DESCRIBING THE PLAN

The County's current wastewater system is a complex collection of pipes, plants, and pump stations. This section first gives an overview of this system and then describes the changes proposed in the *Executive's Preferred Plan*. The Executive's recommendations are presented in more detail later in the section.

Our Current System

King County's wastewater system consists of 2 large wastewater treatment plants, 2 combined sewer overflow treatment plants, 38 pump stations, 22 regulator stations, 255 miles of conveyance pipe, and several outfalls (**Figure 1**). The conveyance system transports wastewater from our homes and businesses to the two treatment plants. The West Point Treatment Plant (West Treatment Plant) is located near Puget Sound west of Magnolia in the City of Seattle; the East Section Reclamation Plant at Renton (East Treatment Plant) is located east of the City of Renton. Both treatment plants provide primary and secondary treatment, which removes about 85 to 90 percent of the solids from the wastewater and disinfects the discharge from the plants.

The area that the system serves is divided into the west and east service areas, depending on which treatment plant ultimately treats the wastewater. The conveyance system in the west service area transports the wastewater to the West Treatment Plant; the conveyance system in the east service area transports the wastewater to the East Treatment Plant. The conveyance system includes forcemains, which are pipes that require pump stations to pump the wastewater flow uphill, and gravity pipes. King County owns all the large pipes, such as trunks and interceptors, that lead directly to the plant. These large pipes collect wastewater from a network of smaller pipes that are owned, operated, and maintained by 32 separate local agencies or districts in King County's service area. These pipes also collect wastewater from 83,000 residents in Shohomish County and from a small number of residents in Pierce County.

The by-products of the treatment process are disposed of or recycled:

- Most liquid effluent is discharged through outfall pipes into Puget Sound
- Some of the liquid effluent is subjected to advanced treatment beyond the secondary level to produce "reclaimed" water for irrigation and industrial reuse in and near the plants
- Treated solids ("biosolids") are recycled for use as a soil amendment for forestry and agricultural crops
- Methane recovered from treating biosolids is used to power plant processes or is sold to energy suppliers

The outfall systems are also part of the conveyance system. The outfall system from the West Treatment Plant extends directly west from the plant into Puget Sound. The outfall system from the East Treatment Plant consists of 12 miles of pipe leading to two outfall pipes extending into Puget Sound from the Duwamish Head off West Seattle.

In addition to treatment plant outfalls, the County's wastewater system includes combined sewer overflow (CSO) outfalls. In the City of Seattle, most of the sewers collect rain water ("stormwater") in addition to sanitary sewage (the water from flushed toilets, showers, sinks, and washing machines). During storms the flows in these "combined sewers" can exceed the capacity of conveyance pipes, untreated flows discharge directly from CSO outfalls to nearby water bodies.

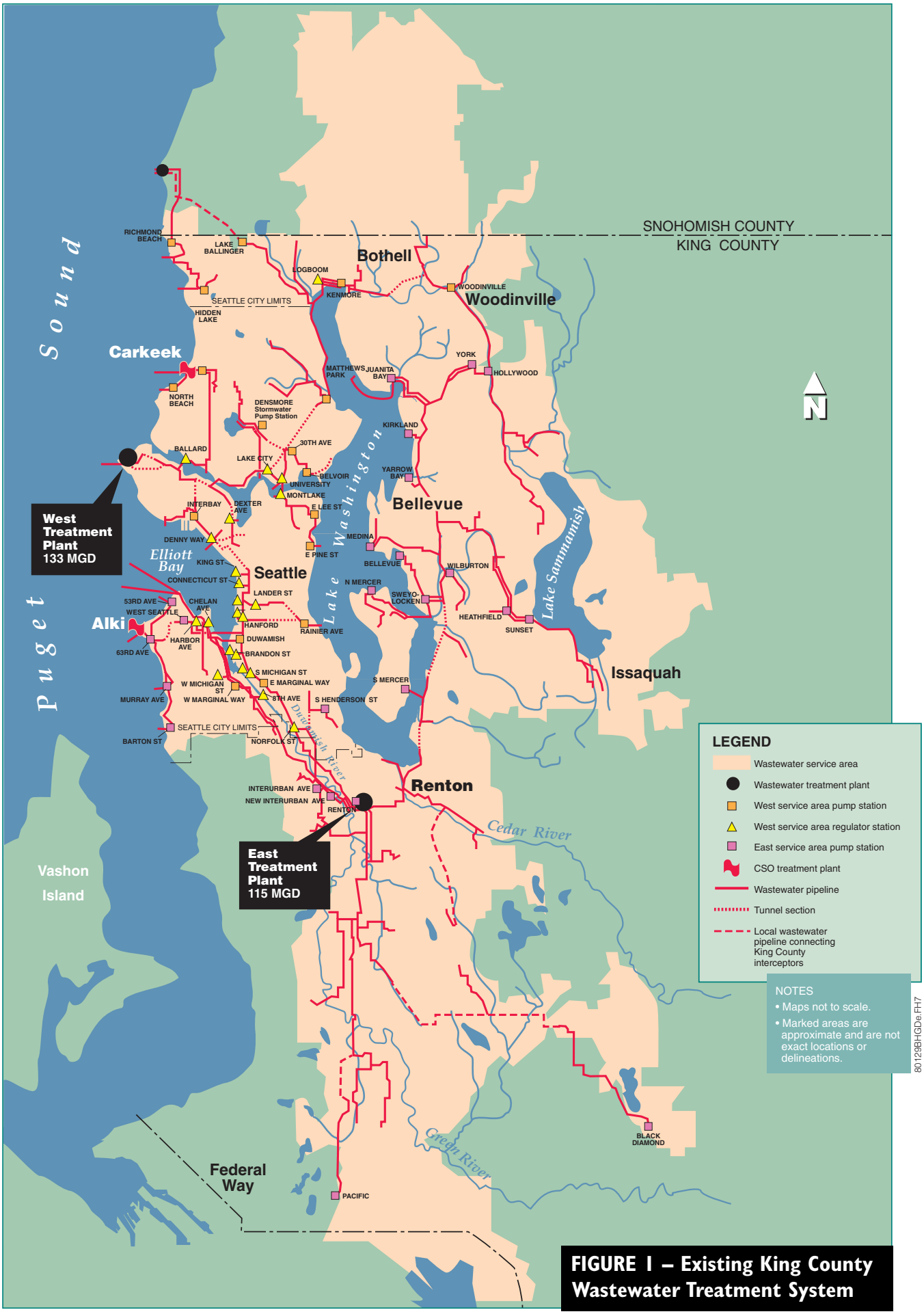


FIGURE 1 – Existing King County Wastewater Treatment System

The Executive's Preferred Plan: Our Future System

The most dramatic change to the system proposed under the *Executive's Preferred Plan* is the construction of a new secondary treatment plant (North Treatment Plant) in the north portion of the current service area and the designation of a new service area (north service area) tributary to the new plant. **Figure 2** shows existing and proposed wastewater flow routes to the treatment plants.

A New Treatment Plant

During the 1997 public involvement process, focus group and survey participants expressed about equal support for either building a new treatment plant or expanding the existing plants. Most of those who provided comments on the draft documents strongly supported a new plant. Even though constructing a new plant is more costly than expanding the two existing plants, the Executive had several reasons for selecting a 3-plant strategy :[3]

- The North Treatment Plant would allow us to reserve land area at the existing plants to build additional capacity in the future. This capacity could accommodate growth in flows from other parts of the service area resulting from higher-than-expected population growth in south and east King County or more stringent regulations
- The North Treatment Plant could be designed for possible upgrade to advanced treatment if water reuse is seen as a cost-effective and environmentally prudent

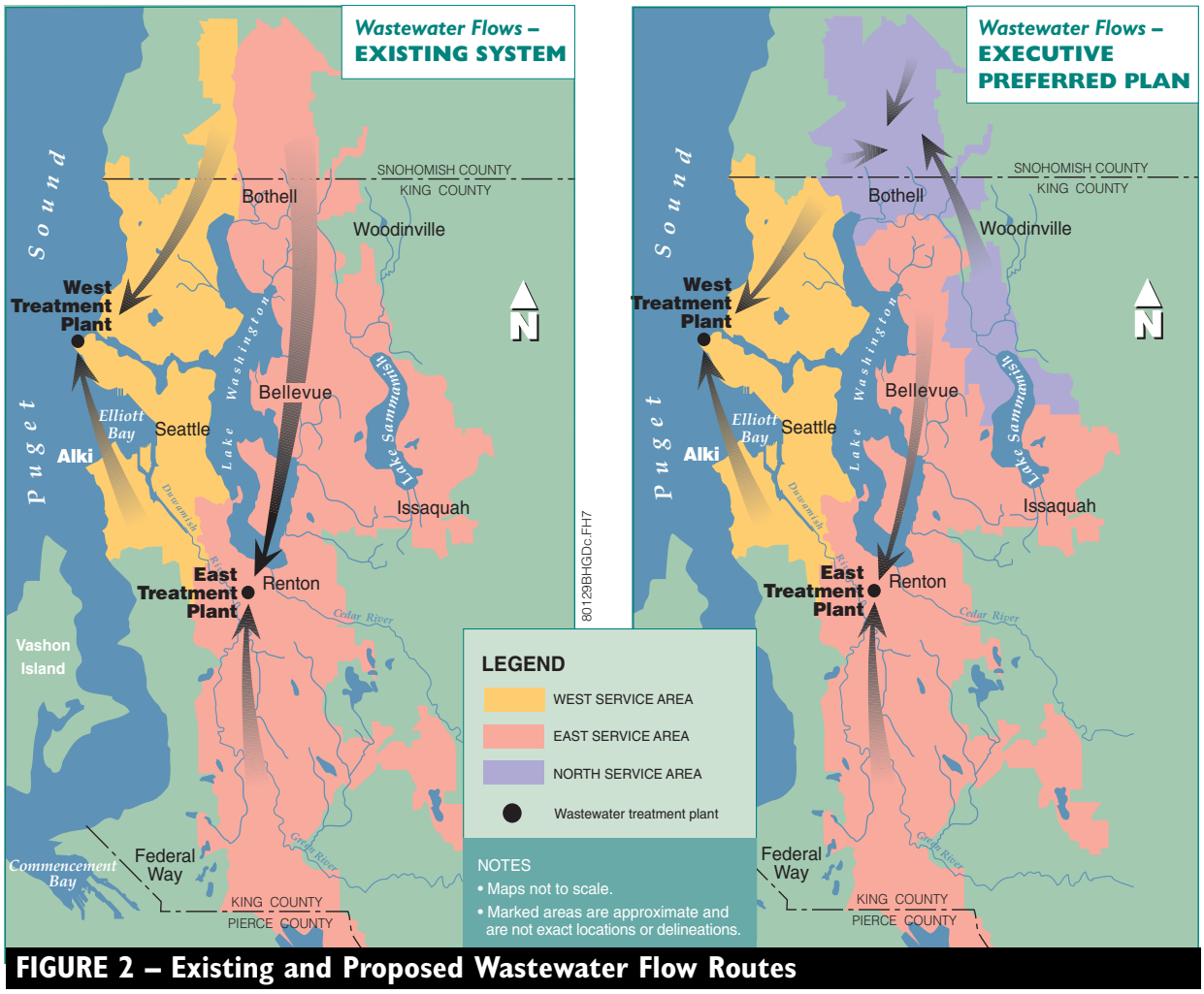


FIGURE 2 – Existing and Proposed Wastewater Flow Routes

[3]*See Appendix A for comparative costs of the four service strategies presented in the draft RWSP.*

TABLE 2

Improvements Proposed under the Executive's Preferred Plan

WASTEWATER ELEMENT	PROPOSED IMPROVEMENTS
TREATMENT	• Build a new secondary treatment plant in north King/south Snohomish County • Expand the East Treatment Plant (Renton) • Maintain the existing capacity at the West Treatment Plant (West Point) and improve the plant's ability to treat combined sewer overflows
CONVEYANCE	• Construct an outfall from the new treatment plant to Puget Sound • Construct a conveyance system to serve the new treatment plant • Expand existing conveyance pipes system-wide to meet developing needs
INFLOW AND INFILTRATION (I/I)	• Establish a cost-sharing program with local agencies to reduce inflow and infiltration • Assess a surcharge for excessive inflow and infiltration by 2010
COMBINED SEWER OVERFLOWS (CSOs)	• Construct storage and treatment facilities to meet the Washington State standard of one combined sewer overflow event per year at all combined sewer overflow locations by 2030
BIOSOLIDS	• Produce recyclable biosolids at all three plants • Explore alternative technologies to improve biosolids quality and marketability
WATER REUSE	• Research new applications for reclaimed water • Allow flexibility to produce and distribute reclaimed water at all treatment plants • Add smaller "satellite" treatment plants to augment local water supplies if circumstances warrant

alternative for developing additional water supplies in the region

- The North Treatment Plant would serve one of the fastest growing areas in the region, thus eliminating the need to upgrade large pipes leading from this area to the existing treatment plants and also minimizing construction impacts along the routes of these pipes
- The new North Treatment Plant will provide a greater level of water quality protection as upper layer discharges of treated effluent will move out of Puget Sound faster than the lower layer Duwamish Head discharge
- Eventually, our region will not be able to rely completely on the existing treatment plants. Building a new plant now before population fills in will be less disruptive to nearby communities

Other Improvements

Other improvements proposed under this plan represent a balance between the need for new system capacity and optimizing the use of existing facilities:

- Modify and expand the conveyance system to accommodate the new North Treatment Plant flows and increased flows in other parts of the service area
- Reduce the amount of stormwater and groundwater that enters the system through leaking pipes and connections to roof and street drains (infiltration and inflow)
- Meet Washington State regulations for reducing the frequency of CSOs
- Enhance opportunities to recycle biosolids and reclaimed water

Table 2 presents a summary of the projects proposed in this plan. Figure 3 shows their locations and completion dates. The remainder of

this section describes the proposals in more detail.

Treatment Improvements

This plan proposes to construct a new treatment plant (the North Treatment Plant) in the north service area, expand the East Treatment Plant to handle additional south and east King County flows, and reserve capacity at the West Treatment Plant to handle Seattle flows and CSOs. Improvements at the West Plant are planned to treat the extra CSO flows that will result from CSO control projects.

North Treatment Plant

King County would construct an 18 million gallon per day (mgd) treatment plant in the North Service Area by 2010. This plant would provide secondary treatment initially but could be upgraded to tertiary treatment if future conditions warrant; for example, if water supplies are needed and recycling water is the preferred option to meet this need or to help comply with environmental mandates like the Endangered Species Act; for example, augmenting stream flows to improve fish habitat. The plant would be expanded again by 2030 to 36 mgd followed by a possible expansion to 54 mgd by 2040. King County would evaluate population growth and wastewater treatment needs before implementing this proposed construction schedule.

The North Treatment Plant would need to be constructed by 2010 and have an initial capacity of 18 mgd.

The exact location for the North Plant is unknown. Once the King County Council adopts a plan, King County would begin a cooperative siting process (see "Implementing the Plan" for more details on siting). As part of siting a new treatment plant, we will also be looking at places to site its outfall. This plan assumes that the North Treatment Plant will be a secondary plant with a marine outfall. But as part of project level environmental work, we will be investigating other options such as a possible tertiary plant with a freshwater outfall. Environmental impacts will be evaluated as part of the project level environmental impact statement.

East Treatment Plant

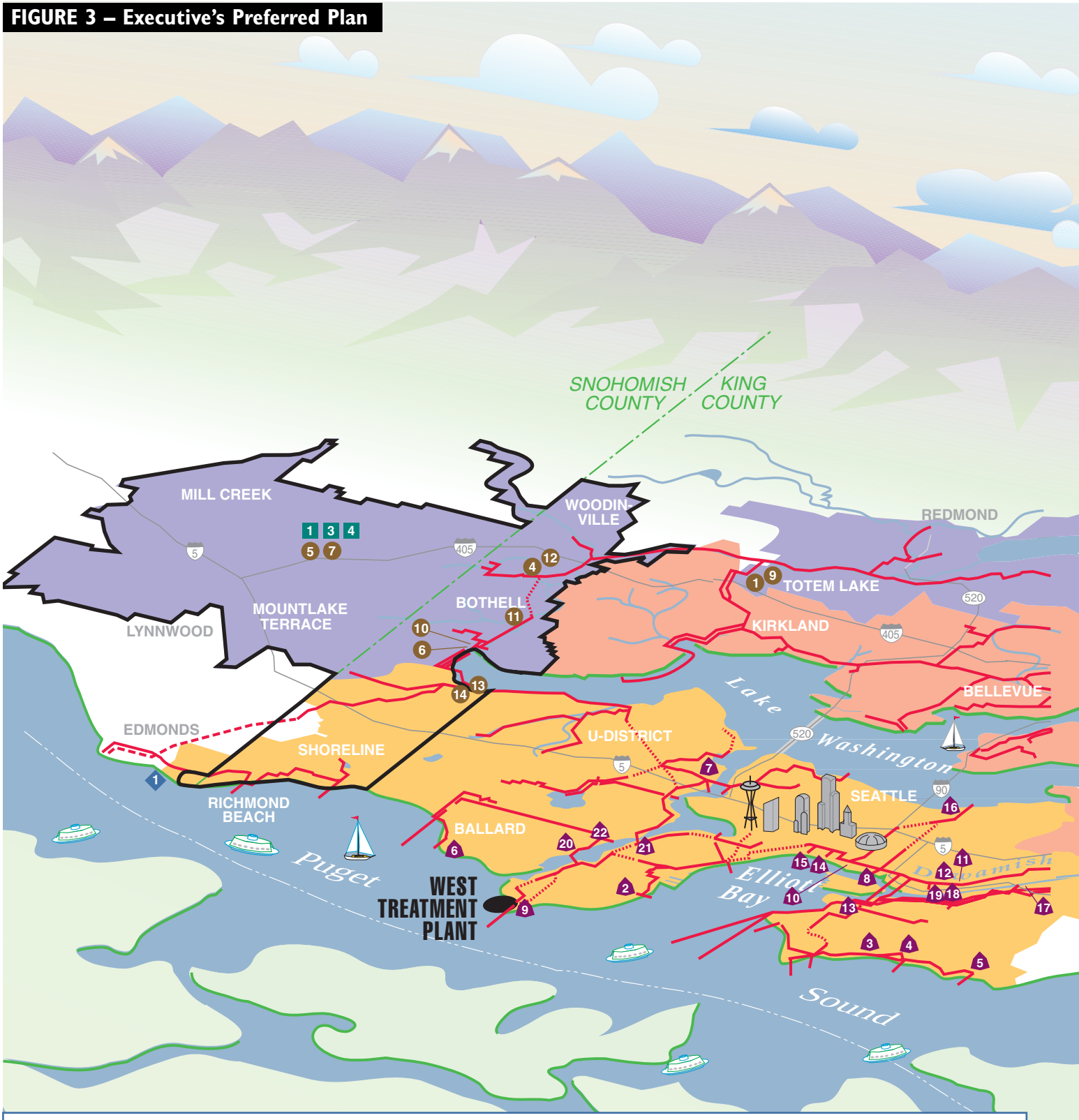
King County would expand the East Treatment Plant to handle increased wastewater flows from the southern and eastern portions of the County. The expansion, scheduled for the year 2020, would increase the plant's capacity from 115 to 135 mgd. Some or all of the plant's capacity could also be upgraded to tertiary treatment as part of future expansions or in addition to its current level of treatment using available land reserves at the plant site.

West Treatment Plant

King County would maintain the West Treatment Plant at its current capacity of 133 mgd primarily to serve the City of Seattle and handle flows from the combined sewers in the area. Maintaining capacity at the West Treatment Plant enables the County to assess the impacts on the West Treatment Plant of sending additional combined sewage to the treatment plant. Additional facilities are planned in the year 2018 to accommodate the extended peak CSO flows that will occur after storms once the CSO control projects are constructed. King County will evaluate the impacts every five years as part of the CSO Update, as required by permits.

King County's West Treatment Plant located in Discovery Park in Seattle

FIGURE 3 – Executive's Preferred Plan



CSO Projects*

1. Norfolk CSO Storage Tank (2009)
2. South Magnolia CSO Storage Tank (2010)
3. SW Alaska CSO Storage Tank (2010)
4. Murray CSO Storage Tank (2010)
5. Barton Pump Station (2011)
6. North Beach CSO Storage Tank & Pump Station (2011)
7. University/Montlake CSO Storage Tank (2015)
8. Hanford #2 CSO Storage/Treatment Tank (2017)
9. West Treatment Plant Primary/Secondary enhancements due to CSO Projects (2018)
10. Lander CSO Storage/Treatment Tank at Hanford (2019)
11. Michigan CSO Storage/Treatment Tank (2022)
12. Brandon CSO Storage/Treatment Tank (2022)
13. Chelan CSO Storage Tank (2024)
14. Connecticut CSO Storage/Treatment Tank (2026)
15. King Street CSO Conveyance (2026)
16. Hanford at Rainier CSO Storage Tank (2026)
17. 8th Ave S CSO Storage Tank (2027)
18. W Michigan CSO Conveyance (2027)
19. Terminal 115 CSO Storage Tank (2027)
20. Ballard CSO Storage Tank (2029)
21. 3rd Ave W CSO Storage Tank (2029)
22. 11th Ave NW CSO Storage Tank (2030)

*CSO control projects at Denny Way, Martin Luther King Jr. Way, and Henderson Street CSOs are part of current plans and scheduled for construction.

Treatment Plant Projects

1. Construct North Treatment Plant (2010)*
2. Increase East Treatment Plant capacity (2020)
3. Increase North Treatment Plant capacity (2030)*
4. Increase North Treatment Plant capacity (2040)*

Outfall Projects

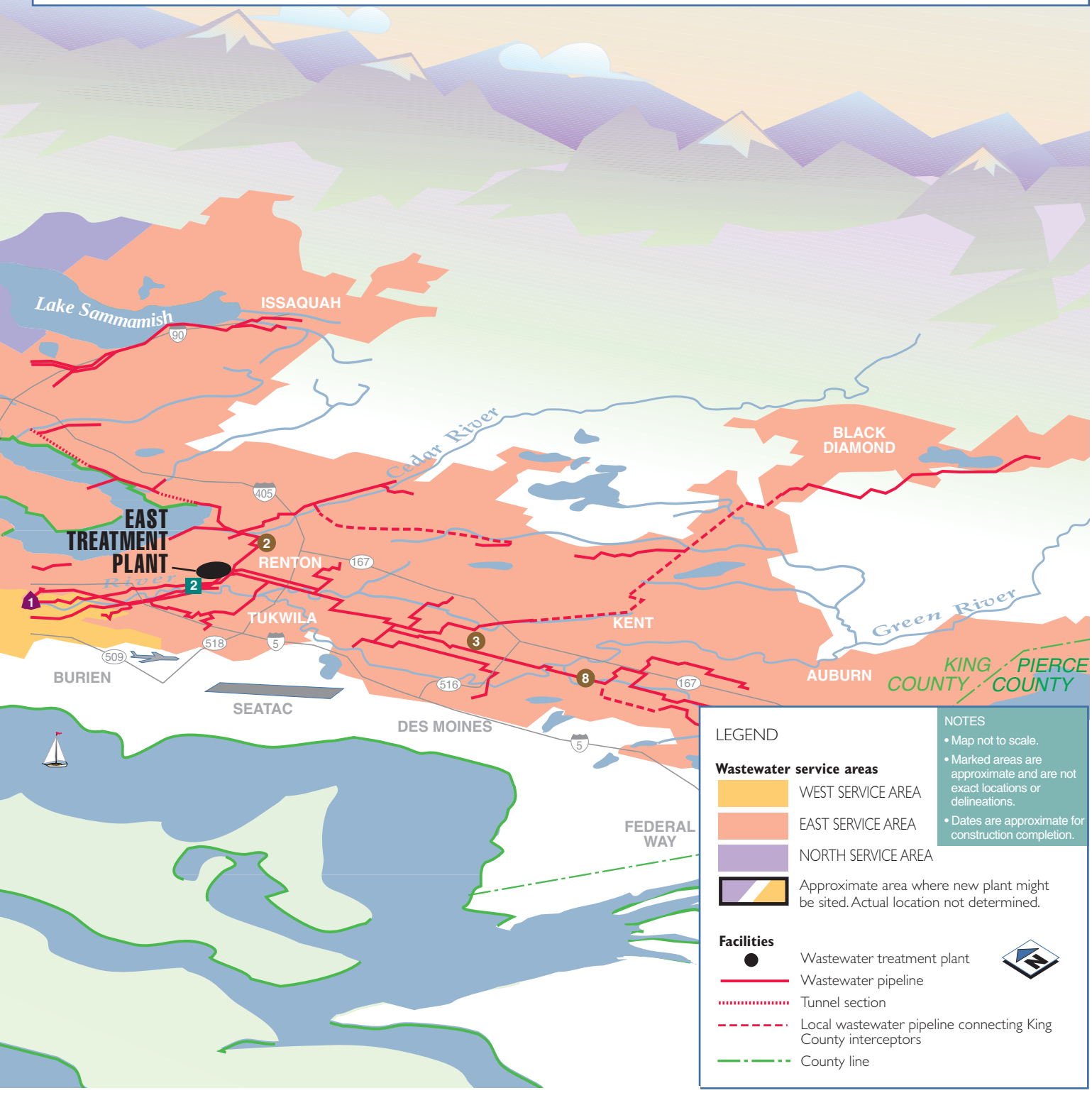
1. North Treatment Plant Outfall (2010)*

Conveyance Projects**

1. York Pump Station upgrade (2000)
2. Parallel Eastside Interceptor Section 1 (2000)
3. Parallel Auburn Interceptor Sections 1, 2, and 3 (2004)
4. Off-Line Storage at North Creek Pump Station (2005)
5. Tunnel from North Treatment Plant to Outfall (2010)*
6. New Kenmore Pump Station (2010)
7. Forcemain from new Kenmore Pump Station to North Treatment Plant (2010)*
8. Auburn Interceptor Storage (2020)
9. York Pump Station Modifications (2030)
10. Kenmore Pump Station upgrade (2030)
11. Forcemain to convey North Creek Flows to Kenmore Pump Station (2030)
12. North Creek Pump Station upgrade (2030)
13. McAleer-Lyon Pump Station Flows to Kenmore Pump Station (2038)
14. Forcemain to Transfer McAleer-Lyon Pump Station Flows to Kenmore Pump Station (2038)

*No site identified at this time for north treatment plant, conveyance, or outfall.

**Minor conveyance improvements throughout the system.



All activities at the plant would comply with the terms of the West Point Settlement Agreement, such as evaluating technologies that reduce plant impacts (for example, truck trips and odor), keeping the plant within the 32-acre limit of the plant footprint, and researching ways to reduce the number of digestors at the plant.

Conveyance System Improvements

This plan proposes two major improvements to the conveyance system. The first is to build and upgrade the pipes and pump stations needed to convey wastewater to the North Treatment Plant, and the second is to build the outfall pipes from the North Treatment Plants.

Pipes and Pump Stations

After the North Treatment Plant is sited, this plan proposes to modify the York Pump Station, which now pumps wastewater to the East Treatment Plant. The York Pump Station modifications will allow it to pump wastewater north to the North Treatment Plant. This wastewater would travel through the newly constructed North Creek Force Main to the North Creek Pump Station. Other conveyance lines would be constructed to bring flows from the North Creek Pump Station and new McAleer –Lyon Pump Station to the Kenmore Pump Station. The Kenmore Pump Station would be upgraded and conveyance lines would be constructed between the Kenmore Pump Station and the North Treatment Plant. If an inland site is selected for the North Treatment Plant, a tunnel from the North Treatment Plant to the new outfall would also need to be constructed.

Outfall to Puget Sound

The plan proposes building and upgrading the pipes that transfer treated effluent from the North Treatment Plant to Puget Sound. The County would need to construct an effluent transfer system that includes a pipe from the plant to an outfall that discharges at a good mixing site in Puget Sound; that is, a site where currents in the Sound will best disperse the treated effluent. The specific location and characteristics of the pipe would be determined around the same time that the North Treatment Plant is sited. King County may modify its plans for additional outfalls to Puget Sound depending on future developments in water reuse and legal requirements such as the federal Endangered Species Act.

As part of an expansion already underway at the East Treatment Plant, the Effluent Transfer System pumps will be upgraded by the year 2000 to maximize the amount of flow that can be conveyed through the existing pipe and outfalls in Puget Sound. However, with increases in treated effluent, additional pipes may be needed to convey treated effluent to Puget Sound. In the draft RWSP, a third outfall was proposed for discharging treated effluent to Puget Sound from the East Treatment Plant as well as an alternative option of discharging secondary treated effluent through an existing outfall to the Duwamish River in lieu of constructing another outfall.

Discharge from the existing outfall would occur during rainy periods when flows are already high in the river and no more frequently than once every two years on average. The impacts of this option were assessed as part of a larger study called the CSO Water Quality Assessment. The results of the CSO Water Quality Assessment found that there would be no significant adverse impacts to aquatic life from this discharge. In addition, by using the existing outfall there will be significant cost savings as well as decreased disruption to aquatic habitat in Puget Sound as another outfall would not need to be constructed.

Reducing Inflow and Infiltration

King County's wastewater system is running out of capacity not only because of new flows generated from population growth, but also because of inflow and infiltration (I/I). I/I is the water that enters the wastewater system during storms from sources such as leaky sewer pipes, roof drain connections, storm drains, and manhole covers (Figure 4). Most inflow comes from stormwater; most infiltration comes from groundwater.

I/I takes up a lot of space in sewer pipes and the treatment plants, which can lead to backups and overflows. King County estimates that 75 percent of peak flows in the separated conveyance system comes from these non-wastewater sources. If we could reduce I/I, we could delay, reduce, or eliminate the need to build additional expensive capital projects such as pipes and pump stations.

All wastewater systems experience I/I, and while it cannot be totally eliminated, it can be reduced. During the 1997 public involvement process, people said that I/I should be controlled and that everyone should pay for it. But reducing I/I is difficult. It is expensive to find and fix the leaky parts of the system and no single entity in King County controls the entire conveyance system. King County is able to control I/I within its own system, however it has little control over I/I from local systems where 95 percent of I/I occurs. To address I/I in local systems, this plan proposes a two-part program.

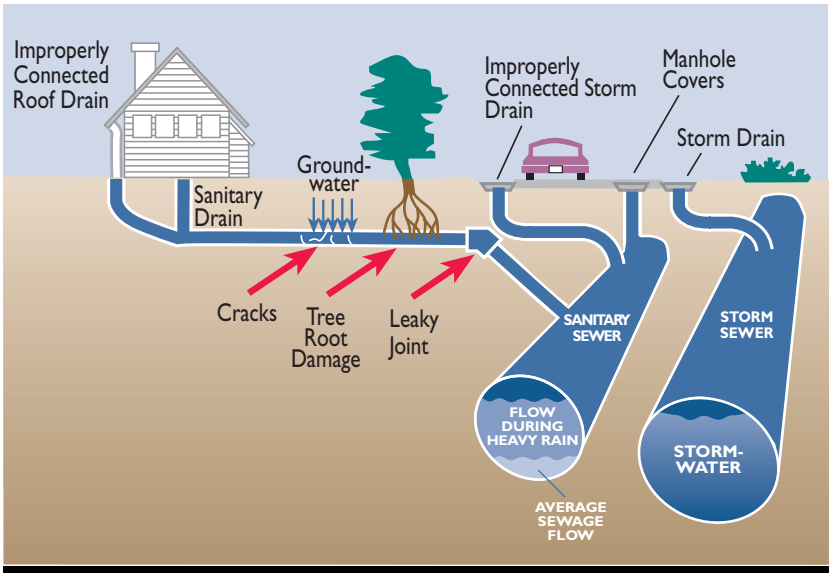


FIGURE 4 – Inflow and Infiltration into Sanitary and Storm Sewers

Cost Sharing to Find and Fix Leaky Pipes

The first part of this program, beginning in the year 1998, would provide financial incentives in the form of cost sharing with the 32 local service providers to (1) define current levels of I/I in local conveyance systems and establish what portion of that I/I is cost effective to remove, and (2) construct cost effective control projects that would help alleviate regional system capacity constraints. King County would commit $31 million as its initial share of the cost of this incentive-based program. Of this $31 million:

- Approximately $8 million would be made available to the local service providers to assess I/I in their systems and define cost-effective projects that are regionally significant. These funds would be made available on a 50/50 cost share basis.
- Approximately $23 million would pay for planning, designing, and constructing specific control projects through the year 2003. King County would cost share with local service providers to design and construct these projects. The cost share amounts would vary and be established by assessing the benefits these projects have to the King County regional system.

Developing a Surcharge on Excessive I/I

The second part of this program would design and implement a surcharge on excessive I/I, and complete additional I/I control projects. King County would work with local service providers to develop a surcharge on excessive I/I. The surcharge would be formulated based on agency-specific I/I characteristics identified during the first part of the program. The surcharge would be tailored to the unique conditions found within each individual conveyance system and the amount of I/I that could be cost effectively removed from them. In this manner, the surcharge would be fairly and equitably allocated to not place undue burden on any single service provider. Once the provisions of the surcharge are established, contracts with local service providers would be modified to reflect the implementation of this surcharge. This surcharge would go into effect no later than the year 2010.

Between the years 2003 to 2010, King County would plan, design, and construct additional local system I/I projects. These projects, defined as cost effective and regionally significant, would also be funded by a cost share between King County and local service providers. The cost share percentages would be determined on a project by project basis depending upon the potential benefit the project would have to the King County regional system. Funding for these projects would be secured from the cost savings realized from reducing flows to the regional

system and the resulting delays in capital facility construction.

Throughout the process of implementing the I/I program, King County would work closely with each of the 32 local service providers. Our goal is to cooperatively reduce local system I/I and initiate a surcharge for excessive I/I beginning in 2010. To accomplish this goal, we will:

- Provide financial and technical assistance to support the upgrade of existing conveyance systems
- Establish workable design standards for new collection systems that effectively control I/I
- Establish a surcharge program that does not unfairly burden individual local service purveyors yet ensures excessive I/I is controlled in the most cost effective manner
- Eliminate the contract provision that prohibits King County from collecting a surcharge on pipes built before 1961 in separated systems
- Establish a mechanism for monitoring flows from each individual local conveyance system for the purpose of assessing an excess I/I surcharge
- Revise County rules and regulations related to I/I and amend the agreements with local service providers

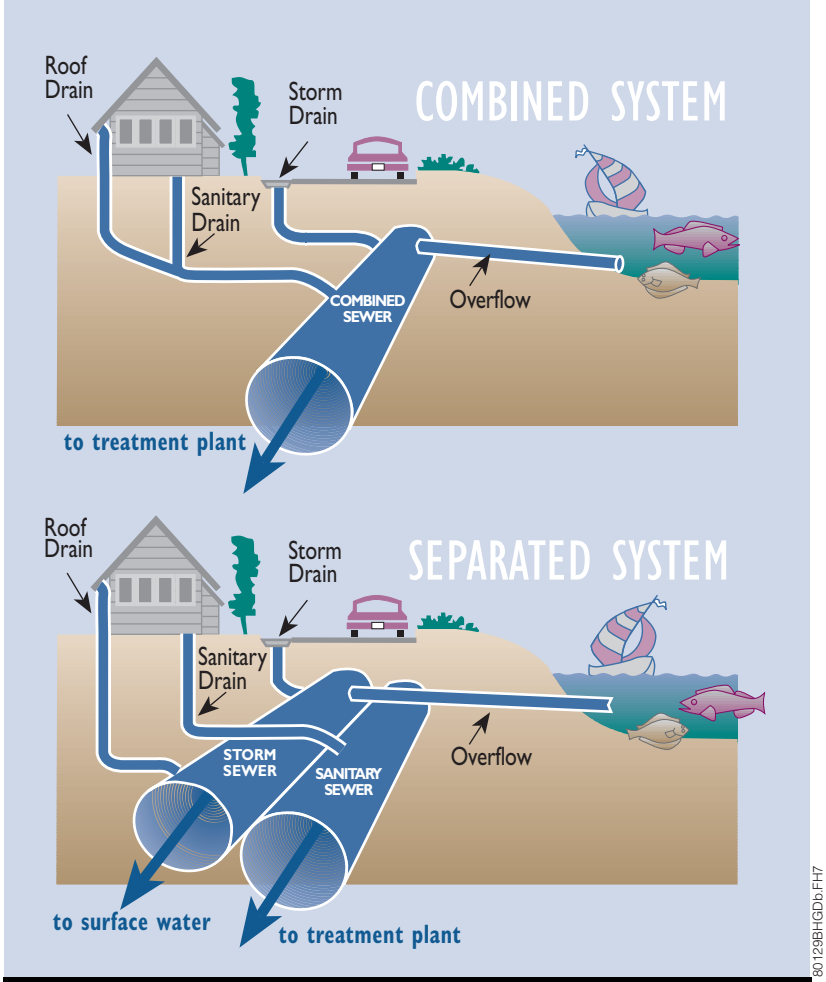


FIGURE 5 – Combined and Separated Sewers

Reducing Combined Sewer Overflows

Combined sewers are pipes that were originally built in many older cities like Seattle to collect a combination of stormwater, street debris, horse manure, and sanitary sewage from homes and businesses. Before treatment plants were built, this mixture was typically discharged to the largest nearby surface water. Today in King County, most stormwater and sanitary sewage is conveyed by separate pipes, but combined sewers still exist in many parts of Seattle where they carry a combination of sanitary sewage and stormwater to the West Treatment Plant. Figure 5 depicts the difference between combined and separated sewers.

During storms, combined sewers can sometimes fill and overflow into surface waters. These combined sewer overflows (CSOs) currently discharge at 37 different outfalls into Lake Washington, the Lake Washington Ship Canal, the Duwamish River, Elliott Bay, and Puget Sound. While the wastewater in CSOs is diluted by stormwater, it does contain harmful bacteria and pollutants that could degrade water quality and potentially affect human health.

During the 1997 public involvement process, people indicated that CSOs should be prevented even if it costs more to do so. Because of potential risks to human health and water quality, CSOs are also closely regulated at both the state

and federal levels. Washington State Department of Ecology regulations require that the County design its system to limit overflows so that the average number of untreated discharges over several years is no more than one at each CSO location per year. The regulations do not specify a date for meeting this requirement, just that CSO jurisdictions must make "the greatest reasonable reduction at the earliest possible date."

Ongoing Efforts

King County has an ongoing program to meet these regulations. The County is currently designing a project to control the one remaining CSO into Lake Washington and has several projects under way in other parts of Seattle. In the last 10 years, the County has reduced CSO volumes from an average of 2.4 to about 1.6 billion gallons per year and expects to fully meet the regulations by the year 2030—thirteen years sooner than proposed in the draft RWSP. By accelerating the CSO program by thirteen years, net present value CSO Control program costs increase $35 million from $195 million to $230 million and adds ten cents per month on average to the wholesale sewer rate paid by customers.

Denny Way CSO in Seattle's Myrtle Edwards Park

CSO Storage and Treatment

This plan proposes two basic approaches to reduce untreated CSOs. The first includes constructing large underground tanks and tunnels to store combined flows during storms. These flows would then be pumped to the West Treatment Plant once the rain subsides. Additional improvements may have to be made at the West Treatment Plant to treat additional CSO flows conveyed to the treatment plant from these projects. The second approach includes treating the combined sewage at existing CSO outfall locations using technology to remove solids and disinfect the combined sewage before discharge.

In certain areas such as North Beach, West Seattle, and Magnolia, CSO control projects would include routing roof drains into storm drains in the streets and repairing leaky side-sewers that connect sanitary sewers from homes to the conveyance system. This program will be implemented as part of the Inflow and Infiltration Reduction Program.

The County has prioritized its CSO projects to protect public health, beginning with the construction of CSO projects along Puget Sound beaches and the east end of the Lake Washington Ship Canal. The next phase of projects would be built along the Duwamish River and the west end of the ship canal.

King County may propose additional refinements to the CSO program in response to changing conditions and new information. The proposed listing of salmon under the federal Endangered Species Act may affect project priorities and timing. In addition, the County is conducting a CSO Water Quality Assessment (WQA) and sediment analysis in the Duwamish River and Elliott Bay that will provide useful information for optimizing the CSO program. The WQA will be completed in 1998; the sediment analysis will be completed in 1999.

Recycling Biosolids

This plan reflects our region's strong recycling ethic and desire for more efficient use of resources. King County is committed to recy-

cling the by-products of the wastewater treatment process to the greatest extent possible.

One by-product that is currently being recycled is biosolids. Biosolids are the organic materials removed from wastewater during the treatment process. King County currently produces "Class B" biosolids at both the East and West Treatment Plants through anaerobic digestion, a treatment process that relies on microorganisms to break down and stabilize the raw organic solids in the absence of oxygen. Class B biosolids contain significantly reduced disease-causing microorganisms (pathogens) and can be safely applied to land with limited public access such as agricultural and forest sites, which is where it is currently being used.

Biosolids are used as fertilizer in eastern Washington for wheat, hops, and other grain crops.

King County produces approximately 135,000 wet tons of biosolids annually—all of which is recycled. We have supplied biosolids for commercial and public forestlands for the last 20 years; more recently, we began supplying biosolids for agricultural uses in eastern Washington. King County now recovers a portion of its processing and distribution costs from the Class B product from sales to these two markets. In addition, a small percentage (about 10 percent) of biosolids are composted by a private firm into a pathogen-free "Class A" product called GroCo. Class A biosolids have no detectable pathogens, so state regulations allow them to be used for landscaping and home gardens. During the 1997 public involvement process, people indicated that the County should continue recycling biosolids.

King County produces approximately 135,000 wet tons of biosolids annually—all of which is recycled.

Continue Recycling and Explore New Technologies

This plan proposes to continue to produce Class B biosolids using anaerobic digestion at the East and West Treatment Plants and to implement the same process at the North Treatment Plant until the County is confident new technology can be used reliably. The plan also proposes that the County continue to evaluate alternative technologies to reduce the water content of biosolids while preserving their marketability. Two new processes are currently being evaluated: Centridry—a high-speed centrifuge that applies heat to reduce the water content of biosolids—and VerTad—an anaerobic digestion process that takes place in deep underground shafts. In addition, the County plans to test other technologies that produce even higher quality Class A biosolids.

The goal of this testing is to select a technology that best meets all criteria, including product quality (Class A or B), marketability, odor, rate impacts, reliability of the treatment process, amount of land needed for the treatment facility, and the number of truck trips needed to transport the biosolids. Based on the results of this testing and public comment, the County will implement one of three biosolids handling scenarios at the treatment plants:

- Continue using anaerobic digestion
- Supplement anaerobic digestion with another technology
- Replace anaerobic digestion with another treatment technology

Finally, King County will continue using a public-private partnership approach to recycling biosolids. One example of this is the 1995 Biosolids Forestry Agreement with the Mountains To Sound Greenway, the Washington State Department of Natural Resources, the Weyerhaeuser company, and the University of Washington. This 50-year agreement provides for

use of biosolids on working forests in King County to enhance wildlife habitat and generate long-term income from selective timber harvests.

Exploring and Increasing Water Reuse

Population growth drives the need not only for additional capacity in the regional wastewater system but also for additional water supply. Our region's established water supply sources will provide adequate water supply for projected growth until about the year 2013. Our region must therefore develop additional water supplies while preserving high quality water for fish, wildlife habitat, and recreation.

One potentially significant source of water supply is reclaimed water. Reclaimed water is wastewater that receives advanced treatment such that it can be used to water lawns and golf courses.

One potentially significant source of water supply is reclaimed water. Reclaimed water is wastewater that receives advanced treatment beyond secondary treatment. Some cities are already using reclaimed water for irrigation, industry, and in other ways to supplement the water supply.

Using reclaimed water is not only consistent with the region's recycling ethic, but it offers several advantages as well. For example, reclaimed water is available even during hot dry summers when drought can threaten other water supply sources. Reclaimed water can be used to augment surface water and groundwater resources. In addition, reclaimed water ultimately may be more cost effective and less disruptive environmentally than continuing to develop traditional sources of water supply using dams, reservoirs, and pipelines, and its ultimate advantage is that it provides a "new supply" that does not have to be taken away from fish. Given the recent proposal by the federal government to list Puget Sound Chinook under the Endangered Species Act (ESA), reclaimed water may be the only viable new water available for future growth.

Both the East and West Treatment Plants now produce reclaimed water for use in irrigation and industrial processes at locations in and near the plants. This type of use is termed "direct non-potable"; that is, water not used for drinking. King County is evaluating the potential to use reclaimed water as an indirect source of potable (drinkable) water. This use, termed "indirect potable," could involve discharging reclaimed water to area water bodies (such as Lake Washington, Lake Sammamish, the Ship Canal, or groundwater) and withdrawing water for drinking from another location in the same watershed. This would offset pressure on existing water supply sources. This has been implemented in other parts of the country, even in Washington State, but it has not been done in our region.

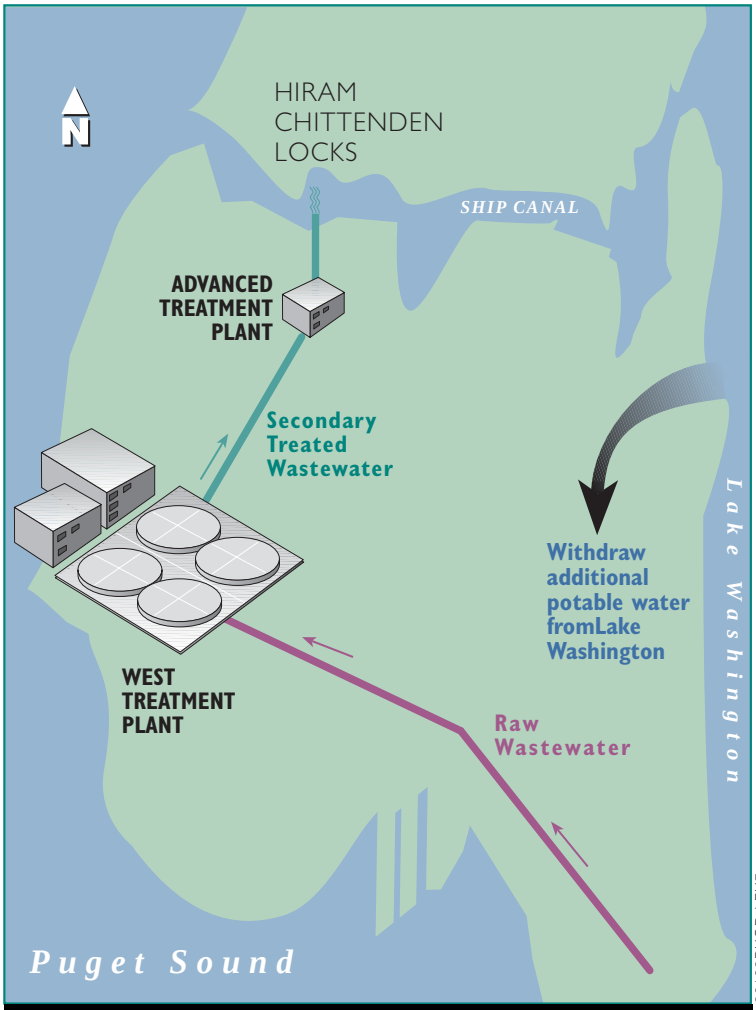


FIGURE 6 – Potential Indirect Potable Reuse Project: Discharging Reclaimed Water at Hiram Chittenden Locks

Figure 6 shows an example of a possible indirect potable reuse project.

Coordinate, Evaluate, and Explore Future Opportunities

This plan proposes that the County work with water suppliers to plan and implement water reuse projects. Direct non-potable reuse projects, such as increasing industrial and irrigation uses, will be evaluated for near-term implementation. Because the participants in the 1997 public involvement process supported the concept of water reuse but needed more information, reuse projects such as streamflow augmentation or groundwater replenishment will require more research, monitoring, and survey of public opinion before implementation. King County will coordinate with other interested parties to conduct the required technical and environmental studies, public involvement, baseline monitoring, and technology assessments, and to resolve legal and institutional issues related to reclaimed water.

If public attitudes, economic conditions, and environmental mandates surrounding water reuse are favorable, King County may explore the possibility of constructing one or more "satellite plants." Satellite plants are essentially small treatment plants that would provide high quality effluent to be recycled in the vicinity of the satellite plant, but solids would be transferred to the regional plants for processing. The County could build such plants in cooperation with a local community and then provide them with high-quality reclaimed water. However, this would only occur if the satellite plant remained part of the regional wastewater system and the reclaimed water produced at that plant would be distributed through the regional water supply system.