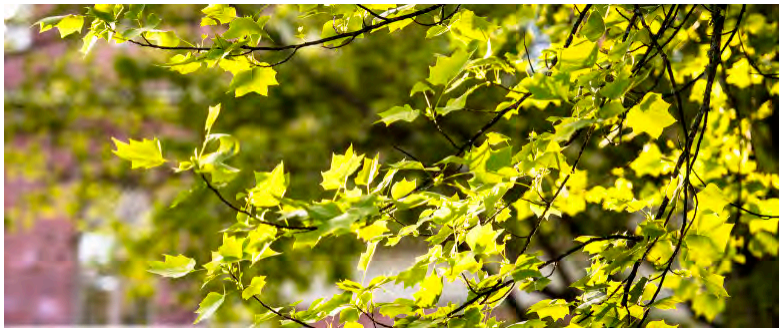
OREGON STATE UNIVERSITY SUSTAINABILITY OFFICE

Sustainable Stormwater Guide



- Bioswales
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Throughout the Corvallis Campus there are stormwater handling features that attempt to mimic natural systems. These features work to reduce impacts of paved surfaces by recharging groundwater, treating pollutants, and serving other functions detailed below. Once established, these facilities require varying levels of maintenance for proper function.

Bioswales

Bioswales consist of a marshy runoff course with gently sloped sides and are filled with plants, compost, and in some cases, rocks. They are designed to remove pollutants and silt from surface runoff water.

The bioswale removes pollutants and silt by maximizing the time water spends in the swale, which aids in trapping and filtering pollution.

One of the most common locations for a bioswale is next to a parking lot. The parking lot discharges pollution from cars when rainwater flushes into a bioswale. The bioswale then filters the water and releases cleaner water into the storm drain system or a local waterway.

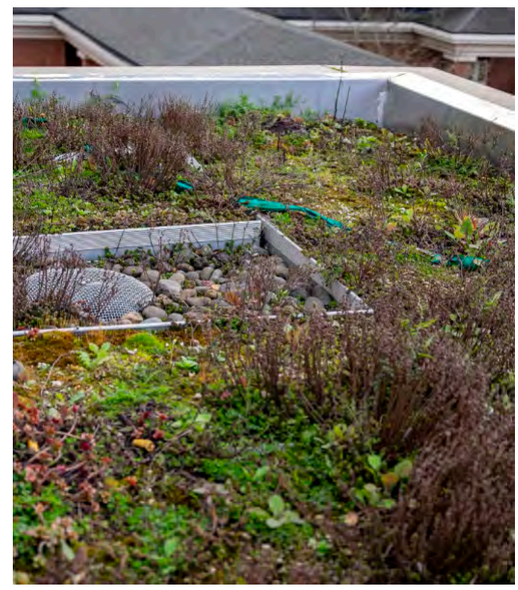
Bioswale on the northeast side of the International Living-Learning Center

Green Roofs

A green roof, or "vegetative roof", is a rooftop of a building that is covered with planted vegetation laying over a waterproofing system. Green roofs absorb rainwater, provide insulation, create habitat for wildlife, and decrease urban air temperatures.

Reducing stormwater runoff is a major benefit of adding a green roof to any building. Green roofs can reduce water runoff by over 75% during storms. The rainwater runoff is both filtered of pollutants and is temperature moderated.

Green roofs can also extend the lifespan of a roof membrane by providing protection from harmful ultraviolet radiation and physical damage. Green roofs offer a strong thermal barrier, keeping heat in while also reflecting and absorbing solar radiation during the summer, resulting in lower energy usage year round.



Green roof at the Beth Ray Center for Academic Success

Rain Collection

Rainwater collection is the storage of rain in large tanks that can be located indoors or outdoors. Rainwater can be collected from roofs and redirected to these tanks for later use as irrigation, toilet flushing, or other non-potable uses.

Collected rainwater is used in three locations on campus. The largest rainwater collection facility at OSU is at Kelley Engineering, where rainwater is collected from the rooftop. It then flows through infiltration gardens around the perimeter of the building, is stored in a 16,000 gallon tank, and is used for the building's toilet flushing.

Another rainwater collection tank on campus is at the OSU Pride Center. The Pride Center's collection tank was designed by an engineering student using an old composting bin. Rainwater is used for watering plants around the Pride Center's permaculture garden.

Rainwater collection tank on the southside of the Pride Center.

Rain Gardens

Rain gardens are vegetated depressions that catch rain runoff from impervious areas such as roofs, driveways, walkways, parking lots, and even some compacted lawn areas. They are designed to absorb stormwater rather than filter it of its pollutants.

The rain runoff is captured in the gardens and allowed to soak into the soil. This prevents surges of rain water from flowing into storm drains or local streams, which causes erosion, water pollution, flooding, and diminished ground water. The essential purpose of a rain garden is to improve the water quality in nearby bodies of water.

OSU has numerous rain gardens for your viewing pleasure. Their aesthetic is one of the many benefits of rain gardens but the main function is their impact on our living environment!

Rain garden on the northwest side of the International Living-Learning Center

Permeable Pavement

Permeable paving can be created using a number of different techniques, but the fundamental idea stays the same throughout: infiltration. Permeable pavement allows rainwater to flow through and into a series of subbase materials to suspend any solids and pollutants from the runoff before releasing the water back into the groundwater system.

Oregon State University has begun implementing porous asphalt in parking lots as pictured to the right. The surface looks just as any other parking lot would, but with a different mix of asphalt which allows water to flow through and infiltrate into the ground.

Permeable pavement on the northeast side of the International Living-Learning Center

Sewer Access Structure

A sewer access structure screens, separates, and traps pollutants that would normally flow directly into local streams. These separators drop out solids in the center by spiraling inflow and capturing oils and floatables. The filtered rainwater then flows into the local water system.

Hydrodynamic separator near Gill Coliseum