

SOAP Action Update

Public Works Use of Bioretention Facilities



Why install bioretention facilities?

Bioretention is a stormwater management practice that uses chemical, biological and physical processes to transform or filter contaminants and sedimentation from stormwater runoff. Stormwater runoff is rain or snowmelt that flows from developed land (i.e. roads, parking areas, roofs, yards) into nearby streams, lakes and Puget Sound. This runoff transports a mix of pollutants such as petroleum, heavy metals, fertilizers, pesticides, and sediments downstream and harms waterways in the state.

Bioretention facilities are engineered to more closely approximate natural forested conditions where stormwater disperses along the forest floor, infiltrates into the ground, evaporates or is taken up by vegetation. A single rain storm in Snohomish County can introduce nearly 3,000 tons of pollutants¹ into our waterways. Traditional methods for removing stormwater pollutants include construction of large storage areas (vaults and ponds) to store stormwater until pollutants will drop out of the water. These methods are expensive and difficult to build and maintain within the county right-of-way. Studies by the Environmental Protection Agency have shown that LID bioretention strategies and practices can reduce capital costs by as much as 15% - 80%.²

Since 2010 Snohomish County Public Works has utilized bioretention facilities extensively to reduce the impact of stormwater runoff on county road and bridge projects. Nearly 65% of all road and bridge projects constructed by Public Works have incorporated some form of bioretention. Stormwater is collected into relatively small, localized treatment areas and encouraged to infiltrate into the underlying soils.

In 2013, use of bioretention on the Jim Creek Bridge #42 Replacement Project eliminated the need for vaults or ponds on the site, effectively treating and detaining all stormwater through low impact development techniques. The Seattle Hill Road Project, a two mile road corridor project designed in 2014, is an example of how Snohomish County is utilizing bioretention in conjunction with other LID practices to manage all stormwater onsite without the use of ponds or vaults. Utilizing bioretention also typically results in additional benefits such as reduced right-of-way impacts and acquisition costs.

environmental goals

Snohomish County is working to achieve the energy and resource conservation goals established in our internal Sustainable Operations Action Plan (SOAP) for government operations. The use of innovative bioretention facilities to treat stormwater runoff is one example of how we are taking action to achieve our SOAP Goals and Objectives, namely:

- **Goal 6:** Promote Ecological Preservation and Healthy Ecosystems.
- **Objective 6S:** Manage county land, facilities and infrastructure in a way that minimizes negative impacts to the natural ecosystem while meeting the functional needs of the site.
- **Objective 6T:** Protect water resources and watersheds from actions that can degrade water quality.
- **Strategy 6(ii):** Use Low Impact Development (LID) best management practices at all county facilities to the greatest extent feasible (new development, maintenance and renovations).
- **Strategy 6(iv):** Identify strategies to reduce the urban heat island effect in the development and maintenance of public infrastructure and facilities.

environmental benefits

By incorporating bioretention into county projects, Snohomish County . . .

- More effectively removes pollutants and reduces the overall volume of stormwater runoff.
- Protects property by reducing flooding.
- Protects drinking water supplies by infiltrating into the ground and recharging aquifers.

economic case

By taking action to achieve Snohomish County sustainability goals, the county realizes an economic benefit as well.

- Bioretention facilities are less costly to build than vaults or stormwater ponds.

1. Total suspended solids assuming low concentration (Puget Sound Partnership 2010)
2. Fact Sheet: Reducing Stormwater Costs through Low Impact Development Strategies and Practices (EPA 2007)