



drainage

reduce impervious surfaces by narrowing the roadway and creating more space for vegetation and soil to absorb rain water



water quality

utilize a combination of soils, plants, and infrastructure to clean and filter rainwater as it washes off parking spaces and the roadway



landscaping

use natural materials—vegetation and soils — to slow, filter, and infiltrate stormwater runoff... all within the space of the public right-of-way



mobility

calm traffic by narrowing and curving the roadway; ensure safe access for emergency vehicles, bicycles, and pedestrians



community

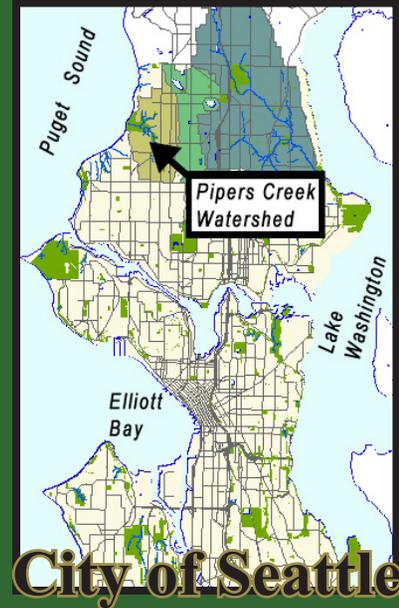
bring life to the street by constructing sidewalks, gardening with neighbors, and promoting watershed stewardship



education

set an example for future alternative streets projects; monitor changes in water quality and drainage; share ideas with watershed neighbors and other cities

Broadview-Green-Grid



Broadview Green Grid in Context

This Natural Drainage Systems (NDS) project spans 16 blocks of a residential neighborhood in northwest Seattle. Topography, infrastructure, and landscape were designed to meet Seattle Public Utilities' goals for Natural Drainage Systems, including improvements in ecology, safety, and aesthetics. This project is located adjacent to the 110th Cascade Project, within the Pipers Creek watershed. Much of the Broadview Green Grid was modeled after the SEA Street project, which is located 10 blocks to the north within the same watershed.



Bus routes nearby are #5, #28, and #355.



Storing Stormwater on Steep Slopes

This project was designed as a way to reduce roadway paving and create spaces for stormwater to be absorbed by soils and vegetation. Steep slopes presented a new challenge for SPU's engineers and landscape architects. In response, they used the topography to their advantage, maximizing swale size by building rock walls to stabilize the side slopes. The series of vegetated cells and flow-control weirs is engineered to control runoff conveyance and allow stormwater to infiltrate into the soil.



Greening the Grid

The hardy, salmon-friendly landscape was selected by the project's landscape designers to be well-suited to the hydrology of the Pacific Northwest. The species are aesthetically pleasing and resilient even when planted at the roadside. Plants that thrive in wetlands have been placed in the lower, moist areas of the stormwater swales. These roadside gardens are designed to be integrated with the landscaping on private property adjacent to the right-of-way.



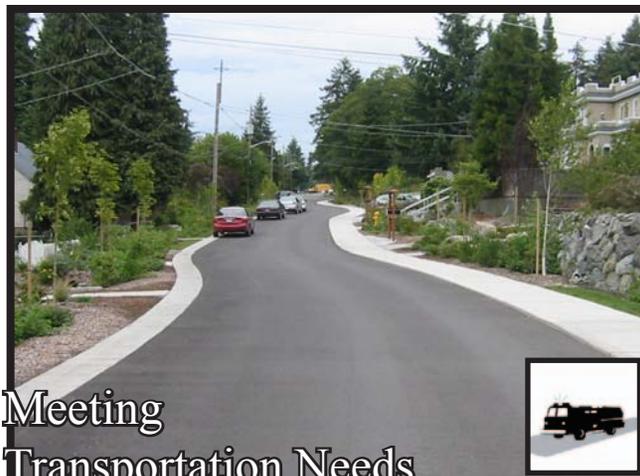
Walkability

The street designs, replicated from street to street within the Broadview Green Grid, draw attention to the fact that something special is happening here. Beyond drainage improvements, valuable community amenities have been added to this neighborhood. A sidewalk now separates pedestrians from vehicle traffic; clusters of mailboxes create gathering spaces. Visitors will notice the unique appearance of these streets, which subtly reflects the relationship of the neighborhood to the greater watershed.



Biofiltration

The roadside landscape serves the ecological functions of storing and treating stormwater runoff. Compost-amended native soils and specially engineered soils help the landscape to absorb and filter stormwater. Bacteria help break down carbon-based pollutants like motor oil. Dense plantings of native shrubs and fine-stemmed grasses, sedges and rushes mimic an undeveloped watershed's capacity for storing and cleaning runoff. Trees increase evaporation and transpiration.



Meeting Transportation Needs

This atypical street grid was laid out by designers who took cues from the SEA Street prototype project. The meandering shape of the roadway helps to reduce impervious surfaces, making room for landscaping and a sidewalk. Traffic also slows in response to the curving roadway. Parking on the three north-south streets of Broadview Green Grid is limited to one side of the street, maximizing space for vegetated swales, while meeting local parking needs.



Applied Knowledge

To date, the largest built project of its kind, the Broadview Green Grid design is a culmination of lessons learned through creating and studying earlier projects at SEA Street and the 110th Cascade. Designers and engineers have considered what works and why, and what modifications might be made to improve NDS functions. Monitoring of the site's water quality and hydrology will continue to inform scientists, engineers, and designers, inspiring further research and NDS developments.