

# Infiltration Basin

Infiltration basins are constructed impoundments that capture and temporarily store stormwater runoff. The temporarily stored runoff infiltrates into the permeable soil within 72 hours or as specified in your basin's O&M manual.

Infiltration basins contain inflow and outflow structures and some variation of infiltration media. Most infiltration systems are vegetated; however, the type of vegetation can vary from traditional lawn to native grasses and wildflowers. Examples of different types of infiltration systems are shown in the following photos.



Photo: <https://www.flickr.com/photos/scpr/4949432301>



Photo: [stormwater.pca.state.mn.us](http://stormwater.pca.state.mn.us)



Photo: [www.constructionspecifier.com](http://www.constructionspecifier.com)

# Infiltration Basin Maintenance

Typical Maintenance Indicators	Typical Maintenance Actions
Poor vegetation establishment/bare spots	Re-seed, re-establish vegetation.
Overgrown vegetation and invasive weeds/plants	Mow or trim as appropriate and remove invasive plants. Selective herbicides can be used if in accordance with local, state, and federal laws. Refer to invasive weeds/plants section of the guide for pictures.
Signs of dumping (grease, piles of grass clippings, discolored grass, etc.)	Contact your local municipality to report a potential illicit discharge/illegal dumping.
Erosion (gullies formed on berms, basin bottom, and/or around inlet/outlet structures)	Repair/re-seed eroded areas (may need added measures such as erosion control blankets or stone at flow entry points), may include re-grading areas.
Signs of rodents/animals (gopher holes)	Fill/repair/re-seed holes and make appropriate corrective measures to prevent rodent activity. May need to contact a professional pest control management company to assist.
Accumulation of sediment, litter, or debris	Remove and properly dispose of accumulated materials such as trash and landscape debris.  Dredge accumulated sediment. This may be required every 5 to 15 years, and more frequently if there are excess sources of sediment. Dredging is usually a major project requiring mechanized equipment. The work will include an initial survey of depths and elevations; sediment sampling and testing; removal, transport, and disposal of accumulated sediment, and reestablishment of original design grades and sections. Permits may be required.
Standing water (BMP not draining) <i>If mosquito larvae are present and persistent, contact the PADEP. Mosquito larvicides should be applied only when absolutely necessary and then only by a licensed individual or contractor.</i>	Abate by filling holes in the ground in and around the basin and by insuring that there are no areas where water stands longer than 72 hours following a storm or as specified in your basin's O&M manual. Filling and re-grading will most likely require re-seeding or re-establishing vegetation as well.
Obstructed inlet or outlet structure	Clear obstructions.
Damage to structural components such as weirs, inlet, or outlet structures; disconnected or failed pipes at structures	Remove any debris or sediment that could plug the outlets. A professional contractor or consultant may be required to assist with re-establishing/re-building a structural component.
General obstructions (trampolines, sporting equipment, stored boats, sheds, picnic tables, etc.)	Basins should be free of any general obstructions. This is critical for large and/or long rain events. Take the time to inspect and remove any general obstructions that may be present prior to forecasted rain.

## What to Look For

### Accumulation of Sediment, Litter, Debris

#### Standing Water

Infiltration basins more typically have an issue with standing water / ponding than infiltration trenches or other types of infiltration systems.

#### Erosion

#### Rodents/Animal Burrows (gopher holes)

#### Overgrown Vegetation/Invasive Weeds

#### Poor Vegetation Establishment/Bare Spots

#### Obstructed Inlet/Outlet

#### Structural Damage

#### Signs of Dumping

#### General Obstructions (trampolines, etc.)

The intent of these infiltration practices is to absorb stormwater instead of discharging it and, therefore, reduce runoff. They also help to filter out pollutants in the stormwater. Infiltration basins are typically managed like detention basins, but with more emphasis on maintaining proper infiltration. Anything that could clog the base of the infiltration area can reduce the efficacy of this stormwater BMP.

## Common Infiltration Basin Issues

### Invasive Weeds/Poor Vegetation

- Invasive weeds can originate by inlet and outlet structures that can inhibit flows into and from the basin.
- A few weeds can quickly take over a basin if the vegetation is not managed. Invasive weeds should be removed on a frequent basis and areas re-planted or re-seeded with the vegetation called out in the O&M Plan.
- Refer to the invasive weed section of this guide for pictures of common weeds. If these weeds are encountered, they should be removed.



### Standing Water

- Standing water is generally a sign of poor soil conditions, depressed areas/holes, and/or sediment accumulation has created pockets and lined the basin bottom that trap water and cannot infiltrate appropriately.
- Correcting areas that do not infiltrate in the appropriate amount of time or pond water generally requires re-grading and/or replacing some of the soils. Re-grading will most likely require re-seeding or re-establishing the vegetation in the approved plans.
- Mosquitos can become an issue with standing water if conditions are just right to allow larvae to be present.



# Infiltration Basin Considerations

## General Basin Components

Infiltration basins have many similar characteristics as a dry detention basin (refer to the dry detention basin guide sheets for more information and tips).

Similar characteristics generally include a spillway, inlet/outlet structures, and berms. The primary difference is dry detention basins generally do not allow stormwater to infiltrate; whereas infiltration basins do just that—infiltrate. Through infiltration, basins provide better water quality treatment and reduce the volume of runoff to downstream areas than dry detention basins.

Inlet Structure



Outlet Structure



Spillway



Berm



## Sinkholes

Sinkholes may be encountered in the basin bottom. Sinkholes can generally lead to more issues if not addressed. You should contact a professional engineer or your local municipality immediately after encountering a sinkhole.



## Basin Discharge

Every basin generally has a discharge point connected to the outlet structure that is located on the other side of the basin berm. This is the point where stormwater that does not infiltrate (generally during large storm events) exits the area and may enter the storm sewer system or flow directly into a stream. The components of this structure should be treated and maintained in a similar fashion as the inlet and outlet structures inside the basin (area free of debris and weeds, pipe opening free of clogs, no dumping, concrete is structurally sound, and so on).