

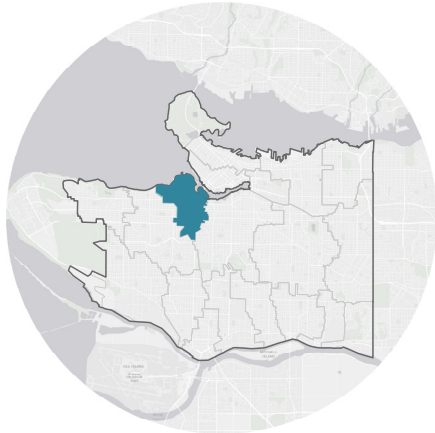
Pine Street

Rain City Strategy Green Infrastructure Implementation

Last updated: 2022

About Pine Street

Location



South Hill Watershed



Location of bioswale



Project overview

As part of the Pine Street sewer main upgrade, three new bioretention corner bulges were designed and installed to help capture and clean rainwater runoff from Pine Street, 7th Ave and 8th Ave. All three bioretention bulges include best practice green infrastructure designs such as concrete sediment pads to help reduce maintenance requirements. Wier walls have been designed to help slow the movement of rainwater runoff and increase infiltration. All three sites will help to capture roadway pollutants as well as add a number of co-benefits such as pollinator habitat and increased biodiversity.

Why was GRI implemented?

Pine Street underwent a major infrastructure upgrade to replace aging storm and sanitary sewer mains between West 4th Avenue and West 8th Avenue. The construction involved opening up the street and removing existing curbs. This provided an opportunity for the TDE and GI branches to work together on traffic calming and rainwater management objectives.

In total, six corner bulges have been installed, three of which are bioretention corner bulges designed to capture and clean urban rainwater runoff. Opting for bioretention corner bulges eliminated the need to relocate three existing catch basins and install new sewer connections. By not spending \$30,000 on relocating the catch basins, more value was added by improving urban rainwater runoff quality, reducing the risk of overland flooding, and supporting biodiversity and ecosystem services.

What is Green Rainwater Infrastructure (GRI)?

GRI is a cost-effective approach to rainwater management that protects, restores, and mimics the natural water cycle. It uses soils, plants, trees, and engineered structures to capture, store, and clean urban rainwater runoff before returning it to our waterways and atmosphere.

GRI delivers essential drainage services as well as additional co-benefit services such as reducing climate change risks, providing ecosystem services, and offering opportunities to stimulate the local economy.

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Project design

Project elements



1 **Outlet** the existing Catch Basin was re-used as an outlet for any overflow during large rain events.

2 **GI curb** helps to protect the existing boulevard trees by reducing erosion and minimize changes to hydrolic conditions.

3 **River rock** helps to disperse energy of incoming rainwater runoff and in turn, helps to reduce water ruts and erosion.

Design components



Inlet directs water into the bioswale and removes sediment.



Weir wall helps to slow water flow and in turn, increases opportunity for ponding and infiltration.



Diverse planting helps to increase local biodiversity and create year-round interest.



The subdrain removes excess rainwater when soil is saturated.

Design considerations



Bioretention soil consists of a specialized mix of sand and organic matter. The design allows for infiltration while still providing adequate nutrients to support thriving plant communities.



Clearances from underground utilities, including street lighting, BC Hydro utilities above and below ground.



Planting palette developed in coordination with Street Activities.

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49 m²

Bioretention planting area



2.5 thousand m²

impervious area managed



3.1 thousand m³

urban rainwater runoff treated onsite annually

Timeline & partners for GRI

The GRI components of the project were **internally designed and externally constructed, led by the Green Infrastructure Implementation Branch**. In the timeline below, key partners that supported the delivery of GRI are identified at each stage of the project.

