

Regional Wastewater Services Plan

Annual Report

December 2000



KING COUNTY

Department of Natural Resources
Wastewater Treatment Division

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Purpose

In November 1999, the King County Council adopted Ordinance 13680, which comprehensively updated King County's Comprehensive Water Pollution Abatement plan. This update, termed the Regional Wastewater Services Plan, describes a 30-year capital improvement program designed to provide wastewater capacity for this region's rapidly growing population and protect its aquatic resources.

In December, the Council adopted the RWSP Operational Master Plan (OMP), which explains how King County will implement the RWSP as established by the policies in Ordinance 13680. This report, like the OMP, describes work under the seven main categories of the RWSP, including treatment, conveyance, infiltration and inflow, combined sewer overflows, biosolids, water reuse, and financing. The purpose of this report is to summarize, for each element, the progress made in implementing the RWSP in the year 2000. It also anticipates the work that will be done in 2001.

This annual report, together with a semiannual report and briefing provided to the RWQC last June, satisfies the RWSP annual reporting requirement as required by Ordinance 13680.

Treatment improvements

The main body of work in this category was geared toward finding appropriate sites for the new Brightwater Treatment Plant, its conveyance facilities, and its marine outfall. In particular, the Brightwater team focused on developing a set of site selection criteria for use in narrowing the number of suitable sites. The development of the siting criteria was guided by Ordinance 13680, which required King County to develop a comprehensive public involvement program to seek public input about the siting criteria and the screening process. The Ordinance also required that the King County Executive establish a committee to aid in siting the Brightwater facilities. Each component of the required public process is summarized below, followed by a summary of the expected site narrowing process.

Developing the site selection criteria

Several public involvement efforts were carried out to assist in the development of the policy siting criteria. During April, May, and June, Brightwater staff and consultants conducted interviews with over 100 regional and community leaders in King and Snohomish Counties. The interviews provided a forum for discussing our proposed siting process and the development of a siting advisory committee.¹ In addition, three open houses were held on June 13, 14, and 15 to educate the public about the existing wastewater system and seek their involvement in the siting process and the development of site selection criteria for the new plant, its conveyance facilities, and marine outfall.² Time was also spent discussing the values, issues and concerns of the communities in the approximate site selection area.

¹ See Appendix for *Summary of Interviews with Community Leaders*; King County DNR; May 2000

² See Appendix for *Summary of Introductory Open Houses – Bothell, Mill Creek & Shoreline*; King County DNR; June 2000

Other public involvement efforts were implemented this year as well.

- The Metropolitan Water Pollution Abatement Advisory Committee assisted in the review and refinement of the site selection criteria through the establishment of an eight-member technical review committee and review by the entire MWPAAC membership. A copy of their letter of support is included in the Appendix
- A stakeholder workshop was held in August 2000, which allowed representatives from environmental groups and federal and state regulatory agencies as well as King and Snohomish county staff to have the opportunity to discuss, review, and refine the policy siting criteria
- Two newsletters were distributed to about five thousand recipients, articles were posted in the local media, information was posted in public areas, a web site was developed (<http://dnr.metrokc.gov/wtd/brightwater>), and staff participated in 15 briefings and speaker's bureau presentations
- The *Final Public Improvement Program* plan was released in August. The plan was developed to outline a long-term approach to public involvement for the Brightwater siting process. A copy of the plan is included in the Appendix

Siting Advisory Committee appointed

In June 2000, King County Executive Ron Sims and Snohomish County Executive Bob Drewel appointed members to a Siting Advisory Committee (SAC) of regional leaders to advise them on siting the new regional wastewater treatment facility, conveyance system and marine outfall. Members include representatives from nearly every jurisdiction in the approximate site selection area, two tribal governments, three utility districts, and eight organizations representing environmental, business and labor interests. To date, the committee has met five times this year (June 22, July 20 & 27, September 14, and October 12), focusing their efforts on developing site selection criteria. The site selection criteria, termed "policy siting criteria," were unanimously approved by the SAC and were submitted to the executives on September 21 along with a letter of support (included in the Appendix). The committee's future work will involve supporting and participating in public involvement efforts and project workshops that will narrow the number of potential sites during the 3-year siting process and advised King County on the narrowing process.

The site narrowing process

The narrowing process will begin by screening all potential sites based on engineering and environmental constraints. The constraints evaluate factors that, if present, would seriously limit construction of wastewater facilities. Examples of environmental and engineering constraints would be minimum site size, steep slopes over much of the site, protected area designations, or areas within a 100-year floodplain. The remaining sites will then be screened using the policy siting criteria. Examples of issues addressed by these criteria include:

- technical factors such as site size, shape, and topography
- environmental concerns such as endangered species and protection of wetlands

- financial factors such as cost for acquisition, operations, and maintenance
- community concerns such as traffic, cultural resources, providing benefit to neighboring communities and being compatible with surrounding land uses

Schedule for 2001

The site selection process is on schedule. The policy siting criteria have been developed and the King County Council is currently reviewing them. With Council approval of the policy siting criteria in December 2000 as anticipated, the siting process will be on schedule for identifying 10-15 treatment plant sites early in 2001. Work will then begin to develop “system packages” for these sites that also include conveyance alignments and outfall locations. By the end of 2001, we expect to narrow the number of system packages to between 2 and 5. Environmental review of these packages will take place during the year 2002. By December 2002, the King County Executive will select a preferred system package consisting of sites and alignments for the treatment plant, its conveyance facilities, and marine outfall.

Conveyance improvements

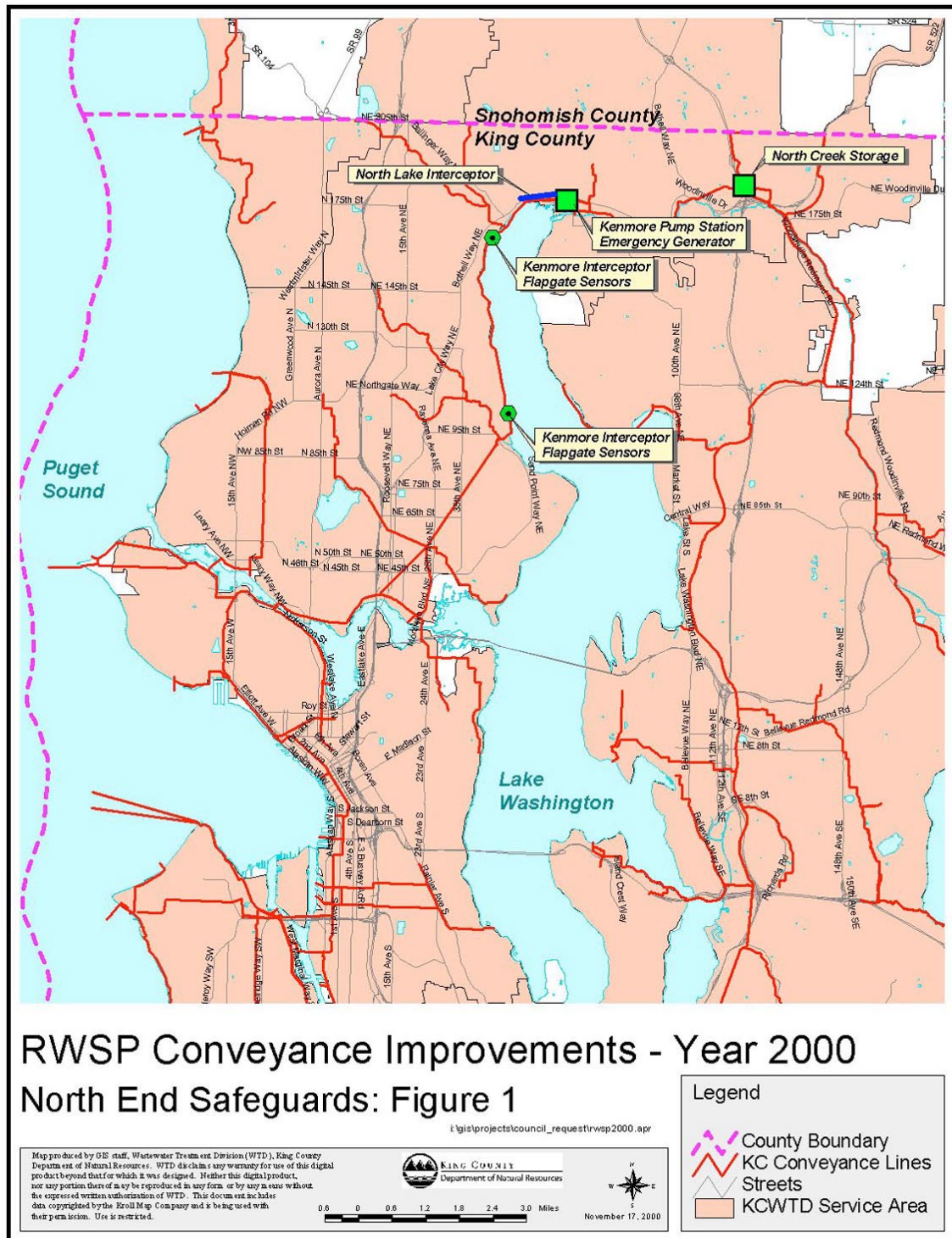
Three near-term conveyance efforts identified in the RWSP that were addressed this year, including the north-end safeguards, the effluent transfer system for the Brightwater Treatment Plant, and the Conveyance System Improvement program. The specific projects under each effort are described in more detail below.

North-end safeguards

Figure 1 shows the location of several projects that were completed or are underway in the North-end that will protect residents in that area and protect against overflows into Lake Washington. The County will extend the high level of storm protection through the year 2010 with construction of the 6 million-gallon **North Creek Storage facility**, which is expected to be operational in March 2003. Design work for the storage facility began in July, with 50 percent design drawings due by November 30, 2000.

Conceptual planning-level alternatives for the **North Lake Interceptor** (NLI) have been developed, with predesign scheduled to begin in 2001. Five preliminary alternatives were developed to meet the requirements of the NLI project to provide 10-MG of storage, divert wastewater from the McAleer/Lyon Trunk, and to convey wastewater to a point hydraulically upstream of the Kenmore Lake Line. Three of the preliminary alternatives provide storage in a 16-foot diameter tunnel between the Sheridan Beach area and the Kenmore area. The fourth alternative provides storage in a 10-MG underground storage facility in the Kenmore area with associated facilities to pump out the facility. The fifth alternative provides storage in a 10-foot diameter tunnel between the Sheridan Beach area and the Kenmore area and in a 6-MG storage facility in the Kenmore area.

The environmental process is complete and permits have been issued to install sensors on the flap gates of the **Kenmore Interceptor Section 2**. The flap gate sensors will be attached to a custom-made buoy with radio telemetry equipment installed. If a flap gate opens, the buoy will transmit a signal to main control at the West Point Treatment Plant indicating a possible overflow into Lake Washington. The operators will then take actions to correct the problem and ensure appropriate notification. We expect to complete flap gate construction in December 2000.



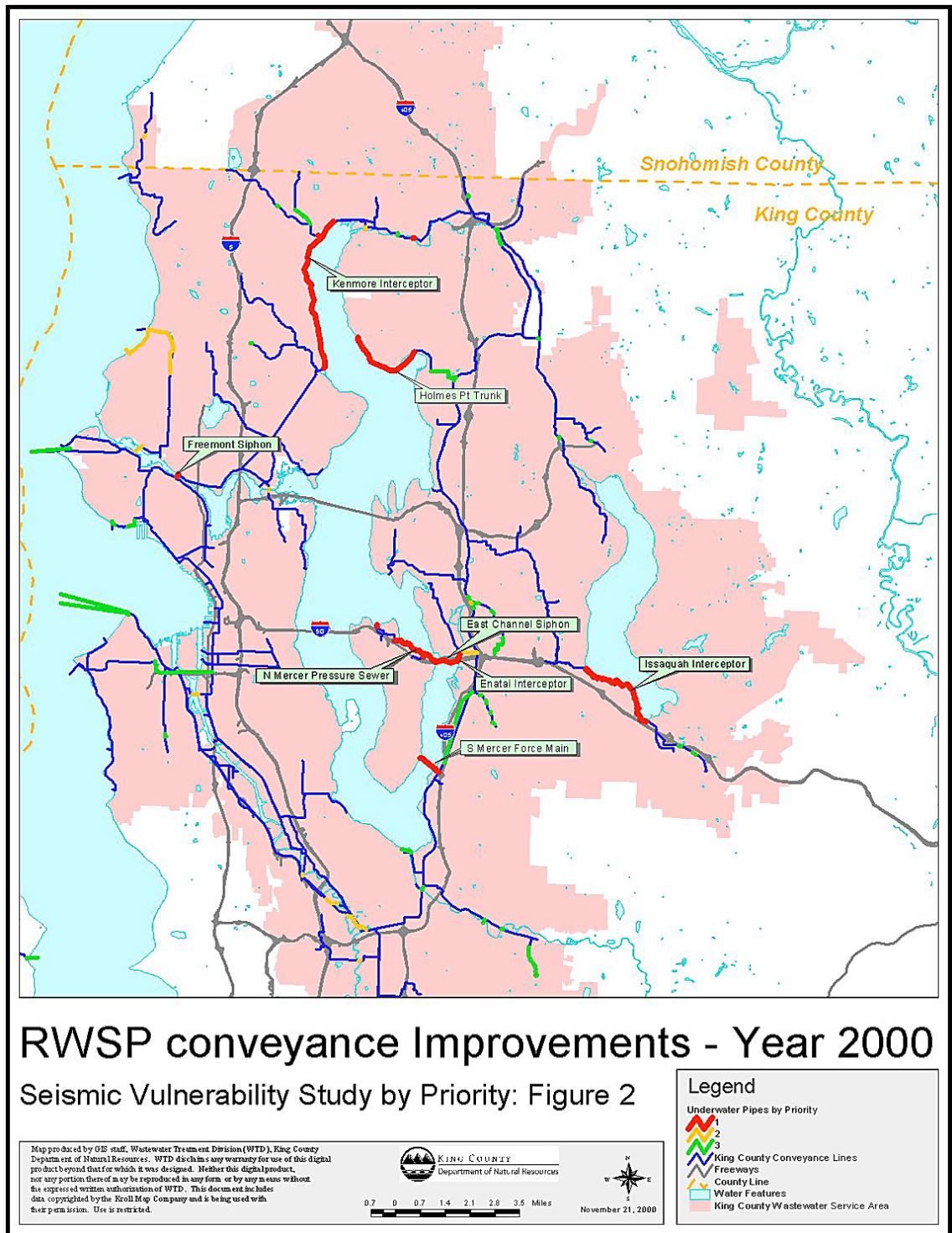
RWSP Conveyance Improvements - Year 2000
North End Safeguards: Figure 1

A temporary, trailer-mounted emergency generator is now in place at the **Kenmore Pump Station**, providing power to fully operate the pump station in times of crisis. King County DNR has received permits to construct permanent housing for the generator. Construction bids were solicited in October, with contract award to occur in November; the permanent generator will be in place by fourth quarter 2001.

In 1999, The King County Council directed and authorized a **Seismic Vulnerability Study** as part of the Regional Wastewater Services Plan. A final consultant scope was approved to complete the first phase of this work to assess the vulnerability of underwater wastewater pipelines to earthquake damage and to recommend short- and long-term protective action if warranted. The study, which began in May, will assess pipe sections under Lake Washington, Lake Sammamish, the Ship Canal, sloughs, rivers, and creeks. The Kenmore Interceptor, also known as the Lake Line, receives the first priority for this study with the remainder of the system analyzed by 2002. The first report will be completed in the first quarter of 2001. Figure 2 shows the facilities being assessed by the seismic study and the priorities for assessing them.

Effluent transfer system for the Brightwater Plant

The Marine Outfall Siting Study (MOSS) is aimed at finding a suitable site for an outfall that will discharge effluent from the Brightwater Treatment Plant. This effort, conducted as part of the Brightwater site selection process, supported the Siting Advisory Committee and related groups in developing the policy siting criteria. The MOSS effort also collected basic environmental information needed for the siting, design, mitigation, and construction of the marine outfall. This information included geological information about portions of the Puget Sound seabed, measurement of currents in Puget Sound, data on populations of marine animals and plants, and measurement of the chemical and bacteriological conditions in the study area. This information gathering effort was lead by the MOSS team with partners from the University of Washington, the King County Environmental Lab, private consulting firms, and the Washington State Departments of Ecology, Fish and Wildlife, and Natural Resources.



Conveyance system improvements

The Conveyance System Improvement (CSI) Program made progress on a number of projects during this reporting period. See Figure 3 for the general location of the CSI projects described in this report. During the planning of these projects, KCDNR also considered the age and condition of the existing facilities and any other potential improvements that might be necessary. For example, a review of all asset replacement and repair projects were examined over a 10 – 15 year period to identify the potential to more efficiently complete the capacity upgrades (RWSP component) and any asset repair or replacement (asset management component). Combining projects can be more efficient and higher quality than doing them separately over many years. Additionally, neighbors to the pump stations experience fewer construction disruptions. This is consistent with the RWSP Operational Master Plan and the RWSP wastewater planning policies.

In some cases, further improvements to the original RWSP project have been incorporated because of the age of the facility. Rather than doing partial upgrades now and replacing the station in another 10-15 years, projects are being combined to bring older facilities up to current standards and to make them better neighbors; for example, the Hidden Lake and Juanita Bay Pump Stations. The majority of these incorporated improvements will lower future asset management costs. Further explanation of these impacts will occur in future reports and during the County's annual budget process.

Pacific Pump Station

Planning was completed for the Pacific Pump Station in south King County. The existing pump station, located in City of Pacific street right-of-way, has insufficient capacity to convey the existing and future peak service flows to the proposed Auburn Interceptor Alternative (described below). The working alternative recommended for predesign consists of construction of a new 6-mgd pump station at an alternative site, possibly a new force main, and a permanent generator to provide dedicated backup power supply. A predesign consultant was selected in October 2000 and notice to proceed on predesign is expected in the first quarter of 2001.

Juanita Bay Pump Station

Planning was completed for the Juanita Bay Pump Station. The existing pump station is experiencing significant operational difficulties with the inability to convey existing flows because of the age of the pump station. The working alternative recommended for predesign combines replacing the existing pump station with the RWSP capacity upgrade, resulting in the construction of a new 24-mgd peak capacity pump station in the vicinity of the existing pump station. Notice to proceed on a predesign consultant contract is anticipated in the first quarter of 2001.

Sweyolocken and Bellevue Pump Stations

A working alternative was selected to divert excess flows from the Sweyolocken Pump Station where capacity is limited, toward the Eastside Interceptor. An upgrade of the Bellevue Pump Station and a new 5,500 foot-long force main from the pump station to the Eastside Interceptor is proposed. Selection of a predesign consultant is to begin in the first quarter of 2001. These alternatives are more expensive but were selected because they avoid construction disruption in a heavily traveled major arterial (Bellevue Way SE).

Hidden Lake Pump Station and Boeing Creek Trunk

Consultation continues with the Ronald Wastewater District and the City of Shoreline for predesign and design at the Hidden Lake Pump Station and in sections of the Boeing Creek Trunk. The selected working alternative to reduce the number of storm related overflows includes three elements: (1) retrofitting or replacing the existing Hidden Lake Pump Station; (2) paralleling or replacing approximately 6,400 lineal feet of the Boeing Creek Trunk where restrictions have reduced pipe capacity; and (3) constructing 0.5 MG of storage upstream of the Hidden Lake Pump Station. The project scope is larger because it combines replacement of the pump station (asset management) and larger volumes of inflow and infiltration (I/I) than was estimated previously. Some elements of the project may be eliminated if I/I reduction efforts underway by the local agencies and King County are effective. The project has been phased so that if the I/I reduction efforts are effective, new facilities can be delayed or eliminated.

Tukwila Interceptor

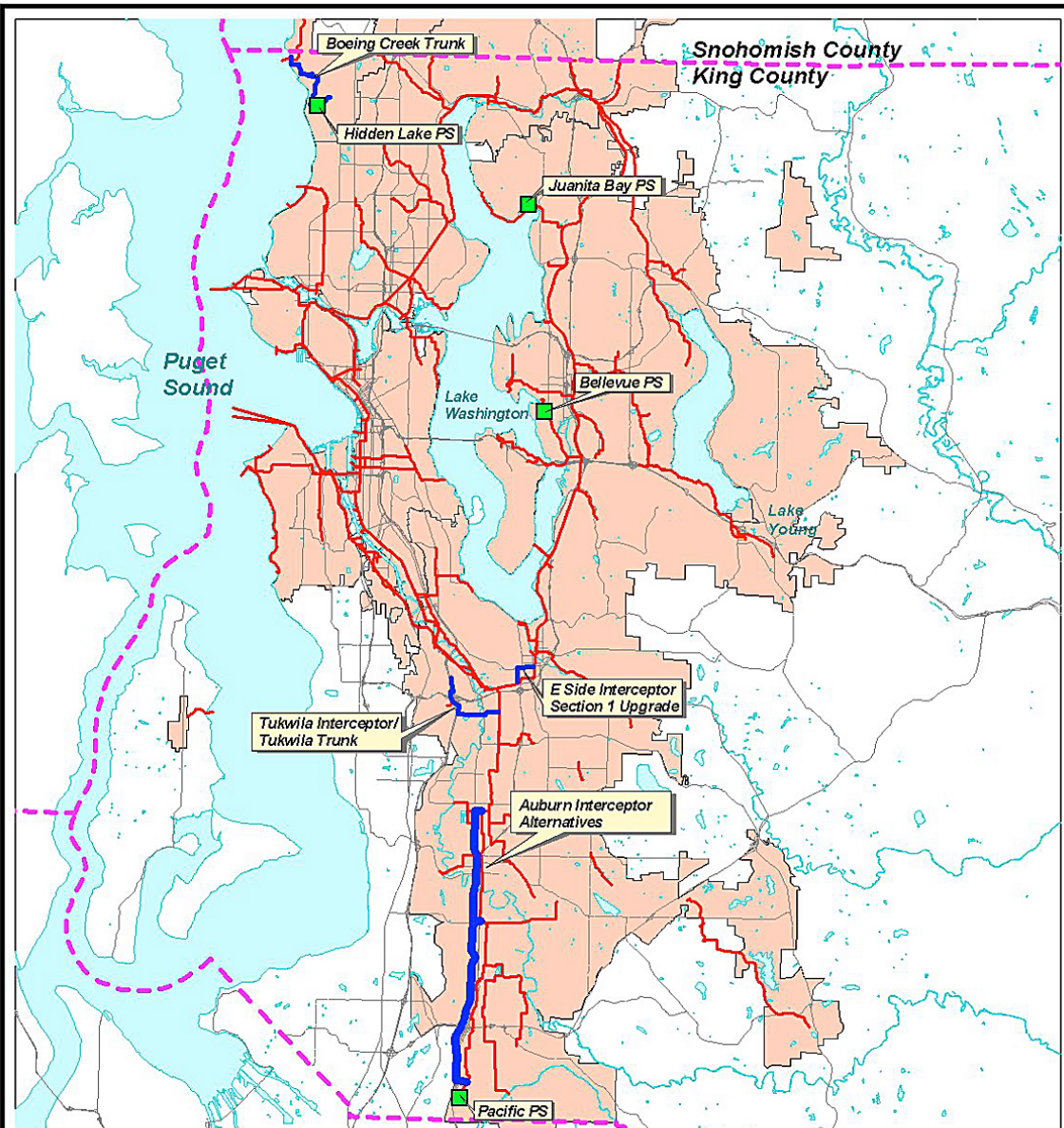
Planning has begun to upgrade portions of the Tukwila Interceptor and Tukwila Freeway Crossing under the I-5/I-405 freeway near Tukwila. The remaining issues to be resolved prior to predesign are general routing, capacity needs, and the project's "constructability."

East Side Interceptor

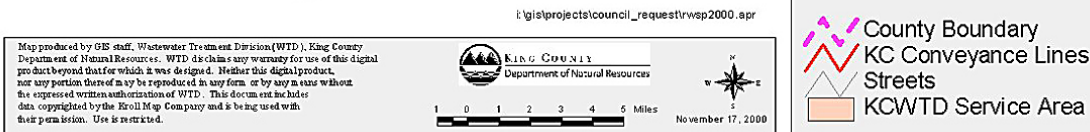
Final design work is about 50 percent complete to repair earthquake damage and upgrade Section 1 of the East Side Interceptor, and we anticipate that construction will begin in the year 2001. The project will restore the Eastside Interceptor to its original design capacity of 224-mgd by constructing a 72-inch parallel pipeline around the damaged section of pipe.

Auburn Interceptor alternatives

Coordination continues with local sewer agencies in south King County to identify working conveyance alternatives for needed wastewater improvements in King County systems while supporting local system development. As part of the planning for the parallel to Sections 1, 2, and 3 of the Auburn Interceptor, King County DNR did extensive flow analysis at the Interceptor and its tributaries to identify the optimal near-term expansion alternatives for the entire area. A working alternative called the Auburn Interceptor Alternative is an option to paralleling the existing Auburn Interceptor for Sections 1, 2 and 3 by diverting flow to a new pipeline along the west side of the Green River Valley. The working alternatives in the Soos Creek planning area include new pump stations and possible use of some local facilities for use as regional facilities by the County. **These alternatives are expected to be more cost effective in the long run and have fewer environmental and community impacts.** The Pacific Pump Station upgrade project underway is one component of the improvements needed in the South valley area.



RWSP Other Conveyance Improvements
Year 2000: Figure 3



Conveyance system improvements schedule and cost

The schedule and cost information for the CSI projects are provided in Tables 1 and 2.

Table 1
Estimated schedule for conveyance system improvements

FACILITY IMPROVEMENT	Planning	Design	Construction
North Creek Storage	Jan 00 – Dec 00	Jun 00 – Mar 01	Apr 01 – Dec 03
Kenmore Interceptor flapgate sensors	Jan 00 – Jun 00	Mar 00 – Apr 00	Jun 00 – Dec 00
Kenmore PS emergency generator		Jan 00 – Dec 00	Jan 01 – Oct 01
Seismic study	Feb 00 – Sep 01		
ESI Section 1 upgrade		Jan 00 – Mar 01	May 01 – Jul 02
Tukwila Interceptor/Tukwila Trunk	Jan 00 – Mar 01		
Hidden Lake PS / Boeing Creek Trunk		Sep 00 – Jun 02	Jun 02 – Apr 05
Bellevue Pump Station		Nov 00 - Feb 02	Mar 02 – Mar 04
Juanita Bay Pump Station	Jan 00 – Feb 00	Jan 01 – Jan 03	Aug 03 – Jul 05
Pacific Pump Station		Jan 01 – Feb 03	Feb 03 – Dec 03
Auburn Interceptor Alternatives*	Jan 00 – Mar 01	Jun 01 – Apr 06	May 06 – Dec 10
North Lake Interceptor	Jan 00 – Mar 01	Jun 01 – Jun 04	Dec 04 – Dec 06

* schedule varies by alternative

Table 2
Estimated costs for conveyance system improvements

FACILITY IMPROVEMENTS	COST* RWSP cost component estimates (1998 dollars)	COST* 2001 Estimates (RWSP and Asset Management)**	Difference
North Creek Storage	30.00	30.00	-
Kenmore Interceptor flapgate sensors	0.18	0.20	-
Kenmore PS emergency generator	1.14	1.40	00.36 ¹
Seismic study	0.50	0.50	-
ESI Section 1 upgrade	17.00	6.00	-11.00 ²
Tukwila Interceptor/Tukwila Trunk	3.30	3.00	-
Hidden Lake PS / Boeing Creek Trunk	5.50	28.10	22.60 ³
Bellevue Pump Station	15.80	21.00	5.20 ⁴
Juanita Bay Pump Station	14.00	18.00	4.00 ⁵
Pacific Pump Station	-	4.50	4.50 ⁶
Auburn Interceptor Alternatives	201.00	224.00	23.00 ⁷
North Lake Interceptor	70.00	70.00	-

*Cost in millions (rounded)

**Further explanation of how the RWSP and Asset Management costs relate to each other will occur in future reports and during the County's annual budget process.

1. Costs increased due to additional permit requirements imposed by the City of Kenmore.
2. Original budget assumed nearly one mile (4700 feet) of parallel 84" gravity pipe using open cut technology while the current project uses tunneling methodology to construct 1800 feet of 72" pipe. Project cost estimates will be adjusted further as design and construction proceeds.
3. RWSP budget covered trunk improvements only; planning study incorporated several asset management components into one project. This project will be constructed in phases into take advantage of I/I reduction; if such efforts are successful, the costs are potentially lower. **Replacement of the older Hidden Lake Pump Station will lower future asset management costs.**
4. Increase based on new alternative to upgrade pump station and to construct new line to Eastside Interceptor rather than paralleling the Bellevue Trunk under Bellevue Way SE, a heavily traveled major arterial.
5. Original project included expansion of the existing pump station; subsequent planning incorporated replacement of the asset (pump station) at the same time. **Replacement of the old Juanita Bay Pump Station will lower future asset management costs.**
6. South end planning identified the need for improvements to the existing Pacific Pump Station to move flow to the proposed Auburn Interceptor Alternative. **Replacement of the pump station will lower future asset management costs.**
7. Original budget included parallel of several major interceptors in highly urbanized areas in the south end of the service area as well as parallels of the existing Auburn Interceptor sections 1, 2, & 3. The project was refined to divert flows to an alternative pipeline along the West Side of the Green River Valley. The revised project will also be constructed in major phases through 2020. **The result will be more cost effective and have fewer environmental and community impacts.**

Reducing infiltration and inflow

King County DNR is implementing the I/I Control Program identified in the RWSP. The primary goal of this work is to define current levels of I/I for each local agency and determine how much I/I is cost effective to remove. To accomplish this, a primary focus of the I/I team was to build and maintain consensus between King County and the 34 local agencies regarding the proposed I/I Control Program, including its goals, policies, schedule, costs, constraints, engineering specifics, and implementation strategy. Accordingly, the considerable effort went into developing and conducting four workshops this year attended by elected officials and technical staff from King County and local agencies. These workshops fostered a common understanding of the Program and allowed local agencies to actively participate in its initiation.

A key component of this years work effort was to measure flows in local agency sewer systems and isolate where infiltration and inflow is getting into these systems. This work involved installing over 800 flow meters and collecting precipitation information from over 70 rain gauges. Flow and rainfall data collected this winter will help identify priority areas for implementing pilot projects to help establish the cost effectiveness of removing infiltration and inflow.

Workshops

Four workshops were held this year to help develop the goals, policies, schedule, technical criteria, and financing for the I/I program.

Workshop 1 – On February 29, 2000 approximately 80 attendees, including local agency, political, policy and technical representatives, consultants, and County staff participated in the first of 14 regional workshops. The attendees discussed the I/I Control Program, its goals and schedule, and proposed implementation strategies. Participants held roundtable discussions regarding pilot project selection criteria, reimbursement criteria for pilot projects, agency equity issues, local agency coordination, communication and briefings, and I/I assessment protocols. King County Council member David Irons addressed the workshop participants.

Workshop 2 – On April 25, 2000, approximately 70 local agency, consultant and County representatives participated in Workshop 2 to discuss and define the criteria that will be utilized to chose pilot project basins and ultimately 10 pilot projects. These pilot projects will be sent to the Council for review and approval in accordance with RWSP Policy I/IP-2.1. Council member and Regional Water Quality Committee Chairperson Louise Miller addressed the workshop participants.

Workshop 3 – On July 18, 2000, approximately 50 local agency, consultant and County representatives participated in Workshop 3 to discuss and define the technical and engineering components of the I/I Control Program. Key elements of the workshop included flow metering; rainfall measurement, and data interpretation methodologies; infiltration and inflow modeling, and rehabilitation cost estimating protocols. Information on the County's efforts to apply for supplemental federal I/I funding was also presented to the local agency representatives, including the need for local agency letters-of-support. Several attendees stayed for a post-workshop briefing on the use of the CALAMAR rainfall-modeling program.

Workshop 4 – On November 16, 2000, approximately 100 local agency, consultant, and County representatives participated in Workshop 4 to review and discuss financial and policy components of the I/I Program. Key elements of the workshop included a review of local agency /King County contract agreements, application of financial concepts to the I/I Control Program, and financial cost sharing policy alternatives. The goal of the workshop was to present the wide range of financial/policy alternatives available for the local agencies and the County to incorporate into the I/I Program. King County Executive Ron Sims and Council Member Louise Miller addressed the workshop participants.

Flow metering

Metering flow from the local agency systems provides the technical framework upon which the successful I/I Control Program will be built. Working in coordination with each of the local agencies, the I/I team installed 807 flow meters. Coordination with local agencies has included verifying the size and location of local collection systems, defining modeling and mini-basin configuration, approving flow meter locations, developing traffic control and safety plans, permitting, and fieldwork scheduling. All flow meters were installed under the five-tier approach as follows:

- **Tier 1 – Install long-term flow meters** – The I/I team installed 75 long-term flow meters in the King County interceptor system by March 15, 2000. These meters will continue to operate for a total of 14 months capturing baseline flow data for the County’s interceptor system
- **Tiers 2 & 3 – Install flow meters at local agency boundaries** – The team installed 104 local agency boundary flow meters on or near the County’s interceptors by September 15, 2000. These meters measure and document actual flows from each of the local agencies (Tier 2). Modeling basin meters will also verify wastewater flow data for utilization in the I/I Program’s modeling effort (Tier 3). These meters will be in place for 6 months
- **Tier 4 – Install local agency “mini-basin” flow meters** – The I/I team installed 628 local agency “mini-basin” flow meters throughout the local sewer agencies by November 1, 2000 to measure and document actual flows from local agency basins containing an average of less than 22,000 linear feet of collection mains. The mini-basin monitors will be in place until January 10, 2001
- **Tier 5 – Install post-rehabilitation flow meters** – The team will install post-rehabilitation flow meters in specific mini-basins after pilot project rehabilitation work is completed in 2002. They will serve to provide the technical foundation for determining the actual effectiveness of the pilot project I/I rehabilitation efforts

The correlation of all five tiers of flow monitoring will serve to establish a direct correlation between each local agency’s wastewater flows and the effect of rainfall on I/I levels. The effects can then be measured and compared downstream to evaluate King County wastewater system alternatives and associated cost saving possibilities.

Rainfall monitoring

Measuring and reporting rainfall accurately provides a credible basis for the flow data identified during flow measuring. The I/I Team is utilizing the rainfall data collected from a total of 73 rain gauges located throughout King and Snohomish counties, including 17 Wastewater Treatment Division gauges, 31 Water and Land Resources

Division gauges, and 25 rain gauges installed specifically for this program. I/I team modelers will analyze the precipitation data using CALAMAR software to generate accurate rainfall quantities for the study area. CALAMAR is a French rainfall monitoring software that combines the network of rain gauges with the National Weather Service NEXRAD radar to provide rainfall measurements with more accuracy than is available from rain gauges alone.

Modeling

The intensity of the flow metering and rain gauge effort will provide an accurate picture of how sewer flows increase during actual rainfall events. The I/I Team selected a new modeling software program to analyze the wealth of information being collected and interpret the impact of I/I flows on the regional wastewater treatment and collection system. The software selected, called MOUSE, is a product developed by the Danish Hydraulic Institute. The analysis will be available to all local agencies and will rank I/I levels by service areas and mini-basins—showing worst to best basins.

Schedule for 2001

The Regional I/I Control Program was on schedule in 2000. The continued implementation of the program in 2001 will continue to involve a parallel process involving both technical and policy discussions. A preliminary schedule of next year's key I/I Program events is presented below.

- **February 2001 – Workshop 5 – Modeling.** The I/I team will conduct two identical modeling workshops (north and south County) to present the County's wastewater flow model, results from the model for a calibrated test basin, and the proposed application of the model in future I/I Program efforts.
- **April 2001 – Workshop 6 - Local Agency Flow Data/ Pilot Project Selection Workshop.** The team will present I/I flow data, application of pilot project selection criteria to select pilot basins and projects, and discuss design standards. It will also present pilot project contract administration and reimbursement alternatives for local agency consensus and program application.
- **May 2001 - Pilot Project Recommendations to RWQC (I/I Policy-2.1).** The I/I team will present pilot project basins and pilot projects, as selected by the local agencies and in accordance with approved selection criteria, to the Regional Water Quality Committee.
- **June 2001 - Pilot Project - Sewer System Evaluation Survey.** The I/I team will initiate sewer system evaluation surveys (SSES), including video, smoke testing, manhole inspection, dye testing and flow isolation, on pilot project basins. SSES tasks are scheduled for completion by October 2001
- **October 2001 - Basin Rehabilitation Report Workshop 7.** The I/I team will present pilot project basin SSES findings, rehabilitation recommendations, and alternative contracting methods to local agencies for pilot project consensus. The team will also present and discuss draft regional I/I design standards
- **December 2001 - Workshop 8 - New and Rehabilitation Construction Design Standards.** The team will present legislative, local agency, private property and inspection I/I standards to local agencies for consensus approval and adoption (I/I Policy-2.2).

Reducing combined sewer overflows

The primary RWSP work effort for the CSO program in 2000 was updating the five-year CSO Plan. Other activities involved negotiating with federal agencies regarding the Lower Duwamish Superfund listing and implementing CSO public involvement efforts.

CSO Plan Update

In June, King County DNR completed the CSO Plan Update for the CSO component of the RWSP as required by the Department of Ecology. This update, due every five years as part of the West Point NPDES permit renewal application, described the Division's progress on its CSO program to date and identified its program for the next five years based on the approved RWSP. Much of the update focus for 2001-05 was on completing two major projects – the Denny/Lake Union Project and the Henderson/MLK/Norfolk Project. It also identified potential impacts to the RWSP from developing regulations and initiatives such as the Endangered Species Act, Total Maximum Daily Loads, and contaminated sediment management, all of which will be examined further in the 2005 CSO Plan Update.

The City of Seattle is currently doing a major update of their 1988 CSO Control Plan, which will be completed by the end of this year. The County is working closely with them to identify opportunities for collaboration and cost sharing. This could lead to proposed project and schedule changes in the County's next Plan Update in 2005.

Lower Duwamish Superfund listing

A listing of the Lower Duwamish Waterway as a Superfund site could impact the CSO control priorities identified in the RWSP. The federal Environmental Protection Agency expects to list the Lower Duwamish as a Superfund site in the near future. Earlier this year, King County, the City of Seattle, the Port of Seattle, and Boeing formed a partnership and worked closely with regulators to develop an alternative approach to cleaning up contaminated sediment. Unfortunately, the partnership could not reach agreement with federal agencies regarding the statute of limitations for natural resource damage liability. However, it appears that EPA will approve a consent agreement between the partnership to prepare a remedial investigation and feasibility study for the Lower Duwamish. This would give King County DNR an opportunity to help shape the Superfund process and to implement the clean up earlier than would occur under the traditional Superfund approach. The impact of this listing on CSO control priorities will be assessed in the 2005 Plan Update.

King County DNR expects to move ahead on the sediment management program in 2000 – 2005 with contaminated sediment cleanups at two CSO locations: Denny Way and Diagonal/Duwamish (as an Elliott Bay/Duwamish Restoration Panel project). The County is working cooperatively with the Port of Seattle, the City of Seattle, and Washington Departments of Natural Resources and Ecology to further cleanup efforts and share implementation costs. The timing of these cooperative opportunities could lead to proposed changes to the sediment management plan schedule.

Public involvement

Many public outreach materials were developed this year as part of the larger public outreach effort for the RWSP and the CSO Water Quality Assessment completed in 1999. Some of these efforts were required to meet the federal CSO regulations.

- Developing a summary document describing the CSO Water Quality Assessment
- Helping fund a hotline to answer the public's questions about CSOs
- Maintaining signage at CSO outfalls
- Developing a brochure and a Web site

CSO program staff have also participated at outreach events such as the Enviro Expo in April and an Open House at the West Point Treatment Plant. The program is looking at developing other public outreach materials in 2001, perhaps initiating their use for the national Water Environment Federation's Wet Weather Issues Conference occurring in Bellevue in July 2001.

Schedule for 2001

Construction on the Denny/Lake Union Project and the Henderson/MLK/Norfolk Project will continue next year. Staff will develop the annual CSO control report, continue public involvement efforts, and respond to regulatory issues such as the Lower Duwamish Superfund listing.

Recycling biosolids

The RWSP identified two ongoing efforts for the Biosolids program. One effort is to continue producing Class B biosolids at all treatment plants. On average, King County produces approximately 135,000 wet tons of biosolids produced each year—all of which is recycled for use in forestry and agricultural application. The other effort is to evaluate new technologies for biosolids processing, as described below.

Evaluating new technologies

King County DNR continued to test and assess four new biosolids processing technologies that have the potential to replace digesters, reduce the number of digesters, reduce truck traffic, and otherwise minimize the potential impacts of solids processing at our wastewater treatment facilities. The technologies currently under review include:

- Centidry, which reduces water content
- Vertad, or modified deep shaft, which reduces the digester footprint and the amount of solids
- Anoxic gas flotation, which reduces the amount of solids, reduces the time needed to digest them, and produces more methane gas
- thermophilic/mesophilic digestion, which enhances solids digestion

The results of these assessments will help us make decisions about solids handling at the West, South, and Brightwater Treatment Plants.

Schedule for 2001

Since the current dewatering facilities at the South Treatment Plant have nearly reached their useful life, King County DNR anticipates making a decision in the 4th quarter of 2001 about implementing new biosolids treatment and dewatering technologies at the Plant to replace the older system. The budget has already been established and the pre-design consultant should be under contract in March. We expect to make a decision about biosolids digestion enhancement for use at the West Point Treatment Plant by late 2001 in accordance with the 1991 West Point Settlement Agreement.

Exploring and increasing water reuse

The goal of the County's reclaimed water program is to use reclaimed water to assist the region in meeting the water resource needs of the environment and people. The program focused on three important efforts this year: evaluating nominations for reuse demonstration projects, evaluating reuse technologies for possible application in the future, and developing a water reuse work program.

Water Reuse Demonstration Program

After the RWSP was adopted, King County DNR initiated a process to develop criteria to evaluate potential satellite treatment facilities and to solicit nominations for potential water reuse projects. A Stakeholder Task Force was established to help develop the criteria and to help evaluate nominated projects. The Task Force included representatives from the Association of Sewer and Water Districts, the Cascade Water Alliance, the Cities of Bellevue and Seattle, the Suburban Cities, King County DNR, the State Departments of Health and Ecology, the University of Washington, and the Center for Environmental Law and Policy. Representatives from the Muckleshoot Tribe also observed the Task Force meetings. King County requested written project nominations from public and private parties interested in partnering to implement water reuse projects consistent with the criteria established through the Task Force process.

Twelve nominations were submitted for water reuse demonstration projects with locations in Bellevue, Newcastle, Issaquah, Covington, North Creek, Tukwila, the University of Washington, and near the Sammamish River. King County reviewed the nominations using the criteria developed by King County and the Stakeholder Task Force. The results of this review are reflected in the Water Reuse Work Program.

Technology Demonstration Program

King County DNR has completed design of a pilot-scale water reuse technology demonstration facility designed to develop information about the effectiveness, operability, and cost of technologies that have the potential to:

- reduce the costs and potential impacts of producing "Class A" reclaimed water at small, upstream "satellite" plants for commercial/irrigation uses
- cost-effectively remove nutrients, pathogens, organics, and other contaminants from wastewater as may be necessary to make reclaimed water suitable for discharge to freshwater to supplement surface water supplies

The demonstration facility will combine technologies into small-scale operational process systems to assess the ability to meet process objectives. Construction of the facility and related utilities will be completed in March 2001 and the facility is expected to be operating in April 2001. A nine-month operating period is anticipated.

Water Reuse Work Program

King County developed a Water Reuse Work Program with the participation and support of the Stakeholder Task Force. The Work Program outlines tasks, budgets, and schedules for the water reuse activities for the next five years and beyond. The key elements of the Work Program, which will be provided to Council later in December, are summarized below.

- Continue stakeholder involvement by creating technical advisory groups for technology demonstrations, the satellite plant demonstration project, and the freshwater discharge studies
- Begin site-specific public involvement for water reuse demonstration project(s)
- Continue discussions with potential reclaimed water users and partners to establish level of participation in demonstration projects
- Continue developing projects near regional treatment plants
- Continue development of more detailed evaluation of the Sammamish project
 - ✓ compare the cost-effectiveness of serving from satellite versus regional plant
 - ✓ evaluate the use of small, mobile facilities to provide reclaimed water prior to constructing the Brightwater Treatment plant
 - ✓ Hold detailed discussions with potential partners and reclaimed water users
 - ✓ Initiate design of the Sammamish project as appropriate based on the results of the detailed investigation
- Continue development of Water Reuse Program “Implementation Guidelines” based on task force policy recommendations and existing County policies
- Continue work to support legislation favorable to the development of water reuse

Schedule for 2001

The Water Reuse Work Program identifies the following activities for implementation in 2001.

- Continue to demonstrate and assess reclaimed water technologies
- Begin to develop agreements with stakeholders and partners to encourage legislators to modify legal constraints on reclaimed water development and use
- Evaluate the costs, benefits and risks of providing reclaimed water for non-potable uses within the Sammamish valley from (1) a local satellite treatment facility, and from (2) potential sites for the regional north treatment facility
- Evaluate the costs and feasibility of installing a satellite treatment facility utilizing technologies that could provide near-term water reuse benefits to the Sammamish valley and could be relocated, if appropriate, upon completion of the Brightwater Treatment Plant in 2010

Financing – capacity charge

At the time of RWSP adoption, the Washington State statute governing capacity charges included provisions that constrained the County's ability to pursue a policy of growth pays for growth; namely:

- the capacity charge could not exceed \$10.50 through the year 2001
- the capacity charge could not exceed one-half of the Residential Customer Equivalent (RCE) rate after the year 2001
- the capacity charge could be set based only on facilities identified in the pre-1989 comprehensive wastewater plan

In recognition of these constraints on growth paying for growth, the King County Council adopted financial policy FP-12 in Ordinance 13680 to pursue changes in the legislation.

In compliance with this policy, King County successfully pursued changes to the capacity charge enabling legislation in House Bill 2528 that was signed by the Governor on March 27. The bill became effective June 8, 2000. The new statute deletes the old constraints on the structure and level of the capacity charge. The County's ability to set a capacity charge will be more in line with the capacity charge legislation governing municipalities.

The King County Executive will forward a set of policies outlining a proposed new capacity charge to Council in December 2000.

Appendix

- Summary of Interviews with Community Leaders
- Summary of Introductory Open Houses
- Final Public Involvement Program
- Siting Advisory Committee members
- Letter from the Siting Advisory Committee supporting the policy siting criteria
- Letter from the Metropolitan Water Pollution Abatement Advisory Committee supporting the policy siting criteria