



# LANDSCAPE PERFORMANCE SERIES

## Thornton Creek Water Quality Channel – Seattle, WA Methodology for Landscape Performance Benefits

### Environmental

- ***Increased open space within the Northgate Urban Center by about 50%.***

Seattle's 1994 Comprehensive Plan identified Northgate as an Urban Center - a target area for new jobs, housing, and public investment. The area has historically contained dense commercial strip mall-type development with clusters of offices and residential pockets mixed in. Prior to the Project's development, there were few open spaces in the area, primarily a park space associated with a new library/community center campus (about 1 acre), and an unmaintained natural area (about 4.3 acres) through which the headwaters of the South Fork of Thornton Creek flow after leaving the Project. At 2.7 acres, the Project increased open space within the Northgate Urban Center by about 50%. A new 3.73 acre park is currently under construction which will further increase open space in the neighborhood.

- ***Reduced impervious surfaces by 78%.***

The project site was an abandoned parking lot. The site's original impervious surface area was 2.27 acres. This was determined by calculating the amount of asphalt to be removed. The project's impervious surface area after construction is 1.78 acres. The difference in impervious surface area equals an impervious surface reduction of 78% across the site.

- ***Designed to remove an estimated 40-80% of total suspended solids from 91% of the average volume of annual stormwater runoff from the 680-acre drainage basin.***

The project's water quality channel is designed to provide water quality treatment for flows at or below 13 cubic feet per second (cfs). Hydrologic and hydraulic modeling was performed using XP-SWMM Version 10.5. Modeling performed by City staff and consultants indicated that designing to this flow standard would meet the project's goal of providing water quality treatment for 91 percent of the 680 acre drainage area's annual average runoff. It is estimated that the Water Quality Channel will provide 40-80% removal of Total Suspended Solids (and associated pollutants); actual performance is difficult to estimate due to the project's modified bioswale design. The project is being monitored for performance. As monitoring data is collected, actual performance will be determined, the predictive models used to design the site will be refined and the installed design will be adjusted to improve performance.

- ***Created new habitat within this heavily paved commercial area. Within one month after opening, native birds were observed at the project. A variety of desirable native volunteer plants have migrated into the site and begun to establish.***

Prior to development, few birds frequented the site other than birds highly adapted to urbanized environments, such as crows and sparrows. The new wetland and upland plantings have attracted native bird species, such as killdeer. The team performed a vegetation survey for invasive plants about six months after opening. About 30% of the volunteer species identified were desirable native plants that had not been part of the Project's planting palette, including

some wetland species that are considered rare and difficult to establish in Seattle. These volunteers were likely carried into the site as seeds by channel flows from upstream. It will be interesting to see how these plants integrate into the Project's plant palette and how the species mix adjusts over time.

## **Social**

- ***Provides pedestrian links from adjacent commercial and residential neighborhoods. Shortened walking access by 50%.***

Long blocks were shortened by adding mid-block access into the site and allowing diagonal travel through a megablock, improving pedestrian connectivity.

## **Economic**

- ***Catalyzed \$200 million in adjacent private residential and commercial development.***

This figure is based on the estimated development costs for the two private parcels adjacent to the Project. The parcel to the northwest, owned by Lorig and Associates, consists of high rise apartments, townhouses, commercial space, and a new state of the art multiplex movie theater. The private parcel to the southeast, owned by ERA Living, is retirement community housing.