

Regional Wastewater Services Plan and Conveyance System Improvement Program Planning Assumptions



PRESENTED TO:
ENGINEERING AND PLANNING SUBCOMMITTEE OF
THE METROPOLITAN WATER POLLUTION
ABATEMENT ADVISORY COMMITTEE
AUGUST 1, 2013



King County

Department of Natural Resources and Parks
Wastewater Treatment Division

Schedule for Briefings with E&P



Date	Planned Topic
May 2, 2013 COMPLETED	Overview of process to update planning assumptions
June 6, 2013 COMPLETED	Future population, planning horizon, and water conservation assumptions
August 1, 2013	Sewered area growth rate and average wet-weather I/I degradation rate
September 5, 2013	Follow-up from May 2, June 6, and August 1 discussions
October 3, 2013	Peak I/I and new system I/I degradation rate
November 7, 2013	Follow-up from October 3 and other meetings as needed

Today's Presentation



- Discussion of WTD recommended updates to planning assumptions including:
 - Sewered Area Growth Rate
 - Average Wet Weather Flow (AWWF) at Treatment Plants
 - I/I degradation rate associated with AWWF
- Next steps

Update of Planning Assumptions

Regional Conveyance System
Needs Assessment

Conveyance System Improvement
Project Identification

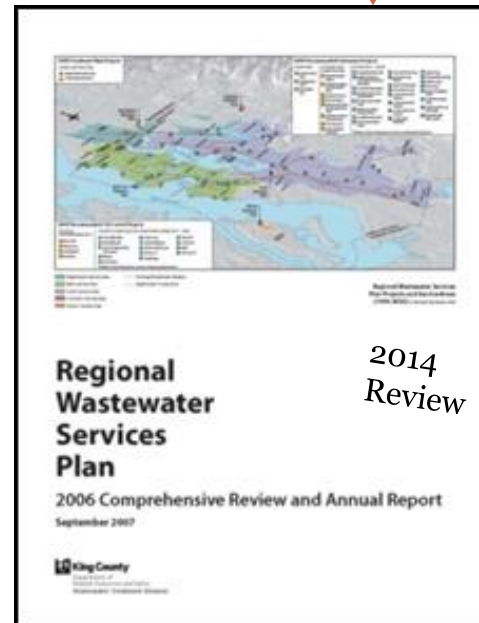
Prioritize Projects and Update
Cost Estimates

Conveyance System Improvement
Program



**2015
Update**

Treatment Plant Flow Projections



*2014
Review*

Review of RWSP
Programs &
Policies

Review of Asset
Management
Assumptions

Review of
Technology
& Regulatory
Trends

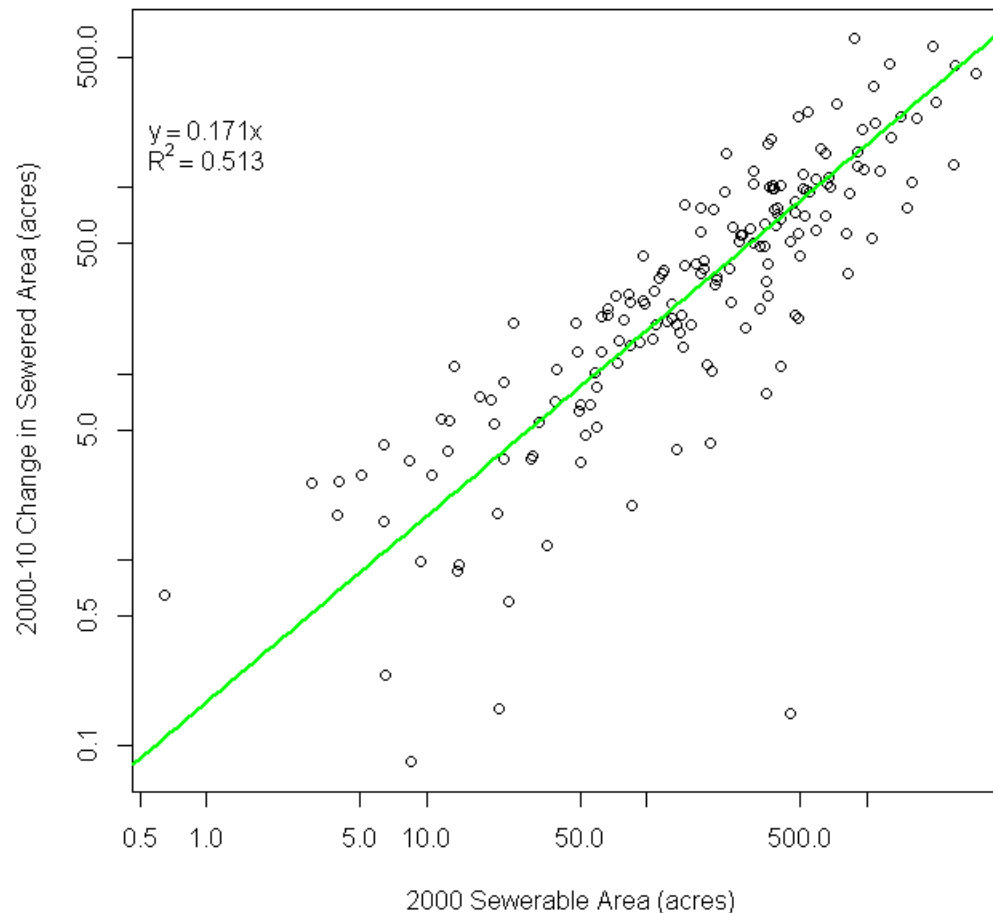
Assumption: Sewered Area Growth Rate



Previous Assumption: The current planning assumption is that 90 percent of the unsewered area (in year 2000) with potential for sewers will be sewered by 2030 and that 100 percent of this area will be sewered by 2050.

Analysis: Correlations between changes in sewered area, by modeling basin, between 2000 and 2010.

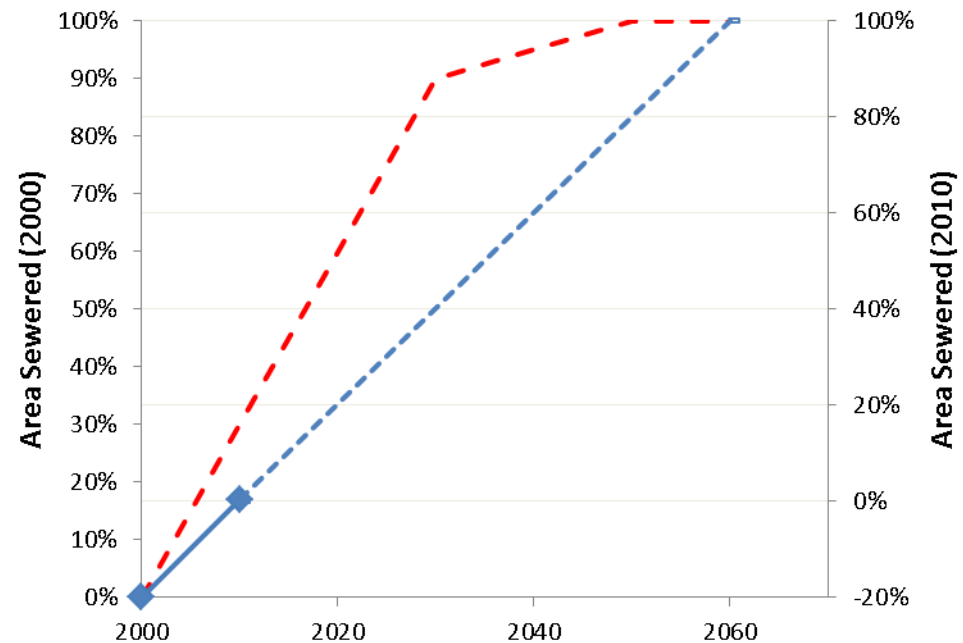
2000 – 2010 Change in Sewered Area



Sewered Area Growth Assumption



Analysis: 17% of the unsewered area was sewered between 2000 and 2010.



Proposed Assumption: Sewered Area will continue to grow at a constant rate until service area is fully sewered in 2060.

Assumption: I/I Degradation

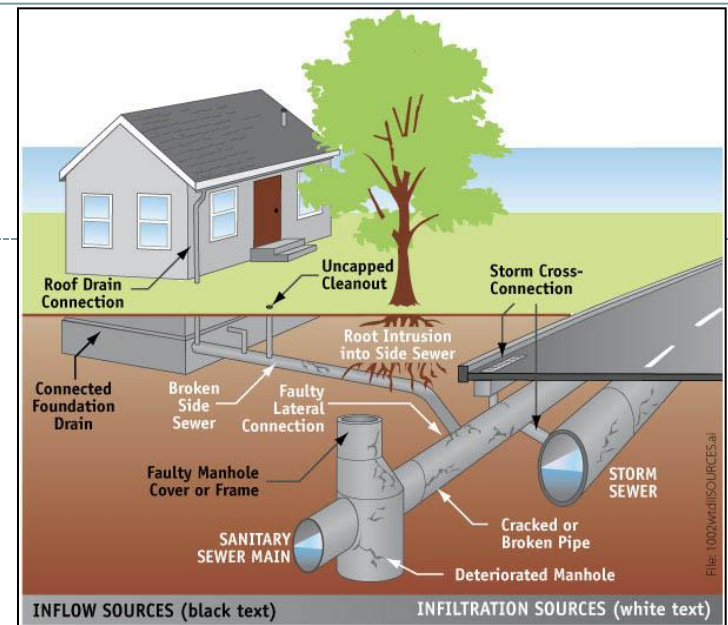


Previous Assumption:

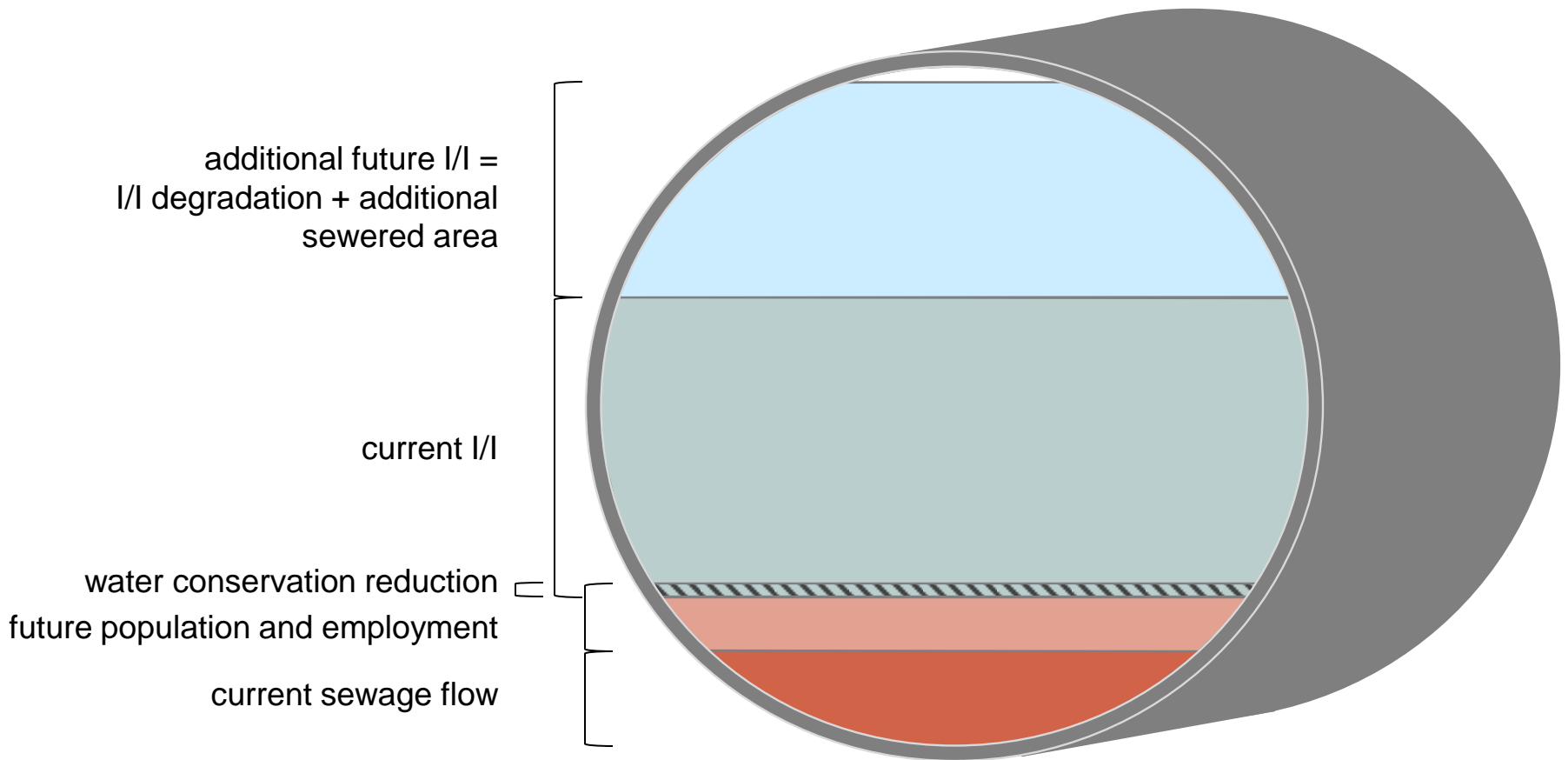
WTD assumes that I/I degradation starting in 2000 would be 7 percent per decade, with a limit of 28 percent over a 40-year period.

Applied to: Peak and Average I/I rates

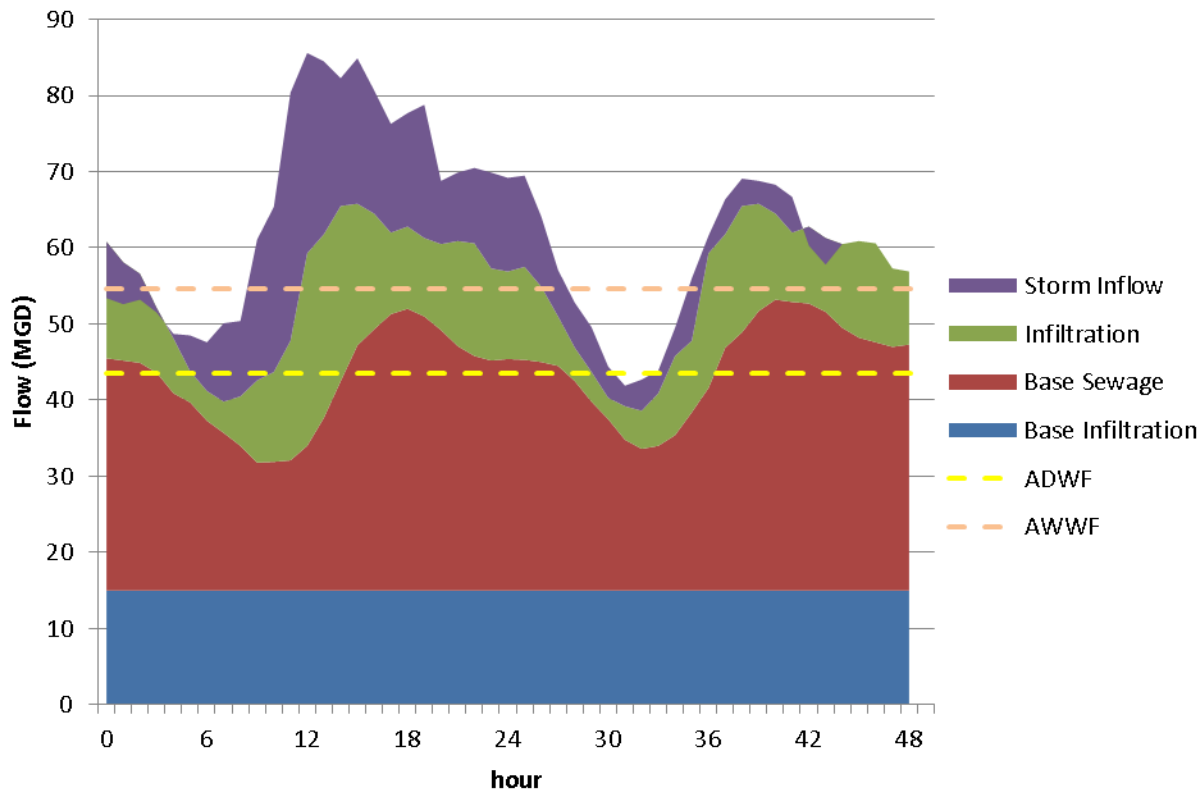
Process to update: Evaluate both Average Wet Weather I/I and Peak I/I. Compare previously documented I/I volumes with new DFM and other data from modeling basins and at treatment plants.



Components of Future Flows



Components of Wet Weather Flows



- Treatment Plants must accommodate peak flows
- AWW I/I includes base infiltration, wet weather infiltration, and storm inflow
- Storm inflow has significant effect on peak flow rates, but much less on AWWF, as storms are averaged over wet season (November – April)

AWWF I/I Degradation

(separated system only)



AWWF is used as an indicator of when we need additional treatment plant capacity.

$$\text{AWWF} = \text{Base Sewage} + \text{AWW I/I}$$

Future Projection:

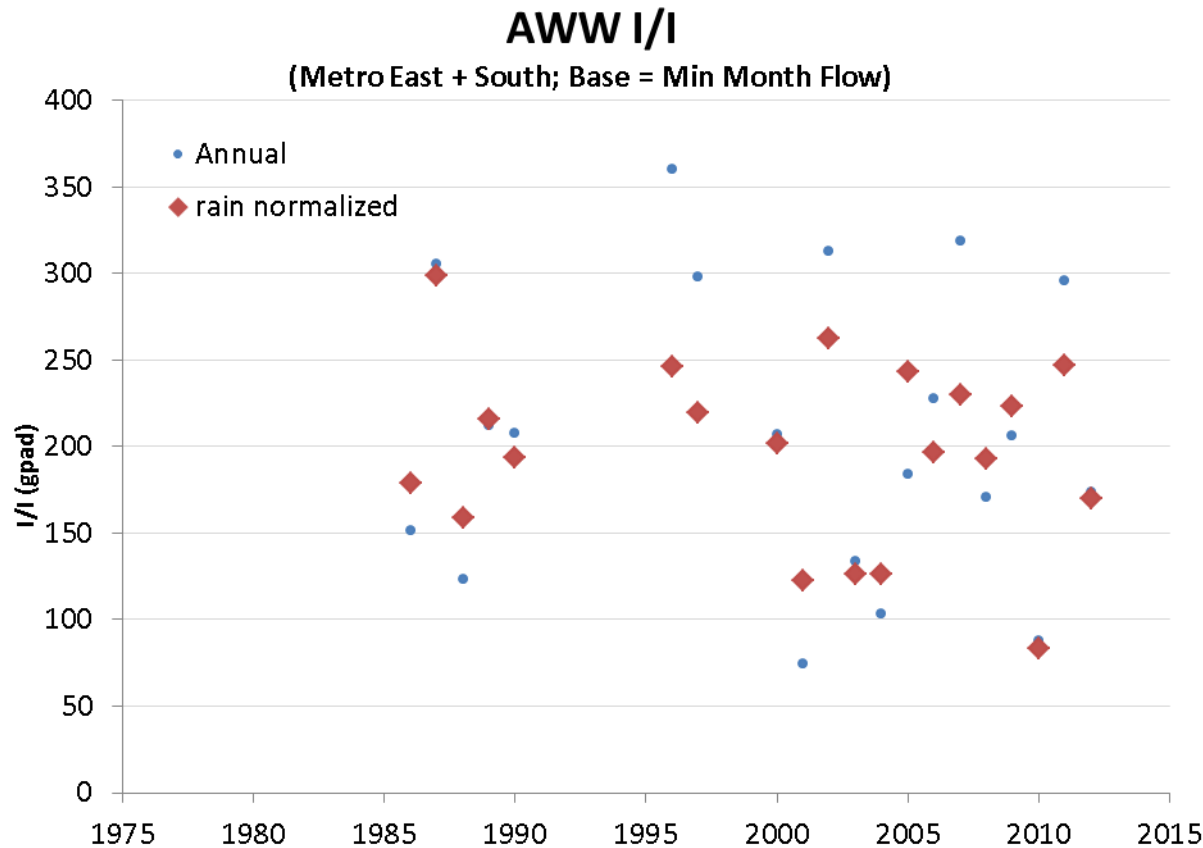
- Base Sewage – population, employment growth
- AWW I/I – Current AWW I/I, I/I degradation factor

Methodology



- Used South Treatment Plant flows (long record, all separated system)
- Removed flow transfers (York pump station, Allentown diversion)
- Normalize for size of service area
- Normalize for variations in rainfall:
 - AWWF (November – April)

South TP Average Wet Weather I/I



- Plot excludes base infiltration
- No discernible trend in AWW I/I rates
- Recommendation: No AWW I/I degradation factor

* Includes Interurban + Tukwila North

Discussion



- Less infiltration in new service areas may be offsetting degradation of existing system
- AWW I/I may not be sensitive to system degradation
 - due to 6 month averaging time

Next Meeting/Contacts



- Follow-up from May 2, June 6, and August 1 discussions.
- For questions on RWSP Comprehensive Review contact:
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- For questions on CSI Program Update contact:
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