

King County's Wastewater Treatment System

2010 Census and Modeling Update Schedule

Presentation to MWPAAC

Engineering & Planning Subcommittee

January 19, 2011



King County

Department of Natural Resources and Parks
Wastewater Treatment Division

Today's Presentation

- Status of 2010 Census-based Population Forecasts
- Decennial Flow Monitoring Effort
- Modeling Work
- Anticipated Schedule for Updating Flow Projections

New Projections will Provide Necessary Information for:

- 2013 Conveyance System Improvements Update
- 2013 RWSP Update
- (Won't Affect the CSO Plan Update Occurring This Year)

Planning Wastewater Facilities

- Why

- To carry out WTD mission and vision
 - Mission: *We protect public health and enhance the environment by treating and reclaiming water, recycling solids, and generating energy*
 - Vision: *Creating resources from wastewater*
- Meet our contractual obligations
- Ensure economic development
- Prepare for and respond to changing conditions
- Meet or exceed regulations
- Identify and prepare for future needs to ensure infrastructure and capacity are available when needed

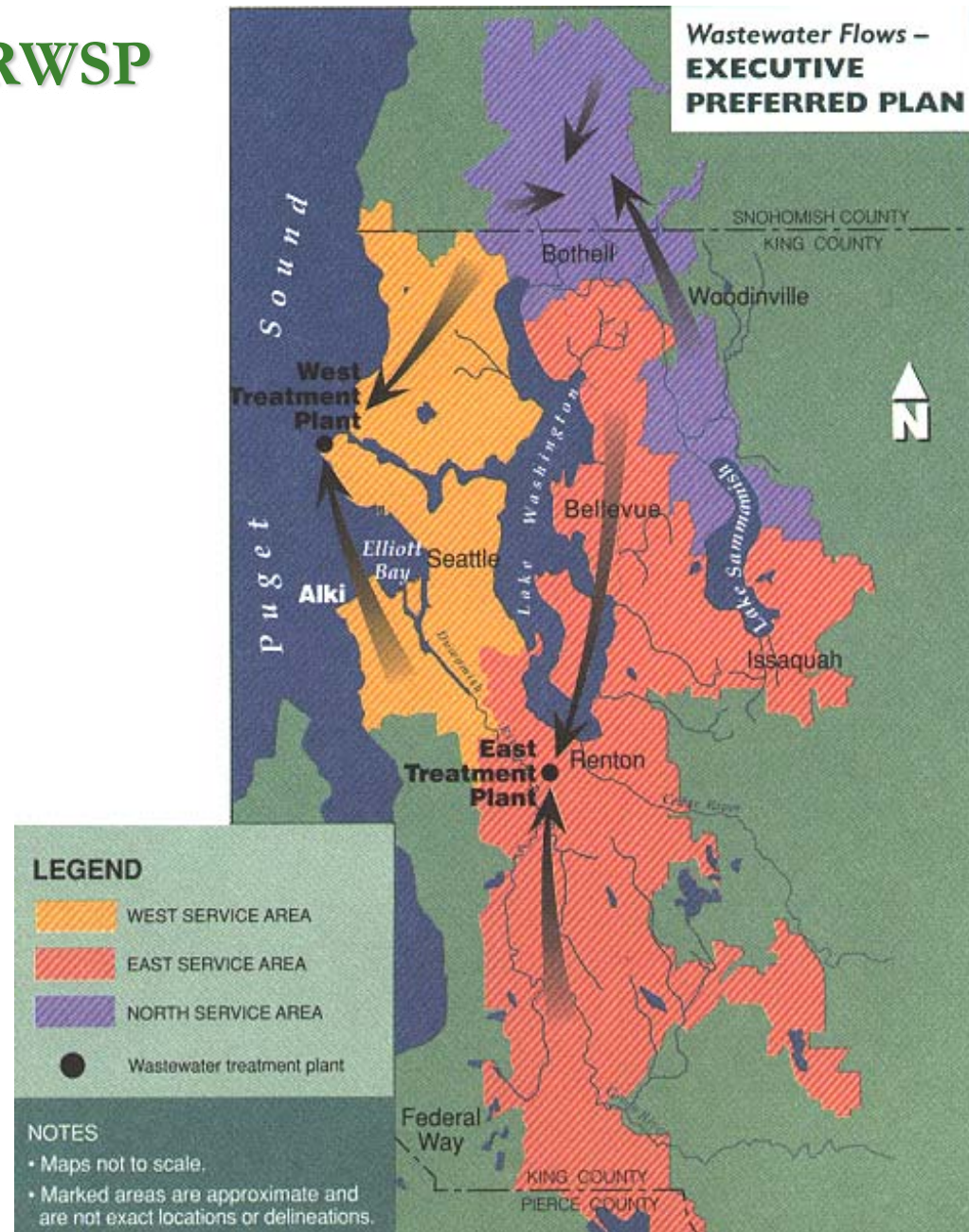
Planning Wastewater Facilities

■ How

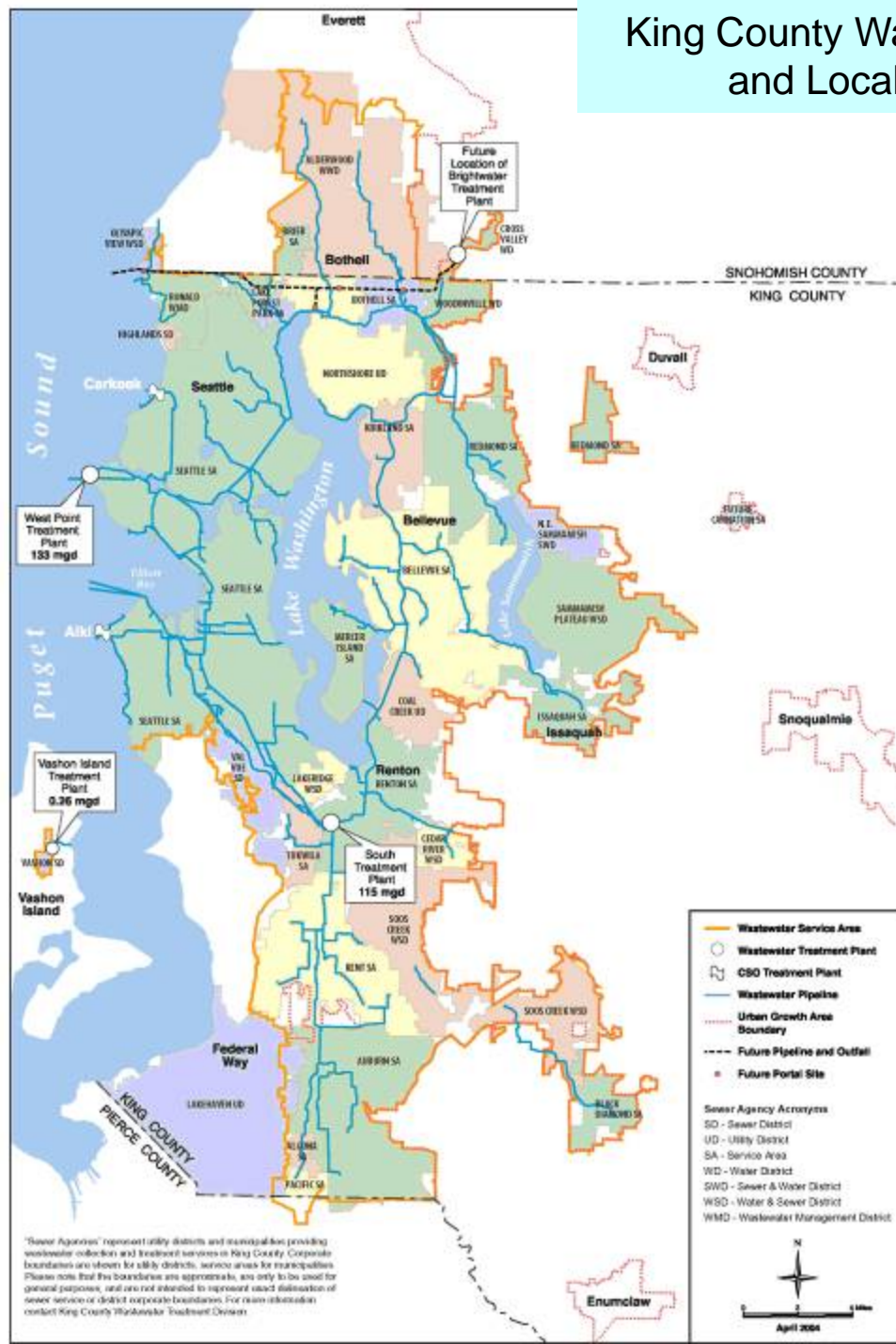
- ❑ Determine future needs based on forecasted population and employment growth and flow monitoring
- ❑ Determine future needs based on ongoing assessment of existing system
- ❑ Evaluate existing regulatory requirements and compliance
- ❑ Consider potential new regulations
- ❑ Evaluate the use of existing and new technologies
- ❑ Develop and analyze alternatives to meet future needs
- ❑ Develop and consider options and policy implications
- ❑ Evaluate risks of alternatives
- ❑ Involve regional partners, stakeholders, public in decision-making process

November 1999 - Adopted RWSP

- Build 36-mgd North Plant (Brightwater) by 2010
- South Plant expansion from 115 mgd to 135 mgd in 2029
- Refine planning for system-wide conveyance
- Implement long-term measures to reduce I/I
- Implement 22 major CSO control projects
- Produce additional reclaimed water
- Continue biosolids recycling
- Develop capacity charge policies to implement growth pays for growth



King County Wastewater Service Area and Local Sewer Agencies



"Sewer Agencies" represent utility districts and municipalities providing wastewater collection and treatment services in King County. Corporate boundaries are shown for utility districts, service areas for municipalities. Please note that the boundaries are approximate, and are only to be used for general purposes, and are not intended to represent exact delineation of sewer service or district corporate boundaries. For more information contact King County Wastewater Treatment Division.

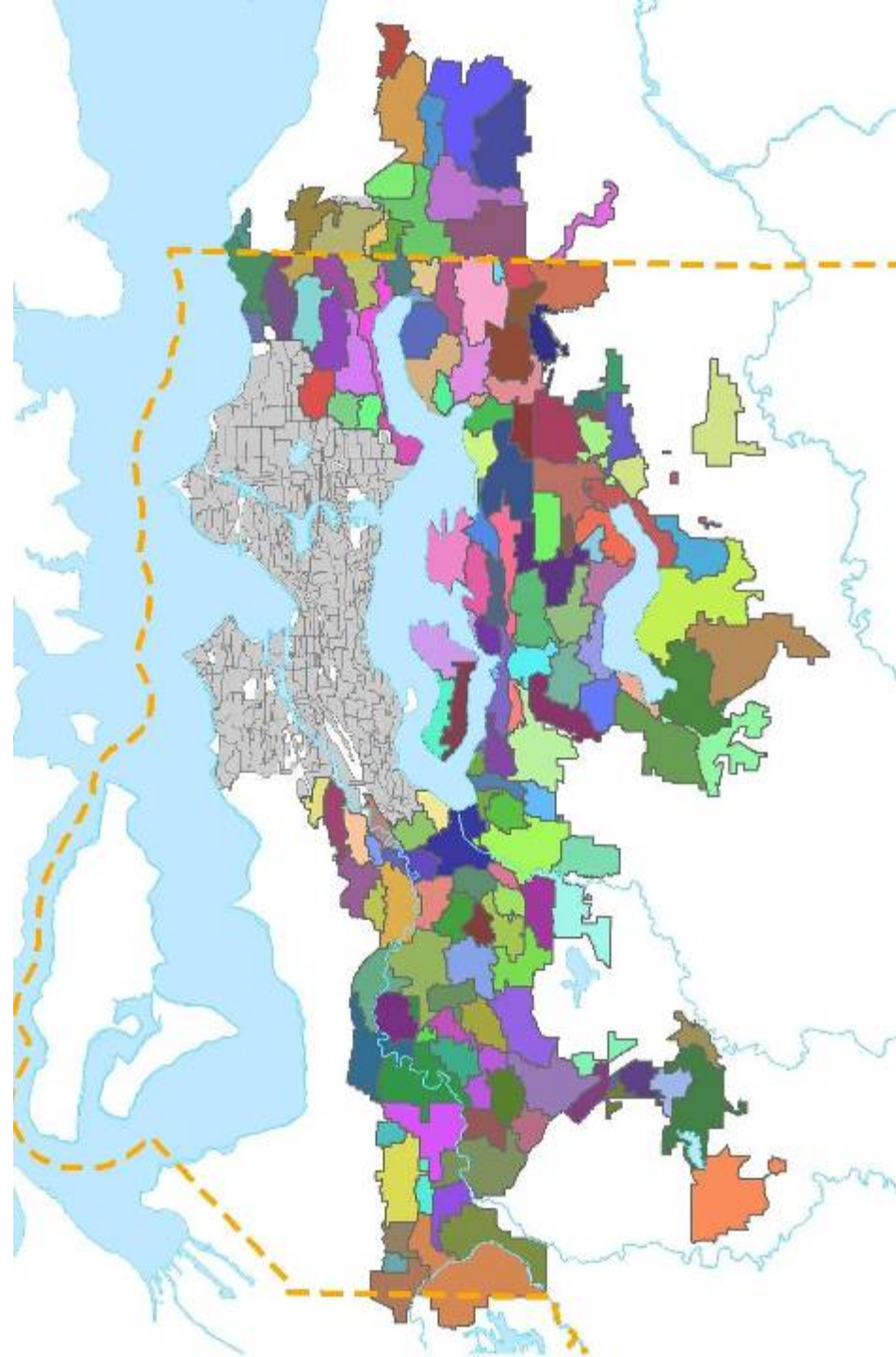
Previous Monitoring & Modeling

150 Model Basins in
Separated System

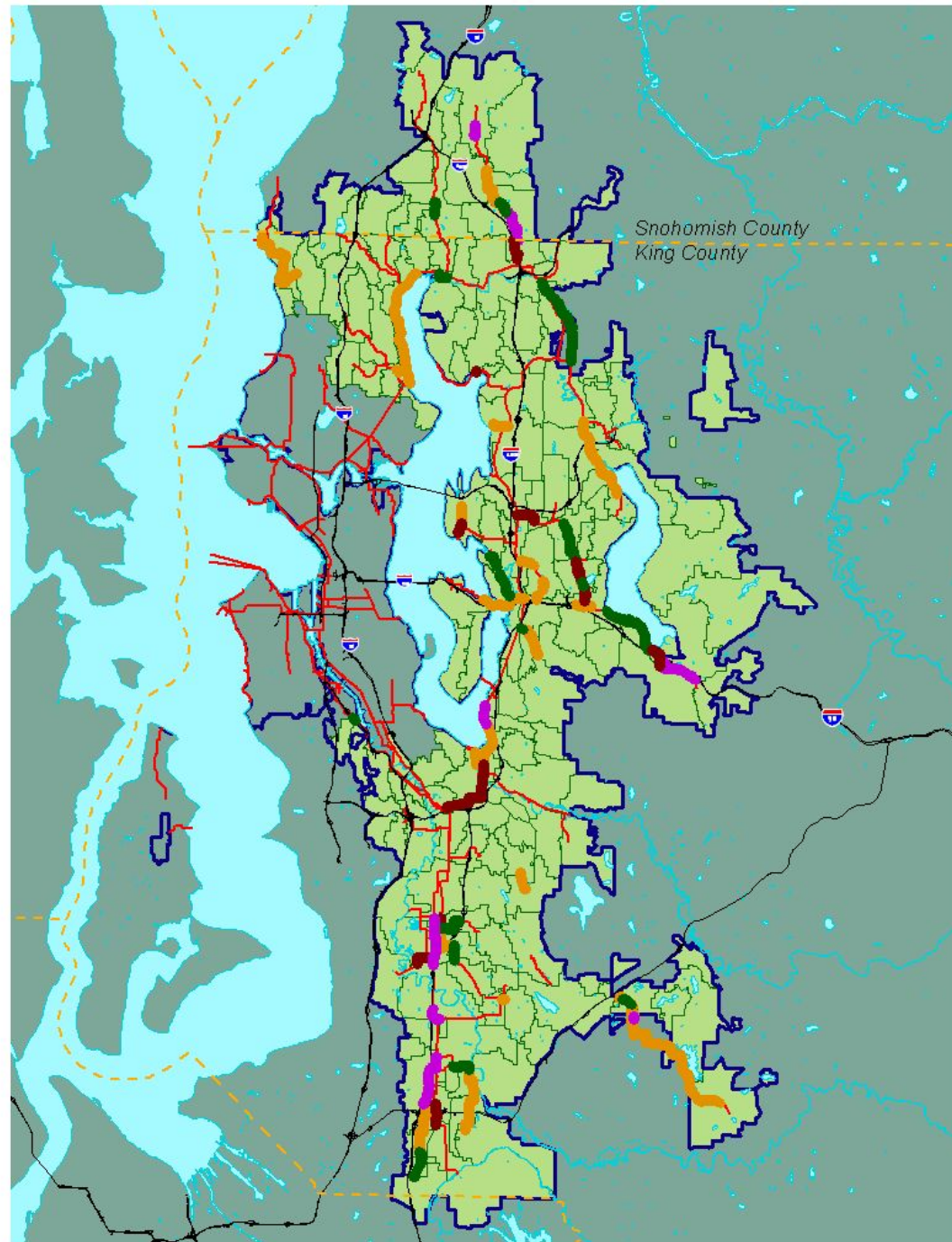
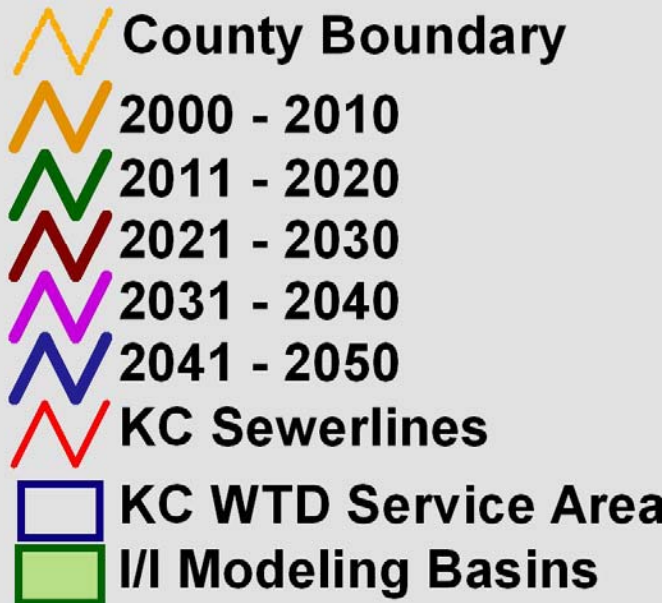
800 Flow Monitors for 2 wet
seasons: 2000–01; 2001-02

Model Calibration in I/I
Program using MOUSE

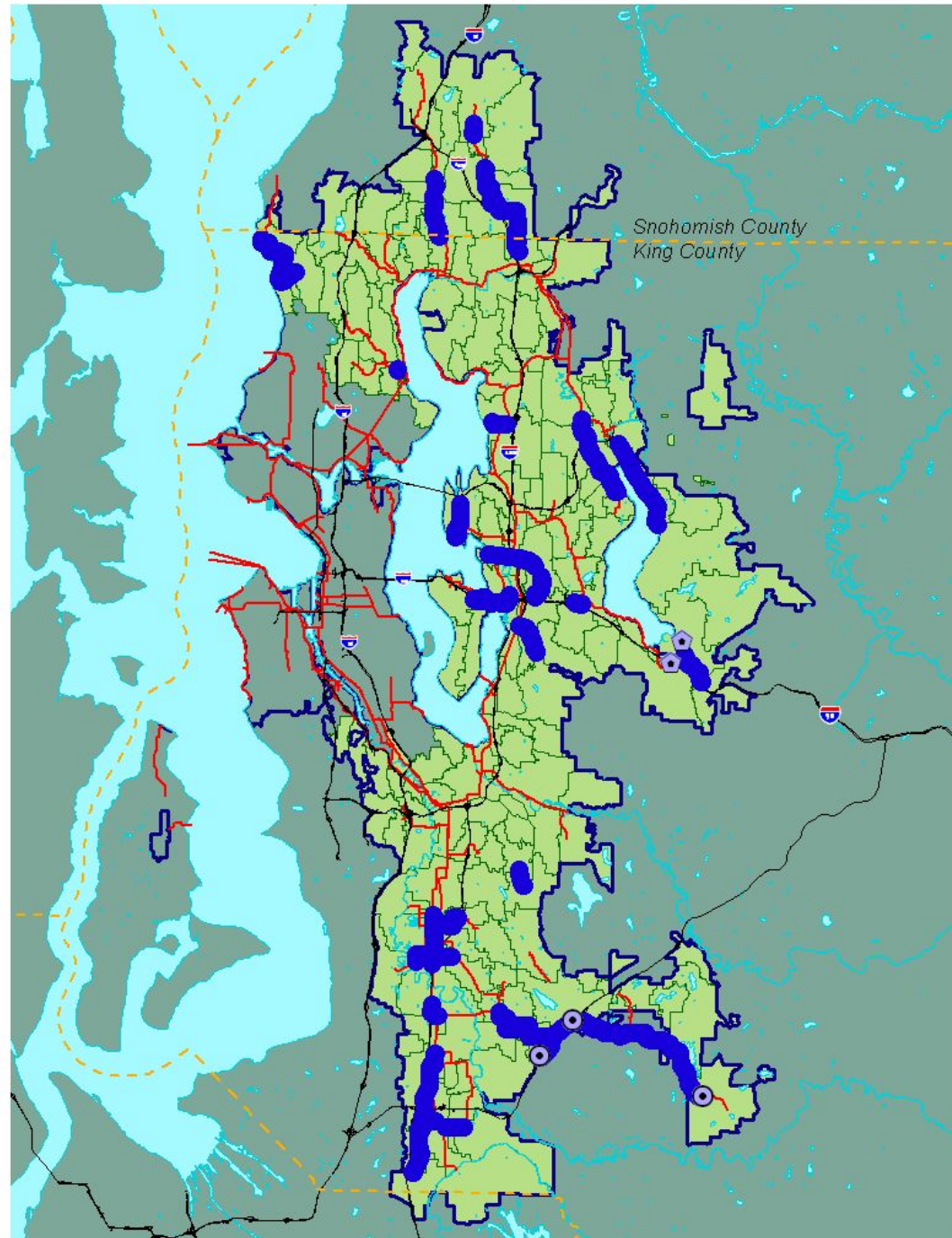
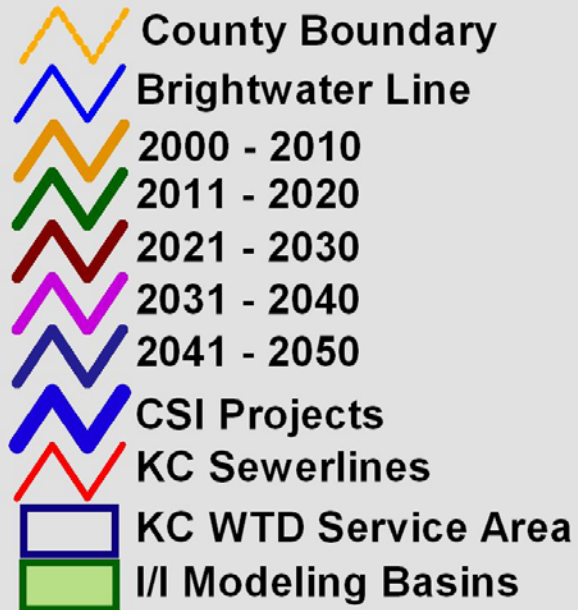
320 Model Basins in
Combined System



CSI Facility Needs (20-Yr Criteria)



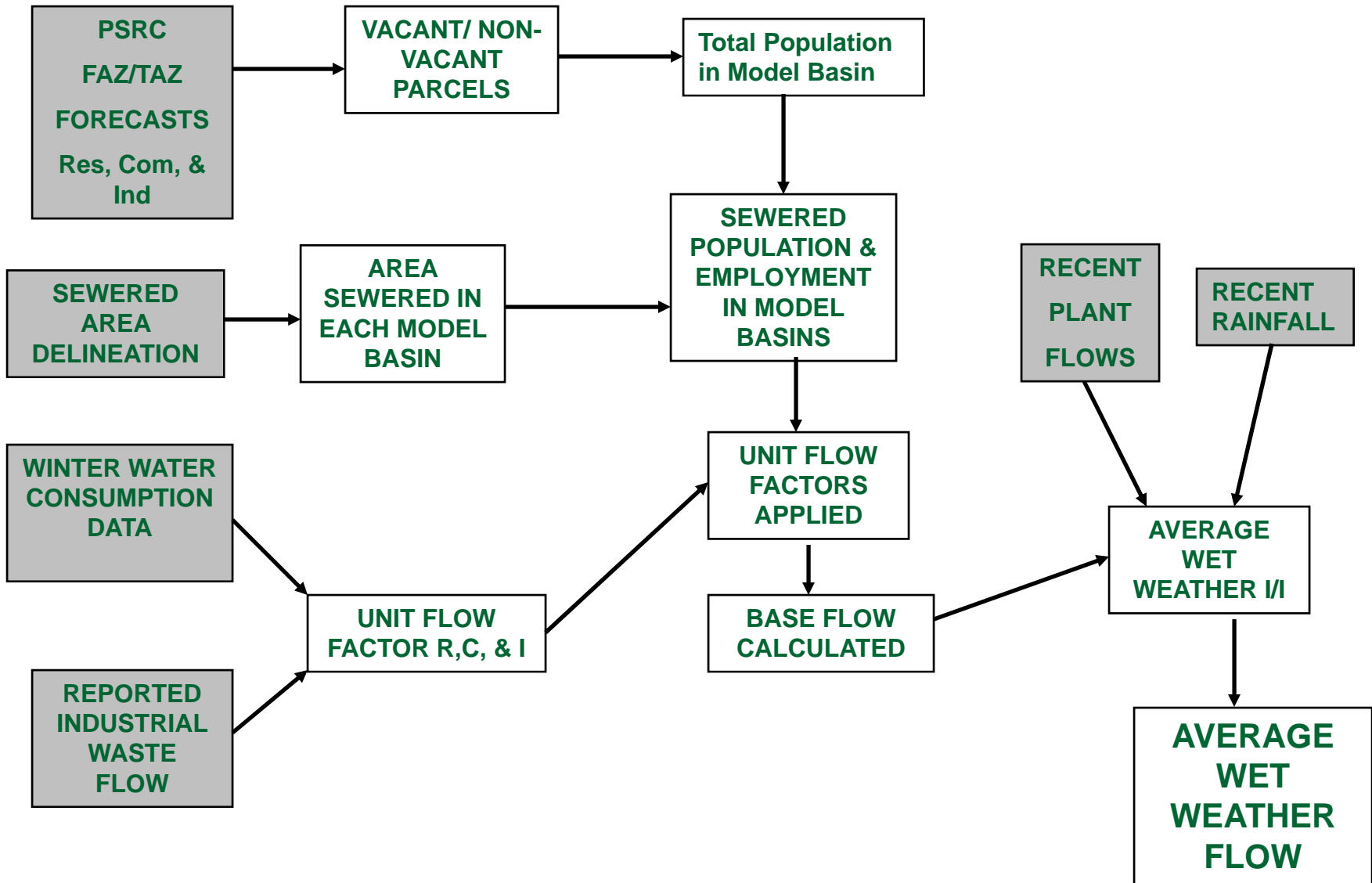
Proposed CSI Improvements (20-Yr Criteria)



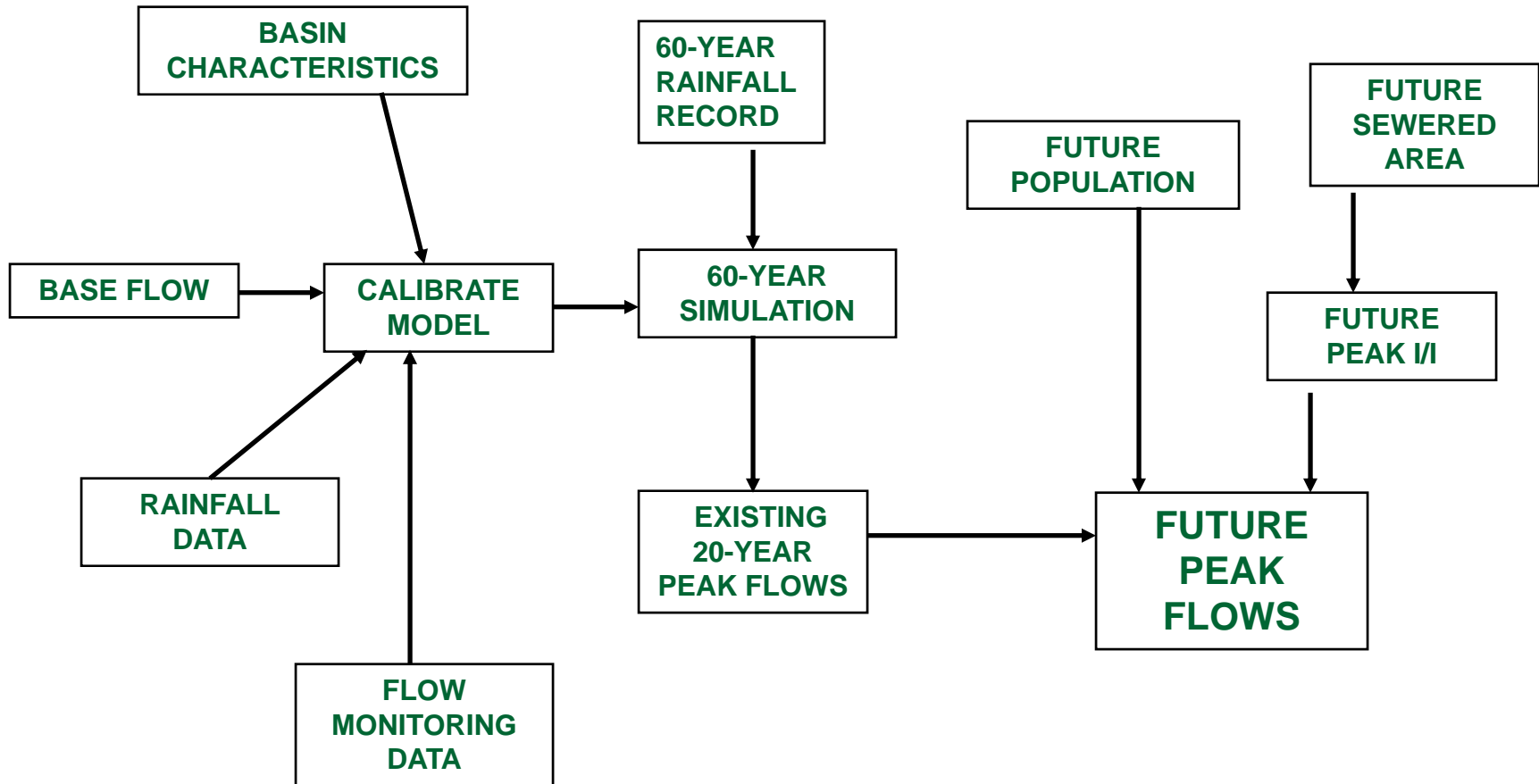
Forecasting Wastewater Demand

- Factors used in forecasting demand and wastewater flow projections
 - Flow monitoring and facilities inspection
 - PSRC's population and employment projections
 - Water conservation assumptions
 - Rainfall data
 - Comprehensive plans of component agencies
 - Base residential, industrial, commercial wastewater volumes
 - I/I volumes
 - The rate of septic conversions to sewer area

Average Wet Weather Flow Projections



Peak Flow Projections



Sizing Treatment Facilities

- Average Wet Weather Flow (AWWF) – nominal plant rating only
- Treatment Plant Equipment and Processes are Sized on the Pertinent Flow and Loading
- Hydraulic Capacity – Peak hourly flow
- Primaries – Peak hourly, Peak daily flow
- Secondary – Peak day & week, Peak 3 weeks
- Digesters – Peak 3 weeks

Sizing Conveyance Facilities

- 20-year Peak hourly flow

Status of 2010 Census-based Population Forecasts from PSRC

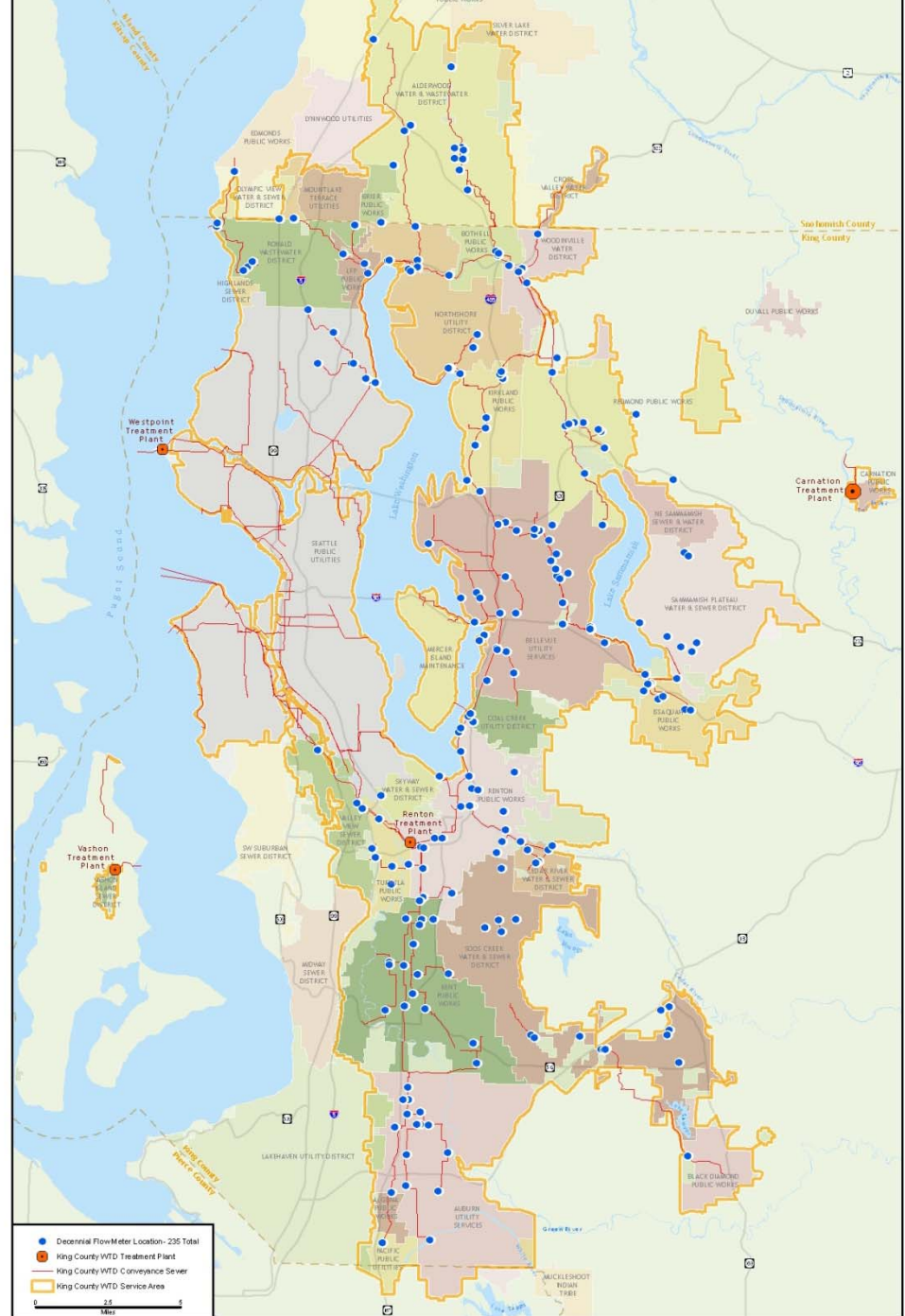
- PSRC using new model – UrbanSim
- Expect population forecasts based on the 2010 census in late 2012 or early 2013.

Schedule for Flow Projections

- Decennial Flow Monitoring – 235 meters: Sept. 2009 – May 2011
- Calibrate model for 150 model basins: May 2011 – November 2012
- Estimate Peak 20-year flows in all parts of conveyance system: December 1012.
- Evaluate water usage for 2010 population: Early 2013.
- Establish new flow planning assumptions: Early 2013
- Develop new flow projections: May 2013

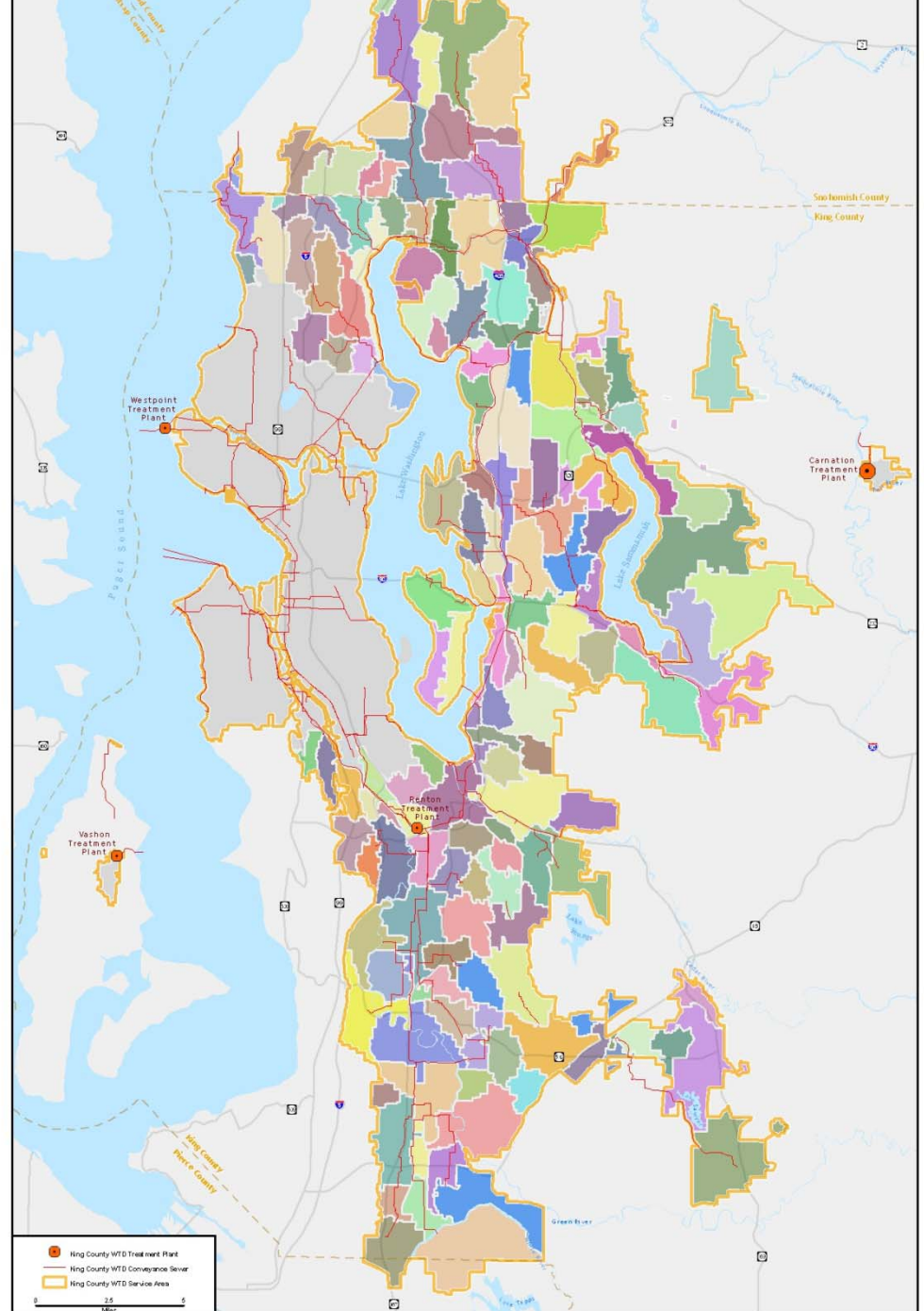
Decennial Flow Meter Locations

- 235 meters
- 2 wet seasons plus one dry season
- 9/09 – 5/11



Model Basins

- 150 Basins
- Separated System



Schedule for CSI and RWSP Updates

- Determine Wastewater Treatment Capacity Needs – 2nd Qtr 2013
- Determine Conveyance system capacity needs – 2nd Qtr 2013
- CSI Update – December 2013
- RWSP Update – December 2013

Questions / Discussion

For more information contact:

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