

Identifying a Stormwater Injection System

Background

Underground injection control systems are most commonly used in Oregon to dispose of stormwater runoff. However, not all stormwater management systems that infiltrate runoff are UIC systems. Because UIC systems must be registered and approved by DEQ, it is necessary to differentiate between stormwater best management practices that are UIC systems and those that are not.

What is a stormwater injection system?

Injection systems receiving stormwater discharges include wells and subsurface distribution systems. According to DEQ definitions in [Oregon Administrative Rules 340-044-0018](#):

- A well is a bored, drilled, driven or dug hole whose depth is greater than its largest surface dimension.
- A subsurface fluid distribution system is an assemblage of perforated pipes, open-ended solid pipes, drain tiles or other mechanisms that distribute fluids below the ground surface.

Based on these definitions, stormwater controls that qualify as UIC systems include but are not limited to:

- Drywells and drill holes
- Trenches with depth from ground surface that is greater than width regardless of the presence of gravel fill or soil cap
- Soakage trenches (also known as recharge beds, infiltration trenches or infiltration galleries) of any dimension

Identifying UIC systems based on functions of BMP design elements

Determining that a stormwater best management practice is a UIC system is not always evident, especially when the BMP is a low-impact development design. Stormwater BMPs may be UIC systems, depending on the function of certain design elements. The BMP is a UIC system if it includes a design element that is a subsurface fluid distribution system intended to discharge stormwater flow (including flow associated with the design storm, overflow or drain down) into the subsurface. If the BMP is not a UIC system, the point receiving the BMP discharge may be a UIC system.

Design element functions which are not criteria for a UIC system include:

- Drainage components, such as French drains, perforated pipes, drain tiles or other similar mechanisms that function to collect and convey infiltrating stormwater to another disposal or discharge point
- A drain rock layer or gravel storage area underneath an infiltration swale or basin with a soil mixture designed to filter out stormwater pollutants. The drain rock layer functions as temporary storage for stormwater infiltrating into the subsurface when precipitation intensity exceeds the infiltration rate of the natural soils.

Drawings on the following pages show stormwater best management practices with and without design element functions which define the BMP as a UIC system.

If a BMP uses a drainage component capable of functioning as either a subsurface fluid distribution system or a collection and conveyance system, the BMP is a UIC system. For example, a BMP uses a perforated pipe to collect and convey stormwater after it has filtered through a soil mixture during the design storm. However, in conditions of overflow, the same perforated pipe is used to allow bypass of the soil mixture and injection of untreated stormwater into the subsurface. See an example of this pipe configuration in Plan View 3b.

For information on stormwater best management practices and green infrastructure design, refer to:

- City of Portland [Stormwater Management Manual](#)
- City of Gresham [Green Development Practices for Stormwater Management](#) and their [Water Quality Manual](#)
- Central Oregon Intergovernmental Council [Central Oregon Stormwater Manual](#)

For more information

Contact Paula Calvert, DEQ program coordinator, at 503-229-5101, Portland, or David Cole, DEQ regional hydrogeologist, at 503-229-6371.

You may also reach DEQ contacts toll free in Oregon at 1-800-452-4011.



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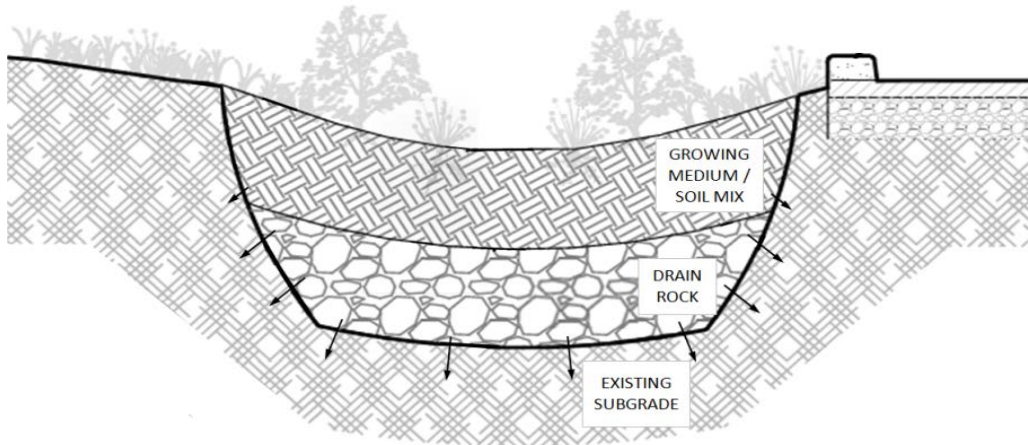


Figure 1. Use of drain rock storage area in green infrastructure is not a criterion for a UIC system. This BMP is not a UIC.

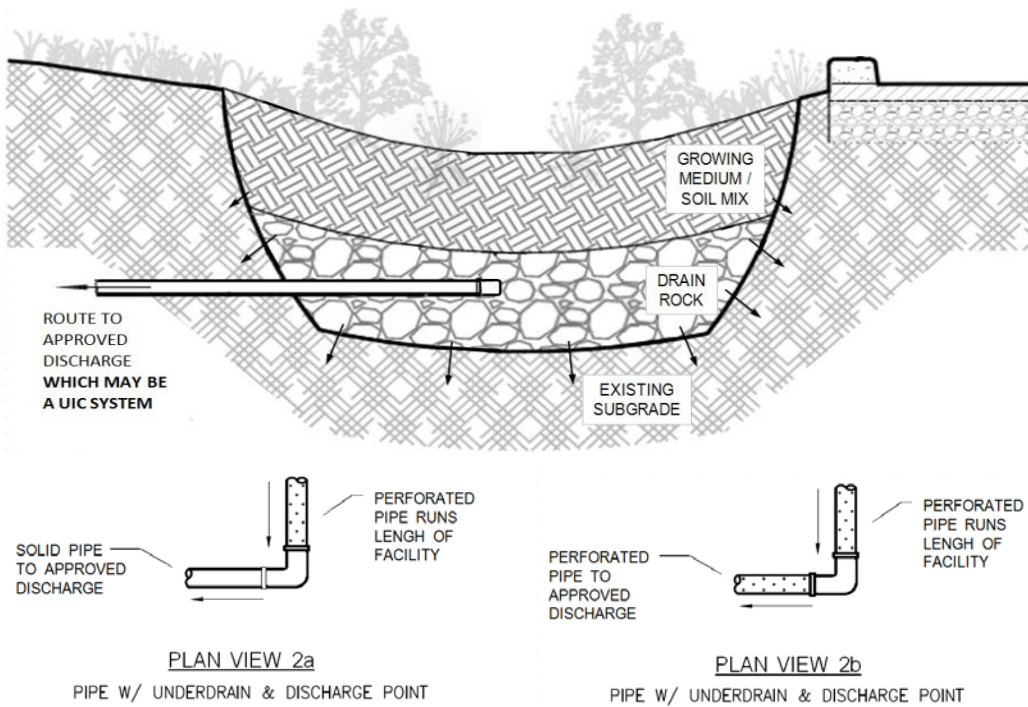


Figure 2. If a BMP uses perforated pipe to discharge water in the subsurface, the BMP is a UIC system.

Plan View 2a. The perforated pipe collects and conveys water. This BMP is not a UIC.

Plan View 2b. Perforated pipe routes water to the an approved discharge point, but also functions to discharge water into the subsurface. Therefore, this BMP is a UIC system.

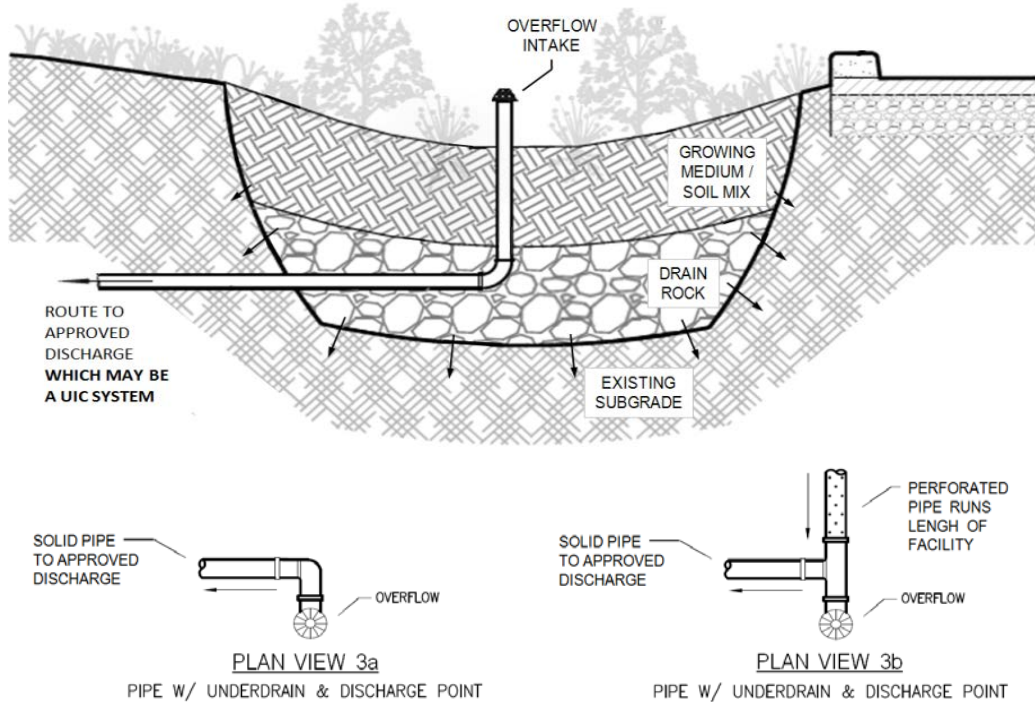


Figure 3. Any flow component of a storm event (overflow is shown) bypassing soil filtration and routing to the subsurface, either directly through drain rock or perforated pipe is criterion for a UIC system.

Plan View 3a. Overflow routes directly to approved discharge. This BMP is not a UIC.

Plan View 3b. Overflow bypasses soil filtration and may route to the subsurface, either directly through drain rock or perforated pipe. This BMP is a UIC system.