Shoreline's Aurora Corridor

- **Safer travel on Aurora –** raised medians and left-turn pockets, new sidewalks, pedestrian lighting, accessible design
- **Improved traffic flow and transit services –** improved signal detection, bus lanes, and bus shelters
- **Enhanced corridor aesthetics –** undergrounded utilities, new plantings, patterned and colored paving, street furnishings, stylish retaining walls, public art, gateways
- **Reinvestment to promote economic development**
- **Environmental improvements –** new street trees and shrubs, added green space (planted medians and planting strips), stormwater quality and management

▲ **Street trees** in the planting strip provide shading and natural beauty along the sidewalk. **Tree grates** can extend the walkable area of a sidewalk. Grates have ring sections that can be knocked out to allow for additional tree trunk growth.

STREET TREES

- **Large canopy** tree planting
- **Replenish oxygen** and **filter pollutants**
- Shading to **reduce heat island effect**

WALK, RIDE, BIKE

- Safety improvements - **crossings, pedestrian light heads**
- Continuous **sidewalks**
- **Planting strips** buffering pedestrians from the roadway
- Linkages to the **Interurban Trail**

WATER CONSERVATION

The Aurora Corridor project practices the following water conservation measures:

- **Hardy, drought tolerant plants**
- **Drip irrigation**
- Supplemental irrigation through **rain gardens**
- Water-wise **demonstration gardens**

▲ **Cobble medians** planted with Elijah blue fescue. More examples of **drought-tolerant plants** are below.

Sedum spathifolium 'Purpureum' and *'Cape Blanco'*
STONECROP

Heliocoptrichon sempervirens
BLUE OAT GRASS

Lavandula spp.
LAVENDER varieties

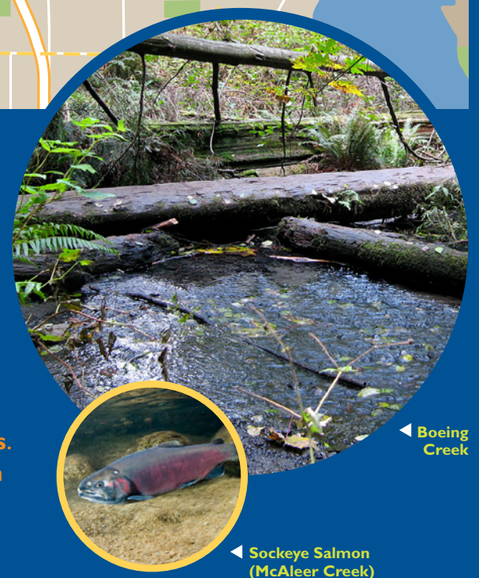
Achillea filipendulina 'Moonshine'
YARROW

Artemisia schmidtiana
SILVER MOUND WORMWOOD

▲ Map of **creek basins**

BASIN-WIDE WATER QUALITY IMPROVEMENT

An important Aurora Corridor improvement is the capturing, storing, and treatment of stormwater runoff. This is particularly important because the **roadway stormwater contains sediment and pollutants**. Stormwater is not only **slowed down to prevent flooding and erosion,** but also **filtered** before reaching salmon-bearing streams.



◀ **Boeing Creek**

◀ **Sockeye Salmon (McAleer Creek)**

Generally, the runoff **north of 185th** flows to **Echo Lake, Lake Ballinger, McAleer Creek, Lake Washington** and eventually **Puget Sound.** The runoff **south of 185th** travels a much shorter distance from **Boeing Creek to Puget Sound.**

NON-NATIVE SPECIES?

Most native species are **best adapted** to **cool, forested conditions,** rather than developed urban environments. The drought tolerant plants featured along Aurora Ave are **not necessarily** all Pacific Northwest native species.

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Capturing our Stormwater

▲ **Permeable sidewalk pavers (root box system** underground) and a planting bed line the south side of Shoreline City Hall.

HOW IS STORMWATER TREATED ALONG AURORA?

Storm events produce a **surge of water to a system,** flowing quickly over paved areas while picking up **pollutants and sediment.** This creates concerns for **erosion and the quality of water** reaching our streams, lakes, and Puget Sound.

Storm drains and catch basins are used to help direct and contain runoff, but these **conventional** methods eventually release untreated water into our natural systems.

Along Aurora Avenue, **alternative** stormwater management methods of **capturing and retaining runoff** have also been added to help **regulate the flow, filter, and clean** the water they catch.

Alternative Stormwater Management Methods

Surface Infiltration

RAIN GARDENS

Stormwater enters via curb cuts into these **shallow depressions or swales. Specialized plants and compost-rich soil mixes** remove stormwater pollutants and reduce stormwater runoff. Rain gardens can be found along sidewalks and in the median.

▲ Installation of **root box system under the sidewalk**

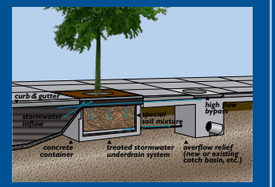
PERMEABLE SIDEWALK

Stormwater infiltrates via openings between **permeable pavers** to the **root box system underneath.** The modular root boxes hold lightly compacted soils in place, to **promote healthy root and tree growth,** while supporting the sidewalk.

Biofiltration

BIORETENTION BOXES

Stormwater flows through a special soil mixture in a landscaped container. The **soil captures and immobilizes pollutants;** those pollutants are then broken down and absorbed by the system's tree or shrub.



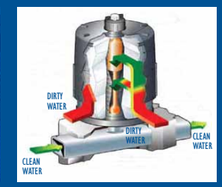
ECOLOGY EMBANKMENT

Stormwater flows off the roadway and across the shoulder to a **grass strip and trench containing specialized soils.** Through filtration and chemical processes, sediment and pollutants are removed from the stormwater.

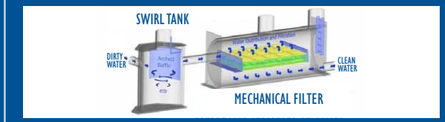
Filtration

VAULT & MANHOLE FILTER

Stormwater enters a vault or manhole and **flows through cartridges containing filter materials specifically designed to remove sediment and pollutants of concern.** Filter materials are replaced at regular intervals to provide consistently clean stormwater.



Hydrodynamic Separation



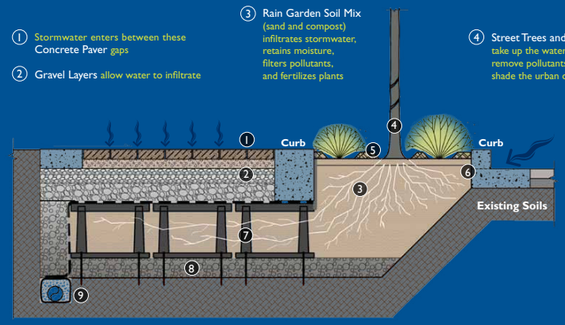
SWIRL TANK & FILTER

Stormwater enters and flows across a curved plate in the Swirl Tank. **A swirling (vortex) pattern is produced that helps floatable contaminants to migrate to the center, and heavier polluting solids to settle out to the bottom** of the chamber.

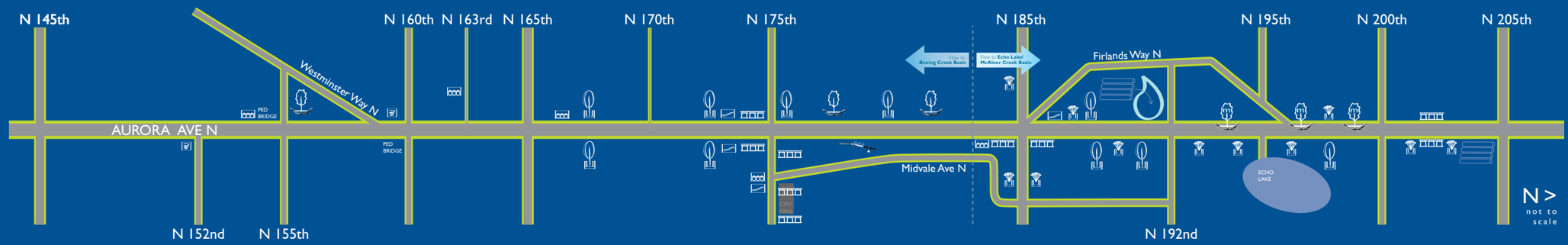
Next, the stormwater enters the Mechanical Filter to **remove fine sediment, excess nutrients, petroleum hydrocarbons, and heavy metals** before reaching sensitive receiving water bodies, such as our salmon-bearing streams.

OIL / WATER SEPARATOR

Stormwater enters a vault and is passed through a binding material that **forces oil particles to combine into larger droplets that float to the surface.** The oil can then be removed from the stormwater and disposed.



▲ Section of **permeable sidewalk, root boxes and rain garden**



LEGEND

- Demonstration Gardens
- Pipe Farm
- Rain Garden Planter
- Rain Garden Swale
- Rain Garden Median
- Bioretention Box
- Permeable Sidewalk
- Ecology Embankment
- Vault & Manhole Filter
- Oil / Water Separator
- Swirl Tank

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What's under your feet?

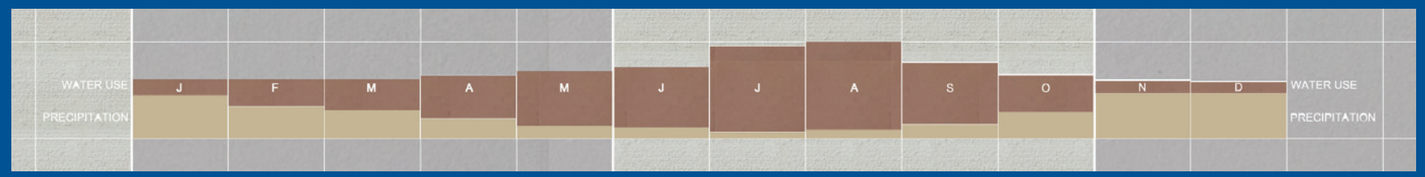
▲ Cut-away diagram of a **pipe farm** underneath a parking lot

▲ Construction of the **pipe farm** under this plaza

About three feet beneath you is an **array of four large detention pipes**. Stormwater flows **from the street, plaza, and park & ride lot** to these pipes, where it is stored and slowly released. **Slowly releasing the water** reduces flooding and erosion in the downstream waters of **Echo Lake, Lake Ballinger and McAleer Creek.**

WATER USE GRAPH

Although common perception is that it is always raining west of the Cascades we actually have very little rainfall during the summer months. These months are also when we tend to use the most water for irrigating plants and lawns.



▼ **'Water Use Graph'** paving located on west end of plaza

▲ Map of **rain garden** and drought-tolerant **theme gardens**

CAN YOU SPOT . . .

Look for these **plant identification signs** throughout the water-wise demonstration gardens.

Take a look at the **special colored paving** on the west end of this plaza. Each block represents a month, and the different colors show varying levels of precipitation and water use per month. Notice how much larger the block of red pavement is for the months of July and August. We have the **least amount of rainfall** during those months, yet the **demand for water is greatest.**

In order to **reduce water use** in Shoreline, we have planted **low-maintenance drought tolerant plants,** such as the ones featured in our water-wise demonstration gardens. We've also installed **drip irrigation** (water is directly irrigating the roots; less water is wasted through spray evaporation).

Why conserve water when it's always raining?

WATER-WISE DEMONSTRATION GARDENS

Many of these plants can also be found along the Aurora Corridor. You can explore some of these combinations for your home or commercial garden.

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