

# Conveyance System Improvements

The RWSP calls for improvements to King County's wastewater conveyance system. RWSP conveyance policies direct WTD to use the 20-year peak flow storm as the design standard for its separated wastewater system to avoid sanitary sewer overflows and ensure there is sufficient capacity in the regional conveyance system to accommodate projected population growth.<sup>1</sup> Because no uniform capacity standard was in place before adoption of the RWSP, portions of the regional conveyance system do not currently meet the design standard. In setting this standard, the King County Executive and King County Council recognized that it is one of the most stringent standards in the nation and that it would take some time for the conveyance system to be upgraded to meet this standard.

This chapter begins with a description of the amendments made to RWSP conveyance policies in 2008 and then presents information on the RWSP conveyance projects that were in design or construction in 2008. The chapter concludes with major activities anticipated in 2009 as part of the Conveyance System Improvement (CSI) Program.

## 3.1 Amendments to RWSP Conveyance Policies

The June 2007 Conveyance System Improvement Program Update identifies regional conveyance projects to meet projected capacity needs through 2050.<sup>2, 3</sup> During the update process, King County worked closely with the Metropolitan Water Pollution Abatement Advisory Committee (MWPAAC), through its Engineering and Planning (E&P) Subcommittee, and with individual local agencies.

In recognition of the fact that long-term management of the conveyance system is expensive and largely depends on projections of future flow volumes that are themselves based on projections of regional growth and weather patterns, the update made several recommendations related to future conveyance planning. In November 2007, the King County Executive forwarded these recommendations to the King County Council as amendments to RWSP conveyance policies.

---

<sup>1</sup> The separated system is the part of the King County regional system where stormwater and wastewater are collected in separate pipes.

<sup>2</sup> The 2007 *Conveyance System Improvement Program Update* is available at <http://www.kingcounty.gov/environment/wastewater/CSI/ProgramUpdate.aspx>.

<sup>3</sup> RWSP Wastewater Planning Policy-4 calls for facility sizing to take into account the need to accommodate build-out population. By 2050, it is projected that the regional wastewater service area will be fully built out and all sewerable portions of the service area will be connected into the wastewater system. Therefore, new conveyance facilities are designed to convey the 20-year peak flow event projected to occur in 2050.

The King County Council approved the policy amendments through adoption of Ordinance 16033 in March 2008.<sup>4</sup>

Key elements of the adopted conveyance policy amendments are as follows:

- Update the CSI program every five years beginning in 2013 to ensure that the program remains current.
- Conduct systemwide flow monitoring every 10 years that corresponds with the population census to ensure that flow projections remain accurate.
- To avoid overbuilding the system, field verify wastewater flows and conveyance facility conditions prior to implementing regional conveyance capital projects that are intended to expand the capacity of the conveyance system.
- Evaluate other demand management methods to meet identified conveyance needs, such as infiltration and inflow reduction, water conservation, and reclaimed water facilities.

## 3.2 RWSP Projects in Design

Two RWSP conveyance projects were in design during 2008: the Kent/Auburn Conveyance System Improvements and the Black Diamond Infrastructure Upgrade. The locations of these projects are shown in Figure 3-1.

### 3.2.1 Kent/Auburn Conveyance System Improvements

The Kent/Auburn Conveyance System Improvements project will provide needed capacity in the rapidly growing south portion of King County's wastewater service area by adding approximately 3 miles of pipes in Auburn, Kent, Algona, and Pacific. The project consists of four individual projects that will be built in two phases: Phase A and Phase B. Phase A projects are expected to be in service in 2011, and Phase B projects are expected to be in service in 2015.

Phase A projects consist of two new pipelines:

- **Stuck River Trunk in Auburn.** Approximately 3,900 feet of new 27-inch-diameter gravity sewer pipe will be constructed to divert flows upstream of the M Street Trunk to the Lakeland Hills Trunk.
- **Kent East Hill Diversion in Kent.** Approximately 1,800 feet of new 24-inch-diameter gravity sewer pipe will be constructed to divert flows from the Mill Creek Interceptor to the South 277th Street Interceptor.

---

<sup>4</sup> Ordinance 16033 is available at <http://mkkcclegisearch.kingcounty.gov/attachments/29221.pdf>.

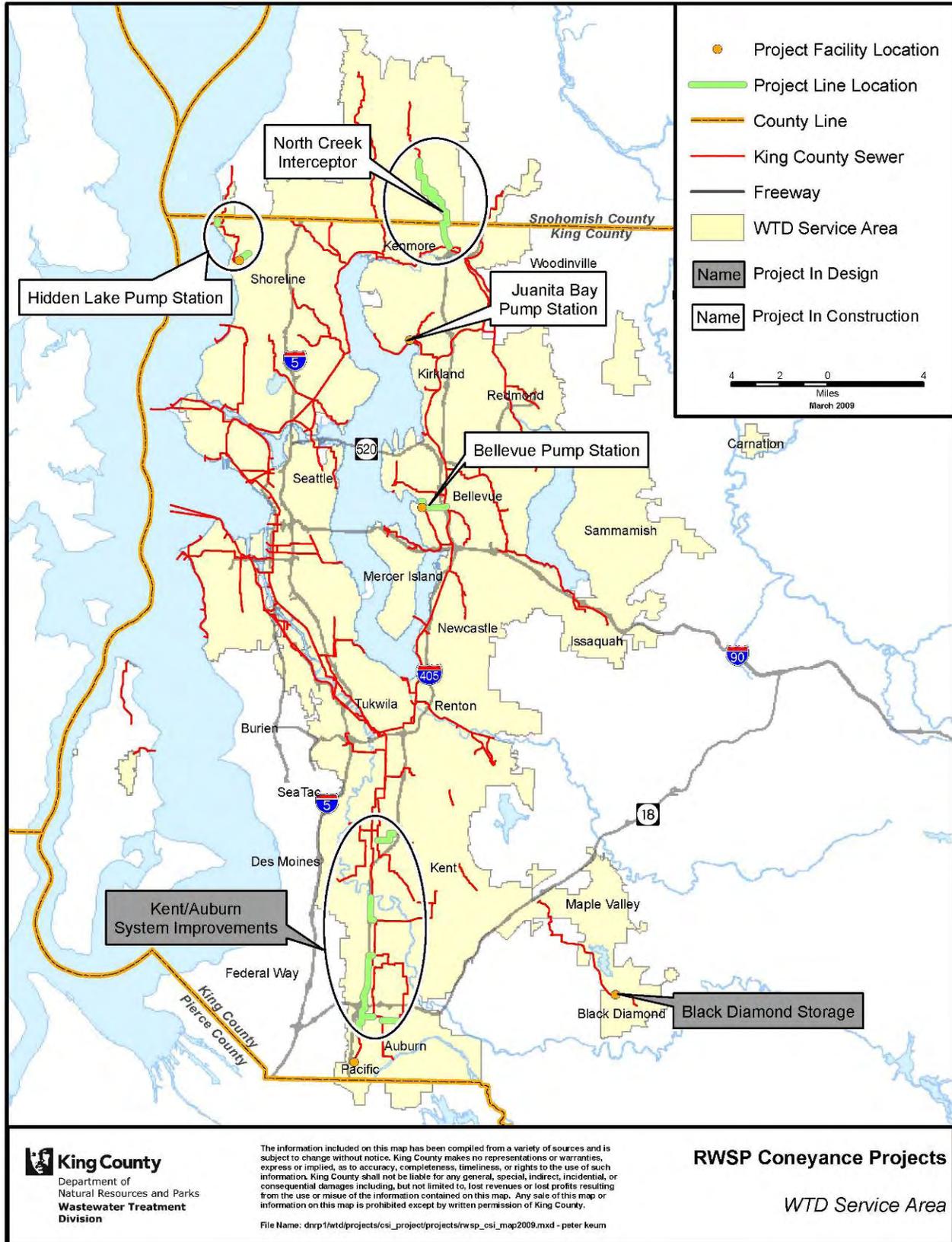


Figure 3-1. RWSP Conveyance Projects in Design and Construction in 2008

Phase B projects consist of two new pipelines:

- **Pacific Pump Station Discharge in Pacific, Algona, and Auburn.** Approximately 7,900 feet of new pipe will carry flow north from the Pacific Pump Station to the Auburn West Interceptor.
- **Auburn West Interceptor Parallel in Auburn.** Approximately 2,600 feet of new gravity pipe will parallel an existing portion of the Auburn West Interceptor between 15th Street Southwest and West Main Street.

Phase A project activities in 2008 focused on selecting the preferred alignments, completing predesign, and starting final design. Environmental review of Phase A projects also took place in 2008. Through this review, the county determined that the Phase A projects will not have significant adverse environmental impacts and issued an environmental determination of non-significance (DNS) in September 2008. Final design will continue through 2009, and construction on Phase A projects is expected to begin in 2010.

Phase B project activities in 2008 focused on selecting the preferred alignments, completing predesign, and beginning easement acquisitions. Final design is expected to be complete in 2012. Construction on Phase B projects is expected to begin in 2013.

To help identify preferred project elements and their locations, WTD staff met with interested parties, large property owners, and staff from the Cities of Auburn, Kent, Algona, and Pacific. The project team will continue to work with local jurisdictions, regulatory agencies, property owners, and neighbors during design and construction.

Visit the project Web site for more information:

<http://www.kingcounty.gov/environment/wtd/Construction/South/KentAuburn.aspx>.

### 3.2.2 Black Diamond Infrastructure Upgrade

Population in the City of Black Diamond is projected to reach approximately 20,000 residents by 2025, based on current local master planned developments (MPD) planning. As the city's wastewater conveyance and treatment provider, King County must build conveyance capacity to manage and transport wastewater flows from Black Diamond.

The county and the city have agreed to a phased approach to providing additional conveyance capacity:

- **First Phase.** An enclosed peak-flow equalization storage facility will be built in the first phase. The facility will store peak flows entering the pump station in Black Diamond and release them slowly over time to avoid overwhelming the downstream conveyance system. It will extend the life of existing equipment and defer the need to build additional new pumping and conveyance facilities for several years. Based on current MPD planning, the facility is anticipated to be online by 2015.
- **Second Phase.** Improvements in the second phase could include larger conveyance facilities, a satellite treatment facility, or a combination of both. Second-phase facilities are currently projected to be operating by 2020. A final decision will be made only after

extensive planning and analysis. Planning will incorporate outcomes from development of the first-phase storage facility and the Reclaimed Water Comprehensive Plan (see Chapter 8).

Activities in 2008 focused on developing and selecting sites and configuration alternatives, researching property issues, and conducting an environmental review for the first-phase storage facility. Public meetings were held in April and May 2008 for Black Diamond community members and interested parties. A formal alternatives analysis report is expected to be complete in early 2009; the report will reflect input gathered from the City of Black Diamond and the public. No additional work on the project is planned for 2009.

Visit the project Web site for more information:

<http://www.kingcounty.gov/environment/wtd/Construction/South/BlackDiamond.aspx>.

## 3.3 RWSP Projects in Construction

Four RWSP conveyance projects were in construction during 2008: the Hidden Lake Pump Station Replacement and Sewer Improvement, Juanita Bay Pump Station Replacement, North Creek Interceptor, and Bellevue Pump Station Upgrade. The locations of these projects are shown in Figure 3-1.

### 3.3.1 Hidden Lake Pump Station Replacement and Sewer Improvement

The Hidden Lake Pump Station Replacement and Sewer Improvement project includes constructing a new Hidden Lake Pump Station to replace the existing pump station in the City of Shoreline, replacing approximately 12,000 feet of the Boeing Creek Trunk, and building a 500,000-gallon underground storage facility in Boeing Creek Park. The new pump station has a pumping capacity of 6.8 million gallons per day (mgd), an increase of 2.5 mgd over the replaced pump station's capacity of 4.3 mgd. The county also replaced 6,000 feet of water mains owned by Seattle Public Utilities and 1,200 feet of local sewer pipes for the Ronald Wastewater District as part of the project.

WTD staff coordinated with the City of Shoreline, Ronald Wastewater District, and the City of Seattle to minimize community impacts. This coordination made it possible to keep the Boeing Creek and Richmond Beach parks open during construction. WTD staff also worked closely with nearby residents and businesses and with City of Shoreline staff to keep them informed of construction activities. The new pump station, designed with the help of public input, fits in the neighborhood and includes native plant landscaping.

Activities in 2008 focused on completing construction and startup of the pump station and Boeing Creek Trunk. Construction closeout is expected to be complete in early 2009. Because this project is considered complete, this is the last year it will be included in the RWSP annual report.

Visit the project Web site for more information:

<http://www.kingcounty.gov/environment/wtd/Construction/North/HiddenLake.aspx>.

### 3.3.2 Juanita Bay Pump Station Replacement

The Juanita Bay Pump Station Replacement project replaces the aging 14.2-mgd Juanita Bay Pump Station with a 30.6-mgd pump station. The new pump station is designed to meet projected flows through 2050. It includes features to improve safety and reliability, such as a standby generator, odor and corrosion prevention systems, improved access for maintenance vehicles and workers, and equipment lifting devices.

Construction on the project was substantially complete by the end of 2008, and the new pump station began operating in January 2009. Because this project is considered complete, this is the last year it will be included in the RWSP annual report.

Visit the project Web site for more information:

<http://www.kingcounty.gov/environment/wtd/Construction/East/JuanitaBay.aspx>

### 3.3.3 North Creek Interceptor

Improvements to the North Creek Interceptor are necessary to avoid overflows and meet current and future growth needs in the North Creek basin. This project, located in unincorporated Snohomish County and the City of Bothell, includes constructing 16,400 feet of gravity sewer pipes, ranging from 21 to 48 inches in diameter, to replace existing sewer pipes. The project will be constructed under two contracts: one for the North Segment located in Snohomish County and one for the South Segment located in the City of Bothell.

In 2005, King County signed an interlocal agreement with the Alderwood Water and Wastewater District. The district is managing design and construction of the project. WTD staff is providing overall project management and oversight, including approving key construction decisions.

In 2008, activities focused on completing final design and beginning construction on both the North and South Segments. Construction is expected to be complete in 2012.

### 3.3.4 Bellevue Pump Station Upgrade

The Bellevue Pump Station is being upgraded to handle growing wastewater flows from the Bellevue area. Built in 1964, the station pumps about 8 mgd of wastewater to the Sweyolocken Pump Station near the Mercer Slough.

This project will increase the Bellevue Pump Station's firm capacity to 11 mgd and will improve the station's electrical and control systems.<sup>5</sup> Because of space constraints, the Sweyolocken Pump Station could not be upgraded to handle these additional flows, so a new 5,300-foot-long,

---

<sup>5</sup> Firm capacity means the capacity of the pump station with one of the larger pumps out of service for maintenance or repair needs.

24-inch-diameter force main was constructed in 2008 to convey the added flows directly from the upgraded Bellevue Pump Station to the East Side Interceptor.

Pump station improvements include new pumps; new electrical, mechanical, and odor control equipment; a new standby generator; new aboveground facilities to house the new equipment; and better access for maintenance vehicles and workers. The project is being implemented through two construction contracts: one for the force main and one for the pump station. The force main construction contract was completed and closed in 2008. The pump station contract was advertised in spring, a contractor was selected in summer, and construction began in fall 2008. Construction is expected to be complete in 2010.

WTD continues to update City of Bellevue staff, community groups, and affected property owners on project progress and milestones through a project Web site and a 24-hour community inquiry hotline.

Visit the project Web site for more information:

<http://www.kingcounty.gov/environment/wtd/Construction/East/Bellevue.aspx>.

## 3.4 Schedule for 2009

CSI activities scheduled for 2009 are as follows:

- Complete final design of the Phase A projects (Stuck River Trunk in Auburn and the Kent East Hill Diversion in Kent) of the Kent/Auburn Conveyance System Improvements project
- Complete the alternatives analysis report for the Black Diamond storage facility
- Continue construction of the North Creek Interceptor
- Continue construction of the Bellevue Pump Station Upgrade project.

Project development activities will begin in 2009 on three projects identified in the June 2007 CSI program update:

- **Bellevue Influent Trunk Improvements.** This project, located in the City of Bellevue, will provide additional capacity to approximately 1,600 feet of the existing Bellevue Influent Trunk to meet the 20-year peak flow design standard. The trunk conveys flows to the Bellevue Pump Station.
- **Sunset/Heathfield Pump Station Replacement and Force Main Upgrade.** This project, located in the City of Bellevue will either modify or replace the existing Sunset and Heathfield Pump Stations and their associated force mains to increase peak capacity to meet the 20-year peak flow design standard and future growth needs in the South Sammamish Basin.
- **Decennial Flow Monitoring.** This project is being carried out in accordance with RWSP conveyance policy. The policy directs WTD to conduct systemwide flow monitoring every 10 years to correspond with the population census. In fall 2009, approximately

225 flow meters will be installed throughout the separated portion of the service area to collect accurate flow data over two wet seasons. The data collected will be used to verify and update the regional conveyance system improvement needs identified in the June 2007 CSI Program Update and to prepare for the next CSI Program Update, anticipated to be completed in 2013.