

# Reclaimed Water Rulemaking and Select Case Studies

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# Overview

- How does Washington define reclaimed water?
- What has Washington been doing?
  - Statutory authority
  - Current standards
  - Existing systems
- What is the future of reclaimed water?
- Case studies



“Man, I don’t know...  
How thirsty are YOU?”

# What Is Reclaimed Water?

- A “new” basic water supply
- Derived directly from wastewater
- “Adequately” and “reliably” treated
- Suitable for a “beneficial” use
- **No longer wastewater!**



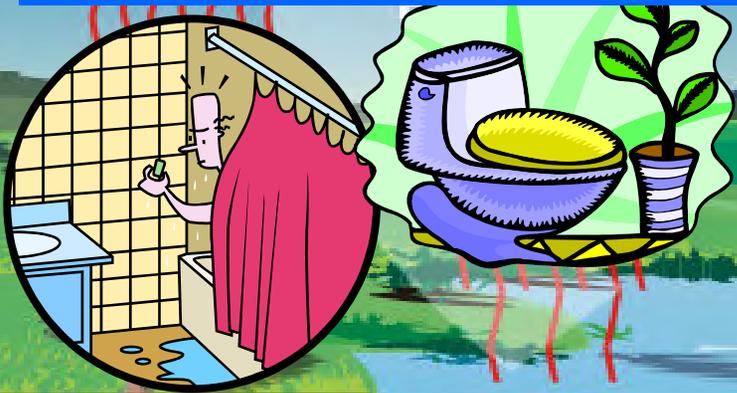
Sewer mains

Wastewater flushed

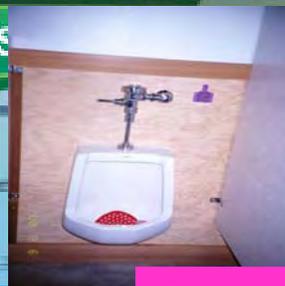


Reclaimed Water Treatment Plant

Water used for various domestic and commercial purposes



Beneficial reuse



Groundwater recharge

Environmental residence time

Water withdrawal from ground or surface water



# Program Development 1992 - 2008

# Washington's Beginning & Evolution

- Reclaimed Water Use Act of 1992
- Jointly administered by Ecology and State Health
  - Standards – 1997
  - Funded 4 demonstration projects – 1998 to 2000
  - Design Guidelines – 1998, revised 2006
  - Reclaimed Water Permit



# Washington State Standards

## Three sections

- Traditional uses:
  - irrigation, impoundments, commercial, industrial.
  - ground water recharge surface percolation.
  - streamflow augmentation.
- Wetlands
- Direct groundwater recharge



## Adequate and Reliable Treatment:

- A multiple-barrier approach
- Required treatment techniques, water quality, reliability, storage, monitoring, cross-connection control, signage and markings

# Four Basic Classes

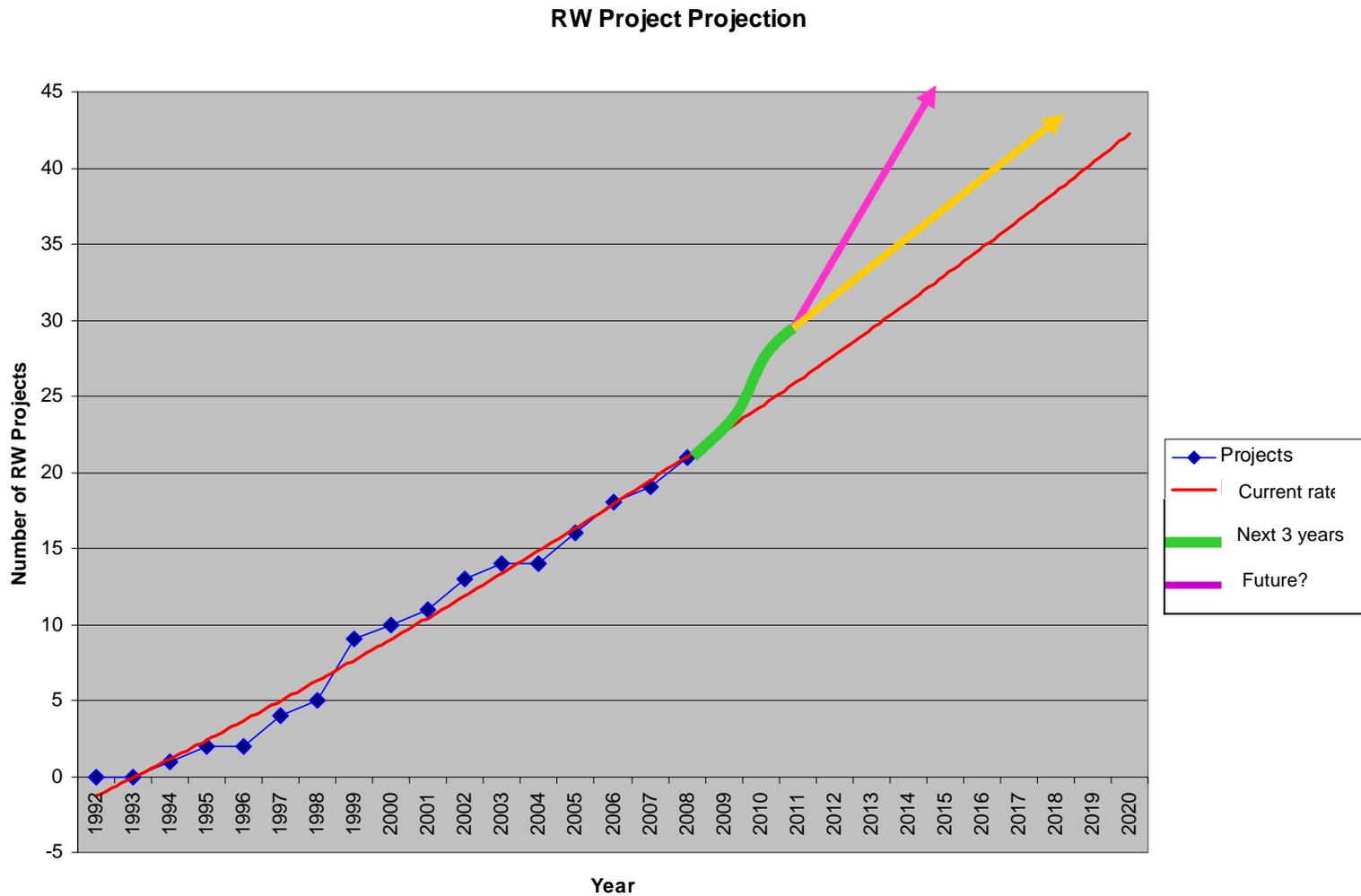
Class Level	Oxidized (Secondary) BOD/TSS mg/L	Coagulated	Filtered Turbidity (NTU)	Disinfection (Total Coliform/ 100 mL)	
				7-Day Median	Single Sample
A	30	<b>YES</b>	<b>2 NTU</b>	$\leq 2.2$	23
B	30	NO	NO	$\leq 2.2$	23
C	30	NO	NO	$\leq 23$	240
D	30	NO	NO	$\leq 240$	No standard

# The Reclaimed Water Permit

- One application
- One permit
- Governs:
  - Treatment technology
  - Water quality
  - Distribution and use
  - Exclusive right to the water



# Reclaimed Water Growth?

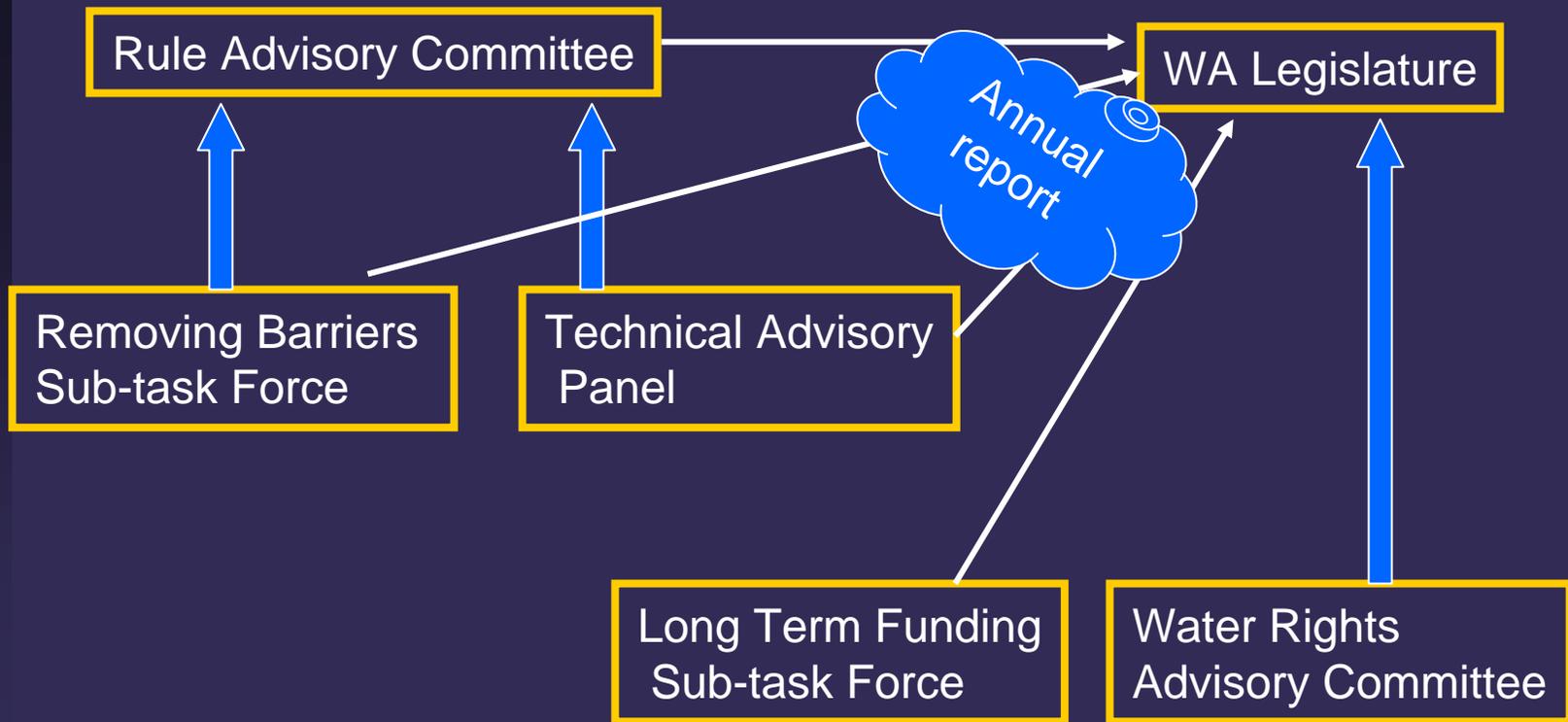


# Building the Future: 2008 and beyond

- 2006 Legislation – rule-making by 2010
- 2007 Legislation – DOH/ECY joint reports:
  - Status of rule making process - Ecology
  - Status of greywater rule making – Health
  - Removing barriers to use
  - Long-term funding
  - Water rights impairment
  - Incorporation into watershed & other planning documents



# Reclaimed Water Regulations by 2010



Follow progress on the web site:

<http://www.ecy.wa.gov/programs/wq/reclaim/index.html>

# Future Challenges

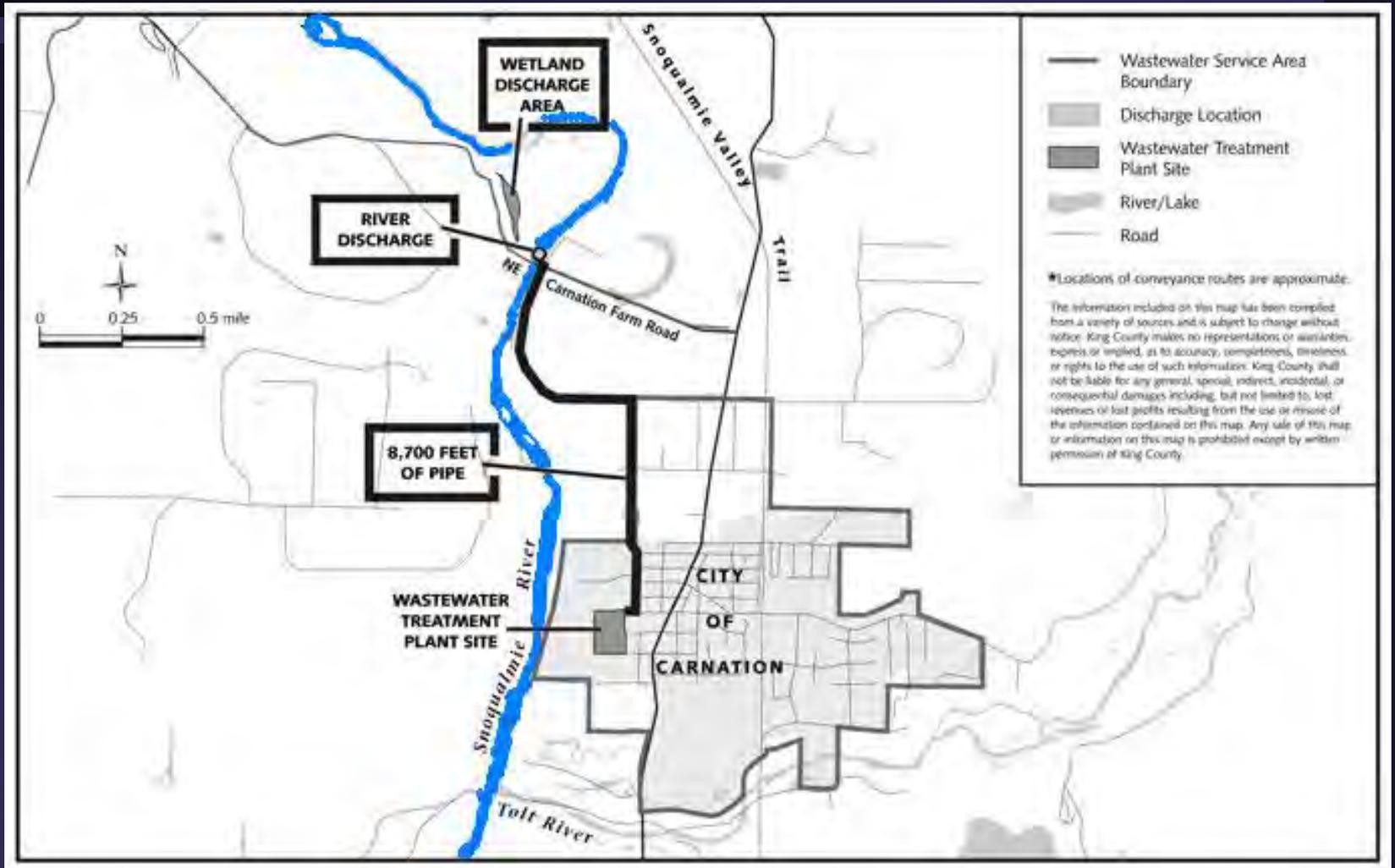
- Amending the law
- Adopting the rule
- Marketing reclaimed water as “new water”
- Developing funding sources
- Streamlining the permit process
- Creating guidance “a purple book”

# Case Studies

# Case Study – City of Carnation

- New vacuum sewage collection system and reclaimed water facility – Class A
- Replaces failing on-site septic systems (OSS)
- 632 connections (population = 1900)
- 0.4 MGD design capacity MBR + UV
- Primary beneficial use will be wetlands enhancement

# City of Carnation

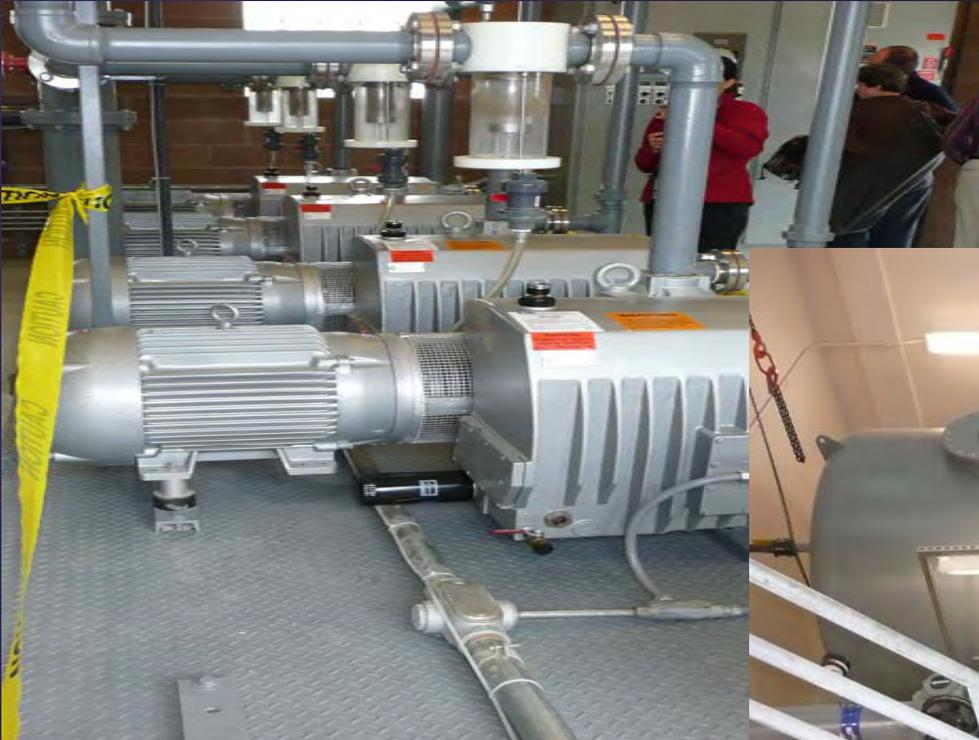


# City of Carnation – vacuum sewer

- 5 trunk lines – 11 miles of pipeline
- Advantages:
  - Flat service area - shallow trenches
  - Less impact to existing residential properties
  - Almost eliminates I & I

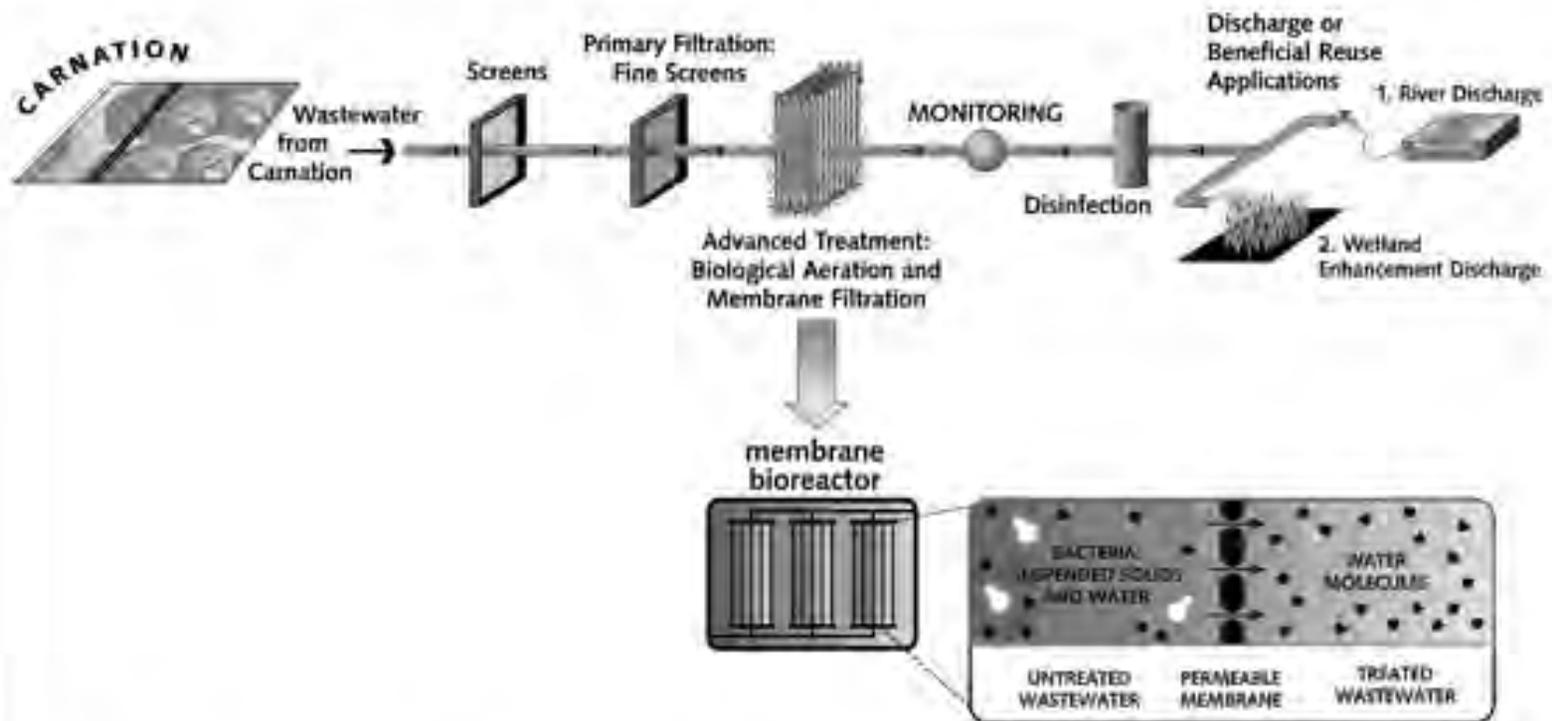


# City of Carnation



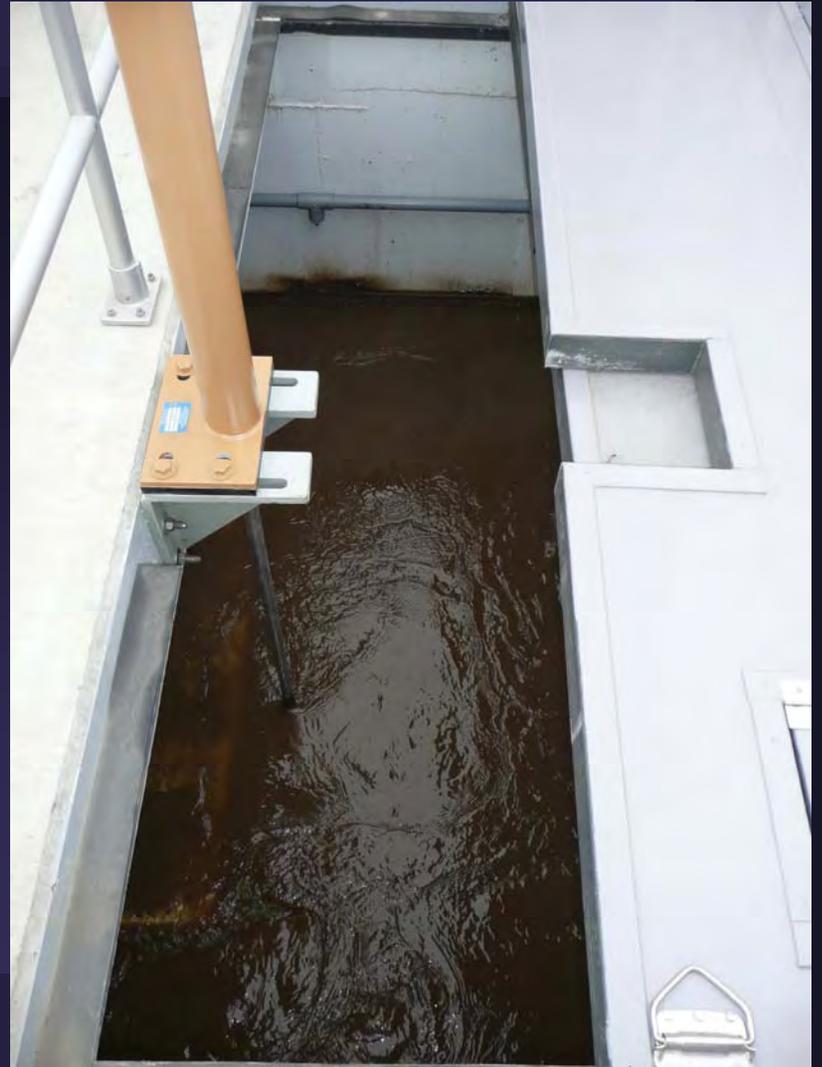
Plant dedication June 2 '08

# City of Carnation



**Carnation Wastewater Treatment Process**

# City of Carnation



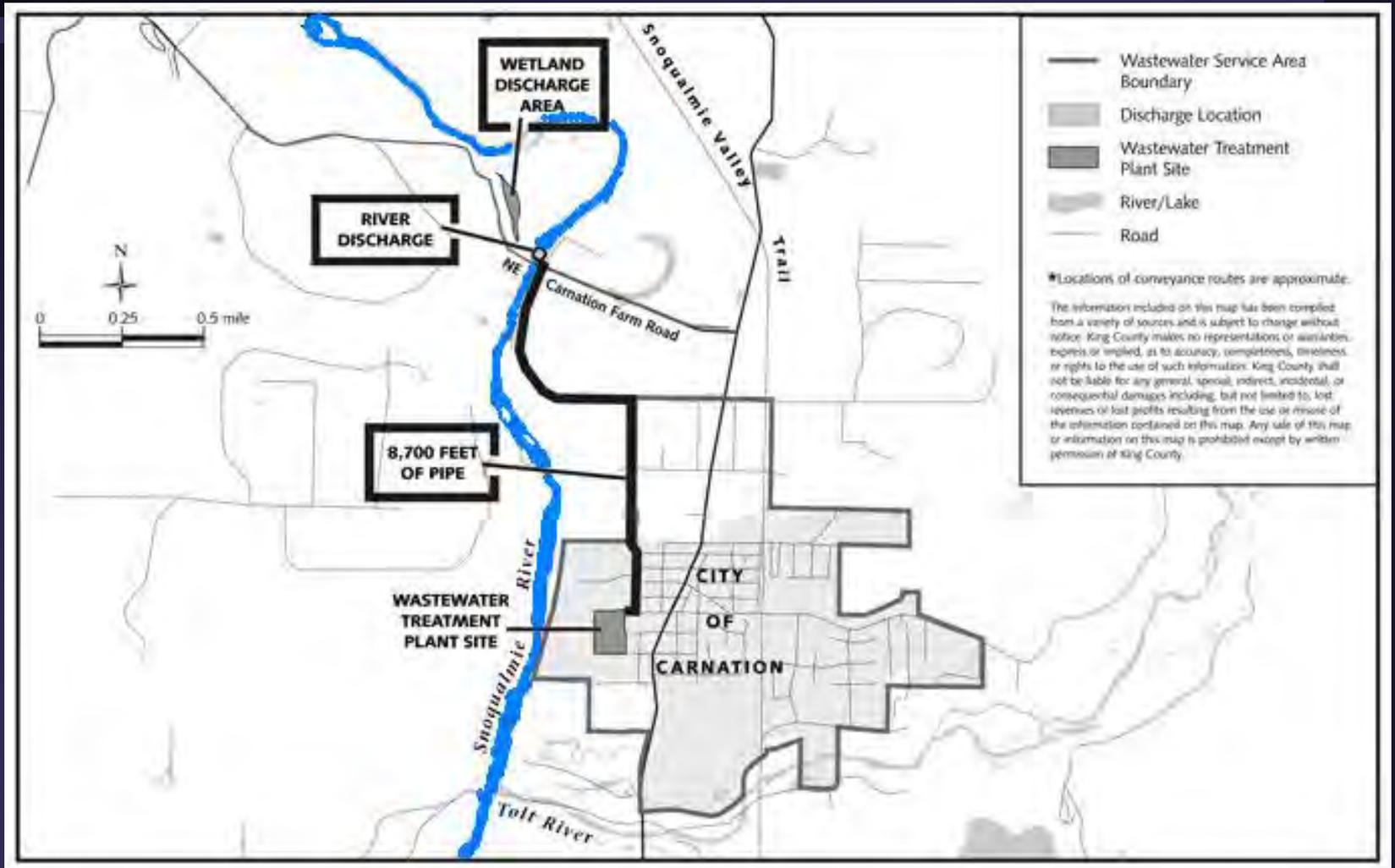
# City of Carnation



# Impairment Analysis

- Washington law requires no impairment of existing water rights
- Reclaimed water system will replace on-site septics (OSS)
- Dispersed into existing natural wetland, or
- New point discharge to river (backup)
- Evaporative and ET losses from the wetland are less than OSS
- Spatial impairment of 2.5 river miles - negligible

# City of Carnation



# City of Carnation



# Case Study – City of Sequim

- Current population = 5,300
- Expected to increase to 20,000 by 2025
- 16 inches annual rainfall
- Closed shellfish beds & citizen activism
- 1 of 4 “demonstration projects” – 1999
- Process includes equalization, oxidation ditch, anthracite filters, & low p, low i UV

# City of Sequim



# City of Sequim



# City of Sequim - expansion

- Existing plant capacity = 0.8 MGD
- Ph 1 – expand to 1.67 MGD
- Ph 2 – expand to 2.23 MGD
- Three secondary treatment options evaluated:
  - New activated sludge
  - Membrane bioreactor
  - Reconfigure existing process with MLE
- Fabric filters for advanced treatment
- UV replaced with low p/high output meeting NWRI guidelines

# City of Sequim



# City of Sequim

- Existing uses:
  - Urban plantings irrigation
  - Park features/toilet flushing
  - Field irrigation
  - Public works – dust control, flushing
  - Streamflow augmentation
  - Marine discharge

# City of Sequim



# City of Sequim

- Future uses:
  - DOT rest area
  - Groundwater recharge
  - Additional irrigation of public grounds

[www.ecy.wa.gov/programs/wq/reclaim/index.html](http://www.ecy.wa.gov/programs/wq/reclaim/index.html)

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