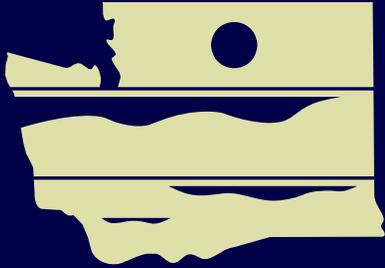


WASHINGTON STATE
DEPARTMENT OF
E C O L O G Y

April 23, 2008
Reclaimed Water
Rule Advisory Committee

Welcome
Review Agenda



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Focus: Task #1 Technical Standards Technical Advisory Panel

1. Source Control Recommendations
2. TAP Progress Update
3. Goal: Feedback to Ecology and to TAP

Source Control

- Industrial pretreatment
- Objective:
 - Protect the water quality for the end uses.
- Options considered
 - Federal and state law
 - Existing regulations and permit practices in WA state
 - Regulations from other states

FOCUS:

- Six recommendations
- Suggested language for rule

Recommendations

1. Use existing state and federal pretreatment requirements for POTWs.
2. Reference the prohibitions and restrictions in:
 - State waste discharge permit regulation
 - State hazardous waste regulation
3. Use same requirements for private utilities

Recommendations

4. Add additional requirements needed to protect the end use or uses.
 - a. On-going efforts to identify and control pollutants.
 - b. Notify Ecology of proposed discharges
 - c. Allow Ecology to establishing other conditions in permits. Caveat – don't create barriers.

Recommendations

5. Guidance needed (in addition to rule) for both state regulatory and utility staff

Provide technical assistance on the following:

- Monitoring
- Inspecting
- Resolving compliance issues

Recommendations

6. After RAC review, have Ecology pre-treatment experts review suggested language.

Suggested Language for Rule

Prior to distributing or using reclaimed water

(see handout)

Update - Source Water Discussion

- 💧 How should the state consider the different sources of water included in Ch. 90.46 RCW?

- 💧 A drop of sewage?
 - Gray water
 - Domestic wastewater
 - Municipal sewage

- 💧 Or not
 - Agricultural industrial wastewater
 - Industrial wastewater

Key Definitions

- 💧 (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.
 - Alternate term – domestic wastewater

Key Definitions

- 💧 (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.
- Alternate term – domestic reclaimed water?

Key Definitions

- 💧 (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.
 - When is greywater (or gray water) considered reclaimed water?

Key Definitions

- 💧 (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.
 - Often confused with industrial uses of the water.
 - No sewage or domestic human waste component.
 - May have animal waste or other pathogens.

Key Definitions

- 💧 (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.
 - A specific subset of industrial reuse water.
 - No human-waste (domestic wastewater) component.
 - May have animal waste or other pathogens.

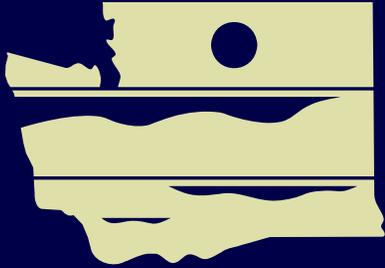
Highlights

- 💧 Goal - focus on final WQ – not source.
- 💧 Difficult - wide variety, long list, monitoring.
- 💧 Need to revisit after more work on standards.

- 💧 Special considerations for ind. wastewater
 - Need for standards - case-by-case?
 - No longer a wastewater?
 - Ch 90.46 RCW vs. Ch 90.48 RCW authority.
 - Rename -industrial process reclaimed water?

Consider Source Water Issues

- 💧 Pathogen standards – Task # 1 continued
- 💧 Clarifying permitting authority – Task # 4
- 💧 Definitions – Task # 5
- 💧 Revisit at future date



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Questions



Technical Advisory Panel

Progress to date

Reclaimed water intended for
human contact

Pathogen removal/inactivation

Reclaimed water intended for human contact

Regulatory approaches considered for the rule:¹

1. Specify a treatment technology
2. Specify a water quality or MCL for the treated water
3. Use indicator organisms to evaluate treatment
4. Specify a log removal/inactivation value

¹Limited to municipal sources; treatment levels relate directly to beneficial use

Treatment Technology combined with performance standards

<i>Advantages</i>	<i>Disadvantages</i>
Provides public health protection through the “multiple-barrier” approach	Doesn't allow for new innovative technologies
Easier to implement	May not be based on water quality or public health protection values
Consistent with existing practice	May be inflexible
Provides for regulatory consistency	Public may be concerned with operational upsets
Easy to understand	Public may be concerned with new technologies
Sustainable	Public may demand the highest level treatment or technology

Specify a water quality or MCL for the treated water

<i>Advantages</i>	<i>Disadvantages</i>
Allows flexibility for designer	Hard to measure all potential pathogens – Costly too
Calming for the public	Time lag in getting results
Water quality and health protection based	More demand to hold water during time delay
If successfully implemented, a “Gold Std.”	Lack of representative indicator organisms and what they mean
Consistent with water quality based approach	

Base treatment technique on indicator organisms

<i>Advantages</i>	<i>Disadvantages</i>
Easy to test for	Lack of representative indicators
Represent the level of treatment	May need more than one indicator
Represent the level of risk	Potential regrowth in distribution/storage
Performance based	Point of compliance
	Public perception of “finding” indicator organisms

Log removal/inactivation concepts

- Tertiary treatment should provide 5-log removal/inactivation of all three pathogen groups
- May need to vary log removal for each type: bacteria, virus, protozoa
- May be difficult dependent on influent concentration of contaminant measured

Log removal/inactivation concepts

(continued)

- A challenge study with an indicator organism could verify treatment efficiency
- Alternatively, other state acceptance (CA Title 22) or third party testing could be used
- Is there sufficient information to assign log removal values to various treatment processes?
- May be too little precise data to use in current rule, but a placeholder could be kept. Put into guidance?

Water Quality Monitoring Issues

- 💧 Difficult and expensive to measure pathogens
- 💧 Indicator organisms have advantage of low cost, simplicity, and history of acceptance
- 💧 Major disadvantage of indicators is that current ones may not protect public health or environment

Water Quality Monitoring Issues

(continued)

- 💧 Hard to find a contaminant that can be measured to verify design and still provide on-going monitoring
- 💧 One option to consider is a “suite” of indicators
- 💧 Issue of compliance “at all times” vs. 95%, etc.

TAP Recommendation #1

The TAP identified the need for a new scientific study to update the findings of the 1977 Pomona Virus study

Pomona Virus Study

- 💧 1970's research into 4 tertiary treatment systems
 1. Conventional filtration + disinfection
 2. Direct filtration + disinfection
 3. Carbon adsorption + disinfection
 4. Direct filtration + disinfection (nitrified feed)

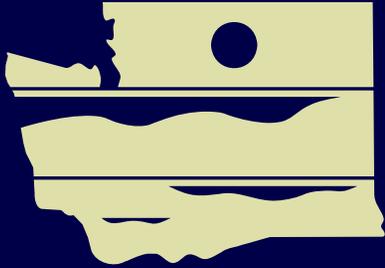
Why is the Pomona Study Important?

- 💧 First to prove virus removal by tertiary treatment
- 💧 It used a “seeding” or challenge study
- 💧 Established 5-log virus standard (CA Title 22)
 - Modal CT of 450 = 4 log virus inactivation
 - Combined with media filtration = 5-log total
- 💧 Pathway to California’s approval of alternative treatment and disinfection

TAP Recommendation #2

The RW rule should be based on a combination of regulatory approaches:

- 💧 Technology based standards
- 💧 Water quality based standards (including appropriate indicator organisms)
- 💧 Flexibility to allow the implementation of log-removal (percent reduction) criteria



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