

CHAPTER 13 EMERGING ISSUES AND PLAN RECOMMENDATIONS

This chapter summarizes storm and surface water emerging issues and major plan recommendations. These recommendations are the result of evaluating the drainage basins using the criteria described in Chapter 7 Summary of Basin Issues and Needs and acknowledging that regional, state, and federal initiatives affect how local jurisdictions implement their stormwater management programs. The approaches to responding and implementing these recommendations are separated into two organizational categories: 1) emerging issues, including regulatory drivers, and 2) the Capital Investment Program (CIP) Plan.

Plan Recommendations

In general, the programs, policies, and practices implemented since the last systematic review of the Storm and Surface Water Utility, such as new detention regulations or asset management strategies, were aligned with the needs of the system. Recommendations in this chapter represent these higher level recommendations. Recommendations affecting technical projects or programs are included within individual chapters where they are discussed.

Capital Investment Program

The Utilities Department's Storm and Surface Water CIP Plan is a 7-year spending plan, representing a significant investment of the Utilities' resources to further its mission regarding storm and surface water. The CIP Plan recommendations are organized into four distinct categories for flood control, water quality, fish and wildlife habitat, and asset management.

Flood Control

Bellevue does not have widespread flooding problems, although a few areas of flooding concern remain. Established level of service goals are intended to prevent flooding of structures, flooding that restricts access to residences or businesses, or street flooding, particularly on primary emergency routes. Such flooding events affect public safety and cause property damage. Proposed flood control projects are prioritized based on risk (frequency and consequence of flooding) and are completed as resources are available.

The King County Flood Control District (District) is a special governmental body created to provide funding and policy oversight for flood protection projects and programs in King County. The District is funded by an assessed value tax (16 cent per \$1,000) on each parcel in King County. It is charged with providing comprehensive flood protection and provides funding to improve the County's aging and inadequate flood protection facilities including at least one project in Bellevue the Lower Coal Creek Flood Hazard Reduction Project (D-106). In addition to its CIP program, the District redirects 1 percent of its funding back to local jurisdictions for sub-regional flood control capital projects. Bellevue uses this funding to supplement local rates to fund its Flood Control Capital Program.

Flood Control Program Recommendations

1. Continue investing in the Flood Control Capital Program (D-94). This ongoing program constructs improvements to reduce or eliminate local flooding caused by insufficient public drainage system capacity. Projects involve enlarging pipes or culverts to convey more stormwater, re-routing drainage to pipes with more capacity, adding detention or infiltration facilities, or implementing other runoff control strategies. Areas where levels of service for flood protection are not met are considered candidate sites. Appropriate annual

funding levels should be re-evaluated during each budget update, based on known flooding problems and needs and acceptable risk.

2. Continue to use King County Flood Control Zone District Sub-Regional Opportunity funds to supplement local rates that partially fund projects in the City's Flood Control Capital Program.

Water Quality

Water quality concerns identified in the Washington State Department of Ecology (Ecology) list of impaired water bodies (see Chapter 6 Current Conditions - State of the Storm and Surface Water System) are common non-point source pollution issues that are better addressed through programs, such as source control investigations or focused outreach, rather than capital projects. However, capital investments have been made at existing stormwater facilities to improve water quality. For example, at the Valley Creek regional detention facility, a stream diversion was installed to increase the travel time of stream flow through the regional detention facility. Because the facility is also a wetland, the increased travel time allows plants to uptake nutrients and for sediment to be deposited in the detention pond. New technologies are being developed and evaluated at the state and regional levels that may provide additional opportunities for site-specific projects that could improve water quality in areas of concern. There is a strategic initiative that will further develop opportunities to improve water quality through capital projects.

Water Quality CIP Recommendations

1. Invest in cost-effective water quality projects, where appropriate.
2. Consider emerging technologies and techniques that improve water quality for pilot projects.

Fish and Wildlife Habitat

Aquatic habitat and biological data indicate that streams in Bellevue, like most urban streams in the Puget Sound, are impaired and lack quality habitat (see Chapter 7 Basin Issues and Needs). There is insufficient wood in the streams and there are not enough deep, in-channel pools where fish forage and seek refuge. Macroinvertebrate data also showed impacts of urban impairment.

Barriers to fish migration also exist. The City is required by state law to maintain fish passage at all road crossings (Revised Code of Washington [RCW] 77.57.030). Culverts that are perched high above the stream channel or culverts where the water is too shallow or too fast are examples of fish passage barriers. Removing fish barriers supports the community's vision for fishable waters, and regional efforts to protect and enhance salmon populations.

New urban residential neighborhoods planned for the Bel-Red Corridor require investments in stream restoration and open spaces that support high quality, livable places. Public investment in these improvements will pave the way for pioneer housing development in the transitioning area. Most streams in this historically industrial part of Bellevue flow through pipes under parking lots, roads, and even buildings. Stormwater support from the City's Mobility and Infrastructure Initiative provides funds for restoration of the West Tributary and Goff Creeks (property acquisition by others) and replacement of the fish-blocking culverts on those creeks under Bel-Red Road. The City Council-endorsed Mobility and Infrastructure Initiative provides CIP funds to improve transportation mobility while meeting City goals for a healthy and sustainable environment. The replaced culverts will allow fish access to the newly opened habitat upstream. Two strategic initiatives, Open Streams Condition Assessment and Citywide Watershed Management Plan Assessment, will develop recommendations for improving Bellevue streams beyond the following recommendations.

The following CIP Plan recommendations are meant to address these issues.

Fish and Wildlife Habitat CIP Recommendations

1. Continue to invest in D-81 Fish Passage Improvement Program to remove fish passage barriers created by impassable culverts, debris jams, or accumulated sediment, which opens spawning and rearing habitat for salmon populations. Typical projects include culvert replacement or modification, debris removal, or installation of logs and boulders to channelize low stream flows.
2. Continue to invest in D-86 Stream Channel Modification Program to construct habitat improvements on stream channels. The program increases opportunities for citizens to enjoy fish and other riparian species and reduces the likelihood of localized erosion that can jeopardize structures, cause flooding, and block fish access.
3. Invest in D-104 Stream Restoration for Mobility and Infrastructure Initiative to implement the stormwater improvements associated with this initiative (a city-wide initiative that seeks to address high priority mobility and infrastructure needs in downtown Bellevue and the Bel-Red corridor). Storm funds will be used to open and restore streams for passive recreation and environmental health through the Bel-Red corridor and to encourage redevelopment of the area.

Asset Management

Much of the constructed drainage system in Bellevue was built before standards for storm pipe material and construction were in place, so the City has only limited information about when pipes were installed, their size, and composition. The City owns almost 400 miles of stormwater conveyance pipe. Because the attribute data for the conveyance pipeline are so limited, predicting its remaining life is particularly challenging. It is a fundamental assumption of the stormwater asset management program that significant investments will be needed to maintain the system and replace components that are reaching the end of their useful life. In its assessment program, Bellevue uses video technology to assess the condition of the pipeline and to evaluate the constructed elements of the stormwater system; in addition, the City prioritizes where renewal and replacement funds are spent.

The CIP Plan includes several investments identified as necessary to meet critical system infrastructure renewal requirements. It focuses on critical pipes where the consequences of failure would be significant. The Primary Conveyance Strategy will inform asset management efforts to assure that primary conveyance facilities in both public and private portions of the storm system continue to function and provide flood protection into the future.

The following CIP program recommendations are meant to address aging infrastructure:

Asset Management Program Recommendations

1. **D-64 Stormwater System Conveyance Infrastructure Rehabilitation.** This ongoing program rehabilitates or replaces defective storm drainage pipelines and ditches identified in the condition assessment program or by other means. Projects are prioritized based on the severity of deterioration, the risk and consequence of failure, and coordination with planned street improvement projects. This program provides for repair or replacement of defective stormwater conveyance pipes, culverts, and ditches. It proactively repairs pipes under arterials in advance of street resurfacing, thereby saving costs and minimizing disruption.
2. **D-59 Minor (Small) Storm and Surface Water Capital Improvement Projects.** This ongoing program is for conducting small improvements to Bellevue's surface water system to resolve

deficiencies, improve efficiencies, or resolve maintenance problems, often in conjunction with other Bellevue programs such as the transportation overlay program. Projects are prioritized based on criteria including public safety, property damage, maintenance frequency, flooding history, operator safety, environmental risk, coordination with other City or development activity, and level of service impact. The program allows the City to efficiently maintain and upgrade its storm system by coordinating minor improvements with other City projects and maintenance activities.

Storm and Surface Water Emerging Issues

Management of Stormwater

As discussed in Chapter 2 Stormwater Management Challenges and Opportunities, Bellevue's management of the storm and surface water system must balance the demand for economic sustainability along with environmental protection. A number of emerging stormwater issues will continue to shape how the resource is managed. For example, in the 2013-2018 National Pollutant Discharge Elimination System (NPDES) Phase II Western Washington Municipal Stormwater Permit, Ecology requires municipalities to amend development codes to require the use of low impact development (LID) best management practices (BMPs) such as rain gardens, bioretention facilities and pervious pavement where feasible in new development and redevelopment projects. Phase II municipalities are required to adopt these new LID development standards by December 31, 2016. Infiltration of stormwater is not a new approach to stormwater management; however, applying LID BMPs at a regional scale (via the NPDES Permit) is, so monitoring its effectiveness and being prepared to make necessary adjustments is the basis of the this Plan's recommendations.

Ongoing stormwater education and outreach informs citizens about stormwater issues and encourages behaviors that protect water quality and reduce runoff. Because most of the land in Bellevue is private property, citizens play a pivotal role in stormwater protection. Education and outreach is needed for common behaviors, such as car washing, yard care, and disposing of pet waste, which can affect water quality as well as natural drainage practices that help control stormwater flow. A variety of outreach methods is needed to reach the general community as well as target audiences depending on the messages and goals.

The following recommendations are in response to the emerging issues related to the management of stormwater.

Recommendations for Emerging Stormwater Management Issues

1. Continue to encourage use of emerging low impact development (LID) technologies and collect data on their effectiveness.
2. Continue to educate the public on how to optimize on-site stormwater runoff management.
3. Monitor the effectiveness of structural and outreach programs over time.

Puget Sound Partnership

The Puget Sound Partnership is a community effort of citizens, governments, tribes, scientists, and businesses working together to restore and protect Puget Sound. State leaders tasked the Partnership with creating an Action Agenda to clean up Puget Sound by 2020. The Legislature intends that all government entities within Puget Sound will exercise their existing authority to implement the applicable provisions of the Action Agenda (RCW 90.71.350). The major focal areas for the Action Agenda are land development, shoreline alteration, runoff from the built environment, wastewater, and loss of floodplain function. The Action Agenda items for stormwater management includes:

- *Sustain freshwater availability for instream and human uses.*
- *Protect and recover salmon.* Implement the regional salmon recovery plan.
- *Prevent and reduce toxic loadings into Puget Sound.* Work with local governments and others to implement toxic chemical and pollution policy and programs to reduce release of chemicals, provide education and technical assistance, and strengthen authorities and policies to deal with toxic chemicals.
- *Control and manage stormwater.* Use a comprehensive approach to manage urban stormwater runoff at the site and landscape scales; control sources of pollutants; provide focused stormwater-related education and training; and assess the effectiveness of actions and effects on the environment.
- *Issue awareness and understanding.* Implement a regional communications effort to increase public understanding of Puget Sound for local communications efforts; and implement a locally based communications effort to increase public understanding of Puget Sound for local recovery efforts and other social media and school-based awareness campaigns.
- *Changing practices and behaviors.* Provide a science-based foundation for targeted communications and behavior change approaches. Sustain and expand proven and effective local volunteer and stewardship programs that target Action Agenda priorities. Stimulate broad-scale individual stewardship behaviors by integrating messages and technical assistance into existing programs, youth education, adult education, volunteer opportunities, and other programs.
- *Build and use a performance management system.*

Recommendation for Support of Regional Planning Efforts

Continue to support regional planning efforts and activities related to water quality, quantity, and habitat consistent with community values and resources.

Regulatory Drivers

The NPDES Municipal Stormwater Permit (NPDES Permit), issued by Ecology, is the basis for regulatory compliance for operating the City's municipal separate storm sewer system (MS4). Permit conditions are phased in over a 5-year permit term and apply to citywide programs. The permit is revised and reissued every 5 years. The City received its first NPDES Permit in 2007. In 2012, Ecology extended the first permit for a year and issued the second NPDES Permit, effective August 1, 2013 to July 31, 2018. The NPDES Permit is anticipated to continue to increase in complexity, cost, and responsibilities.

Regulatory Driver Recommendation

Continue to implement the required NPDES activities described in the City's annual Stormwater Management Program Plan.

Water Quality Improvement Project Process

Ecology may require projects and programs to improve surface water quality for water bodies identified on the state's list of impaired water bodies (the 303(d) list). The Total Maximum Daily Load (TMDL) or Water Quality Improvement Project process establishes limits on pollutants that can be discharged to a listed water body and still allow state standards to be met. The state's 303(d) list identifies the impaired water bodies located in Bellevue.

Water Quality Improvement Project Process Recommendation

Verify the state's list of water quality impairments in Bellevue (303(d) listed water bodies) to determine if existing programs will address identified water quality impairments.

Regional Water Quality Monitoring

As part of the 2013 municipal NPDES permit, Bellevue elected to participate in the Regional Coordinated Stormwater Monitoring Program (RSMP). The monitoring program has three elements, improving pollutant source identification, effectiveness of municipal activities and practices, and monitoring the status and trends of receiving water conditions and biota. The Regional Stormwater Monitoring Program implemented through the municipal stormwater permits is part of a larger regional monitoring strategy, the Stormwater Assessment and Monitoring Program for Puget Sound (SWAMPSS) which provides a strategic, coordinated, and integrated approach to quantifying the stormwater problem in Puget Sound. SWAMPSS is intended to help efficiently and effectively manage stormwater to reduce harm to the ecosystem and to integrate with other efforts to protect and recover Puget Sound.

Regional Water Quality Monitoring Recommendation

Continue to participate in and support the recommendations of the SWG, which provide more meaningful and useful results, are less expensive to implement, and meet multiple objectives, such as Chinook salmon recovery or Growth Management Act directives.