records, have a water right that may be affected by the cessation of the discharge by the municipality.[59]

By implication, if a municipality's effluent discharges comprise anything less than 50% of the total average streamflow – a threshold that would seem to encompass most cases – or those discharges have been conducted for fewer than five years, the state Water Resources Department (WRD) need not formally notify water right holders who may be affected by the water reuse.

With or without formal notice, the burden of presenting the case for impairment appears to rest with the water right holders. If one can "demonstrate[] to the department

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[55] UTAH CODE ANN. § 73-3c-302(2).
[56] Telephone Interview with Jerry D. Olds, *supra* note 17.
[57] *Id.*
[58] *Id.*
[59] OR. REV. STAT. § 537.132(3).

that the cessation of discharge by the municipality substantially impairs the ability to satisfy a water right, the person shall be entitled to a preference to the use of the reclaimed water."[60] However, under the statute this "preference" must be satisfied by conveyance of reclaimed water through means other than a natural watercourse;[61] it apparently does not amount to a right to demand that the original discharge remain in place or that the reclamation project be stopped.

While Oregon's procedure greatly simplifies the initial burden on the project proponent and the state agency, it ultimately may reduce certainty in the right to reclaimed water. The process appears to grant use of the reclaimed water with little impairment analysis, leaving open a greater chance of actual impairment of existing rights, subsequent lawsuit, and a reduction or loss of the ability to use the reclaimed water. It also places significant pressure on water right holders to identify and defend against potential threats to their rights.

Oregon's approach to reclaimed water may be representative of a state that has had comparatively few water scarcity issues to date, or few reclamation projects proposed in fully allocated basins. Drier states that do not have sufficient flows in many streams may not be able to accommodate such a flexible approach. Even the more water-rich states will need to account for climate change and population growth that foreshadow decreasing supplies and increasing demand respectively. Current streamflows may permit reclamation and reuse without much impairment of downstream users, but the hydrology of the region may not always be so accommodating.

Mechanisms for Compensation

If, despite all preventative and procedural measures, operation of a reclamation project would make impairment of water rights inevitable, the issue of compensation arises. Many western states do not have specific compensation statutes for water right impairment, instead relying on general eminent domain statutes to guide this process. However, Washington law provides some mention of compensation and eminent domain for water rights, while Oregon has established an alternate means of fulfilling the rights of senior users.

Washington. Washington has specific statutory language pertaining to compensation for water right impairment caused by water reclamation and reuse. The relevant provision states that "…facilities that reclaim water under this chapter shall not impair any existing water right downstream from any freshwater discharge points of such facilities *unless compensation or mitigation for such impairment is agreed to by the holder of the affected water right*."[62] While this provision allows for compensation, it sets a subjective standard that requires the consent of the right holder, without which impairment by a water reclamation facility appears to be barred. If this is the only

[60] *Id.* § 537.132(4).
[61] *Id.*
[62] WASH. REV. CODE § 90.46.130(1) (emphasis added).

controlling provision, it could give the impaired right holder substantial power to block a water reclamation project.

In 2007, the Washington Legislature attempted to amend this provision to read, "…facilities that reclaim water under this chapter shall not impair any existing water right downstream from any freshwater discharge points of such facilities *unless the impairment is mitigated or the holder of the water right is provided just compensation for the impairment*."[63] If adopted, this provision apparently would have set an objective standard for compensation, in effect removing the right holder's ability to block a proposed reclamation project. However, Governor Christine Gregoire vetoed the section of the bill that included this provision, citing its "unintended consequences to existing water rights."[64]

In addition, Washington has specific reference within its water code to eminent domain and compensation procedures for water rights:

> The beneficial use of water is hereby declared to be a public use, and any person may exercise the right of eminent domain to acquire any property or rights now or hereafter existing when found necessary for the storage of water for, or the application of water to, any beneficial use, including the right to enlarge existing structures employed for the public purposes mentioned in this chapter and use the same in common with the former owner, and including the right and power to condemn an inferior use of water for a superior use. In condemnation proceedings the court shall determine what use will be for the greatest public benefit, and that use shall be deemed a superior one … Such property or rights shall be acquired in the manner provided by law for the taking of private property for public use by private corporations.[65]

The procedure for a taking of private property for public use by private corporations is further outlined in Section 8.20 of the Washington Revised Code. Under that statute, a jury, or a judge in the absence of a jury, makes the determination of just compensation to be paid to the owner of the condemned property, in this case a water right.[66]

California. California has long viewed water rights as a significant form of real property and treated them as such under state law.[67] The protection of the state's courts applies equally to water rights as it does to other real property.[68] When water rights are

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[63] S.B. 6117, 60th Leg., Reg. Sess. (Wash. 2007) (emphasis added).
[64] Letter from Christine O. Gregoire, Governor, State of Washington, to the Washington State Senate (May 11, 2007), *available at* http://www.governor.wa.gov/billaction/2007/veto/6117.pdf.
[65] WASH. REV. CODE § 90.03.040.
[66] *Id.* § 8.20.080; *see also* Kurt Unger, Washington Department of Ecology, "Just Compensation and Eminent Domain," *at* http://www.ecy.wa.gov/programs/wr/rules/images/pdf/reclaim/justcompensationeminentdomain.pdf.
[67] ANNE J. SCHNEIDER, GOVERNOR'S COMMISSION TO REVIEW CALIFORNIA WATER RIGHTS LAW, LEGAL ASPECTS OF INSTREAM WATER USES IN CALIFORNIA 6 (1978).
[68] *Id.*

"taken" for a public purpose within the meaning of the Fifth or Fourteenth Amendment of the U.S. Constitution or Article 1, Section 19 of the California Constitution, just compensation is required.[69] Unless waived, just compensation is determined by a jury.[70] Only following completion of the eminent domain proceedings and payment of the determined monetary sums to the injured party may the legislature provide for possession of the property by the condemnor.[71] Thus, impairment of water rights in the State of California results in monetary compensation in the amount deemed proper by a jury. This is a common means of compensating for water rights impairment throughout the West, although it is uncertain in Washington whether condemnation is available in the reclaimed water context to avoid impairment of another person's water right.[72]

Oregon. Oregon attempts to protect the water rights of senior appropriators by requiring the treatment facility to grant a "preference" and deliver flows to those users whose rights are impaired by the water reclamation.[73] This approach most closely aligns with the objectives of the prior appropriation system since it preserves the rights to water in the order in which they were perfected. But it also establishes a rather inflexible system of allocation and decreases stability of the treatment plant's right to use or market the reclaimed water. However, Oregon's statute further requires that delivery of this water "shall be accomplished through a conveyance facility or channel other than a natural watercourse."[74] The potential for fulfilling the rights of a senior user through the reclaimed water infrastructure or other means grants some flexibility to the treatment facility. But structuring this provision as a mandate rather than an option, as the statute apparently does, also could add substantial cost to fulfilling downstream rights.

Shifting Responsibility to Judiciary

Colorado. Colorado has established a unique procedure for managing water resources: the legislature has vested this authority in the judiciary.[75] Colorado is a traditional prior appropriation state, as compared to the hybrid systems in Washington, California, and elsewhere.[76] Appropriative rights are administered by the Division of Water Resources.[77] However, unlike any other prior appropriation state, Colorado does not have a permitting system.[78] Instead, the Colorado Legislature created special state district courts called water courts, one for each major basin in the state, which adjudicate all water right matters.[79] Any appeals of water court decisions proceed directly to the Colorado Supreme Court.[80] While this may complicate the administration of the state's

[69] *Id.*
[70] CAL. CONST. art. I, § 19.
[71] *Id.*
[72] *See* WASH. REV. CODE § 90.46.130(1)
[73] *See* OR. REV. STAT. § 537.132(4).
[74] *Id.*
[75] Colorado Foundation for Water Education, Citizen's Guide to Colorado Water Law 12 (2004), http://cfwe.org/CitGuides/CG-Law2004.pdf.
[76] *Id.* at 6.
[77] *Id.* at 17.
[78] *Id.* at 12.
[79] *Id.*
[80] *Id.*

waters, in practice it provides greater flexibility in the system, as the courts do not have the same political concerns or fear of a takings claim as in other states.

This structure allows the Colorado Legislature to largely refrain from addressing water rights issues since the water courts handle the legal questions on a case-by-case basis as they arise. Thus, the state has not adopted specific legislation concerning the rights to municipal wastewater effluent, but the courts have established strong precedent on the matter. In 1906, the Colorado Supreme Court held that one cannot gain a vested right to the captured wastewater of another.[81] The facts of that case concerned excess irrigation water that remained on the right holder's property. In 1972, the Court held that this "wastewater rule" also applies to municipal wastewater effluent, so long as no bad faith or arbitrary or unreasonable conduct is at issue.[82] In 1976, the Court clarified its definition of the wastewater rule, holding that wastewater is to be distinguished from return flows and seepage, the former not being subject to appropriation by a junior user.[83] Thus, the state of the law in Colorado appears to prohibit appropriation of municipal wastewater effluent, or at least the ability of downstream users to compel continued wastewater flows even if they have relied on them in the past. This suggests that water reclamation and reuse by municipal wastewater treatment facilities would never impair downstream water rights.

This is an exceptional outcome for such an over-appropriated state. The Colorado Constitution declares all unappropriated waters of every natural stream to be property of the public and subject to appropriation.[84] These "waters" are presumed to include seepage, flood water, return flow, springs, mine water, and groundwater. To justify distinguishing wastewater from these other second-hand sources of water can be a difficult task, as demonstrated by the text of the aforementioned decisions. However, in *Tongue Creek v. Orchard City*, 280 P.2d 426 (1955), Justice Lindsley shed light on the reason the court has excepted wastewater from the traditional rules: "the original appropriators have the right, and in fact it is their duty to prevent, as far as possible, all waste of the water which they have appropriated, in order that the others who are entitled thereto may receive the benefit thereof."[85] Thus, the policy rationale for this distinction appears to be a preference for encouraging wastewater reduction, even at the expense of past reliance on those flows by subsequent users.

Common-Law Right to Reuse

In other western states, the question of who owns rights to reclaimed water was first addressed by the courts; often, those decisions subsequently elicited little or no reaction from the respective legislatures. Most of these states have evolved policies that are close to an absolute right to reuse, viewing reclaimed water as largely outside the prior appropriation system. There exist a variety of explanations for these results, and

[81] Burkart v. Meiberg, 86 P. 98 (1906).
[82] Metro Denver Sewage v. Farmers Reservoir, 499 P.2d 1190 (1972).
[83] City of Boulder v. Boulder & Left Hand Ditch Co., 557 P.2d 1182 (1976).
[84] COLO. CONST. art. XVI, § 5.
[85] *Boulder*, 557 P.2d at 1185 (quoting KINNEY ON IRRIGATION AND WATER RIGHTS, 2nd ed., volume 2, page 1151, section 661).

each court may have its own rationale. Perhaps these judges would account for the policy implications of their decisions as Justice Lindsley did in the Colorado *Tongue Creek* case: prevent water users from compelling the continued discharge of wastewater. Regardless of the rationale, a broad reading of the common-law right to reuse, which has expanded to include reclaimed water, is well-established in several western states.

Arizona. Arizona arguably has the most favorable policy toward water reclamation and reuse with regard to water rights, and it is entirely based on a single decision by the Supreme Court of Arizona. In 1989, the court decided in *Arizona Public Service Co. v. Long* that, absent a regulatory scheme for wastewater effluent, those who treat the wastewater are entitled to put it to any reasonable use.[86] The case involved users downstream from a municipal wastewater treatment plant who alleged impairment of their water rights by the treatment plant's sale of its treated effluent to other parties, which halted effluent discharges to the stream.[87] Based on the definition of "effluent" in the Arizona groundwater code, as well as its exclusion from the surface water code and state health regulations,[88] the court held that wastewater effluent does not qualify as surface water or groundwater until it is returned to one of those states.[89] Without further guidance from the legislature on this third category of water, the court turned to common law, namely the wastewater rule. Thus, the court held that "Cities may discontinue the discharge of sewage effluent without violating the rights of those persons or entities which have previously appropriated it … Because the 'producer' of the effluent is a senior appropriator, those who have appropriated the effluent gain no right to compel continued discharge."[90]

Perhaps even more interesting than the legal analyses in the decision are the policy concerns expressly raised by the Arizona court. In making its decision, the court stated that its holding "will allow municipalities to maximize their use of appropriated water and dispose of sewage effluent in an economically feasible manner. It also provides a degree of flexibility that is essential to a city's ability to meet federal and state environmental and health standards."[91] The court added, "we think the city should not be hampered by a rule that would always require the sewage to be treated as waste or surplus waters,"[92] as this "would be contrary to the spirit and purpose of Arizona water law, which is to promote the beneficial use of water and to eliminate waste of this precious resource."[93] However, one equally could argue that in a highly appropriated state, the water is not wasted if it is returned to the watercourse and subsequently appropriated downstream -- as was the situation in this case. The only apparent explanation is a preference for improving water quality by eliminating effluent discharges to streams, and rewarding the municipality with the rights to the water it treats. For a very arid state such as Arizona, this amount of deviation from the strict tenets of prior appropriation doctrine

[86] Ariz. Pub. Serv. Co. v. Long, 773 P.2d 988, 995 (Ariz. 1989).
[87] *Id.* at 991.
[88] *Id.* at 995.
[89] *Id.* at 994.
[90] *Id.* at 997.
[91] *Id.* at 995.
[92] *Id.*
[93] *Id.* at 997.

is perplexing, but the benefits in promoting water reclamation and reuse are unquestionable.

New Mexico. Like Arizona's, New Mexico's policy regarding rights to reclaimed water is primarily governed by a single seminal decision by the state's highest court. In 1982, in *Reynolds v. City of Roswell*, the Supreme Court of New Mexico held that neither the State Engineer nor downstream users of discharged municipal sewage effluent can compel the continued supply of such water absent a contract, grant, dedication, or condemnation.[94] The case concerned the City of Roswell's applications to the State Engineer to, among other things, change the place of use of a newly acquired water right from one sector of the city to the whole city.[95] The State Engineer determined that this change of place of use would not impair existing water rights, but placed conditions on the permit requiring specific effluent discharges to parts of the Hondo River.[96] The Supreme Court confirmed the holding of the district court that conditions to such permits are allowed only when an impairment is found, and that sewage effluent is private water that the city has a right to reuse.[97]

The Court found that treated sewage effluent constitutes "artificial surface water," which is defined in the New Mexico water code as:

> waters whose appearance or accumulation is due to escape, seepage, loss, waste, drainage or percolation from constructed works, either directly or indirectly, and which depend for their continuance upon the acts of man. Such artificial waters are primarily private and subject to beneficial use by the owner or developer thereof; provided, that when such waters pass unused beyond the domain of the owner or developer and are deposited in a natural stream or watercourse and have not been applied to beneficial use by said owner or developer for a period of four years from the first appearance thereof, they shall be subject to appropriation and use; provided, that no appropriator can acquire a right, excepting by contract, grant, dedication or condemnation, as against the owner or developer compelling him to continue such water supply.[98]

Thus, the producer of the treated sewage effluent has an absolute right to transfer the place of use of the effluent, or to completely discontinue discharges of the effluent, without impairing any vested rights of others so long as there is no contract, grant, dedication, or condemnation of the water. Even though this decision was grounded in part on a legislative provision, that provision codified the common-law right to reuse that is clearly the basis for the outcome.

Montana. Montana also derives its policies on the rights to sewage effluent from the common-law right to reuse, and again primarily due to the decision in a single case. In 1996, the state Department of Natural Resources and Conservation (DNRC) held that a

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[94] 654 P.2d 537 (1982).
[95] *Id.* at 538.
[96] *Id.* at 539.
[97] *Id.*
[98] N.M. STAT. ANN. § 72-5-27.

municipality need not file a change of place of use permit application for sewage effluent discharges to land when the intent of the municipality is to dispose of the effluent without causing a nuisance, rather than to irrigate or farm a crop.[99] The City of Deer Lodge had filed a petition for declaratory judgment with the DNRC to resolve what, if any, administrative approval is required before the city halted its historical effluent discharges to the river in favor of land-applying the effluent.[100]

This petition presented an issue of first impression in Montana, namely whether downstream users have the right to continued sewage effluent discharges.[101] The DNRC noted Montana's statutory definition of "water," which includes "sewage effluent."[102] This, according to the agency, makes "clear that other appropriators who want to beneficially use the sewage effluent at issue here can apply to the DNRC to do so."[103] Yet, the agency sought to reconcile this with prior Montana court decisions that refused downstream users the right to compel continued waste or seepage water[104] and other states' significant cases on the subject of water rights to sewage effluent, including the *Long* and *City of Roswell* decisions.[105] Thus, the DNRC held that downstream users may appropriate effluent, but that appropriation is always subject to the preference of the discharger as to whether to discharge.[106] The agency concludes the decision by stating that if the municipality wishes to beneficially use the effluent outside the city limits, it must apply for a change of place of use permit, but its intent simply to land-apply the effluent for water quality purposes does not require such a permit application.[107] And even if required, it does not appear from the text of the decision that this change of place of use application would analyze the effect on downstream users, since those users have no right to compel sewage effluent releases.

Idaho. Idaho offers an example of a state that follows this expanded common-law right to reuse, but without any case law or legislation clearly denoting adherence to the rule. Court decisions in Idaho have established that "surface waste and seepage water may be appropriated … subject to the right of the owner to cease wasting it, or in good faith to change the place or manner of wasting it, or to recapture it, so long as he applies it to a beneficial use."[108] This right to reuse is limited to the beneficial use and property boundaries denoted in the initial appropriation.[109] Additionally, the wastewater must be captured before it re-enters a public waterway.[110] This right, and associated restrictions, has been employed by Idaho municipalities for reusing their sewage effluent.[111] This has

[99] In the Matter of the Petition for Declaratory Judgment by the City of Deer Lodge, B-No. 97514-76G (1996).
[100] *Id.* at 1.
[101] *Id.* at 2-3.
[102] *Id.* at 10.
[103] *Id.*
[104] *Id.* at 3.
[105] *Id.* at 4-8.
[106] *Id.* at 10.
[107] *Id.* at 11.
[108] Sebern v. Moore, 258 P. 176, 178 (1927).
[109] Telephone Interview with Shelley Keen, Idaho Dep't of Water Res. (August 24, 2007).
[110] *Id.*
[111] *Id.*

been effective in large part because municipal water rights in Idaho are viewed as entirely consumptive, making possible the reuse of effluent that historically has been discharged to a watercourse without enlarging the water right or impairing the rights of downstream water appropriators.[112] While this allows municipalities to make more intensive use of their water rights over time, it prohibits use on or sale to other property or for other beneficial uses without a new water right.[113]

Role of Capture and Reuse Doctrine

Like the "wastewater rule," upon which many of the common-law decisions are founded, the common-law "capture and reuse" doctrine allows the right holder to retain his right to appropriated water while it is still on his land and to reapply it to the same area and for the same use as it initially was used. Traditionally, this common-law doctrine pertains to irrigated lands and operates as a means of maximizing the beneficial use of diverted water. The spirit of the doctrine is to promote efficient water use by encouraging farmers to reuse captured irrigation runoff as a replacement for greater surface water diversions or to improve usage of a poor or inadequate water supply. Yet, the letter of the doctrine, which remains consistent with the prior appropriation system, states that the captured water is to be used only on the same land and for the same beneficial use as it was originally applied, effectively limiting consumptive use only to what is permitted under the water right.

As seen above, some state courts have invoked the spirit over the letter of this common-law right to reuse, expanding it to include not just irrigation water or individual users, but also municipal wastewater effluent. However, states like Washington, with express statutory provisions protecting the rights of downstream users, have stuck to the letter of the doctrine. All references to capture and reuse in Washington lead back to the seminal 1909 decision in *Miller v. Wheeler*. While the case primarily concerned rights to foreign water, the court addressed the right of a farmer to his irrigation runoff, holding that "the rights to it while still upon the lands of the owners can be sustained by the same reasoning which under the common law gave a landowner a right to impound for his own use the water percolating through his own soil."[114]

As recently as 1996, Washington courts have affirmed this right of farmers to reuse their own water allocations, but only on the fields to which the water was originally applied.[115] Additionally, in January 2007, the Department of Ecology issued its interpretation of the law surrounding capture and reuse. This document outlines the water conservation objectives of the doctrine, but also the need for the farmer to have some specific documentation of a water right, the possibility that an additional water right or

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[112] *Id.*
[113] *Id.*
[114] Miller v. Wheeler, 103 P. 641, 643 (1909).
[115] *See* In the Matter of the Determination of the Rights to the Use of the Surface Waters of the Yakima River Drainage Basin, in Accordance with the Provisions of Chapter 90.03, Revised Code of Washington, The State of Washington, Department of Ecology, Plaintiff, v. James J. Acquavella, No. 77-2-01484-5, 3 (Memorandum Opinion Re: Return Flow Exceptions of Harry Masterson and Mary Lou Masterson) (Wash. July 16, 1996).

change of use permit may be needed for capture and reuse, the restriction on use to the purposes authorized by the water right and on the acreage where the water was originally applied, and the prohibition against increasing consumptive use.[116] Thus, while the common-law right to reuse has been interpreted in other jurisdictions to apply to more than just irrigation return flows, such an expansive reading has not been adopted to date in Washington.

Reclaimers' Rights to Foreign Water

Another common-law rule, which has withstood statutory changes in state water law in many instances, is the appropriator's absolute right to reuse "foreign" flows, i.e., those originally appropriated from another water basin. While the common-law rule allows downstream users to appropriate foreign water once it is discharged by the initial appropriator, the downstream user of those discharges has no right to compel future discharges from that water source. This provides the initial appropriator with an absolute right to reuse all of the water that he appropriated from another basin, regardless of the amount and duration of past discharges and subsequent reliance by downstream users.

A. In Washington

Washington has left unaltered this common-law rule regarding rights to foreign water, despite its numerous statutory revisions to other areas of water law. The old but often cited decision of *Miller v. Wheeler* provided a precedent in the state for this rule. The *Miller* court held that the

> waters being the result of the landowners' energy and effort, it would seem but just to say that, so long as he used them or could impound the overflow or waste upon his own land, although for use on other land, one asserting a right of appropriation in no way dependent upon the artificial flow, but made without reference to it, should have no cause to complain.[117]

Thus, a downstream appropriator of water that includes wastewater from lands irrigated by foreign flows cannot compel continued release of water originating from another basin.

In 1986, the Washington Court of Appeals again confirmed the place of this common-law rule in Washington law. In *Dodge v. Ellensburg Water Co.*, the court held that using return flow of foreign water in one year does not give the user the right to use that water the next year.[118] In that case, the watercourse at issue was naturally fed only by snowmelt runoff, so the only water present there after June was foreign water from one of the three canals feeding it.[119] The Ellensburg Water Company would appropriate all of

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[116] WASH. STATE DEP'T OF ECOLOGY, FOCUS ON CAPTURE AND REUSE OF IRRIGATION WATER (2007).
[117] 103 P. 641, 642 (1909).
[118] 729 P.2d 631, 635 (1986).
[119] *Id.*

the summer flows, including water from its canal and the water left from the other two canals, leaving nothing for Dodge.[120] The court held that the first taker of foreign water, in this case the Ellensburg Water Company, had the right to that water.[121] Referencing *Elgin v. Weatherstone*, the court stated that "foreign water, once abandoned by its developer, does not become part of the natural flow of the drainage area where it is discharged and may be used by the first person who takes it."[122] Thus, in Washington, foreign flows remain distinct from natural flows in many aspects of state water law.

B. In California

California also follows the common-law rule for rights to foreign flows. The California Supreme Court's decision in *Stevens v. Oakdale Irrigation District*, , which was cited in the *Dodge* decision in Washington, set the precedent for this rule in California. The Court held that releasing foreign flows into an adjacent watercourse does not constitute "abandonment of a water right, but merely an abandonment of specific portions of water."[123] Therefore, "past abandonment … of certain water, as distinguished from a water right, [does] not confer[] … any right to compel a like abandonment in the future."[124] More recently, the decision in *Los Angeles v. City of San Fernando*[125] reaffirmed this point of law, holding that foreign water is not subject to downstream claims. California court decisions have also been clear that riparian rights do not include foreign flows.

However, California does not draw as clear a distinction between foreign and natural flows as does Washington. One example of this is in the appropriation of foreign flow discharges. In several administrative adjudications, the California State Water Resources Control Board (SWRCB) has held that "a holder of a prior appropriative right has first claim to foreign water introduced into" a watercourse.[126]

In other administrative adjudications, the SWRCB has taken the extra step of expressly limiting a permit so as not to include foreign flows, using language such as "To the extent that water available for use under this permit is foreign water, this permit shall not be construed as giving any assurance that such supply will continue."[127] While such a provision may indicate some uncertainty in the law in California, it could serve as a valuable means of providing notice and preventing reliance on foreign flows by downstream users. This could be useful language for appropriation permits in any state that limits the rights of downstream users to foreign flows.

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[120] *Id.*
[121] *Id.*
[122] *Id.* at 635-636.
[123] Stevens v. Oakdale Irrig. Dist., 90 P.2d 58, 61-62 (1939).
[124] *Id.*
[125] 14 Cal.3d 199 (1975).
[126] In the Matter of Application 25153, SWRCB (1979).
[127] In the Matter of Applications 23838 and 23690, and Permit 1514-O (Application 22102) of South Sutter Water District to Appropriate from Yankee Slough, East Side Canal, King Slough, Pleasant Grove Creek, and Curry Creek in Placer and Sutter Counties, SWRCB (1976).

Reclaimers' Rights to Groundwater

Just as the source of water can determine an appropriator's right to reuse it in the context of foreign flows, the same can be true for groundwater. In practice, this depends on whether ground and surface waters are integrated in a state's legal system. For example, the fact that California separately regulates surface and groundwater usage guided the decision in *Los Angeles v. Glendale*, where the court held that downstream appropriators of surface water cannot claim a right to wastewater originally extracted from a groundwater source.[128]

While this outcome can be beneficial for promoting water reclamation, the distinct legal systems for the two water sources can harm the overall objective of water resource preservation. Since groundwater and surface waters are often hydrologically interrelated, differences in the law can create perverse incentives and unintended consequences in one or the other water source. For example, more lenient regulations of groundwater use than surface water use can result in a substantial drawdown of the aquifer and a reduction in seepage into the surface waters. When designing incentives for water reclamation and reuse, the value of legally integrating hydrologically interdependent water sources should not be overlooked.

Conclusion

Realistically, the Washington State Legislature and Department of Ecology are somewhat limited in their options for promoting water reclamation and reuse by the prior legislative enactments in this subject area. Like California, the state has strongly protected existing water rights, and if the veto of Section 4 of Senate Bill 6117 is any indication, efforts to back away from this position, even at the margins, could prove difficult. Furthermore, unlike the circumstances in Arizona and the other states that are guided more by case law, Washington's reclamation statutes are so comprehensive and so recent that the state courts are unlikely to establish an absolute right to reuse municipal wastewater effluent. Therefore, Washington's position on the policy spectrum is closer to other states that strongly protect water rights holders, and the readily available regulatory options may be more procedural than substantive.

Yet, as demonstrated in Oregon and elsewhere, this situation does not rule out procedures that strongly favor the proponent of the water reclamation and reuse project. The requirements for a water reuse permit application can determine the speed of the process for the applicant, the extent of the substantive review by the agency, and who bears the burden of identifying and proving water right impairment. Simplifying these requirements can streamline the process and make it more feasible and economical than an application for a new appropriation permit, thus encouraging reclamation and reuse over new appropriation. But doing so also may decrease the upfront protections of water right holders and potentially increase the chance of subsequent lawsuits, thus reducing the security in the applicant's right to reclaim and reuse the water.

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[128] 142 P.2d 289 (1943).

Washington has taken some steps to streamline its reuse permitting process, but more could be done on this front. Other western states provide potential guidance as to how these applications can be handled. The tools with which to craft these procedures are available; the challenge for the legislature and the agency is the precise construction.

Appendix C

Detailed questions raised by committee members

Appendix C - Detailed questions raised by committee members

Detailed questions raised by committee members

1) What is impairment?
   a) Should the word "perfected" be removed from Ecology's current guidance language?
   b) What should "existing" mean in the phrase "facilities that reclaim water under this chapter shall not impair any existing water right downstream from any freshwater discharge points of such facilities……."? RCW 90.46.130(1).
   c) Removing the word "downstream" from the statute appears to be appropriate for the Yakima Basin. Should the word "downstream" be removed from the statute for all situations?
   d) Should impairment be defined similarly to impairment for transfers, new water rights, or under a "detriment or injury" standard?
   e) Should impairment consider both water quality and quantity? If so, how?
   f) Should the exemption from permitting under RCW 90.03.250 and 90.44.060 mean that impairment is different than for transfers or new rights?
   g) Should the definition be codified?

2) What should the process be for "triggering," evaluating, determining, and addressing impairment?
   a) Should this be a case by case determination or a fixed/prescriptive approach?
   b) Who should be responsible for "triggering" the analysis?
   c) Who should complete the analysis?
   d) How far downstream is it reasonable for Ecology to require an impairment analysis?
   e) What is foreign flow?
   f) What should the process be and what options should exist when an in-stream flow would be impaired?
      i) Mitigation
      ii) Condition permit
      iii) Modify project
      iv) Invoke "overriding considerations of the public interest" per RCW 90.54.020(3)(a)
      v) Compensation
      vi) Abandon project
      vii) Deny permit
      viii) Others?
   g) What should the process be and what options should exist when a non in-stream flow would be impaired?
      i) Compensation
      ii) Mitigation
      iii) Condition permit

iv) Modify project
v) Purchase impaired water rights from a willing seller
vi) Acquire impaired water rights through eminent domain or condemnation
vii) Abandon project
viii) Deny permit
ix) Others?

3) Under current statute, two linked permits (one under RCW 90.03 or RCW 90.44 and one under RCW 90.46) are required for project proponents wishing to use reclaimed water as mitigation for a new appropriative right; i.e. the use of state water. Should statutory authority under RCW 90.46 for a single permit be recommended? What should the criteria and process be for review of such a project?

4) From a water rights perspective
   a) What happens when a wastewater treatment plant reduces or eliminates flow?
   b) Does state law/impairment standard preclude a wastewater system from terminating discharges if no consumptive use would be made of the former discharge?
   c) What happens when a wastewater treatment plant moves an effluent discharge point?
   d) What happens when a wastewater treatment plant reclaims and puts the water to a consumptive use?
   e) Should a, b, c, and d be different? Why?

Chapter 8

Report from Department of Health on Related Public Health Issues

Fulfilling E2SSB 6117 Requirements-Section 7

2007 Reclaimed Water Use Legislative Report

Prepared by:

Washington State Department of Health
Office of Shellfish and Water Protection

December 2007

Washington State Department of Health
Division of Environmental Health
Office of Shellfish and Water Protection

Table of Contents

List of Tables

Program Status Reports

Summary

Department of Health (DOH) has prepared this report on reclaimed water as directed by the Legislature (E2SSB 6117). A copy of the section about reclaimed water is in Appendix A.

Commercial and Industrial Reclaimed Water Use Permits

Statute requires coordination with an advisory committee to develop rules. The current Rules Advisory Committee will be asked to complete this task. The work is on hold until the Reclaimed Water Rule Development Committee presents recommendations of agency roles. The anticipated completion date is 2010.

Greywater Standards and Guidelines and Permitting

Guidance on greywater use is available through the DOH web site, and Appendix A of this report. A formal rule will be developed by December 2010, as directed by ESHB 2884. Local health and county agencies were asked about their current permitting practices. All currently handle greywater the same as they do for an on-site septic system. No systems currently using greywater could be identified, although it is believed that a few have been approved.

Reclaimed Water Analysis and Projects in Water System Planning

Since 2003, both of the coordinated water system plans submitted to DOH and 78% of the individual systems required to do so in their water system plans assessed reclaimed water use. Active and targeted reclaimed water projects are identified in 30% of the water plans. Water systems see themselves as consumers of reclaimed water, not producers. Most identified barriers to reuse such as cost to treat and transport, lack of availability of reclaimed water supply, lack of customer base or demand, and public acceptance.

Public Health Risks

Reclaimed water is successfully used throughout Washington, the United States and the world in a variety of ways. If the water is properly treated, distributed and controlled, it poses no significant health risk. Only one disease outbreak has been documented in the U.S. This occurred prior to regulatory controls in that state. Most states have programs similar to Washington's, or more stringent. No documented illnesses have occurred even though residents have accidentally consumed reclaimed water through cross connection with a potable supply. Future DOH resources need to include new staff to review engineering projects and provide technical assistance to assure proper treatment, delivery and control, as reuse continues to become more popular. Evaluating public health risks should not require new staff.

Public Information and Acceptance Programs

To address public concerns and misconceptions about reclaimed water use, public information campaigns specific to proposed projects are essential. Utilities in Washington have been successful with this, through allocating time and money to the effort. The report includes

program element information developed by organizations like WateReuse Foundation, Water Environment Research Foundation, and the Environmental Protection Agency.

Development of Permit Fees for Commercial and Industrial Reclaimed Water Uses

RCW 90.46.030 directs Department of Health (DOH) to regulate and permit commercial and industrial water reclamation facilities. The statute also directs DOH in consultation with an advisory committee to develop recommendations for a fee structure to recover permit system costs for:

- Processing applications and modifications.
- Monitoring permits.
- Evaluating permit compliance.
- Conducting site inspections.
- Supporting reasonable overhead expenses directly related to these activities.

DOH is prohibited from issuing permits until it develops a rule and establishes a fee structure.

As directed by the 1992 statute, DOH in coordination with the Department of Ecology (Ecology) formed a Technical Advisory Committee to develop the current *Water Reclamation and Reuse Standards*. The committee, which had limited time to complete significant tasks, chose to complete the Standards first. The committee chose not to develop recommendations for commercial/industrial permits and fees.

Engrossed Substitute House Bill 2884 (2006) renewed this legislative directive and included the task within the scope of the current Rules Advisory Committee. The committee has not yet worked on reuse permit fees.

DOH has been directly involved in one commercial/industrial permit. Class A reclaimed water was to be produced for internal non-potable uses, likely a "typical" commercial/industrial project. The permitting process included acceptance of the application, review and approval of engineering reports and construction documents, and drafting the final permit for Department of Ecology to issue.

DOH tracked staff time to establish baseline data for developing a permit fee schedule that adequately covers department staff time spend on permitting a project, including compliance. Review of this commercial/industrial project required 60 staff hours to gain approval and 22 hours for permit compliance efforts. This time does not include Ecology staff time or any time for public hearings – which can be significant - or extensive review. Therefore, estimates at this time indicate a permit fee of between $12,000 and $20,000 to fully cover the costs of this type of review.

Greywater Use Standards and Guidance Development

RCW 90.46-020 defines greywater as including wastewater from sinks, showers, and laundry fixtures, but does not include toilet or urinal waters. It includes sewage from any source in a residence or structure that has not come into contact with toilet wastes.

Blackwater is water that is flushed from toilets and urinals that contains human waste.

RCW 90.46.140 directs DOH to develop standards and guidance for greywater. DOH initially developed guidance in1999, and revised them in 2007. This guidance is included as Section B in the *Recommended Standards and Guidance for Performance, Application, Design, and Operation & Maintenance - Water Conserving On-Site Wastewater Treatment Systems,* DOH Publication #337-016. It is available on the DOH website at http://www.doh.wa.gov/ehp/ts/WW/wat-consrv-rsg-7-1-2007.doc. Appendix B contains a copy of Section B from this guidance document.

While several greywater options are available, subsurface residential irrigation appears to have the greatest potential. The guidance document suggests this is best done through the use of subsurface drip irrigation. The guidance document even mentions the possibility of residences on sewer replumbing the residence to divert greywater using subsurface drip systems, at least during certain times of the year. DOH initially developed guidance for the design, installation, operation, and maintenance of subsurface drip systems in 2000 and updated them in 2007. DOH has posted this guidance on its website.

Greywater Use Permitting by Local Jurisdictions

The Legislature modified RCW 90.46.140(3) in1997 to authorize the issuance of permits for reusing greywater: "the department of health and local health officers may permit the reuse of greywater according to rules adopted by the department of health." However, DOH did not get legislative authority to develop the rules until 2006 with the passage of Engrossed Substitute House Bill 2884. This bill directed DOH to proceed with developing rules for greywater in coordination with Ecology. DOH will adopt rules no later than December 31, 2010. Resources to develop rules were not provided and are currently not available to be shifted from elsewhere.

Local health officers may permit greywater systems within their jurisdictions. DOH contacted 37 of the 39 local health agencies by telephone in June 2007 to inquire whether greywater systems were being proposed and permitted. Even though most jurisdictions were aware of the guidance for greywater systems, all counties stated that they would treat a proposed greywater system the same as a proposed blackwater system by applying stricter on-site sewage rules. Of the 37 local health agencies we were able to reach, *none* have permitted such systems as a greywater system. No counties have adopted local ordinances for greywater permits and rely on current state regulations and plumbing code requirements. Only Kittitas County indicated they are considering adding greywater to local ordinances. The survey results are noted in Appendix C and the local contacts are noted in Appendix D."

The potential for greywater use has not been tapped, but could be significant. Replumbing existing structures and modified plumbing of new structures will be necessary to achieve gains.

Local health jurisdictions were not asked about cross connection control requirements that will be required for public water systems if greywater systems are permitted. Current regulations for public water systems require protection of the public water supply at all locations where there is a potential for backflow of nonpotable water into the public water supply. Since greywater is

untreated and contains pathogens, any residence or property permitted to use greywater that is connected to public water must install a backflow assembly. Some water utilities require this be done at the customer's expense; others install the assembly for the customer. The assemblies must be tested annually to ensure they are functional.

Water Reclamation Opportunities and Water Supply Planning

Basis for Reclaimed Water Planning in Water System Plans

The passage of the 2003 Municipal Water Law added a provision to RCW 90.46 requiring public water systems with one thousand or more service connections to consider and evaluate the use of reclaimed water in the water system plans submitted to DOH. Since the requirement was a part of statute, it became effective in the spring of 2003. Large water systems were notified of the additional planning requirements shortly thereafter. DOH and Ecology developed interim planning guidance in March 2004 to help systems understand these new requirements.

In the winter of 2007, the DOH adopted its public water system Water Use Efficiency Program, as part of the Group A Drinking Water Regulations (WAC 246-290). The original reclaimed water planning requirement from RCW 90.46 was incorporated in the Drinking Water Regulations at that time (WAC 246-290-100(4)(f)(vii)). In July 2007, the Office of Drinking Water (ODW) published the Water Use Efficiency Guidebook (DOH PUB #331-375) which explains the requirement and outlines procedures systems should consider when evaluating reclaimed water opportunities.

Appendix E provides a summary table of the key water system planning requirements and guidance for evaluating reclaimed water. Appendix F includes a copy of the reclaimed water checklist that is part of the *Municipal Water Law Interim Planning Guidance* (DOH PUB 331-256).

Evaluation of Coordinated Water System Plans and Large Water System Plans

Large water systems serving 1000 or more connections are required to submit a water system plan to ODW for review every 6 years. Since the passage of the Municipal Water Law in 2003 and the amendment of the Reclaimed Water Statute RCW 90.46, these water system plans are to include an evaluation of reclaimed water opportunities (RCW 90.46.120.120). The 2007 Reclaimed Water Bill (E2SB 6117) requires DOH to review all coordinated water system plans and large water systems plans that have been submitted since 2003 and summarize the status of reclaimed water planning by public water systems.

Only two coordinated water systems plans were submitted to DOH during this period. Both the Kitsap County and the Cle Elum and South Cle Elum plans analyzed the option of reclaimed water. Neither found reuse of water to be cost effective.

ODW staff reviewed all individual water systems plans submitted by large systems since 2003 for the following elements:

- Did the water system plan include any discussion of reclaimed water?

- What types of reclaimed water opportunities or customers did the systems identify?
- Were the projects determined to be cost effective?
- Did the system identify active or targeted reclaimed water projects that they were pursuing in the current planning cycle?
- If the system determined that there were no projects to pursue during this planning cycle what reasons were given?

Table 1 summarizes review data by ODW region.

Table 1: Summary of Water System Plan Statistics

Water System Plan Review Tasks	Total # of Systems	Eastern Region	NW Region	SW Region
# of water systems with 1000 or more connections [+]	226	64	106	56
# of water systems plans submitted since 01/01/2003 [++]	102	36	36	30
# of water system plans submitted since 01/01/2003 that included an evaluation of reclaimed water opportunities	80	34	25	21
% of water systems with plans that included an evaluation of reclaimed water opportunities	78%	94%	69%	70%
# of water systems with plans that identify active or targeted reclaimed water activities for the current planning cycle	31	13	7	10
% of water systems with plans that identify active or targeted reclaimed water activities for the current planning cycle	30%	36%	19%	33%

Notes:
[+] Systems required under RCW 90.46.120 to consider reclaimed water opportunities.
[++] Systems with 1000 or more connections and a plan approved or submittal date of 01/01/2003 to present

There are 226 active Group A water systems with one thousand or more connections. However, not all water system plans are due or submitted at the same time. Water system plan submissions are staggered over a six year planning cycle. Since 2003, 102 have been submitted to the three ODW regional offices.

Water system plans are also required for public supply systems with less than one thousand connections when they are expanding, if they have operational issues requiring a comprehensive evaluation, or if they apply for a Drinking Water State Revolving Fund loan. A number of moderate sized water systems have begun to look at the role reclaimed water may offer terms of alternative sources of supply, a tool to help manage demand, or as mitigation for future demand. This review focused on the large water supplies falling under the planning requirement of RCW 90.46.120. A list of the water system plans reviewed for this report is found in Appendix G.

Of the 102 large water system plans submitted since 2003:

- 30% identified active reclaimed water projects or targeted projects that the system planned to pursue during their current planning cycle.
- The majority of water systems that did consider reclaimed water did not find it a cost effective conservation or water use efficiency option at the present time.
- 22% included no discussion of reclaimed water at the time the plan was submitted.

The percentages varied significantly by region. Reasons could include differences in the systems themselves, the timing of the plan submittal, regional workload issues, or the nature of water demand and availability by region.

Opportunities and Barriers for Use of Reclaimed Water by Public Water Systems

The review of large public water systems plans provided insight into how these water suppliers view reclaimed water. Most see reclaimed water as a potential supply for commercial, industrial and irrigation water use. Where it could be exploited, water systems viewed the potential shift in use from potable to non-potable as a means to balance changes in demand, meet new demand or as a way to preserve potable supplies for future needs.

The key to that evaluation hinged on two critical factors – a nearby source of high quality reclaimed water and the cost-effectiveness (purchase and delivery) compared to existing or new sources of potable water. Most water systems can not meet both. Public water supply systems see themselves and some of their large customers as purchasers, not as producers of reclaimed water. The need for a positive or at least neutral benefit-cost analysis is critical in improving their willingness to pursue reclaimed water opportunities.

Public water systems did identify a number of ways that reclaimed water might be used by their customers. These are summarized in Table 2. Most plan documents started with a review of the potential customer base and estimated the projected demand for reclaimed water. Large commercial users, irrigation-related water use on public and private lands, and specialty commercial uses such as non-contact process water were evaluated. Actual projected demand varied greatly by system, customer class, and whether or not the projected use was for an existing facility or a proposed facility.

Some water systems are interested in the potential underground storage of reclaimed water to meet future demand. Others are looking to use reclaimed water to mitigate conflicts between expected demand and other water rights constraints. For most systems these were ideas that were marked for further consideration but not as current opportunities.

Table 2: Reclaimed Water Opportunities Identified by Public Water Systems

Water Use Category	Examples Cited
Landscape Irrigation	School and park district playfields Community parks Golf courses Cemeteries
Commercial Irrigation	Agricultural non-food and specialty crops Nursery Forestry crops
Industrial Process Water	Manufacturing and packaging non-contact process water Aggregate and concrete process water Commercial and industrial service laundries
Community Services	Water tankers for street sweeping and dust control Fire flow for new developments Fire drill and practice water Urinal and toilet flush water for public parks Fish hatchery flow augmentation Wastewater plant maintenance and landscape water
New water sources for mitigation of current and expected demand	Aquifer storage and recovery Direct use for new development (irrigation & fire flow) Stream flow augmentation Groundwater recharge as mitigation seasonal demand Groundwater recharge as mitigation for new demand

For most systems, the cost of reclaimed water far exceeds the cost of other conservation or water use efficiency options. The most commonly cited conservation and efficiency actions included metering, leak detection, conservation rates, and customer education. All were much less expensive than reclaimed water. Given limited conservation resource dollars, most water systems are electing to pursue these actions instead of reclaimed water projects.

The cost of buying and delivering reclaimed water was always estimated to be greater than the cost of delivering potable water. The high costs were based on:

- Treatment costs associated with high quality reclaimed water.
- The need to build a separate transmission network to move the water from the treatment location to the customer.
- The potential loss of potable water revenue when large customers start using reclaimed water.

In the long run, the extra cost might be covered by new potable demand/revenues elsewhere in the system. In the near term, unless the system has existing demand that exceeds its supply, cost issues make reuse an unattractive option.

Where reclaimed water opportunities are being actively pursued, a number of common elements are noted. These include:

- Reclaimed water treatment is driven by the need of the wastewater treatment system to meet more stringent treatment requirements (water supply opportunities are secondary).
- New development (as opposed to existing) allows the planned inclusion of reclaimed water piping at the time of construction.
- Regional wastewater and water supply consortiums provide a larger context in which to evaluate and share costs for reclaimed water.
- Significant seed money is available to cover part of planning, design or construction costs.

Small scale reclaimed water opportunities are being pursued by many systems. These include using reclaimed water in water tankers for street cleaning and dust control, and small scale irrigation. Many systems identify the use of reclaimed water or partially treated wastewater at their treatment facilities and for certain city service operations.

Table 3 lists the most common reasons given by large systems for not pursuing reclaimed water. For most systems, the high initial cost of developing a reclaimed water program (treatment to transmission) is the reason they will not take further action. For irrigation use, many water systems find that their largest potential customers have separate irrigation water rights. Many large commercial users require very high quality process water and find the use of potable water makes both economic and operational sense. A number of water systems do not have a ready source of reclaimed water. For these, the cost of developing a reclaimed water program is unrealistic. A few systems mention concerns about their obligation to protect down stream and instream rights before they can use their reclaimed water rights.

As part of the ODW Water Use Efficiency program, all large water systems are required to periodically reassess the viability of reclaimed water projects as part of their planning efforts. When potable water supplies become more limited or costly, and sources of high quality reclaimed water become available, more systems will look to reclaimed water as an alternative source of supply, as a tool to help manage demand, or as mitigation for future demand. The new Water Use Efficiency requirements, new reclaimed water treatment technologies, education on the public health safety of reclaimed water, and the increasing competition for potable water may change the cost calculations for a number of water systems over the next six to twelve years.

Table 3: Reclaimed Water Barriers Identified by Public Water Systems

Barrier	Examples
Cost	Cost of existing potable water is lower than projected reclaimed water costs Not the most cost effective conservation / water use efficiency option Limited water system dollars for improvements - not best option at this time Public "not for profit" water system - must be cost effective
Reclaimed Water Source	No source of reclaimed water available (or near by) Available wastewater does not meet customer water quality needs Cost to upgrade treatment facility prohibitive and not required
Demand	No large commercial users Irrigation water covered by separate water right(s) Commercial water right separate from municipal water right Commercial / industrial water quality needs higher than reclaimed water standard Current potable right more than adequate for current planning horizon Public perception of safety for certain uses
Infrastructure	Identified uses not near reclaimed water source – high transmission costs Identified uses are uphill from treatment facility – pumping & electrical costs high Transmission lines (purple pipe) expensive within existing system infrastructure Ground water storage options are limited
Institutional Conflicts	Potential for impairment limits reuse options Closed basin no net gain for water use Most water systems are not reclaimed water producers- merely potential consumers Uncertainly on limits for use: how much? How long? Seasonal constraints on water use during time highest potential demand Seasonal demand – limited cost recovery basis May be "good' for regional water needs but not cost effective at the system level

Public Health Risks Associated With Reclaimed Water

Dr. James Crook, P.E. is an internationally renowned expert in reclaimed water. For this report, DOH asked Dr. Crook to provide a thorough assessment of the public health risks associated with reclaimed water. He did a comprehensive literature search and evaluated federal standards and state rules concerning reclaimed water. His detailed assessment, including a comprehensive bibliography, is in Appendix H.

The following statements briefly summarize his findings:

- Reclaimed water has been successfully used for a wide range of uses throughout the United States and the world. All of these reclaimed water uses are currently practiced in the United States.
- Reclaimed water used for any of these uses can present health concerns if it is not properly treated, distributed, and controlled. The major health threat is from pathogenic microorganisms; threats from chemicals are minimal in most cases. Both microbes and chemicals are of concern when reclaimed water is used for potable purposes.
- Only one epidemiologic study for non-potable uses of reclaimed water was found in the literature. After a two-year assessment, the 1984 report concluded that individuals who frequented parks irrigated with reclaimed water were at no greater risk of contracting gastrointestinal disease than visitors of parks irrigated with potable drinking water.

- Only one epidemiologic study was found where reclaimed water is used for indirect potable purposes. The project involves aquifer recharge and withdrawal of the groundwater as a public water system supply. The 1984 cancer-related study findings did not demonstrate any measurable adverse effects on the health of the population ingesting the water. Follow-up epidemiologic studies in 1996 and 1999 provided no evidence that populations using reclaimed water were at a higher risk of cancer, mortality, or infectious disease than those using other water sources.
- There has only been one documented disease outbreak in the United States associated with reclaimed water. The 1979 outbreak was caused by a cross-connection between a potable water system and a subsurface irrigation system that supplied treated wastewater to shrubs and grass. This incident occurred prior to the development of reclaimed water regulations in that state.
- Wastewater treatment and limiting public or worker exposure to reclaimed water by design or operational controls, eliminates, or reduces the risk from health-significant microbes and chemicals.
- The long history of water reuse in the U.S. indicates that, if properly designed, operated, maintained and monitored, water reuse projects do not present unreasonable health risks.
- Other states with active water reclamation programs and assure adequate public health protection by regulation. They require compliance with specific water quality limits and treatment levels. Reliability of the process and use of the reclaimed water is addressed, and regulations limit and control where the water is used.

DOH believes that new resources will not be needed to evaluate public health risks for use of reclaimed water. With appropriate regulations spelling out design, treatment, water quality limits, handling, transport and delivery requirements, public health risk will be low. In order to assure that public health risk will remain low, additional staff resources will be needed:

- To review and approve engineering submittals.
- For field surveys and inspections.
- For permit development and issuance.
- To review monthly monitoring reports.
- To consider and possibly implement operator certification.
- To resolve compliance problems.

As reclaimed water use becomes more popular and necessary, staff must be added to ensure adequate protection of public health. The estimated 2007 workload of 40 municipal project submittals is a dramatic increase and unrealistic expectation for the one DOH engineer. The previous average has been 10 to 12 projects per year and has not included commercial or industrial projects.

Public Information and Acceptance Programs

Background

Public acceptance is essential to successful water reuse programs. Gaining acceptance can be challenging due to preconceived notions about reuse, misinformation regarding the impacts of reuse, and lack of understanding of the issues involved. [HDR Inc., 2005]. Public acceptance and support is developed only by an informed community. The challenge is to develop specific public information and outreach to build local support.

Public Information and Acceptance Efforts in Washington

All communities that are required to plan for municipal water and wastewater improvements or infrastructure must assess the potential to reuse reclaimed water. Requirements for wastewater planning began in 1997 and for public water systems in 2003. Currently, Washington has 16 permitted water reclamation facilities and nine others in construction or design stages.

The approach to community outreach and public information programs has not been consistent. Some projects have been readily accepted without extensive community outreach efforts being necessary, while others projects have developed more extensive programs.

The most extensive public information programs have been developed by the LOTT Alliance, King County Department of Natural Resources and Parks, and the City of Yelm. King County is actively developing and designing the Brightwater and Carnation treatment and reuse projects, and informing county residents about them. Spokane County and the City of Airway Heights are developing public information and outreach projects.

Water reclamation and reuse is often discounted during the planning phases in part because of the cost, but also because of the perception of public backlash over the use. Yet nearly 30 projects that have dismissed water reclamation have <u>not</u> reported conducting any formal public information programs. When the project authors were questioned, some reasons they gave are:

- Perception that the results of the study will be unreliable or biased.
- Fear of severe public backlash if the community is asked.
- Lack of experience developing and implementing these programs.
- Lack of access to acknowledged experts.
- Lack of understanding by the public of the value of the water versus the cost of the project.
- Cost of the program compared to perceived value from the program.

The result is that these reports have dismissed water reclamation during planning phases *due to perceived public reaction* but without ever gauging the actual public perception.

Necessity of Public Information and Acceptance Programs

While engineers can design facilities and scientists provide factual data in support of reuse, the public has emerged as the most volatile and potentially unpredictable aspect of any reclaimed water project. To be successful in promoting reclaimed water, utilities must overcome what some call the 'yuck' factor in helping customers accept this resource. [Davis, 2007].

Informed decisions regarding public health, environmental safety, economic investments *requires* informed public. However, often decisions are made by the few and not the community at large. Personal opinions and perceptions of a limited number of stakeholders, technical and political leaders become *community-wide* perception, even when the public has never been asked. Often, even scientific and engineering professionals, have little or limited knowledge of risks and needs, and dismiss potential projects without basis [Riley 2004]. The only way to adequately and accurately gauge public knowledge, fears and perceptions is to ask the public and then honestly answer their questions. This can only be done by an effective public information and acceptance program, targeted to the project and the community.

Fundamental Program

A great deal of research has been dedicated to public information and acceptance programs. Water Environment Research Foundation [HDR Inc., 2005], WateReuse Foundation [Resource Trends Inc. 2004] and USEPA [EPA 2004] have published guidelines that establish frameworks to understand public perception and public involvement. These also define "best practices" to be used in developing a program and recommended program elements, including identifying and effectively using key stakeholder groups.

To develop and implement a successful program, USEPA suggests the following elements of a successful public information program [EPA 2004]:

- Determine, internally, the community's reuse goals and the associated options and/or alternatives to be further considered.
- Identify any scientific/technical facts that exist, or are needed, to help explain the issues and alternatives. If additional facts or studies are needed, consider beginning to work on them in the earliest stages so that additional scientific data can be made available later in the process. Unanswered questions can damage the credibility of the program effort.
- Create a master list of stakeholders, including agencies, departments, elected officials, potential customers, and others who will be impacted in some way. It might be helpful to identify the level of interest different individuals and groups will have in the reuse planning process.
- Begin public outreach to specific target audiences in the form of informal meetings involving direct contact, limiting the number invited at any one time so that individual discussion is more easily accomplished.
- Determine whether a task force or advisory committee is needed. If so, take steps to formally advertise and be sure to include representatives from the target audience groups. Plan a schedule and target date for reaching consensus on reuse alternatives; then plan

well-prepared meetings that invite two-way communications. Bring in outside experts, such as scientists, to answer questions when needed.

References

Many references are available regarding implementation strategies for successful public outreach and involvement programs. Suggested article, book and web site references are listed in Appendix I.

Appendices

Appendix A

E2SSB 6117, Section 7: Reclaimed Water

Appendix A - E2SSB 6117, Section 7: Reclaimed Water

NEW SECTION. **Sec. 7.** (1) By January 1, 2008, the department of health shall file a brief report with the appropriate committees of the legislature on the general status of:

(a) Development of permit fees for industrial and commercial uses of reclaimed water as required by RCW 90.46.030;

(b) Development of standards and guidelines for greywater use as required by RCW 90.46.140; and

(c) Permitting of greywater use by local health officers and plumbing officials in accordance with standards and guidelines developed pursuant to RCW 90.46.140.

(2) The report shall also identify:

(a) A general description of the number, type, and location of reclaimed water opportunities included in water supply and coordinated water system plans since 2003, as required by RCW 90.46.140;

(b) The best information currently available regarding potential public health risks associated with reclaimed water, if any, any known occurrences of any public health incidents associated with reclaimed water use, the approaches to reclaimed water-related public health issues taken in other states, and resource needs of the department to evaluate any known public health risks; and

(c) A description of a basic public information and public acceptance program necessary to generate public support for the beneficial use of reclaimed water.

(3) In order to ensure brevity of the report, the department should include references to existing documents, reports, internet sites, and other sources of detailed information on the foregoing issues.

Appendix B

Greywater Guidance

Appendix B - Greywater Guidance

The following is taken directly from the *"Recommended Standards and Guidance for Performance, Application, Design, and Operation and Maintenance of Water Conserving On-Site Wastewater Treatment Systems,"* DOH Publication 337-016, July 1, 2007 http://www.doh.wa.gov/ehp/ts/WW/pubs-rsg.htm

Section B - Greywater Systems

1. **Introduction**

Greywater systems are virtually the same as combined-wastewater on-site sewage systems. Gravity flow greywater systems consist of a septic tank and a subsurface drainfield. Pressurized greywater systems consist of a septic tank, a pump chamber or vault, and a subsurface drainfield. Other types of sewage technologies, pre-treatment methods and drainfield design and materials options may also be incorporated in greywater systems.

The primary distinction between a greywater system and a combined wastewater system is the lower volume of wastewater. As a result the size of the septic tank and the subsurface drainfield is smaller compared to a system that treats and disposes of all the household wastewater (combined) through a septic tank and drainfield.

To help assure that future household fixture and/or plumbing changes do not overload the greywater treatment and dispersal system, the household and system plumbing must be clearly identified GREYWATER ONLY—NOT FOR COMBINED WASTEWATER.

In addition to the water conserving nature of waterless toilets / greywater systems, the greywater system drainfield can be designed and located to reuse greywater for sub-surface irrigation. Drainfield designs (methods and materials) which place the distributed wastewater in close proximity to the root zone of turf grasses, plants, shrubs and trees may be used to enhance the reuse potential of greywater as it is treated in the soil, assuring public health protection. A relatively new piping method and material is presented in the "Recommended Standards and Guidance for Performance, Application, Design, and Operation and Maintenance of Subsurface Drip Systems" as a design option for the dispersal / reuse of greywater.

When greywater systems are designed, installed, and operated & maintained to maximize their potential as a greywater re-use irrigation system, various items should be considered. Among these are plant water and nutrient needs and limits, salt tolerances, depth of root zones, etc. The development of a landscape plan is recommended. Information about these issues is presented in the Appendix.

2. **Performance Standards**

2.1. Greywater treatment & dispersal / reuse systems must provide treatment and dispersal at least equal to that provided by conventional on-site sewage systems.

3. Application Standards

3.1. All permitting, installation and inspection requirements are the same as required in Chapter 246-272A WAC.

3.2. Greywater on-site sewage systems may be used with new residential construction and existing dwellings. Internal household plumbing may be modified (consistent with local plumbing code) to route any portion of the household greywater to the greywater on-site sewage system.

3.3. Greywater on-site sewage systems may be located anywhere conventional or alternative on-site sewage systems are allowed. Site conditions, vertical separation, pretreatment requirements, setbacks and other location requirements are the same as described in Chapter 246-272A WAC.

3.4. Greywater on-site sewage systems must provide permanent, year-round treatment and dispersal of greywater unless this is already provided by an approved on-site system or connection to public sewer (see Section 3.4 "Seasonal vs. Year-Round Greywater Reuse).

3.5. Greywater on-site sewage systems must be installed with an approved waterless toilet or other means of sewage treatment for blackwater approved by the local health officer.

3.6. Greywater systems are intended to treat and dispose "residential strength" greywater. Greywater exceeding typical residential strength must receive pre-treatment to at least residential strength levels.

4. Design Standards

4.1. Design requirements for greywater on-site sewage systems, unless otherwise noted here, are the same as the requirements for combined wastewater systems presented in Chapter WAC 246-272A.

4.1.1. Minimum daily design flows and wastewater tank sizes for greywater systems serving single family residences are listed in Table 1.

4.1.2. For residential facilities other than single family residences daily design flow must be at least 60 GPD per bedroom with a minimum design flow of 150 GPD per dwelling unit. Septic tank volume must be a minimum of 1.5 times the daily peak design flow with a minimum capacity of 1000 gallons.

4.2. Enhancing Sub-Surface Irrigation Potential

4.2.1. Greywater may be used for subsurface irrigation of trees (including fruit trees), shrubs, flowers, lawns and other ground covers but must not be used for watering of food crops or vegetable gardens, any type of surface or spray irrigation, to flush toilets/urinals or to wash walls, sidewalks or driveways.

4.2.2. The soil dispersal component of a greywater treatment system may be designed to enhance the potential for sub-surface irrigation. The efficiency of greywater reuse via subsurface irrigation depends upon the proximity of the drainfield to the root-zone of plants, shrubs, trees or turf, and the method of distribution. This may be enhanced by:

4.2.2.1. Installing narrower-than-normal trenches shallow in the soil profile (state rules do not have a minimum trench width; minimum trench depth is six inches).

Gravel and pipe size may limit how narrow a "conventional" trench may be. It is recommended that at least 2 inches of gravel be provided between the sides of the distribution pipe and trench sidewalls. Smaller gravel size (no less than ¾ inch) is recommended for narrow trenches.

4.2.2.2. Using pressure distribution to reduce the height of the trench cross-section to enable shallow trench placement, and to assure even distribution.

4.2.2.3. Using subsurface drip system (SDS) technology for shallow system placement and equal distribution in close proximity to plant, shrub, turf and tree roots.

4.2.3. Some agronomic issues that should be considered with greywater reuse are the water needs and salt tolerance of plants to be irrigated (see Appendix for related information). In many cases the volume of greywater generated may not meet the water needs of the landscape plantings. If potable water is used to augment greywater for irrigation within the same distribution network, a method of backflow prevention approved by the local health officer is required.

4.3. Seasonal vs. Year-Round Greywater Reuse - In some geographical and climatic areas, the frost-protection needs of an SDS or a conventional drainfield trench system may be counter-productive to effective greywater reuse via subsurface irrigation (distribution piping may be too deep for plant root systems). In these areas local health officers may permit seasonal systems where year-round treatment and dispersal is provided by an approved sewage system and seasonal subsurface irrigation with greywater is provided by a separate system with a shallow drainfield or SDS. Where seasonal systems are allowed various administrative and design issues must be addressed.

4.3.1. Both drainfields must meet state & local rule requirements, including soil application rates, to assure treatment and dispersal at least equal to that provided by gravity or pressure on-site sewage systems according to Chapter 246-272A WAC.

4.3.2. Municipal sewer systems may provide year-round sewage dispersal in conjunction with seasonal greywater treatment and dispersal systems designed to enhance greywater reuse via subsurface irrigation.

4.3.3. Seasonal greywater treatment and dispersal / reuse systems must include a three way diverter valve to easily divert greywater to the year-round dispersal field or sewer when needed (when freezing is a problem).

4.4. Special Case / Laundry Wastewater

4.4.1. Local health officers may permit "laundry wastewater only" greywater dispersal or reuse systems for single family residences for either year-round or seasonal use. Greywater systems limited only to laundry wastewater (including laundry sinks) may differ from other greywater systems presented in this document according to the following:

4.4.1.1. A single compartment retention / pump tank, with a minimum liquid capacity of 40 gallons may be used in lieu of the tank recommendations in Table 1. The tank must be warranted by the manufacturer for use with wastewater and meet requirements listed in Appendix G of the 1997 edition of the Uniform Plumbing Code (UPC).

4.4.1.2. Minimum design flow for "laundry wastewater only" systems (for the purpose of drainfield sizing) must be based on the number of bedrooms in the residence and must be no less than 30% of the minimum greywater system design flows listed in Table 1. (see Appendix B).

4.4.1.3. A wastewater filter or screen (with a maximum size opening of 1/16 inch) must be provided in an accessible location conducive to routine maintenance.

5. Operation and Maintenance Standards

5.1. Homeowners are responsible for proper operation and maintenance of their greywater systems.

5.2. Operation and maintenance (O&M) requirements for greywater systems are similar to the O&M requirements of other comparable (combined wastewater) on-site sewage systems. Specific requirements will vary according to the county where the

system is located and the specific type of system. See your local health jurisdiction for local system O&M requirements.

5.3. Operation and maintenance requirements of subsurface drip systems are unique and are outlined separately in the Recommended Standards and Guidance for Subsurface Drip Systems.

5.4. Effluent filters must be cleaned with a minimum frequency in accordance with manufacturer's recommendations.

Appendix C

Greywater Local Health Survey Results

Appendix C - Greywater Local Health Survey Results

Organization	Local ordinance	Number permitted	Comment
Adams County Health Department	No	0	No - all water goes to septic system. Would only find out if there was a failure with drainfield. Some try to use drywell (which is prohibited)
Asotin County Health District	No	0	No - hasn't seen guidance on designing or maintaining a septic system w/o greywater. Black water needs greywater to process.
Benton-Franklin County Health District	No	0	No - treats all the same - septic systems
Chelan-Douglas County Health District	No	0	No - have adopted the state WAC. Greywater is treated the same as black water.
Clallam County Dept of Health & Human Services	No	0	No - follows the WAC - use septic system for gray/black water
Clark County Health Department	No	0	No - all goes to septic system
Columbia County Health Department	No	0	No - treats all the same - septic systems
Cowlitz County Health Department	No	0	No - treats all the same - septic systems. Working on new septic code - however, will not be any specific language for greywater
Northeast Tri County Health District, Ferry	No	0	No - treats all the same - septic systems
Garfield County Health District	No	0	No - all wastewater must go into disposal system
Grant County Health District	No	0	No - go by WAC
Grays Harbor County Health Department	No	0	No - no specific regulations for greywater only, must use same rules as for black water
Island County Public Health	No	unknown	No local regulations rely on DOH on-site regulations and RS&Gs if installations are wanted. They have permitted some, but not many. There is no separate tracking base, but they might be able to search after first of the year with a new data system
Jefferson County Public Health	No	unknown	Greywater treated as black water; some permitted in the past but not any longer; with no criteria to base design on they rely on black water
Seattle/King County Public Health	No	0	No - all plumbed fixtures must be connected to sanitary sewer/septic system
Kitsap County Health District	No	0	No - gray/black treated with septic systems
Kittitas County Public Health Office	No	0	Treated with black water. Updating code - looking at adding greywater language

Organization	Local ordinance	Number permitted	Comment
Klickitat County Health Department	No	0	No - follow state regulations.
Lewis County Public Health	No	0	No - gray/black treated with septic systems
Lincoln County Public Health	No	0	No - treats all the same - septic systems
Mason County Environmental Health	No	0	No - treats all the same - septic systems
Okanogan County Health District	No	0	No specific permit
Pacific County Health & Human Services	No	0	No - treats all the same - septic systems. Few older homes have separate greywater system, but they are shut down when discovered
Northeast Tri County Health District, Pend Oreille	No	0	No - treats all the same - septic systems
Thurston County Health Department	No	0	No - treats all the same
Tacoma Pierce County Health Department	No	0	no permitted system known, right now greywater is considered black water and permitted the same; they don't discourage greywater but require conformance with DOH guidance; cost of 2 system deemed prohibitive
San Juan County Public Health	No	0	No - go by State regulations
Skagit County Health Department	No	0	No - treats all the same - sewer
Clark County Health Department	No	0	No - go by WAC
Snohomish County Health District	No	0	No - treats all the same - septic systems
Spokane Regional Health District	No	0	No - follows State Regulations
Northeast Tri County Health District, Stevens	No	0	No - treats all the same - septic systems
Wahkiakum County Health & Human Services	No	0	No - follow 272
Walla Walla County Health Department	No	0	No - all wastewater must go into disposal system
Whatcom County Health Department	No	0	No - all treated the same/together. May be some old systems, but they aren't permitted
Whitman County Public Health	No	0	No - treats all the same - septic systems
Yakima County Health District			Unable to contact

Appendix D

Local Health Survey Contacts

Appendix D - Local Health Survey Contacts

Health Jurisdiction	County	Phone	Contact	Title	Address	Email
Adams County Health Department	Adams	(509) 488-2031	Brent Stenson	EH Director	108 W. Main, Ritzville	brents@co.adams.wa.us
Asotin County Health District	Asotin	(509) 758-3344	Juan Cabellero	EH Director	431 Elm Street, Clarkston	jcaballero@co.asotin.wa.us
Benton-Franklin County Health District	Benton Franklin	(509) 582-7761	ext 251 Chris		800 W. Canal, Kennewick	
Chelan-Douglas County Health District	Chelan Douglas	(509) 886-6450	Allen Hunter	Program Manager	200 Valley Mall Pkwy, East Wenatchee	Allen.Hunter@cdhd.wa.gov
Clallam County Dept of Health & Human Services	Clallam	(360) 417-2593	Janine Reed		223 East 4th Street, Port Angeles	
Clark County Health Department	Clark	(360) 397-8000	Randy Phillips	water quality mgr	1601 East Fourth Plain Boulevard, Vancouver	
Columbia County Health Department	Columbia	(509) 397-6280	John Skyles	EDH	310 N Main St, Colfax	
Cowlitz County Health Department	Cowlitz	(360) 414-5599	Chris Bishoph	EHSII	1952 Ninth Ave, Longview	
Northeast Tri County Health District, Ferry	Ferry	(509) 684-2262	Aleece McGlothern	Secretary	260 S. Oak St, Colville	
Garfield County Health District	Garfield	(509) 524-2682	Kevin Tureman	EHS	121 South 10th, Pomeroy, WA	
Grant County Health District	Grant	(509) 754-6060	Jerry Campbell	Director	1st & C Street NW, Ephrata	jcampbell@granthealth.org
Grays Harbor County Health Department	Grays Harbor	(360) 249-4413	Eric Khambatta		100 W. Braodway, Ste 31, Montesano	ekhambatta@co.grays-harbor.wa.us

Health Jurisdiction	County	Phone	Contact	Title	Address	Email
Island County Public Health	Island	360-678-7914	Kathleen Parin	EHS II	6th and Main Street Coupeville, WA 98239	
Jefferson County Public Health	Jefferson	360-385-9436	Mike McNickle		615 Sheridan Street, Port Townsend WA	
Seattle/King County Public Health	King	(206) 296-4932	Dave Koperski			
Kitsap County Health District	Kitsap	(360) 337-5235	Steve Brown		345 6th Steret, Suite 300, Bremerton	
Kittitas County Public Health Office	Kittitas	(509) 962-7584	Sage Park	EH Manager	507 N. Nanum Street, Ellensburg	
Klickitat County Health Department	Klickitat	(509) 493-1558	Jeff Martin		228 W. Main Street, Goldendale	
Lewis County Public Health	Lewis	(360) 740-2716	Andy Petyo	Sanitarian	350 N. Market Blvd, Chehalis	
Lincoln County Public Health	Lincoln	(509) 725-9213	Ed Dzedzy	Director	90 Nichols, Davenport	edzedzy@co.lincoln.wa.us
Mason County Environmental Health	Mason	(360) 427-9670	Cindy Waite	On-Site Tech	303 N. 4th, Shelton	cew@co.mason.wa.us
Okanogan County Health District	Okanogan	(509) 422-7140	Dave Windham	EHS	1234 s. 2nd Ave, Okanogan	
Pacific County Health & Human Services	Pacific	(360) 875-9356	Ian Farrell	EHS	1216 W. Robt Bush Dr., South Bend	
Northeast Tri County Health District, Pend Oreille	Pend Oreille	(509) 684-2262	Aleece McGlothern	Secretary	260 S. Oak St, Colville	
Thurston County Health Department	Thurston	(360) 754-3355	Jerry Caird	EHS	2000 Lakeridge Dr SW, Olympia	

Health Jurisdiction	County	Phone	Contact	Title	Address	Email
Tacoma Pierce County Health Department	Pierce	(253) 798-6564	Ron Howard	EHS II	3629 S D St, Tacoma WA 98418	rhoward@tpchd.org
San Juan County Public Health	San Juan	(360) 378-4474	Gary Covington	EHS	145 Rhone Street, Friday Harbor	
Skagit County Health Department	Skagit	(360) 336-9380	Corina Morate	EHS	700 S. 2nd Street #301, Mt. Vernon	
Clark County Health Department	Skamania	(360) 397-8000	Randy Phillips	Water Quality Manager	1601 East Fourth Plain Boulevard, Vancouver	
Snohomish County Health District	Snohomish	(425) 339-5210	Brad Ball	EHS	3020 Rucker Ave, Everett	
Spokane Regional Health District	Spokane	(509) 324-1560	Bob Gaulke	Liquid Waste Technical Advisor	1101 W. College Ave	
Northeast Tri County Health District, Stevens	Stevens	(509) 684-2262	Aleece McGlothern	Secretary	260 S. Oak St, Colville	
Wahkiakum County Health & Human Services	Wahkiakum	(360) 795-6207	Dave Riggs	EHS	64 Main Street, Cathlamet	
Walla Walla County Health Department	Walla Walla	(509) 524-2682	Kevin Tureman	EH Supervisor	310 W. Poplar, Walla Walla, WA	
Whatcom County Health Department	Whatcom	(360) 676-6724	Holly Burke	EHS	509 Girard, Bellingham	
Whitman County Public Health	Whitman	(509) 397-6280	John Skyles	EHD	310 N Main St, Colfax	
Unable to Contact	Yakima					

Appendix E

Water System Planning Requirements and Guidance for Evaluating Reclaimed Water

Appendix E - Water System Planning Requirements and Guidance for Evaluating Reclaimed Water

RCW / WAC /Guidance	Description
DOH PUB #331-068	Water System Planning Handbook (April 1997) Chapter 4 Conservation Program, Water Rights, System Reliability and Interties: introduce the value of considering reclaimed water as part of a water system's overall portfolio of potential water sources (non-potable).
RCW 90.46.120 (3)	Reclaimed Water Statute (2003)(as updated 2007) *Where opportunities for the use of reclaimed water exist within the period of time addressed by a water system plan, a water supply plan, or a coordinated water system plan developed under chapters 43.20 ((or)), 70.116, 90.44, and 90.82 RCW, and the water supply provisions under the utility element of chapter 36.70A RCW, these plans must be developed and coordinated to ensure that opportunities for reclaimed water are evaluated. The requirements of this subsection (3) do not apply to water system plans developed under chapter 43.20 RCW for utilities serving less than one thousand service connections.*
DOH PUB #331-256	Municipal Water Law Interim Planning Guidance (March 2004) Explains the interim requirements purveyors must meet to gain approval for a water system plan as a result of the passage of the Municipal Water Law E2SB 1338. (Includes Attachment 9: Reclaimed Water Checklist as a planning tool.)
WAC 246-290-100(4)(f)(vii)	Group A Public Water System Water Planning Requirements - Reclaimed Water (January 2007) A water resource analysis must include: *For systems serving one thousand or more total connections, an evaluation of opportunities for the use of reclaimed water, where they exist, as defined in RCW 90.46.010(4).*
DOH PUB #331-375 (Sections 5.5-5.7)	Getting Started: Water Use Efficiency Guidebook (July 2007) Explains requirements and procedures for conducting the analysis of reclaimed water opportunities within a water use efficiency program.

Appendix F

Water Reclamation Checklist

Appendix F – Water Reclamation Checklist

The following is taken directly from the "*Municipal Water Law: Interim Planning Guidance"*, March 2004, DOH Publication #331-256; http://www.doh.wa.gov/ehp/dw/

Attachment 9: Water Reclamation Checklist for Systems with 1,000 or more Connections

The Municipal Water Supply - Efficiency Requirements Act, Chapter 5, Laws of 2003 (Municipal Water Law), amended Chapter 90.46 of the Revised Code of Washington (RCW) to require public water systems serving 1000 or more connections to evaluate opportunities for reclaimed water when completing their water system plans (WSP). This checklist may be used to ensure that your WSP includes sufficient information about opportunities for reclaimed water and your system's efforts to develop those opportunities.

Water System Name:_____Date: _____

PWS ID:_____

1. An evaluation of water reclamation opportunities is found in the WSP on pages:

   At a minimum, include the following in your evaluation of reclamation opportunities:

   - An inventory of large water users.
   - Identification of potential reclaimed water users.
   - Estimates of how much water could be saved by development of reclaimed water projects
   - Identification of opportunities that your system intends to pursue within the next six years
   - A brief analysis of the financial and operation feasibility of identified opportunities

   The form on the opposite side of this page is provided to assist you in conducting an inventory of potential users and estimate savings. Use of this form is optional.

2. Provide the results of that evaluation.

   If new or additional reclaimed water opportunities are available, include a brief description of activities you are considering undertaking or those activities you will undertake to pursue development of those opportunities.

   If reclaimed water opportunities are not available, include a brief description of the interaction with the local wastewater facility (or other entity within the area you serve that may be a generator of reclaimed water) to evaluate opportunities to develop reclaimed water.

3. If evaluation of water reclamation is not included because such an evaluation has been completed by the wastewater facility, or other entity, please include a copy of that evaluation.

4. If water reclamation is mandated for this water system through local government agreement, contract, local regulations, ordinances, or other mechanism, please provide a copy of the governing mechanism.

5. If reclaimed is available within the service area of your water system please include the following information:

   - Name of Facility
   - Class of Water Received (A, B, C or D)
   - Reclamation Permit Number
   - Amount of Reclaimed Water received
   - A brief description of how this water is used, including information on cross connection control
   - Date when your utility began receiving reclaimed water

Reclaimed Water Potential Use Checklist	✓	Est. Annual Use	Est. Annual Savings
Crop Irrigation			
Trees	☐	_____	_____
Sod	☐	_____	_____
Nursery	☐	_____	_____
Pasture	☐	_____	_____
Irrigation of Food Crops	☐	_____	_____
Landscape Irrigation			
Cemeteries	☐	_____	_____
Freeway Landscapes	☐	_____	_____
Other Restricted Landscape Areas	☐	_____	_____
Golf Courses	☐	_____	_____
Parks	☐	_____	_____
Playgrounds	☐	_____	_____
Schoolyards	☐	_____	_____
Other Open Access Areas	☐	_____	_____
Residential Landscapes	☐	_____	_____
Ponds			
Landscape Impoundments	☐	_____	_____
Recreational Impoundments	☐	_____	_____
Water Trucks			
Street Sweeping	☐	_____	_____
Fire fighting & protection	☐	_____	_____
Washing of Corporation Yards, Lots, and Sidewalks	☐	_____	_____
Dust Control (Dampening Unpaved Roads, Other	☐	_____	_____
Dampening Soil for Compaction (Construction Sites, Landfills, Pipelines, etc.)	☐	_____	_____
Other			
Toilet and Urinal Flushing	☐	_____	_____
Lift Stations	☐	_____	_____
Ship Ballast	☐	_____	_____
Fish Hatchery Basins	☐	_____	_____
Washing Aggregate and Making Concrete	☐	_____	_____
Flushing of Sanitary Sewers	☐	_____	_____
Industrial Boiler Feed	☐	_____	_____
Industrial Cooling	☐	_____	_____
Industrial Process	☐	_____	_____
Environmental Uses			
Streamflow Augmentation	☐	_____	_____
Aquifer recharge	☐	_____	_____
Wetland Mitigation	☐	_____	_____
Other	☐	_____	_____
***Other uses not listed above:**			
_____	☐	_____	_____
_____	☐	_____	_____
_____	☐	_____	_____

Appendix G

Water System Plans Reviewed for Reclaimed Water and Water System Planning Analysis

Appendix G - Water System Plans Reviewed for Reclaimed Water and Water System Planning Analysis

The following water system plans were review for the analysis in Section 2. The table fields are:

ID#: DOH Public Water System Identification Number

Water System Name: System name as it appears in the DOH Sentry Data System

Last Plan Date: Date of the last submitted water system plan

Reclaimed water (RCH2O) Analysis: Was some type of an assessment of reclaimed water opportunities included in the water system plan? (Yes/No)

RCH2O Projects: Did the water system identify active or targeted reclaimed water activities for the current planning cycle? (Yes/No)

ID#	Water System Name	County	Last Plan Date	RCH2O Analysis	RCH2O Projects
10750	CAMANO WATER ASSOCIATION	Island	01/27/2006	Y	N
62650	OAK HARBOR, CITY OF	Island	03/31/2004	Y	N
01450	ALGONA WATER DEPT	King	09/21/2006	N	N
07900	BOTHELL WATER, CITY OF	King	01/27/2003	N	N
41750	COAL CREEK UTILITY DISTRICT	King	04/15/2005	Y	N
20750	DUVALL, CITY OF	King	05/24/2005	Y	Y
38150	KENT WATER DEPARTMENT	King	01/17/2006	Y	N
38950	KING COUNTY WATER DISTRICT #20	King	05/24/2005	Y	N
71650	REDMOND WATER SYSTEM, CITY OF	King	02/25/2003	N	N
71850	RENTON, CITY OF	King	02/07/2006	Y	Y
77050	SEATTLE PUBLIC UTILITIES	King	04/16/2007	Y	N
38800	SKYWAY WATER & SEWER	King	01/30/2007	N	N
81080	SNOQUALMIE WATER	King	07/15/2005	Y	Y
40100	SOOS CREEK WATER & SEWER DISTRICT	King	08/22/2005	N	N
89500	TUKWILA WATER DEPARTMENT	King	03/22/2007	Y	Y
20500	DUPONT WATER SYSTEM, CITY OF	Pierce	01/07/2005	Y	N
25200	FIRGROVE MUTUAL INC	Pierce	03/25/2003	Y	N
26050	FORT LEWIS WATER-CANTONMENT	Pierce	11/17/2005	Y	N
26300	FOX ISLAND MUTUAL WATER ASSOCIATION	Pierce	01/31/2005	Y	N
45550	LAKEWOOD WATER DISTRICT	Pierce	03/24/2006	Y	Y
52200	MC CHORD AIR FORCE BASE	Pierce	06/06/2005	Y	N
52900	MCNEIL ISLAND WATER	Pierce	10/9/2006	N	N
56820	MOUNTAIN VIEW-EDGEWOOD WATER CO	Pierce	12/27/2005	N	N
66200	PARKLAND LIGHT & WATER COMPANY	Pierce	12/28/2006	Y	N
26595	FRIDAY HARBOR, TOWN OF	San Juan	09/08/2003	N	N
01300	ALDERWOOD WATER DISTRICT	Snohomish	01/15/2003	Y	N
02950	ARLINGTON WATER DEPT	Snohomish	08/10/2004	Y	N
29050	GRANITE FALLS WATER DEPT	Snohomish	09/21/2006	Y	N
49270	LYNNWOOD, CITY OF	Snohomish	11/15/2005	Y	N
51900	MARYSVILLE UTILITIES	Snohomish	01/24/2003	Y	N
57550	MUKILTEO WATER DISTRICT	Snohomish	09/05/2003	Y	N
63600	OLYMPIC VIEW WATER & SEWER DISTRICT	Snohomish	09/08/2003	N	N

ID#	Water System Name	County	Last Plan Date	RCH2O Analysis	RCH2O Projects
79250	SILVER LAKE WATER DISTRICT	Snohomish	03/26/2004	N	N
84770	SULTAN WATER DEPARTMENT	Snohomish	08/23/2006	Y	Y
95904	BIRCH BAY WATER & SEWER DISTRICT	Whatcom	08/29/2003	Y	Y
66110	EVERGREEN WATER – SEWER DIST #19	Whatcom	08/24/2004	N	N
04700	BATTLE GROUND WATER DEPT, CITY OF	Clark	03/28/2005	Y	N
13333	CLARK PUBLIC UTILITIES	Clark	09/15/2004	N	N
72400	RIDGEFIELD PUBLIC WORKS	Clark	05/16/2006	N	N
91200	VANCOUVER, CITY OF	Clark	02/05/2007	Y	Y
93400	WASHOUGAL, CITY OF	Clark	10/8/2005	Y	N
15650	COWLITZ COUNTY PUD	Cowlitz	02/07/2006	N	N
48100	LONGVIEW WATER DEPARTMENT	Cowlitz	02/07/2006	Y	Y
98200	WOODLAND, CITY OF	Cowlitz	12/28/2006	N	N
00050	ABERDEEN, CITY OF	Grays	07/26/2005	Y	N
34350	HOQUIAM WATER DEPARTMENT	Grays	03/18/2005	N	N
63008	OCEAN SHORES WATER DEPT	Grays Harbor	12/27/2005	N	N
95300	WESTPORT WATER DEPARTMENT	Grays Harbor	05/30/2003	Y	N
68700	OLYMPIC WATER AND SEWER	Jefferson		Y	N
N/A	KITSAP COUNTY CWSP	Kitsap	5/9/2005	Y	N
02600	ANNAPOLIS WATER DISTRICT	Kitsap	01/31/2006	Y	Y
08200	BREMERTON, CITY OF	Kitsap	01/25/2007	Y	Y
34375	HORIZONS WEST	Kitsap		Y	N
50700	MANCHESTER WATER DISTRICT	Kitsap	03/30/2007	Y	N
79300	SILVERDALE WATER DIST 16	Kitsap	08/29/2005	Y	Y
97650	BAINBRIDGE ISLAND, CITY OF	Kitsap	01/12/2007	Y	N
12200	CENTRALIA UTILITIES	Lewis	03/22/2006	Y	Y
12250	CHEHALIS WATER DEPARTMENT	Lewis	07/29/2004	N	N
78170	SHELTON, CITY OF	Mason		Y	Y
48000	LONG BEACH WATER DEPARTMENT	Pacific	01/26/2006	Y	N
71500	RAYMOND WATER DEPARTMENT	Pacific	11/30/2006	N	N
13615	CLEARWOOD	Thurston	03/16/2005	Y	N
43500	LACEY WATER DEPARTMENT	Thurston	09/03/2003	Y	Y
63450	OLYMPIA, CITY OF	Thurston	01/25/2005	Y	Y
66578	PATTISON	Thurston	01/25/2005	N	N
89700	TUMWATER, CITY OF	Thurston	09/05/2003	Y	N
04397	TANGLEWILDE #600	Thurston		Y	Y
11700	CASHMERE WATER DEPARTMENT	Chelan	08/02/2004	Y	N
12750	OTHELLO WATER DEPARTMENT	Adams	08/09/2004	Y	N
14050	PUD #1 OF ASOTIN COUNTY	Asotin	9/26/2006	Y	N
21650	RICHLAND, CITY OF	Benton	03/24/2003	Y	Y
21800	LAKE CHELAN RECLAMATION DISTRICT	Chelan	04/19/2006	Y	N
21900	WENATCHEE, CITY OF	Chelan	08/17/2004	Y	Y
23650	EAST WENATCHEE WATER DISTRICT	Douglas	06/07/2006	Y	N
36050	CONNELL	Franklin	5/15/2007	Y	Y
43783	EPHRATA WATER DEPARTMENT	Grant	01/10/2005	Y	Y
55550	MOSES LAKE, CITY OF	Grant	01/03/2006	Y	N
55600	QUINCY	Grant		Y	Y
56300	CAVE B WATER SYSTEM	Grant		Y	Y

ID#	Water System Name	County	Last Plan Date	RCH2O Analysis	RCH2O Projects
63750	CLE ELUM & SOUTH CLE ELUM CWSP	Kittitas	2/13/2007	Y	N
64400	ELLENSBURG	Kittitas		Y	N
64850	WHITE SALMON, CITY OF	Klickitat	05/04/2006	Y	N
93343	OMAK, CITY OF	Okanogan	12/22/2004	Y	N
72250	OROVILLE, CITY OF	Okanogan	06/03/2003	Y	Y
83100	METALINE FALLS	Pend Oreille		Y	Y
85202	EAST SPOKANE WATER DIST 1	Spokane	04/11/2007	Y	N
85400	EASTERN WASHINGTON UNIVERSITY	Spokane	03/28/2005	Y	Y
90250	IRVIN WATER DISTRICT #6	Spokane	08/20/2007	Y	N
91450	MODEL IRRIGATION DIST #18	Spokane	01/16/2007	Y	N
92500	MODERN ELECTRIC WATER CO	Spokane	08/24/2007	Y	N
92800	SPOKANE, CITY OF	Spokane	05/03/2007	Y	Y
94350	VERA WATER & POWER	Spokane	01/18/2007	Y	N
96350	DEER PARK	Spokane		N	N
99150	MEDICAL LAKE	Spokane		Y	Y
pending	CHEWELAH WATER DEPT SOUTH	Stevens	01/13/2003	Y	N
13500v	STEVENS CO PUD - LAKE SPOKANE	Stevens	01/31/2005	Y	N
14009	COLLEGE PLACE WATER DEPT	Walla Walla	01/31/2005	y	y
146002	WALLA WALLA WATER DIVISION	Walla Walla	01/17/2007	Y	Y
185006	COLFAX	Whitman	08/01/2007	Y	N
22950m	SUNNYSIDE, CITY OF	Yakima	01/31/2005	N	N
53400v	UNION GAP WATER	Yakima	07/23/2004	Y	N
54250	WAPATO WATERWORKS	Yakima	04/03/2006	Y	N
704501	YAKIMA WATER DIVISION, CITY OF	Yakima	05/25/2004	Y	Y

Appendix H

"Public Health Issues Associated with Reclaimed Water"

Appendix H – "Public Health Issues Associated With Reclaimed Water"

Prepared by James Crook, Ph.D., P.E.

Introduction

Making reclaimed water safe for any intended use is achieved by eliminating or reducing the concentrations of health-significant microbial and chemical constituents through wastewater treatment and/or by limiting public or worker exposure to the water via design or operational controls. Reclaimed water has been successfully used for a wide range of applications throughout the world. Reclaimed water applications currently practiced in the U.S. are listed in Table 4.

Table 4: Uses of Reclaimed Water

Category of Use	Specific Types of Use
Landscape irrigation	Parks, playgrounds, cemeteries, golf courses, roadway rights-of-way, school grounds, greenbelts, residential and other lawns
Agricultural irrigation	Food crops, fodder crops, fiber crops, seed crops, nurseries, sod farms, silviculture, frost protection
Nonpotable urban uses (other than irrigation)	Toilet and urinal flushing, fire protection, air conditioner chiller water, vehicle washing, commercial laundries, street cleaning, decorative fountains and other water features
Industrial uses	Cooling, boiler feed, stack gas scrubbing, process water, cement mixing
Impoundments	Ornamental, landscape, recreational (including full-body contact)
Environmental uses	Stream augmentation, marshes, wetlands, fisheries
Groundwater recharge	Aquifer storage and recovery, salt water intrusion control, ground subsidence control
Potable water supply augmentation (indirect potable reuse)	Groundwater recharge/replenishment, surface water augmentation
Miscellaneous	Aquaculture, snow-making, soil compaction, dust control, equipment washdown, firefighting, livestock watering

Reclaimed water use for any of the applications listed in Table 4 can present health concerns if not properly treated, distributed, and controlled. Pathogenic microorganisms represent the major health concern for most nonpotable reclaimed water applications, and health risks associated with chemical constituents are generally minimal. Both microbial and chemical constituents are of concern where reclaimed water is used for potable purposes. The long history of water reuse

in the U.S. indicates that – if properly designed, operated, and maintained – water reuse projects do not present unreasonable health risks.

Potential Health Risks Associated with Reclaimed Water

Microbiological Constituents

The potential transmission of infectious disease by pathogens is the most common concern associated with nonpotable reuse. The source of reclaimed water is municipal wastewater that contains pathogens (i.e., organisms capable of initiating infection in a susceptible host) that must be destroyed, inactivated, or reduced to acceptably low levels in the reclaimed water by treatment where there is human exposure to the water. While there are many waterborne pathogenic bacteria, parasites (protozoa and helminths), and viruses that are potentially present in untreated municipal wastewater, many of them are either not normally present in wastewater in the U.S. or are not normally present at levels necessary to initiate infection.

Some pathogenic microorganisms can survive for long periods of time on vegetation or in water or soil under ideal conditions [Feachem et al., 1983]. Some viruses are more resistant to environmental stresses than many of the bacteria, although other viruses survive for only a short time in municipal wastewater. In general, parasitic cysts and oocysts maintain their viability for longer time periods in the open environment than either bacteria or viruses.

The literature reviewed did not reveal any documented instances of illness resulting from the proper treatment, distribution, and use of reclaimed water in the U.S. Several researchers have suggested that tertiary-treated reclaimed water – that is, secondary treatment followed by filtration and a high level of disinfection – would not present unreasonable risks of infectious disease from occasional contact or infrequent, inadvertent ingestion [Asano et al., 1992; Rose and Gerba, 1991; Yanko, 1993]. Similarly, a review of the literature indicates that the health risk associated with aerosols emanating from spray irrigation sites using highly disinfected reclaimed water is immeasurably low [U.S. Environmental Protection Agency, 1980; Crook, 2005].

Pathogen Reduction by Treatment

Some helminths and protozoan parasites are substantially reduced in concentration via settling during primary sedimentation, as are some particulate-associated bacteria and viruses. Pathogen levels are further reduced during secondary biological treatment by predatory organisms and secondary sedimentation. Conventional media filtration also removes many particulate-associated pathogens and can reduce parasites to low levels through the filtering process, particularly if preceded by chemical coagulants or polymers. Membrane processes such as microfiltration and ultrafiltration effectively remove parasites based on size exclusion, but do not provide a complete barrier to either bacteria or viruses.

Disinfection is the main treatment process used to destroy or inactivate pathogens in reclaimed water. Almost all reclaimed water treatment facilities in the U.S. use either chlorine or UV for disinfection. Both are effective in reducing most pathogens to nondetectable levels or very low levels that have not been demonstrated to present a health risk. Chlorine disinfection effectively reduces the concentration of bacteria, viruses, and some parasites (e.g., Giardia) to low or

immeasurable levels in treated reclaimed water, whereas very high levels of chlorine are required to destroy Cryptosporidium. Ultraviolet (UV) disinfection generally is more effective than chlorine in destroying or inactivating most pathogens, including Cryptosporidium. Some enteroviruses, such as the adenoviruses, are more resistant to UV disinfection than most other viruses and require high UV doses to destroy them [Malloy, 2002; Thompson et al., 2003; Thurston-Enriquez et al., 2003]. However, adenoviruses have never been associated with any waterborne disease outbreak and, thus, are not thought to represent a public health threat at levels commonly found in reclaimed water [Cooper, 2003].

The most commonly used treatment scheme for nonpotable reclaimed water applications where human contact with the water is likely or expected includes secondary treatment, filtration with or without preceding chemical addition, and disinfection. The main function of the filtration step is to prepare the water for disinfection by removing particulate matter that can interfere with the disinfection process by consuming the disinfectant (if chlorine is used), preventing destruction or inactivation of organisms embedded in particulate matter, or shielding the organisms where ultraviolet (UV) radiation is used for disinfection.

Bacteria

Although untreated wastewater may contain large numbers of bacterial pathogens, bacteria have not been shown to represent a public health threat in reclaimed water treated to levels specified in state reclaimed water standards. Research studies and operating experience over the last 50 years or more indicate that conventional secondary or tertiary treatment, when coupled with a high level of disinfection, effectively eliminates bacterial pathogens or reduces them to insignificant levels in reclaimed water.

Viruses

Secondary treatment, not including disinfection, is capable of removing 80-99% of the viruses present [Crook, 1992; Camp Dresser & McKee, 1991; Yates, 1998], while secondary effluent followed by chlorine disinfection can remove or inactivate 99.9-99.99% of virus [Yates, 1998]. Secondary treatment followed by chemical coagulation and sedimentation, filtration, and disinfection has been shown to remove up to 99.999% of seeded viruses [Sanitation Districts of Los Angeles County, 1977; Engineering-Science, 1987]. A virus monitoring program of six full-scale operating facilities operated by the Sanitation Districts of Los Angeles County that use the above-stated treatment train found that only 1 of 1,045 samples of reclaimed water contained a measurable level of enteric viruses [Hartling and Nellor, 2000]. A study of several water reuse facilities in Arizona and Florida by Rose and Gerba [1991] found that average virus levels in filtered and disinfected secondary effluent ranged from 0.13 to 1.25 pfu/100 L.

Giardia lamblia

The results of several studies indicate that tertiary treatment removes more than 99% of the Giardia cysts present in untreated wastewater [Brereton et al., 2003; Garcia et al., 1999; Garcia et al., 2002; Rose et al., 1996; Thompson, 2004]. Although Giardia cysts are often found in tertiary-treated reclaimed water at relatively low concentrations, many of the cysts are not viable and, thus, are not infective.

Cryptosporidium parvum

Cryptosporidium is of particular concern due to its prevalence in municipal wastewater and its resistance to destruction by chlorine. While tertiary-treated reclaimed water that has been

disinfected using chlorine typically contains few to immeasurable levels of Cryptosporidium oocysts, low levels of oocysts are sometimes found in the product water [Gennaccaro et al., 2002; Brereton et al., 2003; Nelson et al., 2003; Slifko and Kunihiro 2004; Thompson, 2004]. Pathogen monitoring data from 91 water reclamation facilities (all producing tertiary-treated water) in Florida indicated that 69% of all samples taken had undetectable levels of Cryptosporidium, 75% of all observations were 1.65 oocysts/100 L or less, and 90% of all samples taken had 14.6 oocysts/100 L or less [York and Walker-Coleman, 2004]. The data represent the total numbers of oocysts detected – not viable or infectious oocysts, which likely are considerably lower in concentration. UV disinfection is known to be much more effective than chlorine disinfection for inactivation of Cryptosporidium oocysts, and very low UV dosages effectively inactivate the oocysts [Hunter et al., 2003].

Chemical Contaminants

With few exceptions, there are minimal health concerns associated with chemical constituents where reclaimed water is not intended to be consumed. Pesticides, heavy metals, and organic chemicals are usually reduced to acceptable limits by conventional wastewater treatment and would not be expected to present any risks to health from contact or inadvertent infrequent ingestion of reclaimed water. While there has been some concern regarding irrigation of food crops with reclaimed water, available data indicate that potentially toxic organic pollutants generally do not enter edible portions of plants that are irrigated with treated municipal wastewater [National Research Council, 1996]. Health effects related to the presence of chemical constituents are of primary concern with regard to potable reuse. Assessment of health risks associated with indirect potable reuse is not definitive due to limited chemical and toxicological data and inherent limitations in available epidemiological and toxicological methods. Both organic and inorganic constituents need to be considered where reclaimed water from irrigation or other beneficial uses reaches potable groundwater supplies, or where organics may bioaccumulate in the food chain, e.g., in fish-rearing ponds. Some inorganic and organic constituents and their potential health significance are summarized below.

Trace organic constituents

Some organic constituents tend to resist conventional methods of wastewater treatment. If not eliminated or reduced to low levels in reclaimed water, they may present a health hazard if the water is used for potable reuse. Ultimately, reclaimed water used for potable purposes must meet all physical, chemical, radiological, and microbiological drinking water standards. Drinking water standards are not intended to apply to highly contaminated source waters such as municipal wastewater and cannot be relied on as the sole standard of safety; thus, the water may have to meet additional water quality criteria.

Endocrine disruptors, pharmaceuticals, and personal care products

Endocrine disrupting compounds (EDCs), pharmaceutically active compounds (PhACs), and personal care products are ubiquitous in untreated wastewater and have been implicated in adverse effects to frogs, fish, and other aquatic animals. Pharmaceuticals and personal care products are sometimes called PPCPs, which comprise a very broad, diverse collection of thousands of chemicals, including prescription and over-the-counter drugs, fragrances, cosmetics, soaps and shampoos, lotions, sun screen agents, diagnostic agents, and many other compounds. While conventional secondary and tertiary treatment efficiently removes some EDCs, PhACs, and personal care products, removal or reduction of others is highly variable

[Buser et al., 1999; Ternes, 1998; Huang and Sedlak, 2001; Drewes et al., 2003; Sedlak and Pinskton, 2001; Kolpin et al., 2002]. Reclaimed water used for nonpotable applications is not intended to be consumed; thus, concerns associated with ingestion of water containing these contaminants are mitigated. The human health risks associated with ingestion of low concentrations of many of these compounds are unknown, and health concerns have been raised where reclaimed water is used for potable purposes. Reclaimed water used for potable purposes receives advanced wastewater treatment (e.g., reverse osmosis, advanced oxidation processes, or soil aquifer treatment) to remove EDCs, PPCPs, and other currently-unregulated chemicals known or suspected to present health risks [Snyder et al., 2007].

Nutrients

When applied at excessive levels on land, the nitrate form of nitrogen will readily leach through the soil and may cause groundwater concentrations to exceed drinking water standards.

Heavy metals

Some heavy metals such as cadmium, copper, molybdenum, nickel, and zinc accumulate in crops to levels that are toxic to consumers of the crops. Heavy metals in reclaimed water that has received at least secondary treatment are generally within acceptable levels for most uses; however, if industrial wastewater pretreatment programs are not enforced, certain industrial wastewaters discharged to a municipal wastewater collection system may contribute significant amounts of heavy metals [National Research Council, 1996].

Disinfection Byproducts

Where chlorine is used for disinfection at water reclamation facilities, there is the possibility that chlorine will react with organic chemical constituents in the water to create disinfection byproducts (DBPs) that are potentially harmful upon long-term ingestion of the water [Wallis-Lage, 2007]. Tertiary treatment of municipal wastewater removes or reduces the concentration of many of the compounds that react with chlorine to form DBPs and, thus, reduces the potential for DBP formation. DBP levels – as well as pesticide and heavy metal levels – in tertiary treated wastewater generally are below maximum contaminant levels (MCLs) in drinking water standards [National Research Council, 1998].

Health Assessment

Epidemiological Studies

Epidemiological studies of exposed populations at sites using reclaimed water for nonpotable purposes are of limited value in determining occurrences of illnesses due to a variety of confounding factors and assumptions that have to be made. There has been a paucity of epidemiological studies related to any type of nonpotable reuse, and only one such study report [Durand and Schwebach, 1989] was found in the literature. A two-year prospective epidemiological study conducted in Colorado Springs, Colorado, was directed at gastrointestinal illness in individuals who frequented parks irrigated with tertiary treated reclaimed water versus individuals who frequented parks irrigated with either potable water or runoff water. The study concluded that patrons to parks irrigated with reclaimed water were at no greater risk of contracting gastrointestinal illness than patrons to parks irrigated with potable water.

Epidemiological studies have been conducted at only one location in the U.S. where reclaimed water is used for potable purposes. In 1978, the Sanitation Districts of Los Angeles County initiated a 5-year health effects study to determine whether the Montebello Forebay Groundwater Recharge Project had an adverse effect on the groundwater or the health of individuals ingesting the water. The cancer-related epidemiological study findings did not demonstrate any measurable adverse effects on the health of the population ingesting the groundwater [Nellor, Baird, and Smyth, 1984]. Follow-up epidemiological studies provided no evidence that populations utilizing reclaimed water at the percentages used in the Montebello Forebay are at a higher risk of cancer, mortality, or infectious disease than those using other water sources [Sloss et al., 1996; Sloss et al., 1999].

Microbial Risk Assessment

Due partly to the insensitivity of epidemiological studies to provide a direct assessment of microbial health risk, scientists rely on indirect measures of risk using analytical models for estimation of the intensity of human exposure and the probability of human response from the exposure. There are no regulations specifically mandating conformance to any particular level of risk from reclaimed water or drinking water, although the U.S. EPA has suggested an acceptable microbial risk level of 10-4 (i.e., 1 in 10,000 annual risk of infection) for drinking water [U.S. Environmental Protection Agency, 1989].

Risk assessment has been used to assess relative health risks for microorganisms in reclaimed water. Some of the studies are summarized below.

Table 5: Probability of Infection from Reclaimed Water

Scenario	Probability of Infection
Ingestion of 100 mL of disinfected secondary treated reclaimed water	2×10^{-3} to 2×10^{-4}
Ingestion of 100 mL of disinfected tertiary treated reclaimed water	2×10^{-4} to 2×10^{-6}
Risk to golfers when secondary effluent used for irrigation	$<1 \times 10^{-4}$
Risk to golfers when tertiary effluent used for irrigation	$<1 \times 10^{-6}$
Risk to patrons at parks, etc. when secondary effluent used for irrigation	1×10^{-3} to 1×10^{-4}
Risk to patrons at parks, etc. when tertiary effluent used for irrigation	$<1 \times 10^{-4}$

Source: Rose and Gerba [1991]; Rose et al. [1996]; Tanaka et al. [1993]; Asano et al. [1992]; [EOA, Inc., 1995]; York and Walker-Coleman [1999]

The results of these studies suggest that contact or occasional inadvertent ingestion of tertiary-treated reclaimed water – as is required by most state criteria for high level uses where such contact or inadvertent ingestion may occur – would not present an unreasonable risk to public health.

Health Incidents Associated with Water Reuse

Excluding the use of raw sewage or primary effluent on sewage farms in the late 19th century, there has been only one documented disease outbreak in the U.S. associated with reclaimed water. That outbreak occurred in 1979 and was caused by a cross connection between a potable water system and a subsurface irrigation system that supplied treated wastewater to shrubs and trees at a campground in Arizona. The incident reportedly resulted in diarrheal illness to at least 57 campers who exhibited symptoms of the illness [Starko et al., 1986]. It is noteworthy that this incident occurred several years prior to the development of reclaimed water regulations in Arizona. Several other incidents of cross connections between reclaimed water and potable water lines have been reported [Bloom, 2003; California Department of Health Services, 2002; Crisson, 2007; Krueger, 2007; Babyak and Dominick, 2007]. While a few of the cross connection incidents have resulted in reported illnesses, most were not medically documented. No illnesses from either microbial pathogens or chemical constituents have been reported at any of the indirect potable reuse projects in the U.S.

Other State's Approaches to Public Health Issues

While the U.S. Environmental Protection Agency has published Guidelines for Water Reuse [U.S. Environmental Protection Agency, 2004], they are advisory only and there are no federal regulations governing water reclamation and reuse in the U.S. Water reuse regulations are developed and implemented at the state level. Criteria or guidelines for various applications of reclaimed water vary from state-to-state in those states that have adopted criteria or guidelines. Table 6 includes several different states' water quality and treatment requirements for nonpotable uses of reclaimed water. Most states prescribe treatment unit processes in addition to water quality requirements. Water reuse criteria usually allow for alternative methods of treatment upon demonstration that the alternative methods are shown to the satisfaction of the regulatory agency to be provide equivalent treatment and reliability to those prescribed in the criteria.

Not all states include treatment reliability requirements in their water reuse criteria, although such requirements may be prescribed by other wastewater treatment regulations in those states. Reliability requirements typically address alarms, standby power, duplicate treatment process units, elimination of bypassing, and emergency storage and disposal. Water reuse criteria generally include other requirements addressing: operator certification; cross connection control; pipeline separation and construction; and use area controls. Use area controls may include: prohibition of runoff; setback distances from domestic water supply wells, buildings, etc.; restrictions on time of irrigation; protection of drinking fountains from reclaimed water spray; prohibition of hose bibbs on reclaimed water irrigation systems accessible to the public; color-coding of all pipelines, valves, and other appurtenances; and signage warning that the water is not suitable for drinking. Specific requirements vary from state-to-state.

Table 6: Examples of State Water Reuse Criteria for Selected Nonpotable Applications

State	Fodder Crop Irrigation[1]		Processed Food Crop Irrigation[2]		Food Crop Irrigation[3]		Restricted Recreational Impoundments[4]	
	Quality Limits	Treatment Required	Quality Limits	Treatment Required	Quality Limits	Treatment Required	Quality Limits	Treatment Required
Arizona	• 1,000 fecal coli/100 mL	• Secondary	Not covered	Not covered	• No detect. fecal coli/100 mL • 2 NTU	▪ Secondary ▪ Filtration ▪ Disinfection	• No detect. fecal coli/100 mL • 2 NTU	• Secondary • Filtration • Disinfection
California	Not specified	▪ Oxidation	Not specified	• Oxidation	• 2.2 total coli/100 mL • 2 NTU	• Oxidation • Coagulation[5] • Filtration • Disinfection	• 2.2 total coli/100 mL	• Oxidation ▪ Disinfection
Colorado	Not covered	Not covered	Not covered	Not covered	Not covered	Not covered	Not covered	Not covered
Florida	▪ 200 fecal coli/100 mL ▪ 20 mg/L CBOD ▪ 20 mg/l TSS	▪ Secondary ▪ Disinfection	▪ No detect. fecal coli/100 mL ▪ 20 mg/L CBOD ▪ 5 mg/L TSS	▪ Secondary ▪ Filtration ▪ Disinfection	Use prohibited	Use prohibited	▪ No detect. fecal coli/100 mL ▪ 20 mg/L CBOD ▪ 5 mg/L TSS	▪ Secondary ▪ Filtration ▪ Disinfection
New Mexico (Policy)	• 1,000 fecal coli/100 mL • 75 mg/L TSS • 30 mg/L BOD	Not specified	Not covered	Not covered	Use Prohibited	Use Prohibited	▪ 100 fecal coli/100 mL ▪ 30 mg/L BOD ▪ 30 mg/L TSS	Not specified
Utah	▪ 200 fecal coli/100 mL ▪ 25 mg/L BOD ▪ 25 mg/L TSS	▪ Secondary ▪ Disinfection	▪ No detect. fecal coli/100 mL ▪ 10 mg/L BOD ▪ 2 NTU	▪ Secondary ▪ Filtration ▪ Disinfection	▪ No detect. fecal coli/100 mL ▪ 10 mg/L BOD ▪ 2 NTU	▪ Secondary ▪ Filtration ▪ Disinfection	▪ 200 fecal coli/100 mL ▪ 25 mg/L BOD ▪ 25 mg/L TSS	▪ Secondary ▪ Disinfection
Texas	▪ 200 fecal coli/100 mL ▪ 20 mg/L BOD ▪ 15 mg/L CBOD	Not specified	▪ 200 fecal coli/100 mL ▪ 20 mg/L BOD ▪ 15 mg/L CBOD	Not specified	Use prohibited	Use prohibited	▪ 20 fecal coli/100 mL ▪ 3 NTU ▪ 5 mg/L BOD or CBOD	Not specified
Washington	▪ 240 total coli/100 mL	▪ Oxidation ▪ Disinfection	▪ 240 total coli/100 mL	▪ Oxidation ▪ Disinfection	▪ 2.2 total coli/100 mL ▪ 2 NTU	▪ Oxidation ▪ Coagulation ▪ Filtration ▪ Disinfection	▪ 2.2 total coli/100 mL	▪ Oxidation ▪ Disinfection

[1] In some states more restrictive requirements apply where milking animals are allowed to graze on pasture irrigated with reclaimed water.

[2] Physical or chemical processing sufficient to destroy pathogenic microorganisms. Less restrictive requirements may apply where there is no direct contact between reclaimed water and the edible portion of the crop.

[3] Food crops eaten raw where there is direct contact between reclaimed water and the edible portion of the crop.

[4] Recreation is limited to fishing, boating, and other nonbody contact activities.

[5] Not needed if filter effluent turbidity ≤ 2 NTU, the turbidity of influent to the filters is continually measured, the influent turbidity ≤5 NTU for more than 15 minutes and never exceeds 10 NTU, and there is capability to automatically activate chemical addition or divert wastewater if the filter influent turbidity exceed 5 NTU for more than 15 minutes.

Table 6: Examples of State Water Reuse Criteria for Selected Nonpotable Applications (cont'd)

State	Restricted Access Irrigation[1]		Unrestricted Access Irrigation[2]		Toilet Flushing[3]		Industrial Cooling Water[4]	
	Quality Limits	Treatment Required	Quality Limits	Treatment Required	Quality Limits	Treatment Required	Quality Limits	Treatment Required
Arizona	▪ 200 fecal coli/100 mL	• Secondary • Disinfection	• No detect. fecal coli/100 mL • 2 NTU	▪ Oxidation ▪ Filtration ▪ Disinfection	• No detect. fecal coli/100 mL • 2 NTU	▪ Oxidation ▪ Filtration ▪ Disinfection	Not covered	Not covered
California	• 23 total coli/100 mL	• Oxidation • Disinfection	▪ 2.2 total coli/100 mL • 2 NTU	• Secondary • Coagulation[4] • Filtration • Disinfection	▪ 2.2 total coli/100 mL • 2 NTU	• Oxidation • Coagulation[4] • Filtration • Disinfection	• 2.2 total coli/100 mL • 2 NTU	• Oxidation • Coagulation[4] • Filtration ▪ Disinfection
Colorado	▪ 126 *E.coli*/100 mL ▪ 3 NTU	▪ Secondary ▪ Disinfection	▪ 126 *E.coli*/100 mL ▪ 3 NTU	▪ Secondary ▪ Filtration ▪ Disinfection	Not covered	Not covered	▪ 126 *E.coli*/100 mL ▪ 3 NTU	▪ Secondary ▪ Filtration ▪ Disinfection
Florida	▪ 200 fecal coli/100 mL ▪ 20 mg/L CBOD ▪ 20 mg/l TSS	▪ Secondary ▪ Disinfection	▪ No detect. fecal coli/100 mL ▪ 20 mg/L CBOD ▪ 5 mg/L TSS	▪ Secondary ▪ Filtration ▪ Disinfection	▪ No detect. fecal coli/100 mL ▪ 20 mg/L CBOD ▪ 5 mg/L TSS	▪ Secondary ▪ Filtration ▪ Disinfection	▪ No detect. fecal coli/100 mL ▪ 20 mg/L CBOD ▪ 5 mg/L TSS	▪ Secondary ▪ Filtration ▪ Disinfection
New Mexico (Policy)	▪ 200 fecal coli/100 mL ▪ 30 mg/L BOD ▪ 30 mg/L TSS	Not specified	If within 100 ft of dwelling: ▪ 5 fecal coli/100 mL ▪ 10 mg/L BOD ▪ 3 NTU	Not specified	▪ 100 fecal coli/100 mL ▪ 30 mg/L BOD ▪ 30 mg/L TSS	Not specified	Not covered	Not covered
Utah	▪ 200 fecal coli/100 mL ▪ 25 mg/L BOD ▪ 25 mg/L TSS	▪ Secondary ▪ Disinfection	▪ No detect. fecal coli/100 mL ▪ 10 mg/L BOD ▪ 2 NTU	▪ Secondary ▪ Filtration ▪ Disinfection	▪ No detect. fecal coli/100 mL ▪ 10 mg/L BOD ▪ 2 NTU	▪ Secondary ▪ Filtration ▪ Disinfection	▪ 200 fecal coli/100 mL ▪ 25 mg/L BOD ▪ 25 mg/TSS	▪ Secondary ▪ Disinfection
Texas	▪ 200 fecal coli/100 mL ▪ 20 mg/L BOD ▪ 15 mg/L CBOD	Not specified	▪ 20 fecal coli/100 mL ▪ 3 NTU ▪ 5 mg/L BOD or CBOD	Not specified	▪ 20 fecal coli/100 mL ▪ 3 NTU ▪ 5 mg/L BOD or CBOD	Not specified	▪ 200 fecal coli/100 mL ▪ 20 mg/L BOD ▪ 15 mg/L CBOD	Not specified
Washington	▪ 23 total coli/100 mL	▪ Oxidation ▪ Disinfection	▪ 2.2 total coli/100 mL ▪ 2 NTU	▪ Oxidation ▪ Coagulation ▪ Filtration ▪ Disinfection	▪ 2.2 total coli/100 mL ▪ 2 NTU	▪ Oxidation ▪ Coagulation ▪ Filtration ▪ Disinfection	▪ 2.2 total coli/100 mL ▪ 2 NTU	▪ Oxidation ▪ Coagulation ▪ Filtration ▪ Disinfection

[1] Classification varies by state; generally includes irrigation of cemeteries, freeway medians, restricted access golf courses, and similar restricted access areas.
[2] Includes irrigation of parks, playgrounds, schoolyards, residential lawns, and similar unrestricted access areas.
[3] Not allowed in single-family residential dwelling units.
[4] Cooling towers where a mist is created that may reach populated areas.
[5] Not needed if filter effluent turbidity ≤ 2 NTU, the turbidity of influent to the filters is continually measured, the influent turbidity ≤5 NTU for more than 15 minutes and never exceeds 10 NTU, and there is capability to automatically activate chemical addition or divert wastewater if the filter influent turbidity exceed 5 NTU for more than 15 minutes.

It is impractical to monitor reclaimed water for all microbial pathogens; thus, indicator organisms for waterborne pathogens are universally used – often in conjunction with treatment process requirements (e.g., filtration) and other water quality requirements (e.g., turbidity and chlorine residual). All state criteria use either total or fecal coliform organisms as the microbiological indicator organism except for Colorado, which uses E. coli as the indicator. The total coliform analysis includes enumeration of organisms of both fecal and nonfecal origin, while the fecal coliform analysis is specific for coliform organisms of fecal origin. The use of total coliforms as an indicator of microbial water quality provides an added safety factor that appeals to regulatory agencies that adhere to a more conservative approach to water reuse. Coliforms, by themselves, are inadequate indicators of the presence or concentration of all microbial pathogens, and most states prescribe both treatment unit process and water quality requirements that together are known to remove or destroy pathogens [Crook, 2003]. Washington is the only state that requires a chlorine residual in reclaimed water distribution systems as an added safety factor, although it is recommended in several states.

For some types of reuse, Florida and California require monitoring for specific microbial pathogens in reclaimed water. Florida requires certain facilities (those producing water for high level uses, such as food crop irrigation) with a capacity of 1.0 mgd or greater to sample for Giardia and Cryptosporidium every two years and smaller facilities to sample for those parasites once every five years. California requires that disinfected tertiary reclaimed water that does not include coagulation followed by clarification prior to filtration maybe used for nonrestricted recreational impoundments (full-body contact allowed) provided the reclaimed water is monitored monthly for the presence of Giardia, enteric viruses, and Cryptosporidium during the first 12 months of operation of the project. Following the first 12 months of use, the reclaimed water must be sampled and analyzed quarterly for Giardia, enteric viruses, and Cryptosporidium. The ongoing monitoring may be discontinued after the first two years of operation with the approval of the California Department of Public Health.

For industrial applications of reclaimed water, regulatory agencies are likely to either prohibit the use of reclaimed water in the manufacture of paper products used as food wrap or beverage containers or require the water to be pathogen-free and not contain any health-hazardous contaminants that could leach into consumable products.

Only a few states (e.g., California, Florida, and Washington) address indirect potable reuse in their reclaimed water criteria. Where allowed, very stringent treatment, water quality, and monitoring requirements are imposed to assure that the product water is safe from a microbial and chemical standpoint. Typical requirements include: advanced wastewater treatment processes to remove chemical constituents to safe levels in the water; conformance to drinking water standards in the product water; extensive monitoring for indicators or surrogates of known or suspected contaminants; minimum residence time in the underground or surface waters as an added barrier to microbial pathogen survival and as a buffer to provide time for corrective action if the water does not meet all applicable requirements; and controls on the operation, maintenance, and management of the potable reuse project.

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Appendix I

Public Outreach Program References and Web Sites

Appendix I - Public Outreach Program References and Web Sites

Papers and Articles for Public Involvement and Outreach

Macpherson, Linda, 2007, *H2O-How Will it Flow for Our Future*, WateReuse Symposium, Tampa, Florida

Davis, Marcy, 2007, *Language Counts: Developing a Communications Plan to Talk about Reuse*, WateReuse Symposium, Tampa, Florida

Milan, Mark and Lisa Brew-Miller, Data Instincts, 2007, *Putting Risks into Perspective-Responding to Water Quality Concerns*, WateReuse Symposium, Tampa, Florida

Humphreys, Lois, TRG& Associates, 2007, *Using Market Research to Design Public Outreach & Marketing Program*, WateReuse Symposium, Tampa, Florida

Riley, Craig L, 2004, *Marketing Reclaimed Water to Engineers and Mangers*; AWWA/WEF Water Sources Conference Proceedings, Austin, Texas, January 2004

Ruetten, John. 2005. *Marketing and recycled water – what you don't know can hurt you*; Pacific Northwest Clean Water Association, Caldwell, Idaho

HDR Engineering, Inc. 2005. *Good until the Last Drop – A Practitioner's Guide to Water Reuse*, American Public Works Association, Kansas City Missouri

Resource Trends Inc. 2004. *Best Practices for Developing Indirect Potable Reuse Projects: Phase 1 Report*; Alexandria VA

US Environmental Protection Agency, *Guidelines for Water Reuse*, Chapter 7 – Public Involvement Programs, USEPA 2004

Web Site Addresses for Public Involvement and Outreach

http://www.asaie.army.mil/Public/IE/Toolbox/reference_materials.html

http://www.asaie.army.mil/Public/IE/Toolbox/reference_materials.html

http://www.wfrpc.dst.fl.us/bctpo/pip2005.pdf

http://www.nrc.gov/reading-rm/doc-collections/commission/secys/1999/secy1999-070/1999-070scy.html

http://www.beavertonoregon.gov/departments/neighborhoods/NAC/docs/NACLeadersHandbook.pdf

http://www.nphp.gov.au/enhealth/council/pubs/pdf/enhealth_incidents.pdf

http://www.asaie.army.mil/Public/IE/Toolbox/documents/final_leaders_guide_to_public_involvement.pdf

http://cwrri.colostate.edu/pubs/balance/no.6/bal6.html

Book Reference for Public Involvement and Outreach

Creighton, James L., The Public Participation Handbook: Making Better Decisions Through Citizen Involvement, 2005. Metcalfe & Eddy / AECOM, Water Reuse: Issues, Technologies, and Applications, 2007

Chapter 9

Report on Capital Budget Provisions for Funding Puget Sound Projects

Fulfilling E2SSB 6117 Requirements–Section 10

2007 Reclaimed Water Use Legislative Report

Prepared by:

Washington State Department of Ecology
Water Quality Program

December 2007

WASHINGTON STATE
DEPARTMENT OF
ECOLOGY

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Capital Budget Provisions for Puget Sound Water Reclamation Projects

Summary

The 2007 Washington State Legislature passed the Capital Budget for the 2007-09 Biennium with funds to assist local governments with reclaimed water needs. The Legislature designated $5,455,000 to be spent solely for grants to local governments in the Puget Sound region for the completion of reclaimed water projects. The Legislature directed the Department of Ecology (Ecology) to give priority to projects in water short areas (defined by Ecology and others as areas where available freshwater cannot meet demands of intended uses), and areas where reclaimed water will restore important ecosystem functions in the Sound.

Development of the Grants Program

Ecology's Water Quality Program staff launched and continues in a major effort to develop and implement this new initiative. Ecology used two taskforces, a technical advisory taskforce and the Water Quality Program's Financial Assistance (Advisory) Council taskforce to develop program guidelines and the application for the *FY 2008, Reclaimed Water Grants Program*. Staff also used recommendations from the full Council[23] to complete the development of this program.

Staff introduced this preliminary program to attendees at the Pacific Northwest Regional conference: *Reclaimed Water: Tapping the New Resource,* on June 12, 2007. In mid-July 2007, Ecology also introduced the preliminary program to attendees at two workshops, one in Tacoma and one in Lynnwood, Washington. Staff posted the final application and funding guidelines on August 8, 2007 and provided other funding information on Ecology's Water Reclamation Funding website: http://www.ecy.wa.gov/programs/wq/funding/ReclaimedWaterGrants.htm.

Legislative Direction and Project Targets

In accordance with legislative appropriation language, all funded projects must target water quality improvement and protection where reclaimed water will restore important ecosystem functions in Puget Sound or address water short area needs where reclaimed water can be used to replace other water sources. For example, a project may focus on restoration or

[23] The Water Quality Financial Assistance Council provides Ecology with advice and guidance for the effective and efficient administration of its state and federal grants and loans programs. The council is not mandated in state law but was formed by Ecology to help ensure that the process of administering state and federal grants and loans is transparent and is supported by Ecology's clients and stakeholders. The Council is comprised of representatives from cities, counties, tribes, conservation districts, special purpose districts, environmental groups, and state and federal agencies.

protection of impaired shellfish habitat or address in-stream flow when the lack of water is detrimental to endangered or threatened species. Exhibit 1 shows the specific appropriation.

The target is to fund three to six high priority capital projects. Projects must be completed before June 30, 2011.

Exhibit 1. Biennium 2007-09 Capital Budget language enacting the program

NEW SECTION. **Sec. 3044 [2007-09 Governor's Capital Budget]. FOR THE DEPARTMENT OF ECOLOGY**
13 Reclaimed Water (08-4-002)
14 The appropriation in this section is subject to the following
15 conditions and limitations: The appropriation in this section is
16 provided solely for grants to local governments in Puget Sound to
17 complete reclaimed water projects. Priority shall be given to projects
18 in water short areas where reclaimed water can be used to replace other
19 water sources and where reclaimed water can be used to restore
20 important ecosystem functions in Puget Sound.
21 Appropriation:
22 State Building Construction Account–State ..... $ 5,455,000
23 Prior Biennia (Expenditures) ..... $ 0
24 Future Biennia (Projected Costs) $24,320,000
25 TOTAL……$29,775,000

The *FY 2008, Reclaimed Water Grants Program* provides:

- No ceiling amount.
- Up to 20 percent set aside for feasibility studies. If the demand for high priority feasibility studies or capital facilities projects is low, funds may be used for the other project type.
- 100 percent grant for feasibility assessments up to $250,000 (scaled to the scope of project and area).
- 75 percent grant with 25 percent match for projects that provide a "Very High" ecological benefit to Puget Sound (*see* Evaluation Criteria).
- 60 percent grant with 40 percent match for all other eligible projects.

Eligible Applicants

Local governments were eligible if they were a Puget Sound Basin city, town, county, water-sewer district, public utility district, port district, irrigation district, conservation district, flood control district, or any other municipal corporation or quasi-municipal corporation.

Application, Evaluation, and Grant Offers

The application period from August 3, 2007 to September 28, 2007, resulted in 23 applicants requesting approximately $17.6 million in grants for water reclamation projects (Table 1). Ecology evaluated project proposals in accordance with the evaluation criteria below, and will issue a final offer list by early December 2007.

The following summarizes evaluation criteria used in the FY 2008 Reclaimed Water Grants Program Application Feasibility Studies. Ecology evaluated projects on the ecological benefits and other criteria, but not against those that are capital facilities.

Overall Quality of Project Proposed and Likelihood of Success (Up to 200 Points):

1. Scope of work (up to 150 points).
2. Budget (up to 50 points).

Actions Required or Recommended (Up to 450 Points):

1. Ecological benefit (up to 300 points):
    a. Water short areas have equal priority with restoration of ecosystem functions in Puget Sound. Proposed projects are evaluated for their contributions to the bio-hydrology with up to 300 points available.
    b. Eligible project activities in water short areas or which address ecosystem functions either stand on their own or complement activities in the other category for up to 300 points.
2. State and federal requirements (up to 100 points):
    a. Actions required under Total Maximum Daily Load (TMDL) criteria:
        - Minimum flows.
        - Dissolved oxygen.
        - Maximum temperature.
        - Federal and state water rights.
        - National Pollutant Discharge Elimination System (NPDES) permits.
        - Compliance orders.
    b. Actions recommended by watershed planning groups in approved Watershed Planning Act Plans.

Local Interest and Commitment (Up to 200 Points):

1. Project development process (up to 150 points).
2. Project team (up to 50 points).

Readiness to Proceed (Up to 150 Points):

Capital facilities projects: Applicants are asked to explain their status with Growth Management Act compliance, whether all funds to be used as match for their grant, land needed, environmental permits, etc., had been acquired. Applicants were also asked to estimate how long prerequisite steps will take to complete.

Feasibility assessments: Proposed projects must be ready to proceed when Ecology distributes the offer list. Public information and collaboration efforts with other cities demonstrates readiness. Feasibility assessments will be evaluated independently of capital facilities projects.

Beginning in January 2008, Ecology's Project Management Team will use information found in the funding proposal as the basis for developing the funding agreement. Clearly defined project proposals that include measurable objectives and accurate budgets will help in the preparation of grant agreements.

To speed development and processing, Ecology will use a funding agreement based on standardized boilerplate language that includes terms and conditions, and other requirements necessary due to state and federal law.

Ecology anticipates that the highest priority projects–those offered grants, will start by mid-2008. Feasibility assessments should be completed within one year, and construction projects will be finished within three years.

Information Gained For the Long-Term Water Reclamation Funding Program

The Long-Term Funding Subtask Force considers the FY 2008 grant program described above to be a "pilot" level program at the initial appropriation of $5,455,000. However, Ecology managed this pilot program as a competitive program with some of the same financial assistance provisions, eligibility requirements, and evaluation considerations that are recommended by the Long-Term Funding Subtask Force (described more fully in Chapter 3 of this report).

Throughout this process, the Long-Term Funding Subtask Force and Ecology have acquired valuable insights into some of the anticipated reclaimed water issues. This will help the Legislature direct development of the new long-term water reclamation funding program.

Table 1. FY 2008 Reclaimed Water Grants Program Applications					
#	Applicant Name	Project Title	Project Type	Total Project Cost	Grant Request
1	Blaine, City of	Lighthouse Point Water Reclamation Facility	Construction	$38,450,000	$1,000,000
2	Tukwila, City of	Foster Links Joint Reclaimed Water Project. City of Tukwila and King County Wastewater Treatment Division	Construction	$243,000	$182,250
3	Sequim, City of	City of Sequim Water Reclamation Facility and Distribution Expansion	Design & Construction	$14,800,000	$5,000,000
4	Mason County	Belfair/Lower Hood Canal Reclaimed Water Distribution	Design & Construction	$3,218,860	$1,500,000
5	Arlington, City of	City of Arlington Wastewater Treatment Plant Upgrade and Expansion	Design & Construction	$37,100,000	$4,689,500
6	Karcher Creek Sewer	Reclaimed Water Distribution System	Design & Construction	$853,000	$633,000
7	Jefferson County	Pt. Hadlock UGA Sewer Design Development	Design	$957,900	$718,425
8	Bremerton, Port of	Kitsap Sustainable Energy & Economic development	Site Planning & Design	$300,000	$250,000
9	Lacey, City of	Woodland Creek Reclaimed Water Infiltration and Instream Flow Recharge Facility	Site Planning & Design	$628,000	$471,000
10	PUD#1 of Clallam Co.	Carlsborg Reclaimed Water Reuse System	Site Planning & Design	$625,000	$625,000
11	Silverdale Water District	West Dyes Inlet Water reclamation Facility Feasibility	Feasibility & Site Planning	$250,000	$250,000
12	Kitsap County	Kingston Wastewater Reclamation Final Feasibility	Feasibility & Site Planning	$250,000	$250,000
13	Tacoma, City of	City of Tacoma and Pierce County Reclaimed Water Feasibility Assessment	Feasibility Planning	$290,000	$222,500
14	Buckley, City of	City of Buckley Effluent Treatment for Reuse Feasibility Project	Feasibility Planning	$250,000	$250,000
15	Covington Water District	Sports Park for Amateur Recreation in King County	Feasibility Planning	$177,040	$177,040
16	Stanwood, City of	City of Stanwood Wastewater Treatment Plant Reclaimed Water Feasibility Study	Feasibility Planning	$258,113	$184,034
17	Orting, City of	Orting Reclaimed Water Feasibility Assessment	Feasibility Planning	$250,000	$250,000
18	Skagit County	Big Lake Water Reclamation Facility	Feasibility Planning	$250,000	$250,000
19	Bothell, City of	Bothell Reclaimed Water Project	Feasibility Planning	$190,000	$190,000
20	Shelton, City of	Johns Prairie Water Feasibility Study	Feasibility Planning	$199,500	$199,500
21	Coupeville, Town of	Coupeville Reclaimed Water Feasibility	Feasibility Planning	$211,000	$173,000
22	Penn Cove Water and Sewer District	Penn Cove Water and Sewer District Reclaimed Water Reuse Feasibility Study	Feasibility Planning	$47,503	$47,503
23	PUD #1, Jefferson Co.	Chimacum Creek Reclaimed Water Feasibility Study	Feasibility Planning	$52,200	$52,200
			TOTALS	**$99,851,116**	**$17,564,952**

Chapter 10

Campus-wide Plan for Reclaimed Water Use on the State Capitol Campus

Fulfilling E2SSB 6117 Requirements

2007 Reclaimed Water Use Legislative Report

Prepared by:

Washington State Department of General Administration
Facilities Division

With support from the City of Olympia
Public Works Water Resources

December 2007

General Administration
STATE OF WASHINGTON

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Campus-wide Plan for Reclaimed Water on the State Capitol Campus

Summary

Preliminary planning has identified the appropriate infrastructure and the associated costs of providing reclaimed water to the Washington State Capitol Campus for irrigation and outdoor uses. Prior investments by the LOTT Alliance, the City of Olympia, and General Administration have provided adequate production capacity and a distribution system for the recently installed irrigation system in Heritage Park and the surrounding area. The ability to connect to this asset makes the installation of East and West Campus systems more attainable.

The Capitol Campus uses about 20 million gallons of water annually for irrigation and other outdoor uses. Of this, about one-third is Class A reclaimed water, used to irrigate Heritage Park and the surrounding area. The layout of the existing East Campus irrigation system makes it difficult for the all of the remaining outdoor uses to be converted to reclaimed water because of multiple remote connection points and cross connections. The recommended "majority coverage" approach will allow a cost effective method of serving 70 percent of the East and West campuses.

The recommended approach includes installation of a large underground tank on the East or West Campus with upper and lower pump stations. Improvements to the existing irrigation system are required and uncertainty troubles much of the aged infrastructure. The Tivoli fountain will be connected to reclaimed water as a part of this project and significant irrigation efficiencies will be attained.

The recommended approach will cost approximately $2.32 million. These improvements can be implemented at any time, in one phase, from a single budget authorization. Existing state and federal funding sources are not well aligned to support this expenditure. While some components can be funded through innovative methods, the best opportunity for implementation is a partnership arrangement with the City of Olympia. While LOTT generates the reclaimed water, Olympia is the purveyor within its service area.

In 2009, the City of Olympia will be prepared to contribute approximately $750,000 toward this project, representing more than 30 percent of the total project cost. The project builds upon past investments to demonstrate innovations for the future by forging new partnerships and financial relationships.

Introduction

Section 11 of Engrossed Second Substitute Senate Bill (E2SSB) 6117 directs the Department of General Administration (GA) to work with the City of Olympia (Olympia) to provide a report to the Legislature by December 1, 2007 regarding the potential use of reclaimed water on the State Capitol Campus. The report must include needed infrastructure, the cost of implementation, and

identified funding sources, in a comprehensive campus-wide plan for the use of reclaimed water for irrigation and related outdoor uses.

Background Information on Reclaimed Water

E2SSB 6117 identifies far-reaching benefits from the development of reclaimed water and seeks to provide reclaimed water as a replacement for potable water in non-potable applications, as a supplement to existing surface and ground water supplies, and as a tool to meet the future water requirements of the state.

The Class A reclaimed water that will be used at the Capitol Campus is generated at the Lacey-Olympia-Tumwater-Thurston County (LOTT) Alliance's Budd Inlet Reclaimed Water Plant. Currently, the facility can produce up to one million gallons a day of Class A reclaimed water. LOTT is also developing reclaimed water satellite facilities in other parts of its wastewater service area. This report focuses on the reclaimed water generated at the Budd Inlet plant in downtown Olympia.

Class A reclaimed water is wastewater which has been cleaned to a high level to be reused. It is considered a new, basic water supply similar to surface water or groundwater supplies. The state Departments of Health and Ecology define four classes of reclaimed water: A, B, C, and D. Class A reclaimed water is the highest quality.
Class A reclaimed water is produced from advanced sewage treatment processes such as:

- Biological oxidation.
- Sand or membrane filtration.
- Disinfection such as chlorination or ultraviolet treatment.

While LOTT generates the reclaimed water, Olympia is the purveyor within its service area. GA already uses reclaimed water at Marathon and Heritage parks, as well as the portion of Deschutes Parkway between the two parks. In the summer of 2007, these GA sites used a total of 6.9 million gallons of reclaimed water.

The reclaimed water arrives at these sites through a 12-inch reclaimed water transmission line that runs between the Budd Inlet treatment plant and Heritage Park. A 4-inch pipeline then traverses under the pedestrian walkway bridge at Capitol Lake and through Marathon Park to LOTT's Capitol Lake Pump Station. The LOTT alliance funded the pipeline project (See Figure 1).

Olympia's reclaimed water rates are 70 percent of potable rates. However, Olympia and GA signed an agreement which states that the first three years of reclaimed water use at the above sites will be free. This arrangement recognizes that GA made significant contributions, both in-kind and direct expenses, toward enabling reclaimed water service at its sites. 2008 will be the last year of this three-year waiver.

LOTT, NPDES, and TMDL

On an average day, about 13.5 million gallons of wastewater flows through the Budd Inlet Treatment Plant. This wastewater receives advanced secondary treatment and then discharges

into Budd Inlet. The quality of the water LOTT discharges into Budd Inlet is regulated by the Department of Ecology (Ecology) under a National Pollutant Discharge Elimination System (NPDES) permit.

With the 2005 renewal of the permit, LOTT's summertime discharge limit must achieve a phased reduction in summertime discharges, from 15 mgd to about 12.5. This puts pressure on LOTT to maximize efficiencies at the Budd Inlet Treatment Plant and further emphasize its transition to production, distribution, and use of reclaimed water.

Ecology is also the lead on a federally mandated cleanup study for the Deschutes River, Capitol Lake, and Budd Inlet. This study is known as the Total Maximum Daily Load (TMDL) report, and will result in the development of a Water Cleanup Plan. This plan will likely affect LOTT's allowable discharges into Budd Inlet, reducing them even further.

Discharge restrictions mandated by LOTT's NPDES permit and potentially resulting from the TMDL study encourage LOTT to continue investigating opportunities for the use of reclaimed water. The generation of Class A reclaimed water is a key strategy in meeting the regulatory restrictions on the volume of treated wastewater LOTT can discharge into Budd Inlet.

LOTT's Reclaimed Water Planning

The LOTT Alliance's Capital Improvement Plan (CIP) proposes that LOTT treat up to six million gallons per day of Class A reclaimed water at the Budd Inlet Reclaimed Water Plant.

The LOTT CIP further proposes the construction of a pipeline to carry the reclaimed water to one or more groundwater recharge sites, one of which will be in the Tumwater area. Depending upon the location of this pipeline, this reclaimed water could be used by Olympia for distribution to the Capitol Campus.

LOTT is opting to use reclaimed water to recharge groundwater, as this is a reliable, year-round beneficial use of reclaimed water. This would augment direct, beneficial use by customers (which currently is used seasonally for irrigation).

The project is still being assessed in terms of recharge sites and pipeline routes. As a result, the scope and schedule of the project is not known at this time. Best case projections for implementation predict the recharge project will come online in about 2019.

Olympia's Reclaimed Water Planning

Reclaimed water is a new source of supply for Olympia. The City views reclaimed water as an important resource to help extend its limited water supplies. Olympia developed a Reclaimed Water Business Plan (Plan) in 2005. The Plan identifies the Capitol Campus as a priority for delivery of reclaimed water, due to its proximity to existing infrastructure and the relatively large volume of water used for irrigation.

The Plan also identifies the need for funding partners to expand the reclaimed water system. The City currently sets aside $250,000 annually towards the construction of reclaimed water infrastructure.

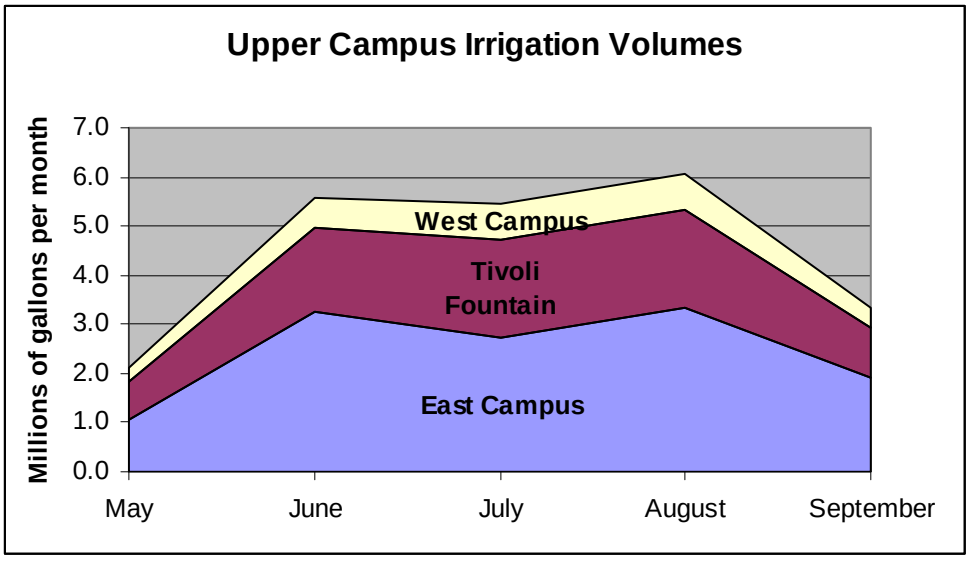
Current Use of Reclaimed Water on the Capitol Campus

The capitol campus consumes about 57.2 million gallons annually. Of this, about 20.8 million gallons are used for irrigation and operation of the Tivoli fountain (36 percent). In 2007, the portion of irrigation provided by Class A reclaimed water was about 6.9 million gallons (33 percent of all irrigation or 12 percent of all water used on the campus). All Class A reclaimed water on the Capitol Campus is consumed as irrigation in the park lands surrounding Capitol Lake. The 2007 consumption rates for reclaimed water were considerably higher than previous levels due to the introduction of new lawns in Heritage Park.

Existing East and West Campus Irrigation Systems

The East and West Campus irrigation systems are connected to Olympia's potable water system. Multiple points of connection serve the system through 10 service meters. West Campus is served by two irrigation meters. One meter serves the entire sprinkler array and one serves Tivoli Fountain, which is considered a part of the total irrigation system. East Campus is served by 8 irrigation meters, distributed around the perimeter of the grounds. The perimeter is defined as Capitol Way, Maple Park Drive, Jefferson Street, and 11th Avenue. East Campus irrigation is also served by two domestic meters.

The following graph represents historical irrigation and outdoor water usage rates for the East and West Campuses. Seasonal use patterns follow normal weather patterns with high irrigation demand from May through October. Water demand generated by the Tivoli fountain is also seasonal, peaking with the heat of mid-summer. Outdoor water usage on the campus drops dramatically during the cooler months from November through March.



Repairs to the Tivoli fountain in 2007 are not reflected in this graph. Normal operation of the fountain produces significant evaporation and loss; however, normal usage rates will be about one-half of prior experience. The existing East and West Campus irrigation systems offer various opportunities for efficiency improvements. These improvements need to be part of bringing Class A reclaimed water to the East and West Campuses. A recent audit identified that significant savings could be achieved through a series of limited irrigation upgrades. Improved zoning, control systems and sprinkler head replacement will work together to yield substantial savings.

As noted above, some irrigation on the East Campus is being served through domestic meters. These zones are served by water lines which also serve restrooms or other domestic uses. Segregation of these areas will be required before bringing reclaimed water to these zones. In addition, segregation will allow for this water to be paid for at irrigation rates, which do not trigger wastewater charges.

With the exception of the Tivoli fountain, the West Campus irrigation system operates as a single unit. An 8-inch loop delivers water throughout the campus, resulting in a simple and effective branched system. However, the system is problematic due to age and tenuous conditions. The cast iron pipe which is the backbone of the West Campus system is old, brittle, and suspected of having significant leakage. Associated fittings and connections are also of dubious condition. Changes in pressure levels or other operations could result in failure or damage to a pipeline which already poses concerns. This issue will need to be closely monitored and managed in a transition to reclaimed water.

Alternative System Designs

Three options were analyzed for bringing reclaimed water to the East and West Campuses, including needed infrastructure and estimated costs. Delivering reclaimed water to the West Campus would be relatively straightforward, compared with the East Campus. This is because the West Campus is served by one, looped irrigation system. Areas of the East Campus, however, are each served by individual irrigation systems with points of connection dispersed around the perimeter of the campus.

Therefore, the three analyzed options include delivery of reclaimed water to the West Campus and to only the readily accessible portion of the East Campus. This approach does not provide full coverage of the East Campus but does represent the most reasonable method of bringing Class A reclaimed water to approximately 70 percent of the East and West Campuses (See Figure 2). With the implementation of a majority coverage project, the more detailed and complex design, required to complete additional portions of the East Campus, can be undertaken.

Reclaimed Water Storage

The amount of reclaimed water currently generated at LOTT's Class A water treatment plant is sufficient to meet the total demand of Olympia's current users, as well as the East and West Campuses. However, since irrigation occurs during a limited number of hours at night, there is not enough reclaimed water to meet the simultaneous peak needs of the East and West Campuses along with other users. There are only 120,000 gallons of storage at the Budd Inlet Treatment

Plant. Therefore, an additional reclaimed water storage tank will be required as part of this project.

This analysis considered the storage requirement of irrigating the entire East and West Campuses, although none of the three alternative system designs anticipate full coverage of the East Campus at startup, as discussed above.

The calculated design flow for the East and West Campuses irrigation systems would be just under 200,000 gallons per day. Therefore, the storage vessel would be sized at 200,000 gallons to assure peak demand capacity. The design alternatives considered in this analysis differ in the siting of the storage tank and the associated costs.

Siting of Storage

The location of a tank could be anywhere near the LOTT treatment plant, the East and West Campuses, or points in between. Cost variables include the cost of land and the extension of lines. In addition, storage tanks at the lower elevations of downtown Olympia or the capitol parklands could not be buried underground due to ground water pressure that would tend to displace an underground tank.

It appears unlikely that a parcel of land in the central business district would be selected for the siting of a large above ground water tank. This analysis proceeds without a downtown siting alternative, but with an acknowledgement that all land in the corridor is both finite and valuable. For the purposes of this report, the study team recommends against new property acquisition, opting instead to consider three alternatives on the Capitol Campus. These options are:

Option 1

Build an above-ground storage tank and pumping facility at the base of the hill near the campus power house. Pump Class A reclaimed water up to the Capitol Campus via the hillside. (See Figures 3 and 4)
Estimated Capital Cost: $2.08 million.

Analysis

- Least-cost option.
- Shortest pipe line.
- Storage tank could be “camouflaged” by building into hillside.

Option 2

Build an in-ground storage tank on the East or West Campus. Site a pumping facility at the power house, and pump to the storage tank. Build a second pumping facility underground near the storage tank to distribute the water to the irrigation system. (See Figures 5 and 6)
Estimated Capital Cost: $2.32 million.

Analysis

- Mid-range cost option.
- Underground tank is not visible.
- Requires two pump stations.

Option 3

Build an above-ground storage tank and pump station on GA property across Deschutes Parkway from Marathon Park. Pipe the reclaimed water up to the Capitol Campus. (See Figures 7 and 8) Estimated Capital Cost: $2.73 million.

Analysis

- Tank less visible, property is "tucked away."
- Most costly option.
- Longest distance and more complicated construction.
- Higher energy costs of pumping greater distance.
- Crosses railroad property.

Detailed cost estimates for each of the options are provided as Table 1.

Conceptual Design Approach

Please note that the design work undertaken as a part of this report is at a conceptual level. No significant effort has gone into identifying the preferred location of a storage tank on the East or West Campus. Similar assumptions are incorporated into other aspects of the analysis. The concept design approach has been undertaken to establish "level of magnitude" costs. Final cost estimates will require further design development.

Recommended Approach

Bringing Class A reclaimed water to the East and West Campuses of the State Capitol is feasible. The majority of the grounds can be addressed by serving all of the West Campus and the accessible portions of the East Campus. The system would be served by an underground storage tank located on the East or West Campus and sized at 200,000 gallons to serve the future development of the entire Capitol Campus. There is an adequate supply of reclaimed water available from the LOTT treatment plant to meet the needs of the Capitol Campus.

Prior to operation of the new water supply, existing campus irrigation infrastructure will require upgrade and improvements to segregate potable components from reclaimed water. Additional improvements are required to assure that old pipes and hardware have serviceable integrity and to achieve greater efficiencies.

When fully installed, the recommended "majority coverage" system will save an additional 12 million gallons of potable water annually which is now used for East and West Campus irrigation and for the Tivoli fountain. These savings will be achieved through both improved efficiencies and replacement with Class A reclaimed water.

The recommended approach includes two pump stations. One in Heritage Park to lift water up the hill, and another installed underground on the East or West Campus to pressurize the distribution lines. The system will serve both irrigation needs and the Tivoli fountain. Whenever possible the system will take advantage of existing distribution pipes and plumbing.

Specific locations for system components have not been selected as a part of this planning exercise. All locations for new infrastructure are conceptual only for comparative purposes and do not represent a detailed recommendation.

The most likely, "fully loaded" cost of this system is $2.32 million in 2007 dollars. The "majority coverage" system can be installed in a single phase, within one biennium.

The conceptual design effort has been undertaken to establish a recommended approach and a "level of magnitude" cost estimate. As discussed above, the existing irrigation system holds unknown conditions and is suspected of requiring repair. In addition, we have found that the East Campus system operates with combined domestic and irrigation zones which require segregation, and that some areas will be relatively difficult to connect to the reclaimed water system. As a result, the most likely cost, which has been provided above, requires additional analysis before a formal budget request is developed.

Financial Considerations

Capital Funding Sources

As identified in this report, Olympia and GA estimate the most likely cost of implementing the recommended approach will be approximately $2.32 million. The potential funding sources for the project are unfortunately quite limited.

As part of the 2007-2009 biennial budget, the Legislature made available a one-time allocation of grant funding through the Department of Ecology for reclaimed water. These funds were linked to efforts related to Puget Sound clean-up, especially in water short areas and where reclaimed water will restore important ecosystem functions. Future allocations of grant funding may provide financial support, depending upon selection criteria at that time.

The funding strategy mostly likely to be successful will be a partnership approach between the Olympia Drinking Water Utility and GA. The Olympia City Council currently allocates $250,000 per year for reclaimed water infrastructure in the drinking water utility capital fund. In 2009, the amount of local funding which could be directed to the Capitol Campus will be approximately $750,000. Olympia has identified the Capital Campus as its highest priority area for reclaimed water expansion, and would welcome a funding partnership with the State of Washington.

GA has identified that about $80,000 of the recommended improvements would be eligible for performance-based contracting. Recent changes in legislation allow these improvements to recapture the value of water saving efficiencies and apply them toward the cost of implementation. Other potential sources of funding include low-interest loans from the Public Works Trust Fund and traditional sources of funding for public works infrastructure.

It should be noted that GA received funding during the 07-09 biennium for the development of reclaimed water service on the Capitol Campus, including $450,000 through the Capitol Building Construction Account (Fund 036) and $100,000 through the State Building Construction

Account (Fund 057). Because 036 funding is not likely to be available during this biennium, GA's ability to move forward with this agenda has been significantly limited.

Operating Costs

In addition to the operating efficiencies associated with performance based contracting, this project will deliver other operating savings to General Administration. By moving areas of the East Campus off domestic service and onto reclaimed irrigation, valuable annual savings will be achieved. In addition, the 30% unit price savings which is available for reclaimed water use will provide ongoing operational savings. These two categories of savings are projected to yield more than $40,000 in savings every year, based on current consumption levels.

In accordance with the state reclaimed water permit held by the LOTT Alliance, the reclaimed water distribution facilities serving the East and West Campuses would be owned and operated by the Olympia Drinking Water Utility. The utility would be responsible for associated operation, maintenance, rehabilitation, and replacement costs associated with the reclaimed water distribution system (including pumping, storage, and transmission lines). Those portions of the improvements which are downstream of the meter would be owned and operated by the GA.

Regional Financial Considerations

As discussed above, there are localized benefits from reclaimed water; however, E2SSB 6117 identifies far-reaching regional benefits which are difficult to quantify. The associated benefits of water conservation, water quality, and habitat renewal, are concurrently indirect, substantial, and economically significant. The projected use of some 20 million gallons of reclaimed water per year on the Capitol Campus will only begin to address the more than 13 million gallons of wastewater that LOTT processes every day. Yet, this project tangibly demonstrates a shift in values; a shift which views waste as a resource and recognizes the economic value of conserving natural resources.

Figures

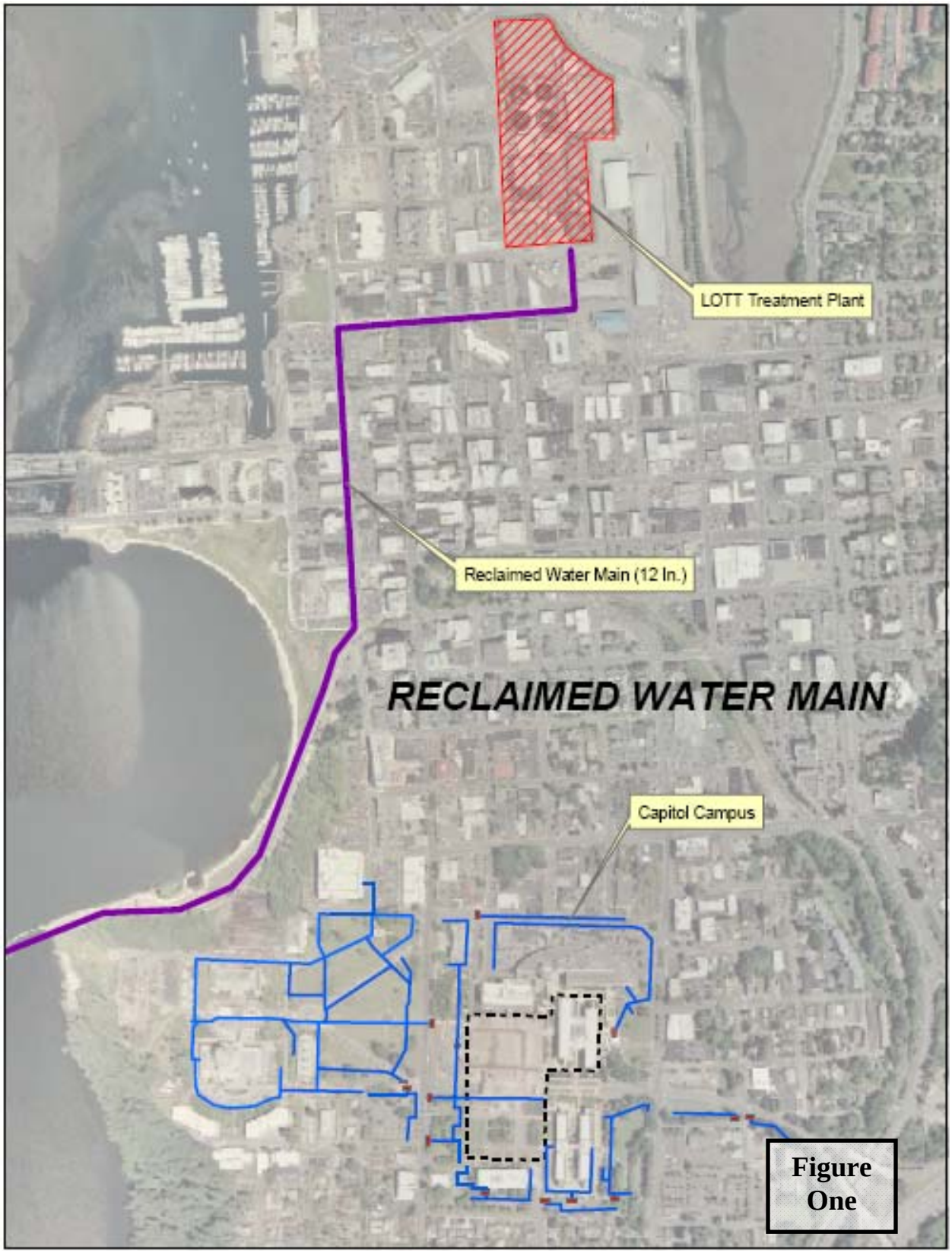

LOTT Treatment Plant
Reclaimed Water Main (12 In.)
RECLAIMED WATER MAIN
Capitol Campus

Figure One

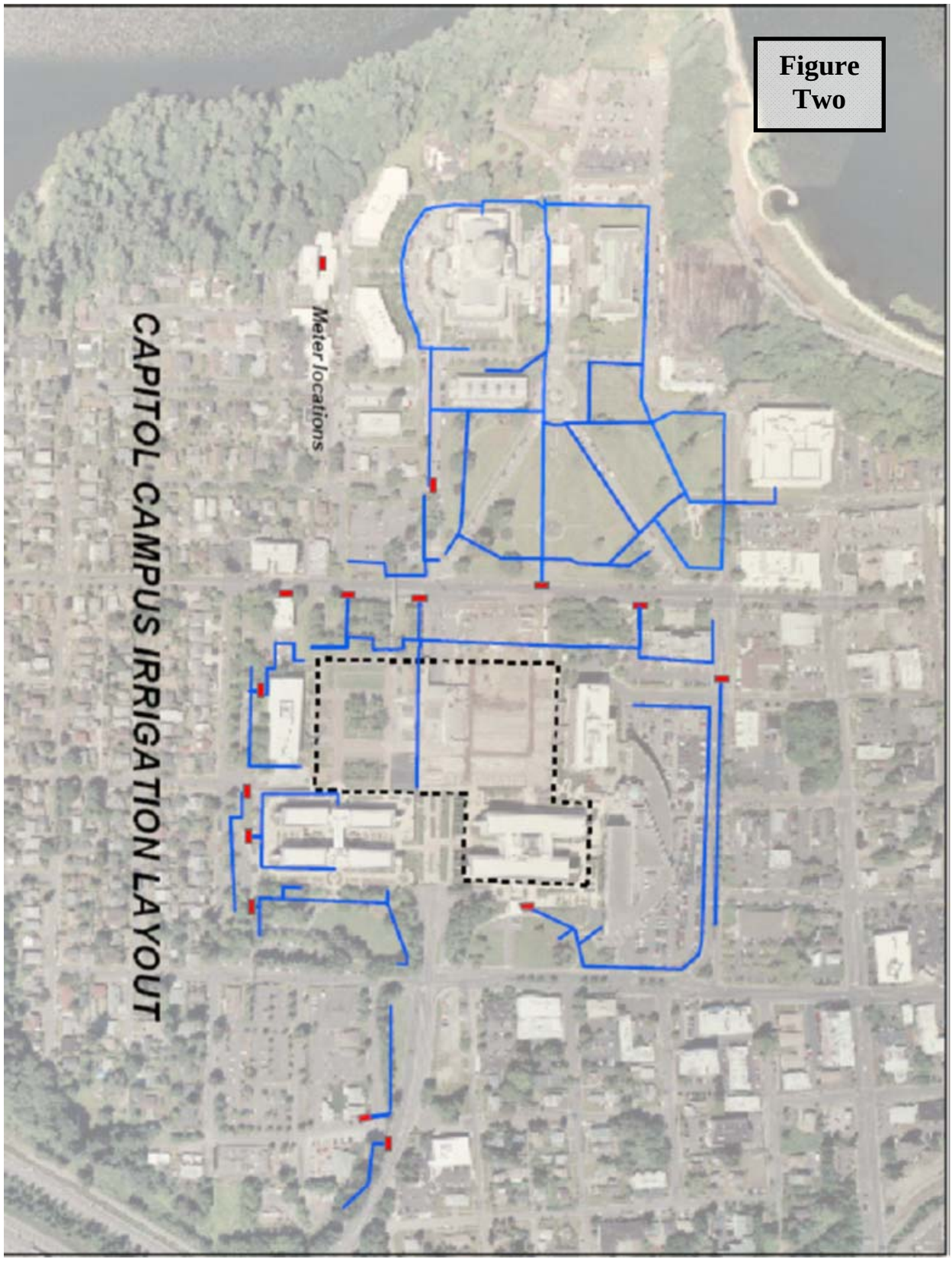


Figure Two
CAPITOL CAMPUS IRRIGATION LAYOUT
Meter locations

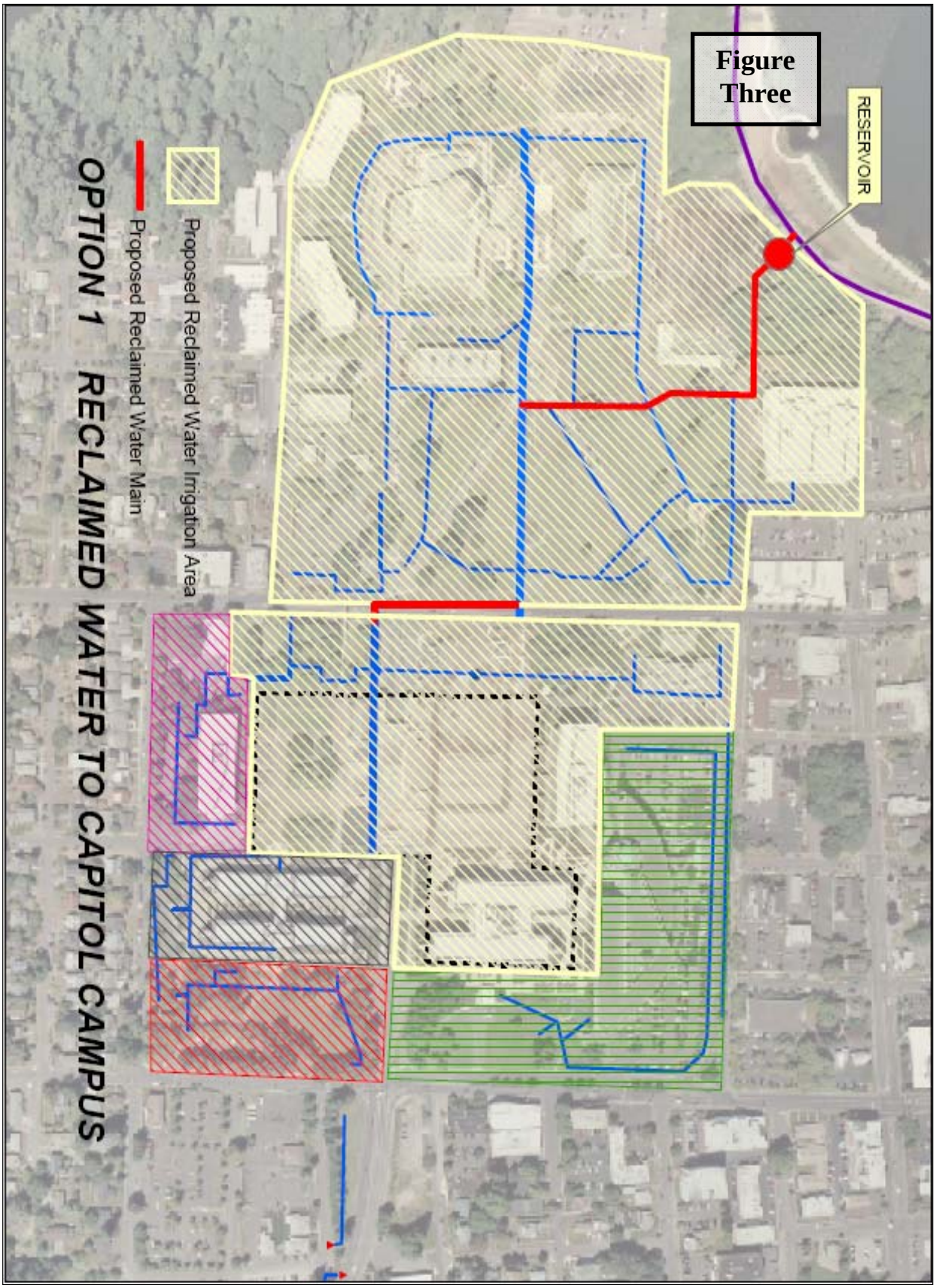
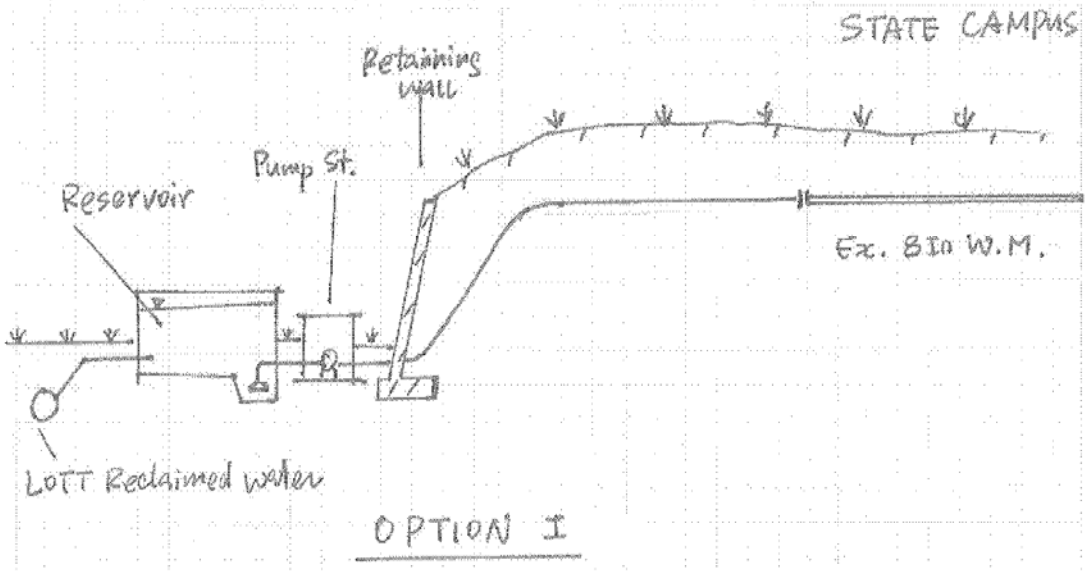


Figure Three
RESERVOIR
Proposed Reclaimed Water Irrigation Area
Proposed Reclaimed Water Main
OPTION 1 RECLAIMED WATER TO CAPITOL CAMPUS

Figure Four



OPTION I

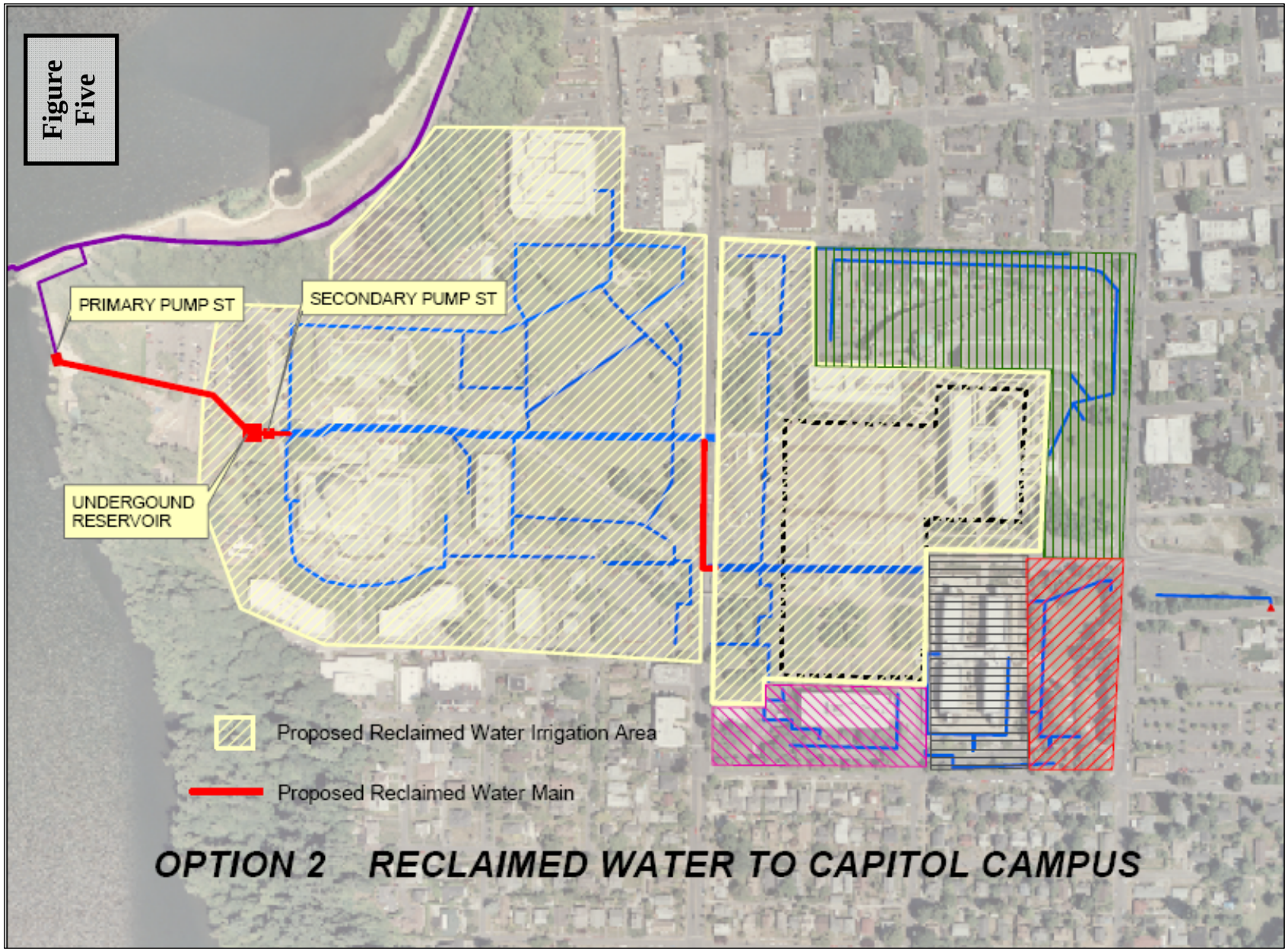
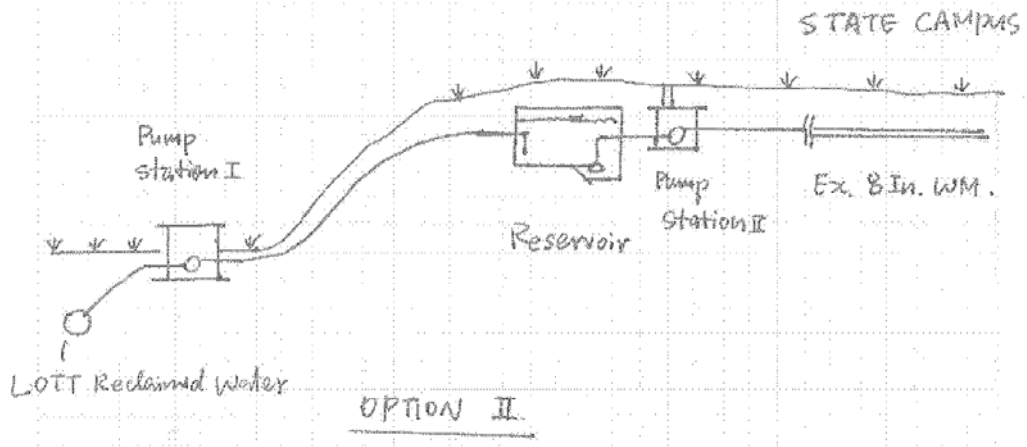


Figure Five
PRIMARY PUMP ST
SECONDARY PUMP ST
UNDERGOUND RESERVOIR
Proposed Reclaimed Water Irrigation Area
Proposed Reclaimed Water Main
OPTION 2 RECLAIMED WATER TO CAPITOL CAMPUS

Figure Six



OPTION II

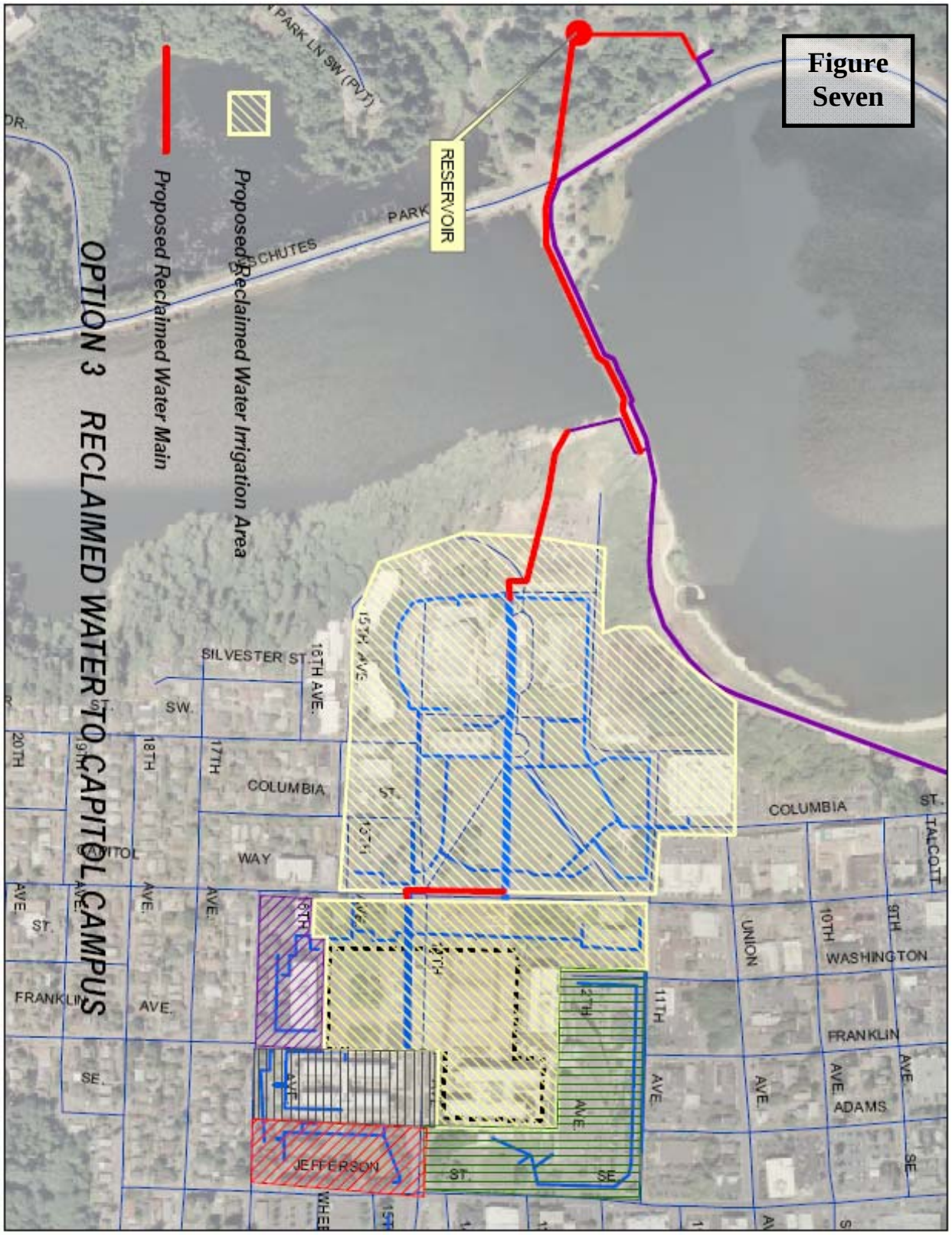
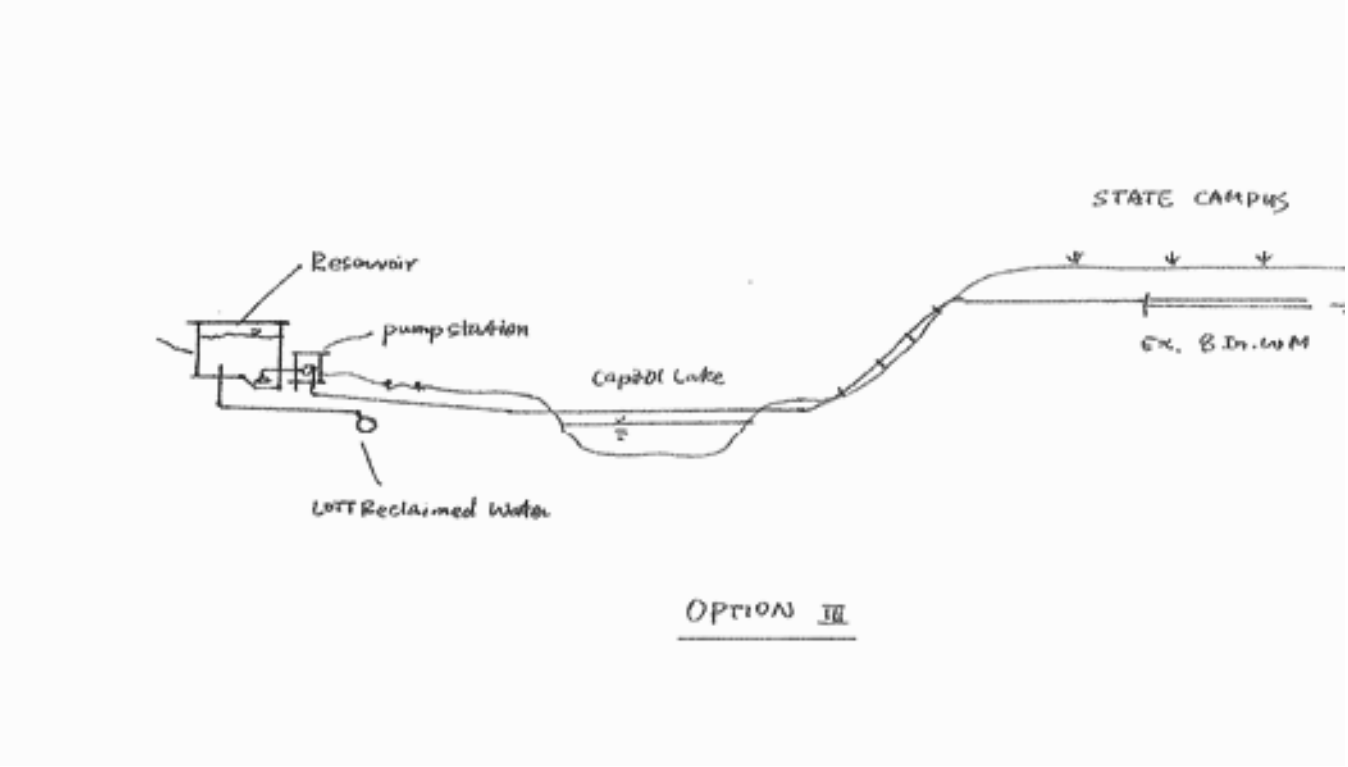


Figure Seven
OPTION 3 RECLAIMED WATER TO CAPITOL CAMPUS
Proposed Reclaimed Water Main
Proposed Reclaimed Water Irrigation Area
RESERVOIR
PARK LN SW (PVT)
SILVESTER ST.
COLUMBIA ST.
COLUMBIA WAY
FRANKLIN AVE.
JEFFERSON ST. SE
WASHINGTON
ADAMS
UNION
TALCOTT
15TH AVE.
16TH AVE.
17TH
18TH
20TH
11TH
10TH
9TH
8TH
7TH

Figure Eight



Capitol Campus Irrigation Cost Estimates (2007 dollars)

No.	Description	Units	Option I Quantity	Option I Unit Price	Option I Cost	Option II Quantity	Option II Unit Price	Option II Cost	Option III Quantity	Option III Unit Price	Option III Cost
1	Mobilization @ 8% of construction	LS	1	$84,080	$84,080	1	$93,800	$93,800	1	$110,220	$110,220
2	6 In. pressure main to Campus	LF				850	150	$127,500			
3	8 In. pipe (fr LOTT Reclaim to Reservoir)	LF	70	50	$3,500				550	75	$41,250
4	10 In. pressure main (fr pump to west campus)	LF	1100	130	$143,000	70	150	$10,500	2800	190	$532,000
5	8 In. pipe (fr west campus to east campus)	LF	550	90	$49,500	550	90	$49,500	550	90	$49,500
6	Reservoir (200,000 gallons)	EA	1	320000	$320,000				1	320000	$320,000
7	Reservor (underground)(200,000 gallons)	EA				1	350000	$350,000			
8	Rechlorination unit	EA	1	70000	$70,000	1	70000	$70,000	1	70000	$70,000
9	Chlorine testing unit	EA	1	15000	$15,000	1	15000	$15,000	1	15000	$15,000
10	Primary pump station	EA	1	150000	$150,000	1	150000	$150,000	1	150000	$150,000
11	Secondary pump station (underground)	EA				1	200000	$200,000			
12	Retaining Wall	SF	2000	50	$100,000						
13	Re-plumbing Plaza garage restroom	LS	1	50000	$50,000	1	50000	$50,000	1	50000	$50,000
14	Modifiy Irrigation System	LS	1	150000	$150,000	1	150000	$150,000	1	150000	$150,000
	Construction Total				$1,135,080			$1,266,300			$1,487,970
	Sales Tax @ 8.4%				$95,347			$106,369			$124,989
	Contigency @ 30%				$369,128			$411,801			$483,888
	Engineering and Management @ 30%				$479,866			$535,341			$629,054
	Grand Total:				**$2,079,421**			**$2,319,811**			**$2,725,902**

Global Appendices

Global
Appendix A

Engrossed Second Substitute Senate Bill 6117 (2007)

Appendix A - Engrossed Second Substitute Senate Bill 6117 (2007)

CERTIFICATION OF ENROLLMENT

ENGROSSED SECOND SUBSTITUTE SENATE BILL 6117

Chapter 445, Laws of 2007

(partial veto)

60th Legislature
2007 Regular Session

RECLAIMED WATER

EFFECTIVE DATE: 07/22/07

Passed by the Senate April 17, 2007
YEAS 32 NAYS 15

BRAD OWEN

President of the Senate

Passed by the House April 11, 2007
YEAS 65 NAYS 32

FRANK CHOPP

Speaker of the House of Representatives

Approved May 11, 2007, 11:25 a.m., with the exception of section 4 which is vetoed.

CHRISTINE GREGOIRE

Governor of the State of Washington

CERTIFICATE

I, Thomas Hoemann, Secretary of the Senate of the State of Washington, do hereby certify that the attached is **ENGROSSED SECOND SUBSTITUTE SENATE BILL 6117** as passed by the Senate and the House of Representatives on the dates hereon set forth.

THOMAS HOEMANN

Secretary

FILED

May 11, 2007

Secretary of State
State of Washington

ENGROSSED SECOND SUBSTITUTE SENATE BILL 6117

AS AMENDED BY THE HOUSE

Passed Legislature - 2007 Regular Session

State of Washington 60th Legislature 2007 Regular Session

By Senate Committee on Ways & Means (originally sponsored by Senators Fraser, Poulsen, Rockefeller, Marr, Kohl-Welles and Kline)

READ FIRST TIME 03/05/07.

AN ACT Relating to reclaimed water; amending RCW 90.46.005, 90.46.120, 90.46.130, 90.82.043, 90.54.020, and 90.54.180; amending 2006 c 279 s 3 (uncodified); adding new sections to chapter 90.46 RCW; and creating new sections.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF WASHINGTON:

NEW SECTION. **Sec. 1.** (1) Since the 1992 enactment of the reclaimed water act, the value of reclaimed water as a new source of supply has received increasing recognition across the state and across the nation. New information on the matters in this section has increased awareness of the need to better manage, protect, and conserve water resources and to use reclaimed water in that process. The legislature now finds the following:

(a) Global warming and climate change. Global warming has reduced the volume of glaciers in the North Cascade mountains to between eighteen to thirty-two percent since 1983, and up to seventy-five percent of the glaciers are at risk of disappearing under projected temperatures for this century. Mountain snow pack has declined at virtually every measurement location in the Pacific Northwest, reducing the proportion of annual river flow to Puget Sound during summer months

by eighteen percent since 1948. Global warming has also shifted peak stream flows earlier in the year in watersheds covering much of Washington state, including the Columbia river basin, jeopardizing the state's salmon fisheries. The state's recent report on the economic impacts of climate change indicate that water resources will be one of the areas most affected, and that many utilities may need to invest major resources in new supply and conservation measures. Developing and implementing adaptation strategies, such as water conservation that includes the use of reclaimed water, can extend existing water supply systems to help address the global warming impacts. In particular, because reclaimed water uses existing sources of supply and fairly constant base flows of wastewater, it has year-round dependability, without regard to any given year's climate variability. This is particularly important during summer months, when outdoor demands peak and stream flows are critical for fish.

(b) Puget Sound. The governor has initiated a Puget Sound partnership, with a request for an initial strategy to address high priority problems. In December, the partnership delivered a strategy that includes expanded use of reclaimed water both in order to improve the Puget Sound's water quality by reducing wastewater discharges and by replacing current sources of supply for nonpotable uses that detrimentally affect stream flows and habitat.

(c) Salmon recovery. The federal fisheries services recently approved a salmon recovery plan for the Puget Sound, which was developed across multiple watersheds by numerous local governments, tribal governments, and other parties to achieve sustainable populations of salmon and other species. That plan includes an adaptive management component where continued efforts will be made to address issues, including problems with instream flows, identified as a limiting factor in virtually all the watersheds, through strategies that will be developed by regional and watershed implementation groups. A potentially significant strategy may be the substitution of reclaimed water for nonpotable uses where it will benefit streams and habitat.

(d) Water quality. Increasingly stringent federal standards for water quality are forcing a number of communities to develop strategies for wastewater treatment that, in addition to providing higher treatment levels, will reduce the quantity of discharges. For many of

those communities, facilities to produce reclaimed water will be a necessary approach to achieve both water quality and water supply objectives.

(e) Watershed plans. Under the watershed planning act of 1997, approximately two-thirds of the watersheds in the state have used a bottom-up approach to developing collaborative plans for meeting future water supply needs. Many of those plans include the use of reclaimed water for meeting those needs.

(f) Columbia river water management. Pursuant to legislation and funding provided in 2006, federal, state, and local governments and agencies, along with tribal governments, user groups, environmental organizations, and others are developing a comprehensive strategy for the mainstem Columbia that will ensure supplies for future growth while protecting stream flows and fish habitat. The strategy will include multiple tools that may include the potential development of new storage, conservation measures, and water use efficiency. One pathway toward conservation and efficiency is likely to be identification and implementation of reclaimed water opportunities.

(g) Development schedule. The time frame required to plan, design, construct, and begin use of reclaimed water can be extensive due to the public information and acceptance efforts required in addition to planning, design, and environmental assessment required for infrastructure projects. This extended time frame necessitates the initiation of reclaimed water projects as soon as possible.

(2) It is therefore the intent of the legislature to:

(a) Effectuate and reinvigorate the original intent behind the reclaimed water act to expand the use of reclaimed water for nonpotable uses throughout the state;

(b) Restate and emphasize the use of reclaimed water as a matter of water resource management policy;

(c) Address current barriers to the use of reclaimed water, where changes in state law will resolve such issues;

(d) Develop information from the state agencies responsible for promoting the use of reclaimed water and address regulatory, financial, planning, and other barriers to the expanded use of reclaimed water, relying on state agency expertise and experience with reclaimed water;

(e) Facilitate achieving state, regional, and local objectives

through use of reclaimed water for water supply purposes in high priority areas of the state, and in regional and local watershed and water planning;

(f) Provide planning tools to local governments to incorporate reclaimed water and related water conservation into land use plans, consistent with water planning;

(g) Expand the scope of work of the advisory committee established under chapter 279, Laws of 2006 to identify other reclaimed water issues that should be addressed; and

(h) Provide initial funding, and evaluate options for providing additional direct state funding, for reclaimed water projects.

Sec. 2. RCW 90.46.005 and 2001 c 69 s 1 are each amended to read as follows:

The legislature finds that by encouraging the use of reclaimed water while assuring the health and safety of all Washington citizens and the protection of its environment, the state of Washington will continue to use water in the best interests of present and future generations.

To facilitate the immediate use of reclaimed water ((~~as soon as is practicable, the legislature encourages the cooperative efforts of the public and private sectors and the use of pilot projects~~)) for uses approved by the departments of ecology and health, the state shall expand both direct financial support and financial incentives for capital investments in water reuse and reclaimed water to effectuate the goals of this chapter. The legislature further directs the department of health and the department of ecology to coordinate efforts towards developing an efficient and streamlined process for creating and implementing processes for the use of reclaimed water.

It is hereby declared that the people of the state of Washington have a primary interest in the development of facilities to provide reclaimed water to replace potable water in nonpotable applications, to supplement existing surface and ground water supplies, and to assist in meeting the future water requirements of the state.

The legislature further finds and declares that the utilization of reclaimed water by local communities for domestic, agricultural, industrial, recreational, and fish and wildlife habitat creation and enhancement purposes, including wetland enhancement, will contribute to

the peace, health, safety, and welfare of the people of the state of Washington. To the extent reclaimed water is appropriate for beneficial uses, it should be so used to preserve potable water for drinking purposes, contribute to the restoration and protection of instream flows that are crucial to preservation of the state's salmonid fishery resources, contribute to the restoration of Puget Sound by reducing wastewater discharge, provide a drought resistant source of water supply for nonpotable needs, or be a source of supply integrated into state, regional, and local strategies to respond to population growth and global warming. Use of reclaimed water constitutes the development of new basic water supplies needed for future generations and local and regional water management planning should consider coordination of infrastructure, development, storage, water reclamation and reuse, and source exchange as strategies to meet water demands associated with population growth and impacts of global warming.

The legislature further finds and declares that the use of reclaimed water is not inconsistent with the policy of antidegradation of state waters announced in other state statutes, including the water pollution control act, chapter 90.48 RCW and the water resources act, chapter 90.54 RCW.

The legislature finds that other states, including California, Florida, and Arizona, have successfully used reclaimed water to supplement existing water supplies without threatening existing resources or public health.

It is the intent of the legislature that the department of ecology and the department of health undertake the necessary steps to encourage the development of water reclamation facilities so that reclaimed water may be made available to help meet the growing water requirements of the state.

The legislature further finds and declares that reclaimed water facilities are water pollution control facilities as defined in chapter 70.146 RCW and are eligible for financial assistance as provided in chapter 70.146 RCW. The legislature finds that funding demonstration projects will ensure the future use of reclaimed water. The demonstration projects in RCW 90.46.110 are varied in nature and will provide the experience necessary to test different facets of the standards and refine a variety of technologies so that water purveyors can begin to use reclaimed water technology in a more cost-effective

manner. This is especially critical in smaller cities and communities where the feasibility for such projects is great, but there are scarce resources to develop the necessary facilities.

The legislature further finds that the agricultural processing industry can play a critical and beneficial role in promoting the efficient use of water by having the opportunity to develop and reuse agricultural industrial process water from food processing.

Sec. 3. RCW 90.46.120 and 2003 1st sp.s. c 5 s 13 are each amended to read as follows:

(1) The owner of a wastewater treatment facility that is reclaiming water with a permit issued under this chapter has the exclusive right to any reclaimed water generated by the wastewater treatment facility. Use ((~~and~~)), distribution ((~~of the~~)), and the recovery from aquifer storage of reclaimed water by the owner of the wastewater treatment facility is exempt from the permit requirements of RCW 90.03.250 and 90.44.060, provided that a permit for recovery of reclaimed water from aquifer storage and recovery shall be reviewed under the standards established under RCW 90.03.370(2). Revenues derived from the reclaimed water facility shall be used only to offset the cost of operation of the wastewater utility fund or other applicable source of system-wide funding.

(2) If the proposed use or uses of reclaimed water are intended to augment or replace potable water supplies or create the potential for the development of additional potable water supplies, such use or uses shall be considered in the development of ((~~the~~)) any regional water supply plan or plans addressing potable water supply service by multiple water purveyors. Such water supply plans include plans developed by multiple jurisdictions under the relevant provisions of chapters 43.20, 70.116, 90.44, and 90.82 RCW, and the water supply provisions under the utility element of chapter 36.70A RCW. The method by which such plans are approved shall remain unchanged. The owner of a wastewater treatment facility that proposes to reclaim water shall be included as a participant in the development of such regional water supply plan or plans.

(3) Where opportunities for the use of reclaimed water exist within the period of time addressed by a water system plan, a water supply plan, or a coordinated water system plan developed under chapters 43.20

((~~or~~)), 70.116, 90.44, and 90.82 RCW, and the water supply provisions under the utility element of chapter 36.70A RCW, these plans must be developed and coordinated to ensure that opportunities for reclaimed water are evaluated. The requirements of this subsection (3) do not apply to water system plans developed under chapter 43.20 RCW for utilities serving less than one thousand service connections.

(4) The provisions of any plan for reclaimed water, developed under the authorities in subsections (2) and (3) of this section, should be included by a city, town, or county in reviewing provisions for water supplies in a proposed short plat, short subdivision, or subdivision under chapter 58.17 RCW, where reclaimed water supplies may be proposed for nonpotable purposes in the short plat, short subdivision, or subdivision.

Sec. 4. RCW 90.46.130 and 2002 c 329 s 5 are each amended to read as follows:

(1)(a) Except as provided in subsections (2) and (5) of this section, facilities that reclaim water under this chapter shall not impair any existing water right downstream from any freshwater discharge points of such facilities unless ((~~compensation or mitigation for such impairment is agreed to by the holder of the affected water right~~)) the impairment is mitigated or the holder of the water right is provided just compensation for the impairment. For purposes of this subsection, "just compensation" has the same meaning as provided in Title 8 RCW.

(b) Any reclaimed water project that reduces the quantity of sewage treatment plant effluent discharged directly into marine waters is deemed to not impair any existing water rights.

(2) Agricultural water use of agricultural industrial process water and use of industrial reuse water under this chapter shall not impair existing water rights within the water source that is the source of supply for the agricultural processing plant or the industrial processing and, if the water source is surface water, the existing water rights are downstream from the agricultural processing plant's discharge points existing on July 22, 2001, or from the industrial processing's discharge points existing on June 13, 2002.

(3) The department of ecology shall convene and staff a task force to review potential barriers or issues related to development of

reclaimed water projects pursuant to the evaluation of water rights impairment under this section and related impairment issues and shall report the findings and any recommendations of this review to the appropriate standing committees of the legislature no later than December 31, 2007. The task force shall be cochaired by a representative from the water quality and the water resources programs at the department, and shall consist of representatives of interested groups, including the attorney general, the department of health, local governments, tribal governments, water utilities, reclaimed water utilities, wastewater utilities, environmental organizations, agricultural organizations, and businesses including golf course owners. The task force and report shall address the following topics at a minimum: (a) Internal processing of reclaimed water permits by the department, including the ability to deliver timely decisions on potential impairment of water rights; (b) compliance with state and federal water quality standards on existing and future discharges, including potential requirements on wastewater utilities to reduce discharges to water and increase upland discharges; (c) nature of water that is imported into a watershed or potentially exported from the watershed in the form of effluent or reclaimed water; (d) inequities or different treatment of processing of reclaimed water permits and wastewater permits for similar treatment and facilities; (e) ability of existing provisions of state law, such as chapter 90.48 RCW, to address possible impacts to, and mitigation for, stream flows and fish habitat; (f) technical ability to determine impacts to water sources from reclaimed water facilities; (g) approaches to these issues in other western states with significant use of reclaimed water; (h) the ability of subsection (1)(a) of this section to adequately, efficiently, and equitably address impairment compensation and mitigation.

(4) For purposes of determining a claim of impairment under subsection (1)(a) of this section, of a downstream water right existing as of August 18, 1997, the applicant for a reclaimed water permit shall publish notice of an application for a permit for a reclaimed water facility in the same manner as provided for in RCW 90.48.170. If the department receives a claim of impairment within thirty days of the last publication of notice, the department shall investigate the claim of impairment and issue a written decision. The decision must include any conditions the department finds necessary to mitigate any

impairment. The decision must be issued within one hundred eighty days and is appealable by any party under RCW 43.21B.310, regardless of whether the party submits a claim of impairment within thirty days of the last publication of notice, upon the issuance of the decision or as part of the overall reclaimed water permit upon the issuance of a reclaimed water permit. This section may not be construed as exempting a reclaimed water project from the provisions of chapter 43.21C RCW.

(5) This section may not be construed as establishing any right for a downstream water right holder to the continued discharge from an upstream wastewater treatment plant or reclaimed water facility.

**Sec. 4 was vetoed. See message at end of chapter.*

Sec. 5. 2006 c 279 s 3 (uncodified) is amended to read as follows:

(1) In order to identify and pursue other measures to facilitate achieving the objectives in RCW 90.46.005 for expanded, appropriate, and safe use of reclaimed water, the department of ecology and the department of health shall provide the legislature with relevant information through periodic progress reports, as provided in this section.

(2) The department of ecology ((~~must present~~)) shall provide interim reports to the appropriate committees of the legislature by January 1, 2008, and January 1, 2009, that summarize the steps taken to that date towards the final rule making required by ((~~section 1 of this act~~)) RCW 90.46.015. The reports ((~~must~~)) shall include, at a minimum, a summary of participation in the rule advisory ((~~group and~~)) committee, the topics considered by the department, and issues identified by the rule advisory committee as barriers to expanded use of reclaimed water that may not be addressed within the rules to be adopted by the department.

(3) In addition to subsection (2) of this section, the department shall form a subtask force consisting of not more than ten members chosen from the existing rule advisory committee, and reclaimed water users, to further identify and recommend actions to increase the promotion of reclaimed water as a water supply and water resource management option. At a minimum, the subtask force shall consider (a) issues assigned by the rule advisory committee; (b) staffing levels, resources, and roles within both state agencies; (c) optimizing organizational structure; (d) unresolved legal issues specific to reclaimed water use; and (e) a more appropriate name to describe

reclaimed water. Information regarding these topics shall be appended to the required interim reports as the topics are considered by the advisory group.

Sec. 6. RCW 90.82.043 and 2003 1st sp.s. c 4 s 3 are each amended to read as follows:

(1) Within one year of accepting funding under RCW 90.82.040(2)(e), the planning unit must complete a detailed implementation plan. Submittal of a detailed implementation plan to the department is a condition of receiving grants for the second and all subsequent years of the phase four grant.

(2) Each implementation plan must contain strategies to provide sufficient water for: (a) Production agriculture; (b) commercial, industrial, and residential use; and (c) instream flows. Each implementation plan must contain timelines to achieve these strategies and interim milestones to measure progress.

(3) The implementation plan must clearly define coordination and oversight responsibilities; any needed interlocal agreements, rules, or ordinances; any needed state or local administrative approvals and permits that must be secured; and specific funding mechanisms.

(4) In developing the implementation plan, the planning unit must consult with other entities planning in the watershed management area and identify and seek to eliminate any activities or policies that are duplicative or inconsistent.

(5)(a) By December 1, 2003, and by December 1st of each subsequent year, the director of the department shall report to the appropriate legislative standing committees regarding statutory changes necessary to enable state agency approval or permit decision making needed to implement a plan approved under this chapter.

(b) Beginning with the December 1, 2007, report, and then every two years thereafter, the director shall include in each report the extent to which reclaimed water has been identified in the watershed plans as potential sources or strategies to meet future water needs, and provisions in any watershed implementation plans that discuss barriers to implementation of the water reuse elements of those plans. The department's report shall include an estimate of the potential cost of reclaimed water facilities and identification of potential sources of funding for them.

NEW SECTION. **Sec. 7.** (1) By January 1, 2008, the department of health shall file a brief report with the appropriate committees of the legislature on the general status of:

(a) Development of permit fees for industrial and commercial uses of reclaimed water as required by RCW 90.46.030;

(b) Development of standards and guidelines for greywater use as required by RCW 90.46.140; and

(c) Permitting of greywater use by local health officers and plumbing officials in accordance with standards and guidelines developed pursuant to RCW 90.46.140.

(2) The report shall also identify:

(a) A general description of the number, type, and location of reclaimed water opportunities included in water supply and coordinated water system plans since 2003, as required by RCW 90.46.140;

(b) The best information currently available regarding potential public health risks associated with reclaimed water, if any, any known occurrences of any public health incidents associated with reclaimed water use, the approaches to reclaimed water-related public health issues taken in other states, and resource needs of the department to evaluate any known public health risks; and

(c) A description of a basic public information and public acceptance program necessary to generate public support for the beneficial use of reclaimed water.

(3) In order to ensure brevity of the report, the department should include references to existing documents, reports, internet sites, and other sources of detailed information on the foregoing issues.

Sec. 8. RCW 90.54.020 and 1997 c 442 s 201 are each amended to read as follows:

Utilization and management of the waters of the state shall be guided by the following general declaration of fundamentals:

(1) Uses of water for domestic, stock watering, industrial, commercial, agricultural, irrigation, hydroelectric power production, mining, fish and wildlife maintenance and enhancement, recreational, and thermal power production purposes, and preservation of environmental and aesthetic values, and all other uses compatible with the enjoyment of the public waters of the state, are declared to be beneficial.

(2) Allocation of waters among potential uses and users shall be based generally on the securing of the maximum net benefits for the people of the state. Maximum net benefits shall constitute total benefits less costs including opportunities lost.

(3) The quality of the natural environment shall be protected and, where possible, enhanced as follows:

(a) Perennial rivers and streams of the state shall be retained with base flows necessary to provide for preservation of wildlife, fish, scenic, aesthetic and other environmental values, and navigational values. Lakes and ponds shall be retained substantially in their natural condition. Withdrawals of water which would conflict therewith shall be authorized only in those situations where it is clear that overriding considerations of the public interest will be served.

(b) Waters of the state shall be of high quality. Regardless of the quality of the waters of the state, all wastes and other materials and substances proposed for entry into said waters shall be provided with all known, available, and reasonable methods of treatment prior to entry. Notwithstanding that standards of quality established for the waters of the state would not be violated, wastes and other materials and substances shall not be allowed to enter such waters which will reduce the existing quality thereof, except in those situations where it is clear that overriding considerations of the public interest will be served. Technology-based effluent limitations or standards for discharges for municipal water treatment plants located on the Chehalis, Columbia, Cowlitz, Lewis, or Skagit river shall be adjusted to reflect credit for substances removed from the plant intake water if:

(i) The municipality demonstrates that the intake water is drawn from the same body of water into which the discharge is made; and

(ii) The municipality demonstrates that no violation of receiving water quality standards or appreciable environmental degradation will result.

(4) The development of multipurpose water storage facilities shall be a high priority for programs of water allocation, planning, management, and efficiency. The department, other state agencies, local governments, and planning units formed under section 107 or 108 of this act shall evaluate the potential for the development of new

storage projects and the benefits and effects of storage in reducing damage to stream banks and property, increasing the use of land, providing water for municipal, industrial, agricultural, power generation, and other beneficial uses, and improving stream flow regimes for fisheries and other instream uses.

(5) Adequate and safe supplies of water shall be preserved and protected in potable condition to satisfy human domestic needs.

(6) Multiple-purpose impoundment structures are to be preferred over single-purpose structures. Due regard shall be given to means and methods for protection of fishery resources in the planning for and construction of water impoundment structures and other artificial obstructions.

(7) Federal, state, and local governments, individuals, corporations, groups and other entities shall be encouraged to carry out practices of conservation as they relate to the use of the waters of the state. In addition to traditional development approaches, improved water use efficiency ((~~and~~)), conservation, and use of reclaimed water shall be emphasized in the management of the state's water resources and in some cases will be a potential new source of water with which to meet future needs throughout the state. Use of reclaimed water shall be encouraged through state and local planning and programs with incentives for state financial assistance recognizing programs and plans that encourage the use of conservation and reclaimed water use, and state agencies shall continue to review and reduce regulatory barriers and streamline permitting for the use of reclaimed water where appropriate.

(8) Development of water supply systems, whether publicly or privately owned, which provide water to the public generally in regional areas within the state shall be encouraged. Development of water supply systems for multiple domestic use which will not serve the public generally shall be discouraged where water supplies are available from water systems serving the public.

(9) Full recognition shall be given in the administration of water allocation and use programs to the natural interrelationships of surface and ground waters.

(10) Expressions of the public interest will be sought at all stages of water planning and allocation discussions.

(11) Water management programs, including but not limited to, water quality, flood control, drainage, erosion control and storm runoff are deemed to be in the public interest.

Sec. 9. RCW 90.54.180 and 1989 c 348 s 5 are each amended to read as follows:

Consistent with the fundamentals of water resource policy set forth in this chapter, state and local governments, individuals, corporations, groups and other entities shall be encouraged to carry out water use efficiency and conservation programs and practices consistent with the following:

(1) Water efficiency and conservation programs should utilize an appropriate mix of economic incentives, cost share programs, regulatory programs, and technical and public information efforts. Programs which encourage voluntary participation are preferred.

(2) Increased water use efficiency and reclaimed water should receive consideration as a potential source of water in state and local water resource planning processes. In determining the cost-effectiveness of alternative water sources, consideration should be given to the benefits of conservation, waste water recycling, and impoundment of waters. Where reclaimed water is a feasible replacement source of water, it shall be used by state agencies and state facilities for nonpotable water uses in lieu of the use of potable water. For purposes of this requirement, feasible replacement source means (a) the reclaimed water is of adequate quality and quantity for the proposed use; (b) the proposed use is approved by the departments of ecology and health; (c) the reclaimed water can be reliably supplied by a local public agency or public water system; and (d) the cost of the reclaimed water is reasonable relative to the costs of conservation or other potentially available supplies of potable water, after taking into account all costs and benefits, including environmental costs and benefits.

(3) In determining the cost-effectiveness of alternative water sources, full consideration should be given to the benefits of storage which can reduce the damage to stream banks and property, increase the utilization of land, provide water for municipal, industrial, agricultural, and other beneficial uses, provide for the generation of

electric power from renewable resources, and improve stream flow regimes for fishery and other instream uses.

(4) Entities receiving state financial assistance for construction of water source expansion or acquisition of new sources shall develop, and implement if cost-effective, a water use efficiency and conservation element of a water supply plan pursuant to RCW 43.20.230(1).

(5) State programs to improve water use efficiency should focus on those areas of the state in which water is overappropriated; areas that experience diminished streamflows or aquifer levels; regional areas that the governor has identified as high priority for investments in improved water quality and quantity, including the Spokane river, the Columbia river basin, and the Puget Sound; areas most likely to be affected by global warming; and areas where projected water needs, including those for instream flows, exceed available supplies.

(6) Existing and future generations of citizens of the state of Washington should be made aware of the importance of the state's water resources and the need for wise and efficient use and development of this vital resource. In order to increase this awareness, state agencies should integrate public ((~~education~~)) information programs on increasing water use efficiency into existing public information efforts. This effort shall be coordinated with other levels of government, including local governments and Indian tribes.

NEW SECTION. **Sec. 10.** A new section is added to chapter 90.46 RCW to read as follows:

(1) The department of ecology shall establish a subtask force from the existing rule advisory committee, and reclaimed water users, by July 31, 2007, composed of no more than ten members including a representative from the department of ecology, who shall serve as chair, a representative from the department of health, and representatives from city, county, and water-sewer district utilities, and the environmental and business communities. By January 1, 2008, the subtask force shall submit to the appropriate legislative committees a recommendation for a long-term dedicated funding program to construct reclaimed water facilities. To minimize the administrative burden, the subtask force shall work toward a coordinated effort with the current clean water state revolving fund

and centennial clean water fund integrated program under which reclaimed water projects with a water quality benefit are currently eligible and shall review the "2006 Inventory of State Infrastructure Programs" produced by the joint legislative audit and review committee. The subtask force shall also review current existing conservation and water reuse plans or programs for cities, counties, and districts and provide a report to the appropriate legislative committees regarding the number, general nature, and extent that conservation and reclaimed water use is identified or incorporated into such plans. The subtask force also shall consider, and recommend, provisions on: (a) The inclusion of reclaimed water use criteria or requirements as an element of water use efficiency requirements required under RCW 70.119A.180 and for water system, public water system, and/or regional water plans as required under chapters 43.20 and 70.119 RCW; and (b) the current and potential use of water conservation plans or ordinances, water conservation measures in regional watershed plans, and water conservation programs adopted by cities, towns, or counties addressing the use of reclaimed water where potable water is not required by the department of health.

(2) The recommendation shall provide a comprehensive funding, loan, and grant program that includes the following:

(a) Eligibility requirements: Eligible components should include the additional water reclamation components to treat wastewater effluent to reclaimed water standards, distribution pump stations, storage, trunk lines, and distribution lines, and multiple-purpose projects in proportion to the costs allocated to reclaimed water;

(b) Competitive process for funding: The funding should be competitive and establish a maximum percentage or maximum funding amount available to any applicant;

(c) Priorities for funding that target reclaimed water projects ready to proceed, local support for the project, projects in areas that have adopted mandatory use ordinances or letters of intent to execute user contracts, projects providing broader public benefits to environmental water quality or water resource needs such as Puget Sound restoration, Columbia river water management strategies, water quality improvements, wetlands habitat, and instream flows, projects with benefits that clearly extend to citizens other than the utility ratepayers; and

(d) A proposed grant program for projects in identified high priority areas.

NEW SECTION. **Sec. 11.** A new section is added to chapter 90.46 RCW to read as follows:

(1) The legislature finds that the state should take a lead in increasing the visibility of the use of reclaimed water.

(2) The department of general administration shall develop a proposal to provide a comprehensive campus-wide plan for the use of nonpotable water in lieu of the use of potable water for irrigation and related outdoor uses, to serve as a demonstration project for the use of reclaimed water. The department of general administration shall work with the city of Olympia to provide a report to the legislature by December 1, 2007, of the needed infrastructure, cost, and potential funding sources for the project.

Passed by the Senate April 17, 2007.
Passed by the House April 11, 2007.
Approved by the Governor May 11, 2007, with the exception of certain items that were vetoed.
Filed in Office of Secretary of State May 11, 2007.

Note: Governor's explanation of partial veto is as follows:

"I am returning, without my approval as to Section 4, Engrossed Second Substitute Senate Bill 6117 entitled:

"AN ACT Relating to reclaimed water."

Section 4 of this bill would establish procedures for determining when a water reuse project would impair existing water rights, and would change the standard for mitigating any such impairment. Based on legal advice, I believe this section could have unintended consequences to existing water rights. The remainder of Section 4 of the bill would also create a new task force to address the state's water reuse program, including water right impairment issues.

I have vetoed Section 4 of Engrossed Second Substitute Senate Bill 6117 because of that portion of it that changes the standard for mitigating impairment of existing water rights.

Section 3 of the bill establishes new requirements for considering reclaimed water during watershed planning and land use decisions, which will eventually need to be harmonized with other statutes in order to ensure effective implementation. I believe this work is still needed and important to accomplish. Accordingly, I am directing the Department of Ecology to work with legislative leadership to address water right impairment from water reuse projects, reclaimed water planning and other issues raised in Sections 3 and 4 of the bill and to provide a report and recommendations to the Governor and appropriate standing committees of the legislature by December 31, 2007.

With the exception of Section 4, Engrossed Second Substitute Senate Bill 6117 is approved."

Global
Appendix B

Engrossed Substitute House Bill 2884

Appendix B - Engrossed Substitute House Bill 2884

CERTIFICATION OF ENROLLMENT

ENGROSSED SUBSTITUTE HOUSE BILL 2884

Chapter 279, Laws of 2006

59th Legislature
2006 Regular Session

RECLAIMED WATER

EFFECTIVE DATE: 6/7/06

Passed by the House March 8, 2006
Yeas 98 Nays 0

FRANK CHOPP

Speaker of the House of Representatives

Passed by the Senate March 7, 2006
Yeas 46 Nays 0

BRAD OWEN

President of the Senate

Approved March 28, 2006.

CHRISTINE GREGOIRE

Governor of the State of Washington

CERTIFICATE

I, Richard Nafziger, Chief Clerk of the House of Representatives of the State of Washington, do hereby certify that the attached is **ENGROSSED SUBSTITUTE HOUSE BILL 2884** as passed by the House of Representatives and the Senate on the dates hereon set forth.

RICHARD NAFZIGER

Chief Clerk

FILED

March 28, 2006 - 2:52 p.m.

Secretary of State
State of Washington

ENGROSSED SUBSTITUTE HOUSE BILL 2884

AS AMENDED BY THE SENATE

Passed Legislature - 2006 Regular Session

State of Washington 59th Legislature 2006 Regular Session

By House Committee on Economic Development, Agriculture & Trade (originally sponsored by Representatives Linville and McCoy)

READ FIRST TIME 01/31/06.

AN ACT Relating to reclaimed water; amending RCW 90.46.050, 90.46.010, 90.46.030, 90.46.040, 90.46.042, 90.46.044, 90.46.080, 90.46.090, and 90.46.100; adding a new section to chapter 90.46 RCW; and creating new sections.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF WASHINGTON:

NEW SECTION. **Sec. 1.** A new section is added to chapter 90.46 RCW to read as follows:

(1) The department of ecology shall, in coordination with the department of health, adopt rules for reclaimed water use consistent with this chapter. The rules must address all aspects of reclaimed water use, including commercial and industrial uses, land applications, direct recharge, wetland discharge, surface percolation, constructed wetlands, and stream flow augmentation. The department of health shall, in coordination with the department of ecology, adopt rules for greywater reuse. The rules must also designate whether the department of ecology or the department of health will be the lead permitting or regulatory agency responsible for a particular aspect of reclaimed water use. In developing the rules, the departments of health and

ecology shall amend or rescind any existing rules on reclaimed water in conflict with the new rules.

(2) All rules required to be adopted pursuant to this section must be completed no later than December 31, 2010, although the department of ecology is encouraged to adopt the final rules as soon as possible.

(3) The department of ecology must consult with the advisory committee created under RCW 90.46.050 in all aspects of rule development required under this section.

Sec. 2. RCW 90.46.050 and 1995 c 342 s 9 are each amended to read as follows:

The department of ((~~health~~)) ecology shall, before July 1, ((~~1995~~)) 2006, form an advisory committee, in coordination with the department of ((~~ecology~~)) health and the department of agriculture, which will provide technical assistance in the development of standards, procedures, and guidelines required by this chapter. ((~~Such~~)) The advisory committee shall be composed of ((~~individuals from the public water and wastewater utilities, landscaping enhancement industry, commercial and industrial application community, and any other persons deemed technically helpful by the department of health~~)) a broad range of interested individuals representing the various stakeholders that utilize or are potentially impacted by the use of reclaimed water. The advisory committee must also contain individuals with technical expertise and knowledge of new advancements in technology.

NEW SECTION. **Sec. 3.** The department of ecology must present interim reports to the appropriate committees of the legislature by January 1, 2008, and January 1, 2009, that summarize the steps taken to that date towards the final rule making required by section 1 of this act. The reports must include, at a minimum, a summary of participation in the advisory group and the topics considered by the department.

Sec. 4. RCW 90.46.010 and 2002 c 329 s 3 are each amended to read as follows:

The definitions in this section apply throughout this chapter unless the context clearly requires otherwise.

(1) "Greywater" means wastewater having the consistency and strength of residential domestic type wastewater. Greywater includes wastewater from sinks, showers, and laundry fixtures, but does not include toilet or urinal waters.

(2) "Land application" means ((~~application of treated effluent for purposes of~~)) use of reclaimed water as permitted under this chapter for irrigation or landscape enhancement for residential, business, and governmental purposes.

(3) "Person" means any state, individual, public or private corporation, political subdivision, governmental subdivision, governmental agency, municipality, copartnership, association, firm, trust estate, or any other legal entity whatever.

(4) "Reclaimed water" means effluent derived in any part from sewage from a wastewater treatment system that has been adequately and reliably treated, so that as a result of that treatment, it is suitable for a beneficial use or a controlled use that would not otherwise occur and is no longer considered wastewater.

(5) "Sewage" means water-carried human wastes from residences, buildings, industrial and commercial establishments, or other places, together with such ground water infiltration, surface waters, or industrial wastewater as may be present.

(6) "User" means any person who uses reclaimed water.

(7) "Wastewater" means water and wastes discharged from homes, businesses, and industry to the sewer system.

(8) "Beneficial use" means the use of reclaimed water, that has been transported from the point of production to the point of use without an intervening discharge to the waters of the state, for a beneficial purpose.

(9) "Direct recharge" means the controlled subsurface addition of water directly to the ground water basin that results in the replenishment of ground water.

(10) "Ground water recharge criteria" means the contaminant criteria found in the drinking water quality standards adopted by the state board of health pursuant to chapter 43.20 RCW and the department of health pursuant to chapter 70.119A RCW.

(11) "Planned ground water recharge project" means any reclaimed water project designed for the purpose of recharging ground water, via direct recharge or surface percolation.

(12) "Reclamation criteria" means the criteria set forth in the water reclamation and reuse interim standards and subsequent revisions adopted by the department of ecology and the department of health.

(13) "Streamflow augmentation" means the discharge of reclaimed water to rivers and streams of the state or other surface water bodies, but not wetlands.

(14) "Surface percolation" means the controlled application of water to the ground surface for the purpose of replenishing ground water.

(15) "Wetland or wetlands" means areas that are inundated or saturated by surface water or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands regulated under this chapter shall be delineated in accordance with the manual adopted by the department of ecology pursuant to RCW 90.58.380.

(16) "Constructed beneficial use wetlands" means those wetlands intentionally constructed on nonwetland sites to produce or replace natural wetland functions and values. Constructed beneficial use wetlands are considered "waters of the state."

(17) "Constructed treatment wetlands" means those wetlands intentionally constructed on nonwetland sites and managed for the primary purpose of ((~~wastewater or storm water treatment~~)) polishing reclaimed water or aesthetics. Constructed treatment wetlands are considered part of the collection and treatment system and are not considered "waters of the state."

(18) "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 result of that treatment, it is suitable for other agricultural water use.

(19) "Agricultural processing" means the processing of crops or milk to produce a product primarily for wholesale or retail sale for human or animal consumption, including but not limited to potato, fruit, vegetable, and grain processing.

(20) "Agricultural water use" means the use of water for irrigation and other uses related to the production of agricultural products. These uses include, but are not limited to, construction, operation,

and maintenance of agricultural facilities and livestock operations at farms, ranches, dairies, and nurseries. Examples of these uses include, but are not limited to, dust control, temperature control, and fire control.

(21) "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.

Sec. 5. RCW 90.46.030 and 2005 c 59 s 1 are each amended to read as follows:

(1) (a) The department of health shall, in coordination with the department of ecology, adopt a single set of standards, procedures, and guidelines on or before August 1, 1993, for the industrial and commercial use of reclaimed water.

(b) Standards adopted under this section are superseded by any rules adopted by the department of ecology pursuant to section 1 of this act as they relate to the industrial and commercial use of reclaimed water.

(2) Unless the department of ecology adopts rules pursuant to section 1 of this act that relate to the industrial and commercial use of reclaimed water specifying otherwise, the department of health may issue a reclaimed water permit for industrial and commercial uses of reclaimed water to the generator of reclaimed water who may then distribute the water, subject to provisions in the permit governing the location, rate, water quality, and purposes of use. Permits issued after the adoption of rules under section 1 of this act must be consistent with the adopted rules.

(3) The department of health in consultation with the advisory committee established in RCW 90.46.050, shall develop recommendations for a fee structure for permits issued under subsection (2) of this section. Fees shall be established in amounts to fully recover, and not exceed, expenses incurred by the department of health in processing permit applications and modifications, monitoring and evaluating compliance with permits, and conducting inspections and supporting the reasonable overhead expenses that are directly related to these activities. Permit fees may not be used for research or enforcement

activities. The department of health shall not issue permits under this section until a fee structure has been established.

(4) A permit under this section for use of reclaimed water may be issued only to:

(a) A municipal, quasi-municipal, or other governmental entity;

(b) A private utility as defined in RCW 36.94.010; or

(c) The holder of a waste discharge permit issued under chapter 90.48 RCW.

(5) The authority and duties created in this section are in addition to any authority and duties already provided in law with regard to sewage and wastewater collection, treatment, and disposal for the protection of health and safety of the state's waters. Nothing in this section limits the powers of the state or any political subdivision to exercise such authority.

(6) Unless the department of ecology adopts rules pursuant to section 1 of this act that relate to the industrial and commercial use of reclaimed water specifying otherwise, the department of health may implement the requirements of this section through the department of ecology by execution of a formal agreement between the departments. Upon execution of such an agreement, the department of ecology may issue reclaimed water permits for industrial and commercial uses of reclaimed water by issuance of permits under chapter 90.48 RCW, and may establish and collect fees as required for permits issued under chapter 90.48 RCW.

(7) Unless the department of ecology adopts rules pursuant to section 1 of this act that relate to the industrial and commercial use of reclaimed water specifying otherwise, and before deciding whether to issue a permit under this section to a private utility, the department of health may require information that is reasonable and necessary to determine whether the private utility has the financial and other resources to ((~~assure~~)) ensure the reliability, continuity, and supervision of the reclaimed water facility.

Sec. 6. RCW 90.46.040 and 2005 c 59 s 2 are each amended to read as follows:

(1)(a) The department of ecology shall, in coordination with the department of health, adopt a single set of standards, procedures, and

guidelines, on or before August 1, 1993, for land applications of reclaimed water.

(b) Standards adopted under this section are superseded by any rules adopted by the department of ecology pursuant to section 1 of this act as they relate to the land application of reclaimed water.

(2) A permit is required for any land application of reclaimed water. The department of ecology may issue a reclaimed water permit under chapter 90.48 RCW to the generator of reclaimed water who may then distribute the water, subject to provisions in the permit governing the location, rate, water quality, and purpose of use. The department of ecology shall not issue more than one permit for any individual land application of reclaimed water to a single generator.

(3) In cases where the department of ecology determines, in land applications of reclaimed water, that a significant risk to the public health exists, the department shall refer the application to the department of health for review and consultation and the department of health may require fees appropriate for review and consultation from the applicant pursuant to RCW 43.70.250.

(4) A permit under this section for use of reclaimed water may be issued only to:

(a) A municipal, quasi-municipal, or other governmental entity;

(b) A private utility as defined under RCW 36.94.010; or

(c) The holder of a waste discharge permit issued under chapter 90.48 RCW.

(5) The authority and duties created in this section are in addition to any authority and duties already provided in law. Nothing in this section limits the powers of the state or any political subdivision to exercise such authority.

(6) Before deciding whether to issue a permit under this section to a private utility, the department of ecology may require information that is reasonable and necessary to determine whether the private utility has the financial and other resources to ((~~assure~~)) ensure the reliability, continuity, and supervision of the reclaimed water facility.

Sec. 7. RCW 90.46.042 and 1995 c 342 s 6 are each amended to read as follows:

(1) The department of ecology shall, in consultation with the

department of health, adopt a single set of standards, procedures, and guidelines, on or before December 31, 1996, for direct recharge using reclaimed water. The standards shall address both water quality considerations and avoidance of property damage from excessive recharge.

(2) Standards adopted under this section are superseded by any rules adopted by the department of ecology pursuant to section 1 of this act as they relate to direct recharge using reclaimed water.

Sec. 8. RCW 90.46.044 and 1995 c 342 s 7 are each amended to read as follows:

(1) The department of ecology shall, in consultation with the department of health, adopt a single set of standards, procedures, and guidelines, on or before June 30, 1996, for discharge of reclaimed water to wetlands.

(2) Standards adopted under this section are superseded by any rules adopted by the department of ecology pursuant to section 1 of this act as they relate to discharge of reclaimed water to wetlands.

Sec. 9. RCW 90.46.080 and 1997 c 444 s 6 are each amended to read as follows:

(1) Except as otherwise provided in this section, reclaimed water may be beneficially used for surface percolation provided the reclaimed water meets the ground water recharge criteria as measured in ground water beneath or down gradient of the recharge project site, and has been incorporated into a sewer or water comprehensive plan, as applicable, adopted by the applicable local government and approved by the department of health or department of ecology as applicable.

(2) If the state ground water recharge criteria as defined by RCW 90.46.010 do not contain a standard for a constituent or contaminant, the department of ecology shall establish a discharge limit consistent with the goals of this chapter, except as otherwise provided in this section.

(3) Except as otherwise provided in this section, reclaimed water that does not meet the ground water recharge criteria may be beneficially used for surface percolation where the department of ecology, in consultation with the department of health, has specifically authorized such use at such lower standard.

(4) The provisions of this section are superseded by any rules adopted by the department of ecology pursuant to section 1 of this act as they relate to surface percolation.

Sec. 10. RCW 90.46.090 and 1997 c 444 s 7 are each amended to read as follows:

(1) Reclaimed water may be beneficially used for discharge into constructed beneficial use wetlands and constructed treatment wetlands provided the reclaimed water meets the class A or B reclaimed water standards as defined in the reclamation criteria, and the discharge is incorporated into a sewer or water comprehensive plan, as applicable, adopted by the applicable local government and approved by the department of health or department of ecology as applicable.

(2) Reclaimed water that does not meet the class A or B reclaimed water standards may be beneficially used for discharge into constructed treatment wetlands where the department of ecology, in consultation with the department of health, has specifically authorized such use at such lower standards.

(3)(a) The department of ecology and the department of health must develop appropriate standards for discharging reclaimed water into constructed beneficial use wetlands and constructed treatment wetlands. These standards must be considered as part of the approval process under subsections (1) and (2) of this section.

(b) Standards adopted under this section are superseded by any rules adopted by the department of ecology pursuant to section 1 of this act as they relate to discharge into constructed beneficial use wetlands and constructed treatment wetlands.

Sec. 11. RCW 90.46.100 and 1995 c 342 s 5 are each amended to read as follows:

(1) Reclaimed water intended for beneficial reuse may be discharged for streamflow augmentation provided the reclaimed water meets the requirements of the federal water pollution control act, chapter 90.48 RCW, and is incorporated into a sewer or water comprehensive plan, as applicable, adopted by the applicable local government and approved by the department of health or department of ecology as applicable.

(2) Standards adopted under this section are superseded by any

rules adopted by the department of ecology pursuant to section 1 of this act as they relate to discharge of reclaimed water for streamflow augmentation.

NEW SECTION. **Sec. 12.** The code reviser shall alphabetize and renumber the definitions in RCW 90.46.010.

Passed by the House March 8, 2006.
Passed by the Senate March 7, 2006.
Approved by the Governor March 28, 2006.
Filed in Office of Secretary of State March 28, 2006.

Global
Appendix C

Chapter 90.46 RCW: Reclaimed Water Use

Appendix C – Chapter 90.46 RCW: Reclaimed Water Use

RCW 90.46.005
Findings -- Coordination of efforts -- Development of facilities encouraged.

The legislature finds that by encouraging the use of reclaimed water while assuring the health and safety of all Washington citizens and the protection of its environment, the state of Washington will continue to use water in the best interests of present and future generations.

To facilitate the immediate use of reclaimed water for uses approved by the departments of ecology and health, the state shall expand both direct financial support and financial incentives for capital investments in water reuse and reclaimed water to effectuate the goals of this chapter. The legislature further directs the department of health and the department of ecology to coordinate efforts towards developing an efficient and streamlined process for creating and implementing processes for the use of reclaimed water.

It is hereby declared that the people of the state of Washington have a primary interest in the development of facilities to provide reclaimed water to replace potable water in nonpotable applications, to supplement existing surface and ground water supplies, and to assist in meeting the future water requirements of the state.

The legislature further finds and declares that the utilization of reclaimed water by local communities for domestic, agricultural, industrial, recreational, and fish and wildlife habitat creation and enhancement purposes, including wetland enhancement, will contribute to the peace, health, safety, and welfare of the people of the state of Washington. To the extent reclaimed water is appropriate for beneficial uses, it should be so used to preserve potable water for drinking purposes, contribute to the restoration and protection of instream flows that are crucial to preservation of the state's salmonid fishery resources, contribute to the restoration of Puget Sound by reducing wastewater discharge, provide a drought resistant source of water supply for nonpotable needs, or be a source of supply integrated into state, regional, and local strategies to respond to population growth and global warming. Use of reclaimed water constitutes the development of new basic water supplies needed for future generations and local and regional water management planning should consider coordination of infrastructure, development, storage, water reclamation and reuse, and source exchange as strategies to meet water demands associated with population growth and impacts of global warming.

The legislature further finds and declares that the use of reclaimed water is not inconsistent with the policy of antidegradation of state waters announced in other state statutes, including the water pollution control act, chapter 90.48 RCW and the water resources act, chapter 90.54 RCW.

The legislature finds that other states, including California, Florida, and Arizona, have successfully used reclaimed water to supplement existing water supplies without threatening existing resources or public health.

It is the intent of the legislature that the department of ecology and the department of health undertake the necessary steps to encourage the development of water reclamation facilities so that reclaimed water may be made available to help meet the growing water requirements of the state.

The legislature further finds and declares that reclaimed water facilities are water pollution control facilities as defined in chapter 70.146 RCW and are eligible for financial assistance as provided in chapter 70.146 RCW. The legislature finds that funding demonstration projects will ensure the future use of reclaimed water. The demonstration projects in RCW 90.46.110 are varied in nature and will provide the experience necessary to test different facets of the standards and refine a variety of technologies so that water purveyors can begin to use reclaimed water technology in a more cost-effective manner. This is especially critical in smaller cities and communities where the feasibility for such projects is great, but there are scarce resources to develop the necessary facilities.

The legislature further finds that the agricultural processing industry can play a critical and beneficial role in promoting the efficient use of water by having the opportunity to develop and reuse agricultural industrial process water from food processing.

[2007 c 445 § 2; 2001 c 69 § 1; 1997 c 355 § 1; 1995 c 342 § 1; 1992 c 204 § 1.]

NOTES:

Findings -- Intent -- 2007 c 445: "(1) Since the 1992 enactment of the reclaimed water act, the value of reclaimed water as a new source of supply has received increasing recognition across the state and across the nation. New information on the matters in this section has increased awareness of the need to better manage, protect, and conserve water resources and to use reclaimed water in that process. The legislature now finds the following:

(a) Global warming and climate change. Global warming has reduced the volume of glaciers in the North Cascade mountains to between eighteen to thirty-two percent since 1983, and up to seventy-five percent of the glaciers are at risk of disappearing under projected temperatures for this century. Mountain snow pack has declined at virtually every measurement location in the Pacific Northwest, reducing the proportion of annual river flow to Puget Sound during summer months by eighteen percent since 1948. Global warming has also shifted peak stream flows earlier in the year in watersheds covering much of Washington state, including the Columbia river basin, jeopardizing the state's salmon fisheries. The state's recent report on the economic impacts of climate change indicate that water resources will be one of the areas most affected, and that many utilities may need to invest major resources in new supply and conservation measures. Developing and implementing adaptation strategies, such as water conservation that includes the use of reclaimed water, can extend existing water supply systems to help address the global warming impacts. In particular, because reclaimed water uses existing sources of supply and fairly constant base flows of wastewater, it has year-round dependability, without regard to any given year's climate variability. This is particularly important during summer months, when outdoor demands peak and stream flows are critical for fish.

(b) Puget Sound. The governor has initiated a Puget Sound partnership, with a request for an initial strategy to address high priority problems. In December, the partnership delivered a strategy that includes expanded use of reclaimed water both in order to improve the Puget Sound's water quality by reducing wastewater discharges and by replacing current sources of supply for nonpotable uses that detrimentally affect stream flows and habitat.

(c) Salmon recovery. The federal fisheries services recently approved a salmon recovery plan for the Puget Sound, which was developed across multiple watersheds by numerous

local governments, tribal governments, and other parties to achieve sustainable populations of salmon and other species. That plan includes an adaptive management component where continued efforts will be made to address issues, including problems with instream flows, identified as a limiting factor in virtually all the watersheds, through strategies that will be developed by regional and watershed implementation groups. A potentially significant strategy may be the substitution of reclaimed water for nonpotable uses where it will benefit streams and habitat.

(d) Water quality. Increasingly stringent federal standards for water quality are forcing a number of communities to develop strategies for wastewater treatment that, in addition to providing higher treatment levels, will reduce the quantity of discharges. For many of those communities, facilities to produce reclaimed water will be a necessary approach to achieve both water quality and water supply objectives.

(e) Watershed plans. Under the watershed planning act of 1997, approximately two-thirds of the watersheds in the state have used a bottom-up approach to developing collaborative plans for meeting future water supply needs. Many of those plans include the use of reclaimed water for meeting those needs.

(f) Columbia river water management. Pursuant to legislation and funding provided in 2006, federal, state, and local governments and agencies, along with tribal governments, user groups, environmental organizations, and others are developing a comprehensive strategy for the mainstem Columbia that will ensure supplies for future growth while protecting stream flows and fish habitat. The strategy will include multiple tools that may include the potential development of new storage, conservation measures, and water use efficiency. One pathway toward conservation and efficiency is likely to be identification and implementation of reclaimed water opportunities.

(g) Development schedule. The time frame required to plan, design, construct, and begin use of reclaimed water can be extensive due to the public information and acceptance efforts required in addition to planning, design, and environmental assessment required for infrastructure projects. This extended time frame necessitates the initiation of reclaimed water projects as soon as possible.

(2) It is therefore the intent of the legislature to:

(a) Effectuate and reinvigorate the original intent behind the reclaimed water act to expand the use of reclaimed water for nonpotable uses throughout the state;

(b) Restate and emphasize the use of reclaimed water as a matter of water resource management policy;

(c) Address current barriers to the use of reclaimed water, where changes in state law will resolve such issues;

(d) Develop information from the state agencies responsible for promoting the use of reclaimed water and address regulatory, financial, planning, and other barriers to the expanded use of reclaimed water, relying on state agency expertise and experience with reclaimed water;

(e) Facilitate achieving state, regional, and local objectives through use of reclaimed water for water supply purposes in high priority areas of the state, and in regional and local watershed and water planning;

(f) Provide planning tools to local governments to incorporate reclaimed water and related water conservation into land use plans, consistent with water planning;

(g) Expand the scope of work of the advisory committee established under chapter 279, Laws of 2006 to identify other reclaimed water issues that should be addressed; and

(h) Provide initial funding, and evaluate options for providing additional direct state funding, for reclaimed water projects." [2007 c 445 § 1.]

Construction -- 1995 c 342: "This act shall not be construed as affecting any existing right acquired or liability or obligation incurred under the sections amended or repealed in this act or under any rule or order adopted under those sections, nor as affecting any proceeding instituted under those sections." [1995 c 342 § 10.]

Effective date -- 1995 c 342: "This act is necessary for the immediate preservation of the public peace, health, or safety, or support of the state government and its existing public institutions, and shall take effect immediately [May 11, 1995]." [1995 c 342 § 11.]

RCW 90.46.010
Definitions.

The definitions in this section apply throughout this chapter unless the context clearly requires otherwise.

(1) "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 result of that treatment, it is suitable for other agricultural water use.

(2) "Agricultural processing" means the processing of crops or milk to produce a product primarily for wholesale or retail sale for human or animal consumption, including but not limited to potato, fruit, vegetable, and grain processing.

(3) "Agricultural water use" means the use of water for irrigation and other uses related to the production of agricultural products. These uses include, but are not limited to, construction, operation, and maintenance of agricultural facilities and livestock operations at farms, ranches, dairies, and nurseries. Examples of these uses include, but are not limited to, dust control, temperature control, and fire control.

(4) "Beneficial use" means the use of reclaimed water, that has been transported from the point of production to the point of use without an intervening discharge to the waters of the state, for a beneficial purpose.

(5) "Constructed beneficial use wetlands" means those wetlands intentionally constructed on nonwetland sites to produce or replace natural wetland functions and values. Constructed beneficial use wetlands are considered "waters of the state."

(6) "Constructed treatment wetlands" means those wetlands intentionally constructed on nonwetland sites and managed for the primary purpose of polishing reclaimed water or aesthetics. Constructed treatment wetlands are considered part of the collection and treatment system and are not considered "waters of the state."

(7) "Direct recharge" means the controlled subsurface addition of water directly to the groundwater basin that results in the replenishment of groundwater.

(8) "Greywater" means wastewater having the consistency and strength of residential domestic type wastewater. Greywater includes wastewater from sinks, showers, and laundry fixtures, but does not include toilet or urinal waters.

(9) "Groundwater recharge criteria" means the contaminant criteria found in the drinking water quality standards adopted by the state board of health pursuant to chapter 43.20 RCW and the department of health pursuant to chapter 70.119A RCW.

(10) "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.

(11) "Land application" means use of reclaimed water as permitted under this chapter for irrigation or landscape enhancement for residential, business, and governmental purposes.

(12) "Person" means any state, individual, public or private corporation, political subdivision, governmental subdivision, governmental agency, municipality, copartnership, association, firm, trust estate, or any other legal entity whatever.

(13) "Planned groundwater recharge project" means any reclaimed water project designed for the purpose of recharging groundwater, via direct recharge or surface percolation.

(14) "Reclaimed water" means effluent derived in any part from sewage from a wastewater treatment system that has been adequately and reliably treated, so that as a result of that treatment, it is suitable for a beneficial use or a controlled use that would not otherwise occur and is no longer considered wastewater.

(15) "Reclamation criteria" means the criteria set forth in the water reclamation and reuse interim standards and subsequent revisions adopted by the department of ecology and the department of health.

(16) "Sewage" means water-carried human wastes from residences, buildings, industrial and commercial establishments, or other places, together with such groundwater infiltration, surface waters, or industrial wastewater as may be present.

(17) "Streamflow augmentation" means the discharge of reclaimed water to rivers and streams of the state or other surface water bodies, but not wetlands.

(18) "Surface percolation" means the controlled application of water to the ground surface for the purpose of replenishing groundwater.

(19) "User" means any person who uses reclaimed water.

(20) "Wastewater" means water and wastes discharged from homes, businesses, and industry to the sewer system.

(21) "Wetland or wetlands" means areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under

normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands regulated under this chapter shall be delineated in accordance with the manual adopted by the department of ecology pursuant to RCW 90.58.380.

[2006 c 279 § 4; 2002 c 329 § 3; 2001 c 69 § 2; 1997 c 444 § 5; 1995 c 342 § 2; 1992 c 204 § 2.]

NOTES:

Alphabetization -- 2006 c 279: "The code reviser shall alphabetize and renumber the definitions in RCW 90.46.010." [2006 c 279 § 12.]

Severability -- 1997 c 444: "If any provision of this act or its application to any person or circumstance is held invalid, the remainder of the act or the application of the provision to other persons or circumstances is not affected." [1997 c 444 § 11.]

Construction -- Effective date -- 1995 c 342: See notes following RCW 90.46.005.

RCW 90.46.015
Rules -- Coordination with department of health -- Consultation with advisory committee.

(1) The department of ecology shall, in coordination with the department of health, adopt rules for reclaimed water use consistent with this chapter. The rules must address all aspects of reclaimed water use, including commercial and industrial uses, land applications, direct recharge, wetland discharge, surface percolation, constructed wetlands, and stream flow augmentation. The department of health shall, in coordination with the department of ecology, adopt rules for greywater reuse. The rules must also designate whether the department of ecology or the department of health will be the lead permitting or regulatory agency responsible for a particular aspect of reclaimed water use. In developing the rules, the departments of health and ecology shall amend or rescind any existing rules on reclaimed water in conflict with the new rules.

(2) All rules required to be adopted pursuant to this section must be completed no later than December 31, 2010, although the department of ecology is encouraged to adopt the final rules as soon as possible.

(3) The department of ecology must consult with the advisory committee created under RCW 90.46.050 in all aspects of rule development required under this section.

[2006 c 279 § 1.]

NOTES:

Interim reports -- 2006 c 279: "(1) In order to identify and pursue other measures to facilitate achieving the objectives in RCW 90.46.005 for expanded, appropriate, and safe use of reclaimed water, the department of ecology and the department of health shall provide the legislature with relevant information through periodic progress reports, as provided in this section.

(2) The department of ecology shall provide interim reports to the appropriate

committees of the legislature by January 1, 2008, and January 1, 2009, that summarize the steps taken to that date towards the final rule making required by RCW 90.46.015. The reports shall include, at a minimum, a summary of participation in the rule advisory committee, the topics considered by the department, and issues identified by the rule advisory committee as barriers to expanded use of reclaimed water that may not be addressed within the rules to be adopted by the department.

(3) In addition to subsection (2) of this section, the department shall form a subtask force consisting of not more than ten members chosen from the existing rule advisory committee, and reclaimed water users, to further identify and recommend actions to increase the promotion of reclaimed water as a water supply and water resource management option. At a minimum, the subtask force shall consider (a) issues assigned by the rule advisory committee; (b) staffing levels, resources, and roles within both state agencies; (c) optimizing organizational structure; (d) unresolved legal issues specific to reclaimed water use; and (e) a more appropriate name to describe reclaimed water. Information regarding these topics shall be appended to the required interim reports as the topics are considered by the advisory group." [2007 c 445 § 5; 2006 c 279 § 3.]

RCW 90.46.020
Interim standards for pilot projects for use of reclaimed water.

(1) The department of ecology shall, in coordination with the department of health, develop interim standards for pilot projects under subsection (3) of this section on or before July 1, 1992, for the use of reclaimed water in land applications.

(2) The department of health shall, in coordination with the department of ecology, develop interim standards for pilot projects under subsection (3) of this section on or before November 15, 1992, for the use of reclaimed water in commercial and industrial activities.

(3) The department of ecology and the department of health shall assist interested parties in the development of pilot projects to aid in achieving the purposes of this chapter.

[1992 c 204 § 3.]

RCW 90.46.030
Standards, procedures, and guidelines for industrial and commercial use of reclaimed water -- Reclaimed water permits -- Fee structure for permits -- Formal agreements between the departments of health and ecology.

(1)(a) The department of health shall, in coordination with the department of ecology, adopt a single set of standards, procedures, and guidelines on or before August 1, 1993, for the industrial and commercial use of reclaimed water.

(b) Standards adopted under this section are superseded by any rules adopted by the department of ecology pursuant to RCW 90.46.015 as they relate to the industrial and commercial use of reclaimed water.

(2) Unless the department of ecology adopts rules pursuant to RCW 90.46.015 that relate to the industrial and commercial use of reclaimed water specifying otherwise, the department of health may issue a reclaimed water permit for industrial and commercial uses of reclaimed water to the generator of reclaimed water who may then distribute the water,

subject to provisions in the permit governing the location, rate, water quality, and purposes of use. Permits issued after the adoption of rules under RCW 90.46.015 must be consistent with the adopted rules.

(3) The department of health in consultation with the advisory committee established in RCW 90.46.050, shall develop recommendations for a fee structure for permits issued under subsection (2) of this section. Fees shall be established in amounts to fully recover, and not exceed, expenses incurred by the department of health in processing permit applications and modifications, monitoring and evaluating compliance with permits, and conducting inspections and supporting the reasonable overhead expenses that are directly related to these activities. Permit fees may not be used for research or enforcement activities. The department of health shall not issue permits under this section until a fee structure has been established.

(4) A permit under this section for use of reclaimed water may be issued only to:

(a) A municipal, quasi-municipal, or other governmental entity;

(b) A private utility as defined in RCW 36.94.010; or

(c) The holder of a waste discharge permit issued under chapter 90.48 RCW.

(5) The authority and duties created in this section are in addition to any authority and duties already provided in law with regard to sewage and wastewater collection, treatment, and disposal for the protection of health and safety of the state's waters. Nothing in this section limits the powers of the state or any political subdivision to exercise such authority.

(6) Unless the department of ecology adopts rules pursuant to RCW 90.46.015 that relate to the industrial and commercial use of reclaimed water specifying otherwise, the department of health may implement the requirements of this section through the department of ecology by execution of a formal agreement between the departments. Upon execution of such an agreement, the department of ecology may issue reclaimed water permits for industrial and commercial uses of reclaimed water by issuance of permits under chapter 90.48 RCW, and may establish and collect fees as required for permits issued under chapter 90.48 RCW.

(7) Unless the department of ecology adopts rules pursuant to RCW 90.46.015 that relate to the industrial and commercial use of reclaimed water specifying otherwise, and before deciding whether to issue a permit under this section to a private utility, the department of health may require information that is reasonable and necessary to determine whether the private utility has the financial and other resources to ensure the reliability, continuity, and supervision of the reclaimed water facility.

[2006 c 279 § 5; 2005 c 59 § 1; 2002 c 329 § 4; 1992 c 204 § 4.]

RCW 90.46.040
Standards, procedures, and guidelines for land applications of reclaimed water -- Permits -- Referral to department of health.

(1)(a) The department of ecology shall, in coordination with the department of health, adopt a single set of standards, procedures, and guidelines, on or before August 1, 1993, for land applications of reclaimed water.

(b) Standards adopted under this section are superseded by any rules adopted by the department of ecology pursuant to RCW 90.46.015 as they relate to the land application of reclaimed water.

(2) A permit is required for any land application of reclaimed water. The department of ecology may issue a reclaimed water permit under chapter 90.48 RCW to the generator of reclaimed water who may then distribute the water, subject to provisions in the permit governing the location, rate, water quality, and purpose of use. The department of ecology shall not issue more than one permit for any individual land application of reclaimed water to a single generator.

(3) In cases where the department of ecology determines, in land applications of reclaimed water, that a significant risk to the public health exists, the department shall refer the application to the department of health for review and consultation and the department of health may require fees appropriate for review and consultation from the applicant pursuant to RCW 43.70.250.

(4) A permit under this section for use of reclaimed water may be issued only to:

(a) A municipal, quasi-municipal, or other governmental entity;

(b) A private utility as defined under RCW 36.94.010; or

(c) The holder of a waste discharge permit issued under chapter 90.48 RCW.

(5) The authority and duties created in this section are in addition to any authority and duties already provided in law. Nothing in this section limits the powers of the state or any political subdivision to exercise such authority.

(6) Before deciding whether to issue a permit under this section to a private utility, the department of ecology may require information that is reasonable and necessary to determine whether the private utility has the financial and other resources to ensure the reliability, continuity, and supervision of the reclaimed water facility.

[2006 c 279 § 6; 2005 c 59 § 2; 1992 c 204 § 5.]

RCW 90.46.042
Standards, procedures, and guidelines for direct recharge.

(1) The department of ecology shall, in consultation with the department of health, adopt a single set of standards, procedures, and guidelines, on or before December 31, 1996, for direct recharge using reclaimed water. The standards shall address both water quality considerations and avoidance of property damage from excessive recharge.

(2) Standards adopted under this section are superseded by any rules adopted by the department of ecology pursuant to RCW 90.46.015 as they relate to direct recharge using reclaimed water.

[2006 c 279 § 7; 1995 c 342 § 6.]

NOTES:

Construction -- Effective date -- 1995 c 342: See notes following RCW 90.46.005.

RCW 90.46.044
Standards, procedures, and guidelines for discharge to wetlands.

(1) The department of ecology shall, in consultation with the department of health, adopt a single set of standards, procedures, and guidelines, on or before June 30, 1996, for discharge of reclaimed water to wetlands.

(2) Standards adopted under this section are superseded by any rules adopted by the department of ecology pursuant to RCW 90.46.015 as they relate to discharge of reclaimed water to wetlands.

[2006 c 279 § 8; 1995 c 342 § 7.]

NOTES:

Construction -- Effective date -- 1995 c 342: See notes following RCW 90.46.005.

RCW 90.46.050
Advisory committee -- Development of standards, procedures, and guidelines.

The department of ecology shall, before July 1, 2006, form an advisory committee, in coordination with the department of health and the department of agriculture, which will provide technical assistance in the development of standards, procedures, and guidelines required by this chapter. The advisory committee shall be composed of a broad range of interested individuals representing the various stakeholders that utilize or are potentially impacted by the use of reclaimed water. The advisory committee must also contain individuals with technical expertise and knowledge of new advancements in technology.

[2006 c 279 § 2; 1995 c 342 § 9; 1992 c 204 § 6.]

NOTES:

Construction -- Effective date -- 1995 c 342: See notes following RCW 90.46.005.

RCW 90.46.060
Enforcement powers -- Secretary of health.

The secretary of health has all of the enforcement powers granted to the secretary of health under chapter 43.70 RCW to enforce this chapter.

[1992 c 204 § 7.]

RCW 90.46.070
Exemption from standards, procedures, and guidelines.

Any person lawfully using reclaimed water before April 2, 1992, may continue to do so and is not required to comply with the standards, procedures, and guidelines under chapter 90.46 RCW before July 1, 1995.

[1992 c 204 § 8.]

RCW 90.46.072
Conflict resolution -- Reclaimed water projects and chapter 372-32 WAC.

On or before December 31, 1995, the department of ecology and department of health shall, in consultation with local interested parties, jointly review and, if required, propose amendments to chapter 372-32 WAC to resolve conflicts between the development of reclaimed water projects in the Puget Sound region and chapter 372-32 RCW [WAC].

[1995 c 342 § 8.]

NOTES:

Construction -- Effective date -- 1995 c 342: See notes following RCW 90.46.005.

RCW 90.46.080
Use of reclaimed water for surface percolation -- Establishment of discharge limit for contaminants.

(1) Except as otherwise provided in this section, reclaimed water may be beneficially used for surface percolation provided the reclaimed water meets the groundwater recharge criteria as measured in groundwater beneath or down gradient of the recharge project site, and has been incorporated into a sewer or water comprehensive plan, as applicable, adopted by the applicable local government and approved by the department of health or department of ecology as applicable.

(2) If the state groundwater recharge criteria as defined by RCW 90.46.010 do not contain a standard for a constituent or contaminant, the department of ecology shall establish a discharge limit consistent with the goals of this chapter, except as otherwise provided in this section.

(3) Except as otherwise provided in this section, reclaimed water that does not meet the groundwater recharge criteria may be beneficially used for surface percolation where the department of ecology, in consultation with the department of health, has specifically authorized such use at such lower standard.

(4) The provisions of this section are superseded by any rules adopted by the department of ecology pursuant to RCW 90.46.015 as they relate to surface percolation.

[2006 c 279 § 9; 1997 c 444 § 6; 1995 c 342 § 3.]

NOTES:

Severability -- 1997 c 444: See note following RCW 90.46.010.

Construction -- Effective date -- 1995 c 342: See notes following RCW 90.46.005.

RCW 90.46.090
Use of reclaimed water for discharge into constructed beneficial use wetlands and constructed treatment wetlands -- Standards for discharge.

(1) Reclaimed water may be beneficially used for discharge into constructed beneficial use wetlands and constructed treatment wetlands provided the reclaimed water meets the class A or B reclaimed water standards as defined in the reclamation criteria, and the discharge is incorporated into a sewer or water comprehensive plan, as applicable, adopted by the applicable local government and approved by the department of health or department of ecology as applicable.

(2) Reclaimed water that does not meet the class A or B reclaimed water standards may be beneficially used for discharge into constructed treatment wetlands where the department of ecology, in consultation with the department of health, has specifically authorized such use at such lower standards.

(3)(a) The department of ecology and the department of health must develop appropriate standards for discharging reclaimed water into constructed beneficial use wetlands and constructed treatment wetlands. These standards must be considered as part of the approval process under subsections (1) and (2) of this section.

(b) Standards adopted under this section are superseded by any rules adopted by the department of ecology pursuant to RCW 90.46.015 as they relate to discharge into constructed beneficial use wetlands and constructed treatment wetlands.

[2006 c 279 § 10; 1997 c 444 § 7; 1995 c 342 § 4.]

NOTES:

Severability -- 1997 c 444: See note following RCW 90.46.010.

Construction -- Effective date -- 1995 c 342: See notes following RCW 90.46.005.

RCW 90.46.100
Discharge of reclaimed water for streamflow augmentation.

(1) Reclaimed water intended for beneficial reuse may be discharged for streamflow augmentation provided the reclaimed water meets the requirements of the federal water pollution control act, chapter 90.48 RCW, and is incorporated into a sewer or water comprehensive plan, as applicable, adopted by the applicable local government and approved by the department of health or department of ecology as applicable.

(2) Standards adopted under this section are superseded by any rules adopted by the department of ecology pursuant to RCW 90.46.015 as they relate to discharge of reclaimed water for streamflow augmentation.

[2006 c 279 § 11; 1995 c 342 § 5.]

NOTES:

Construction -- Effective date -- 1995 c 342: See notes following RCW 90.46.005.

RCW 90.46.110
Reclaimed water demonstration program -- Demonstration projects.

(1) The department of ecology shall establish and administer a reclaimed water demonstration program for the purposes of funding and monitoring the progress of five demonstration projects. The department shall work in cooperation with the department of health.

(2) The five demonstration projects will be:

(a) The city of Ephrata, to use class A reclaimed water for surface spreading that will recharge the groundwater and reduce the nitrate concentrations that currently exceed drinking water standards in domestic wells;

(b) Lincoln county, for a study of the use of reclaimed water to transport twenty-two million gallons a day from Spokane to water sources that will rehydrate and restore long depleted streambeds;

(c) The city of Royal City to replace an interim emergency sprayfield by using one hundred percent of its discharge as class A reclaimed water to enhance local wetlands and lakes in the winter, and potentially irrigate a golf course;

(d) The city of Sequim to implement a tertiary treatment system and reuse one hundred percent of the city's wastewater to reopen an existing shellfish closure area to benefit state and tribal resources, improve streamflows in the Dungeness river, and provide a sustainable water supply for irrigation purposes;

(e) The city of Yelm to use one hundred percent of its wastewater to provide alternative water supply for irrigation and industrial uses in order to offset increased demand for water supply, to protect the Nisqually river chum salmon runs, and to develop experimental artificial wetlands to test low cost treatment options.

(3) By September 30, 1997, the department of ecology shall enter into a grant agreement with the demonstration project jurisdictions that includes reporting requirements, timelines, and a fund disbursement schedule based on the agreed project milestones.

(4) Upon completion of the projects, the department of ecology shall report to the appropriate committees of the legislature on the results of the program.

(5) Demonstration projects which will discharge or otherwise deliver reclaimed water to federal reclamation project facilities or irrigation district facilities shall meet the requirements of the facilities' operating entity for such discharges or deliveries.

(6) No irrigation district, its directors, officers, employees, or agents operating and maintaining irrigation works for any purpose authorized by law, including the production of food for human consumption and other agricultural and domestic purposes, is liable for damages to persons or property arising from the implementation of the demonstration projects in this section.

[1997 c 355 § 2.]

RCW 90.46.120
Use of water from wastewater treatment facility -- Consideration in regional water supply plan or potable water supply service planning -- Consideration in reviewing provisions for water supplies for short plat, short subdivision, or subdivision.

(1) The owner of a wastewater treatment facility that is reclaiming water with a permit issued under this chapter has the exclusive right to any reclaimed water generated by the wastewater treatment facility. Use, distribution, and the recovery from aquifer storage of reclaimed water by the owner of the wastewater treatment facility is exempt from the permit requirements of RCW 90.03.250 and 90.44.060, provided that a permit for recovery of reclaimed water from aquifer storage and recovery shall be reviewed under the standards established under RCW 90.03.370(2). Revenues derived from the reclaimed water facility shall be used only to offset the cost of operation of the wastewater utility fund or other applicable source of system-wide funding.

(2) If the proposed use or uses of reclaimed water are intended to augment or replace potable water supplies or create the potential for the development of additional potable water supplies, such use or uses shall be considered in the development of any regional water supply plan or plans addressing potable water supply service by multiple water purveyors. Such water supply plans include plans developed by multiple jurisdictions under the relevant provisions of chapters 43.20, 70.116, 90.44, and 90.82 RCW, and the water supply provisions under the utility element of chapter 36.70A RCW. The method by which such plans are approved shall remain unchanged. The owner of a wastewater treatment facility that proposes to reclaim water shall be included as a participant in the development of such regional water supply plan or plans.

(3) Where opportunities for the use of reclaimed water exist within the period of time addressed by a water system plan, a water supply plan, or a coordinated water system plan developed under chapters 43.20, 70.116, 90.44, and 90.82 RCW, and the water supply provisions under the utility element of chapter 36.70A RCW, these plans must be developed and coordinated to ensure that opportunities for reclaimed water are evaluated. The requirements of this subsection (3) do not apply to water system plans developed under chapter 43.20 RCW for utilities serving less than one thousand service connections.

(4) The provisions of any plan for reclaimed water, developed under the authorities in subsections (2) and (3) of this section, should be included by a city, town, or county in reviewing provisions for water supplies in a proposed short plat, short subdivision, or subdivision under chapter 58.17 RCW, where reclaimed water supplies may be proposed for nonpotable purposes in the short plat, short subdivision, or subdivision.

[2007 c 445 § 3; 2003 1st sp.s. c 5 § 13; 1997 c 444 § 1.]

NOTES:

Findings -- Intent -- 2007 c 445: See note following RCW 90.46.005.

Severability -- 2003 1st sp.s. c 5: See note following RCW 90.03.015.

Severability -- 1997 c 444: See note following RCW 90.46.010.

RCW 90.46.130
Impairment of water rights downstream from freshwater discharge points.

(1) Except as provided in subsection (2) of this section, facilities that reclaim water under this chapter shall not impair any existing water right downstream from any freshwater discharge points of such facilities unless compensation or mitigation for such impairment is agreed to by the holder of the affected water right.

(2) Agricultural water use of agricultural industrial process water and use of industrial reuse water under this chapter shall not impair existing water rights within the water source that is the source of supply for the agricultural processing plant or the industrial processing and, if the water source is surface water, the existing water rights are downstream from the agricultural processing plant's discharge points existing on July 22, 2001, or from the industrial processing's discharge points existing on June 13, 2002.

[2002 c 329 § 5; 2001 c 69 § 4; 1997 c 444 § 4.]

NOTES:

Severability -- 1997 c 444: See note following RCW 90.46.010.

RCW 90.46.140
Greywater reuse -- Standards, procedures, and guidelines -- Rules.

(1) The department of health shall develop standards, procedures, and guidelines for the reuse of greywater, consistent with RCW 43.20.230(2), by January 1, 1998.

(2) Standards, procedures, and guidelines developed by the department of health for reuse of greywater shall encourage the application of this technology for conserving water resources, or reducing the wastewater load, on domestic wastewater facilities, individual on-site sewage treatment and disposal systems, or community on-site sewage treatment and disposal systems.

(3) The department of health and local health officers may permit the reuse of greywater according to rules adopted by the department of health.

[1997 c 444 § 8.]

NOTES:

Severability -- 1997 c 444: See note following RCW 90.46.010.

RCW 90.46.150
Agricultural industrial process water -- Permit -- Use -- Referral to department of health.

The permit to apply agricultural industrial process water to agricultural water use shall be the permit issued under chapter 90.48 RCW to the owner of the agricultural processing plant who may then distribute the water through methods including, but not limited to, irrigation systems, subject to provisions in the permit governing the location, rate, water quality, and purpose. In cases where the department of ecology determines that a

significant risk to public health exists, in land application of the water, the department must refer the application to the department of health for review and consultation.

The owner of the agricultural processing plant who obtains a permit under this section has the exclusive right to the use of any agricultural industrial process water generated from the plant and to the distribution of such water through facilities including irrigation systems. Use and distribution of the water by the owner is exempt from the permit requirements of RCW 90.03.250, 90.03.380, 90.44.060, and 90.44.100.

Nothing in chapter 69, Laws of 2001 shall be construed to affect any right to reuse agricultural industrial discharge water in existence on or before July 22, 2001.

[2001 c 69 § 3.]

RCW 90.46.160
Industrial reuse water -- Permit.

(1) The permit to use industrial reuse water shall be the permit issued under chapter 90.48 RCW to the owner of the plant that is the source of the industrial process water, who may then distribute the water according to provisions in the permit governing the location, rate, water quality, and purpose. In cases where the department of ecology determines that a proposed use may pose a significant risk to public health, the department shall refer the permit application to the department of health for review and consultation.

(2) The owner of the industrial plant who obtains a permit under this section has the exclusive right to the use of any industrial reuse water generated from the plant and to the distribution of such water. Use and distribution of the water by the owner is exempt from the permit requirements of RCW 90.03.250, 90.03.380, 90.44.060, and 90.44.100.

(3) Nothing in this section affects any right to reuse industrial process water in existence on or before June 13, 2002.

[2002 c 329 § 6.]