Puget Sound Beach Combined Sewer Overflow (CSO) Control Projects

North Beach Basin

Technical Information Session
Summary of Discussion
June 26, 2010, 10:00-2:00 pm
Loyal Heights Community Center, 2101 NW 77th St, Seattle, WA

Overview

On June 26, 2010, the King County Wastewater Treatment Division (WTD) hosted a public meeting to share technical information about the combined sewer overflow (CSO) control project in the North Beach Basin. The meeting was organized in response to citizen requests for additional technical information about how the wastewater system works in the North Beach Basin, how WTD developed and evaluated CSO control alternatives for the basin, and whether green stormwater infrastructure and/or infiltration and inflow control are options in the North Beach Basin.

Thirty-three members of the public attended the meeting.

Presentations

Through presentations from the project team, meeting attendees learned about the nature of the CSO problem and the project decision-making process. There were detailed discussions of flow requirements in the North Beach Basin, with hydrographs demonstrating various scenarios. A detailed discussion of infiltration and inflow reduction and green stormwater infrastructure followed. The nine alternatives that were considered for the North Beach Basin were reviewed. King County outlined next steps in the project and how the county will work with the community during design and construction.

Summary of Questions and Input

Questions and input from the meeting attendees are summarized below.

Impacts to downstream infrastructure
The question arose whether CSO control in North Beach would impact facilities in Carkeek Park and whether there was capacity in the force main and at Carkeek to take additional flow from the North Beach Basin. The CSO control alternatives currently under consideration will not increase flows or require any changes to facilities at Carkeek Park.

Existing North Beach Basin infrastructure/Alternative 1D
Meeting attendees expressed desire for more information about the remaining service life of the North Beach pump station and force main and whether it can be replaced in its current location in the tidelands. Residents have expressed concerns about potential future construction projects that may result in back-to-back construction, new facilities constructed in Blue Ridge Park, and/or above ground structures that may impede views.

The existing facilities at North Beach are almost 50 years old. Alternative 1D for CSO control in North Beach includes replacement of the existing pump station and a new force main that runs uphill to the county's 8th Avenue Interceptor instead of along the tidelands to Carkeek Park. The engineering consultant stated that it would be technically very challenging to locate the new pump station completely underground. The new pump station would require two-stage pumping to reach an elevation of over 300 feet. If the pump station cannot be located underground, it could be up to one story high.

Some meeting attendees recommended that the county inspect the existing force main before deciding whether to build Alternative 1D. If this proposal is not recommended for CSO control at North Beach, King County will continue operations and regular maintenance of the existing pump station and begin planning for an updated force main inspection. Inspecting force mains requires careful planning since these conveyance pipelines are in service and under pressure all the time. The findings from an updated inspection will help the county plan for any future projects to rehabilitate or replace the existing infrastructure. If Alternative 1A or 1B were to be selected for the current CSO project, a later project could be implemented to address existing facilities and include conveyance of flows from storage built at this time for CSO control.

The project team indicated that permitting a rehabilitation or replacement of the force main in the tidelands will be challenging, but can't be ruled out at this time.

WTD staff said the potential new drop structure and odor control facility at the top of the basin for Alternative 1D would be located in a utility easement at the old Crown Hill Elementary site. It is unknown whether the structure could be located underground, but it appears that the diversion structure would not interfere with the plans for playfields at the school site.

A meeting attendee asked what happens if pump station pumps fail. Wastewater overflows can happen when pumps fail; overflows would discharge through the two North Beach outfalls . The North Beach Pump Station has a standby generator to prevent overflows from a power failure.

Reduction of Infiltration and Inflow (I/I)
Meeting attendees expressed interest in reducing the amount of infiltration and inflow that enters the wastewater system as a way to control CSOs. The project team explained that stormwater entering the wastewater system via I/I contributes to a significant amount of the flow during CSO events, however removing stormwater from the system would likely require building a dedicated stormwater collection system throughout the basin, which is more expensive for CSO control compared to storage. A separate storm system might need to include treatment facilities which would create additional costs and impacts.

An attendee inquired whether controlling I/I in just the areas of the North Beach Basin that have an existing stormwater collection system would reduce the size of a CSO storage facility. WTD staff said that the potential reduction in storage size would be minimal and would not reduce fixed costs and construction impacts for a storage project.

A discussion centered around whether WTD would consider offering an incentive to encourage voluntary participation for property owners to replace their side sewers, which might be effective since area homeowners know that they have older infrastructure. WTD staff said that a pilot project is currently underway to help King County assess the affect of I/I control on sewer flows, noting that I/I control has not been proven to control CSOs. The cost of controlling I/I is estimated to be substantially more than the CSO control alternatives that WTD is now considering. King County's policy is to control I/I where it is cost-effective to do so.

In response to a question about whether cracked sewer pipes could be leaking into the ground, WTD staff explained that wastewater does not typically leak from pipes into the ground, even though groundwater may leak into pipes via cracks. Water flows in the easiest way. It's easier to flow in a pipe than through the soil, so if there is a pipe with a crack, the groundwater will enter. Water is unlikely to exit a pipe for the same reason -- it is easier to flow in the pipe than through the soil.

A meeting attendee asked about the trend of I/I levels over time in the North Beach basin. WTD said that I/I levels are predicted to be at a peak. Most structures are 50-60 years old and if they deteriorate further they will need to be replaced, which will reduce I/I. If areas with older structures are redeveloped, I/I will be reduced because side sewers will be replaced.

Green Stormwater Infrastructure (GSI)

In response to questions about the use of green stormwater infrastructure to help control CSOs, WTD staff and consultants explained that most GSI projects that have been built to date were designed to reduce or slow stormwater into stormwater systems, not to control CSOs. They said that designing GSI to control CSOs requires a high degree of certainty that the CSO regulation will be met for the Department of Ecology and EPA to approve the project.

The project team described how GSI was evaluated for all four basins in the CSO Beach Projects, and the factors such as steep slopes and groundwater level limit the use of this approach for CSO control in North Beach.

WTD staff clarified that installing rain barrels on private property will not help reduce CSOs, but it is a way to conserve water. Stormwater containment systems were described as small underground storage tanks that could encompass an entire yard. They directed attendees to the City of Seattle RainWise program for information about GSI on private property.

Other Alternatives That WTD Considered

An attendee asked about pumping flow from the bottom of the basin to storage elsewhere in the basin. WTD staff said a pump station needed to pump to storage elsewhere would be larger than a storage facility at the bottom of the basin.

An attendee asked about increasing the capacity of the pumps at the existing North Beach Pump Station. The engineering consultant said increasing the capacity of the pumps is possible, but it would require increasing the capacity of the North Beach force main and increasing the pumping and treatment capacity at Carkeek Park.

An attendee expressed concern about new facilities meeting noise requirements. WTD staff said new facilities would be required to meet single family residential noise requirements at the fence lines.

Decision-making process
The timeline for obtaining permits for the CSO control project was discussed. WTD will apply for permits after the environmental review process. Alternative 1A and 1D would require a permit to work in the shoreline and in a conservancy recreation zone.

In response to a question, WTD staff explained that the King County Council would be briefed about the decision and that the King County Executive would ultimately approve the proposal.

Meeting attendees wondered if it would be possible to choose anything but the least costly alternative during the tough economy. WTD staff noted that cost is not the only factor considered, but the decision must be justifiable to ratepayers throughout the regional service area. WTD staff clarified that construction of the Puget Sound Beach CSO Control projects are already funded in WTD's capital improvement program.

Staff Attendance

The following project team members attended the technical information session:

King County Wastewater Treatment Division
Linda Sullivan, Capital Projects Managing Supervisor; Shahrzad Namini, Project Manager; Mary Wohleb, Assistant Project Manager; John Phillips, CSO Control Program; Monica Van der Vieren, Community Relations

Carollo Engineers
Brian Matson, consultant team project manager; Karl Hadler, North Beach Basin Lead

Triangle Associates
Bob Wheeler, facilitator; Ellen Blair, community relations support