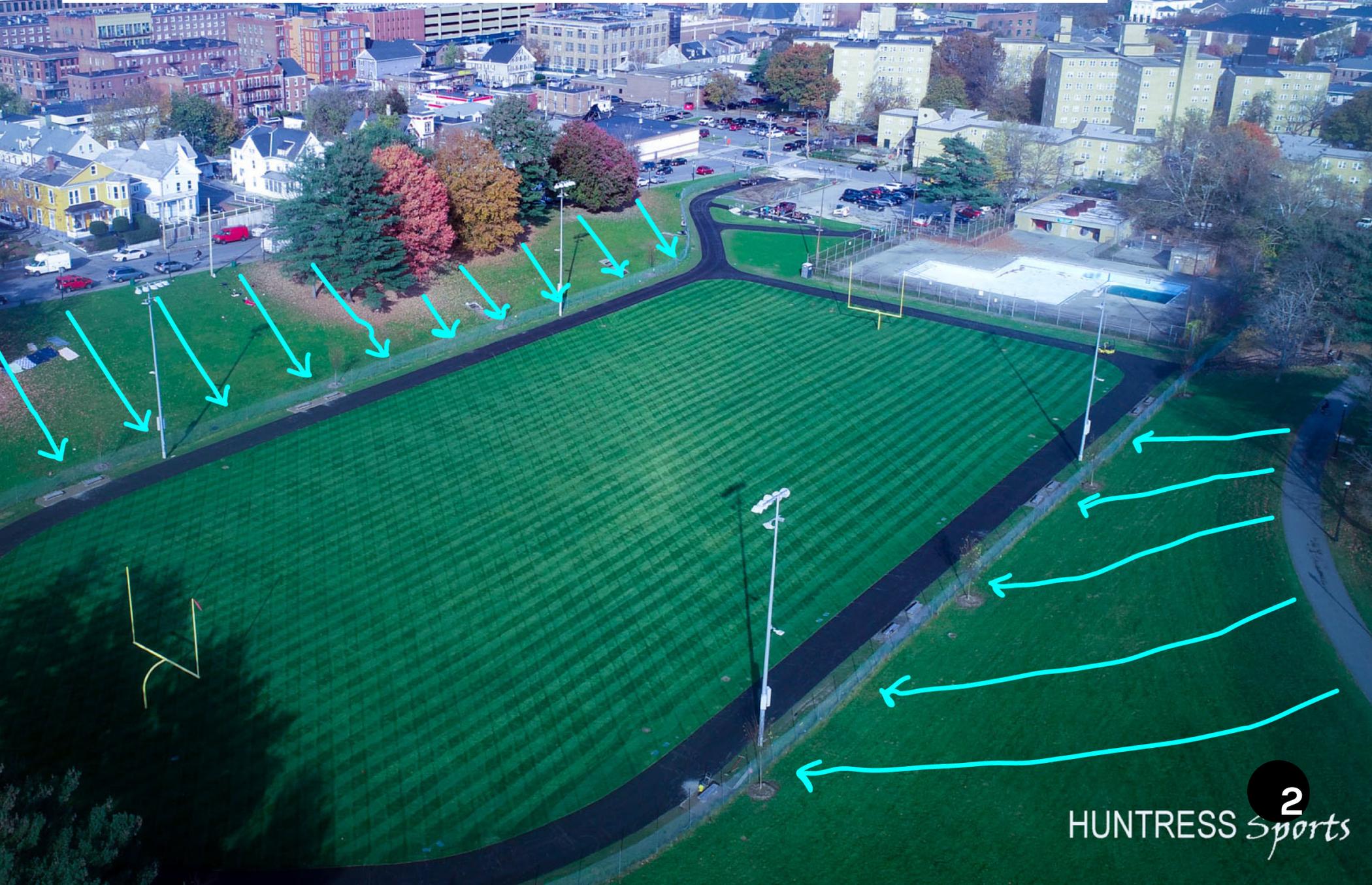


LOVELL  
FORWARD

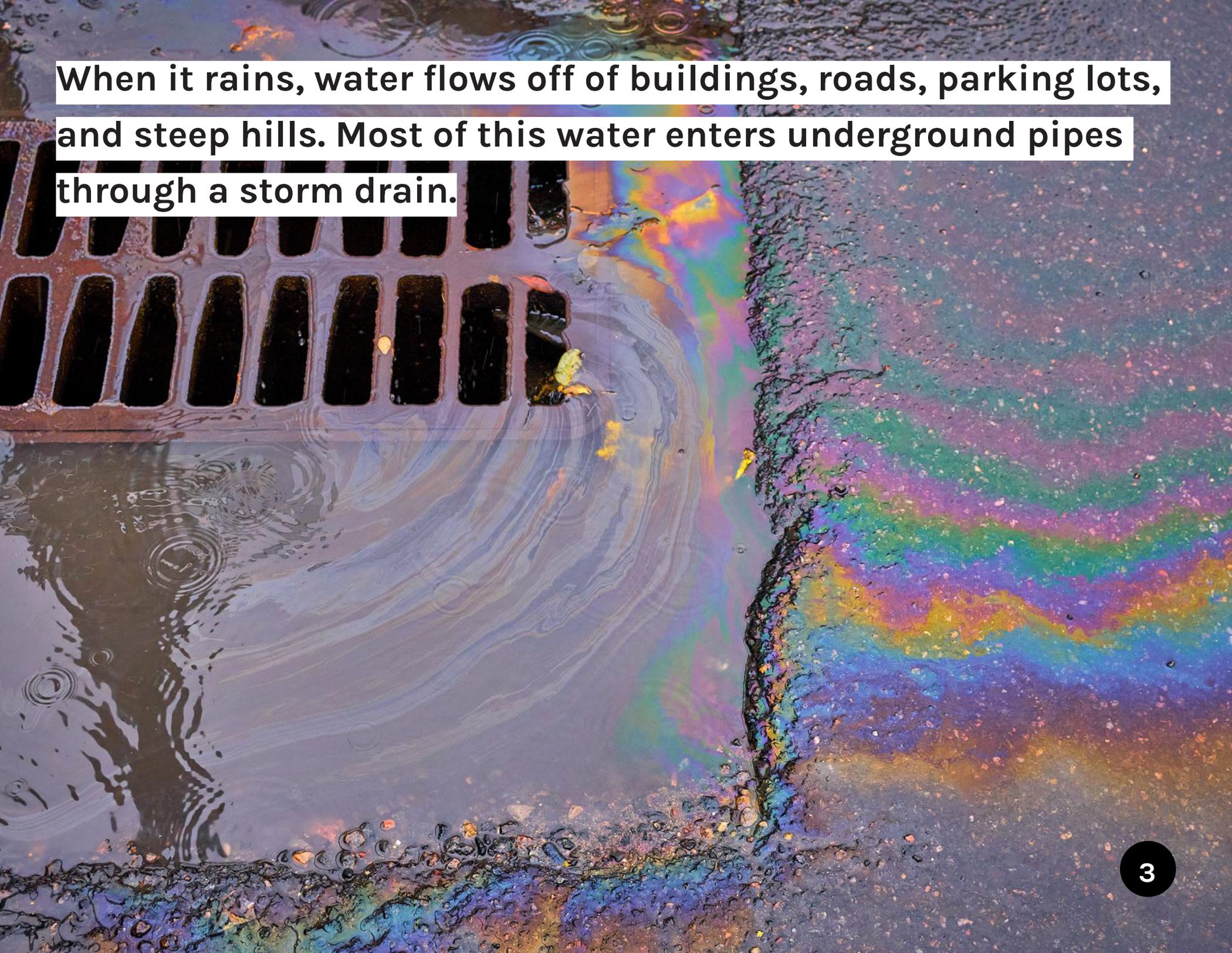


# The South Common Rain Garden

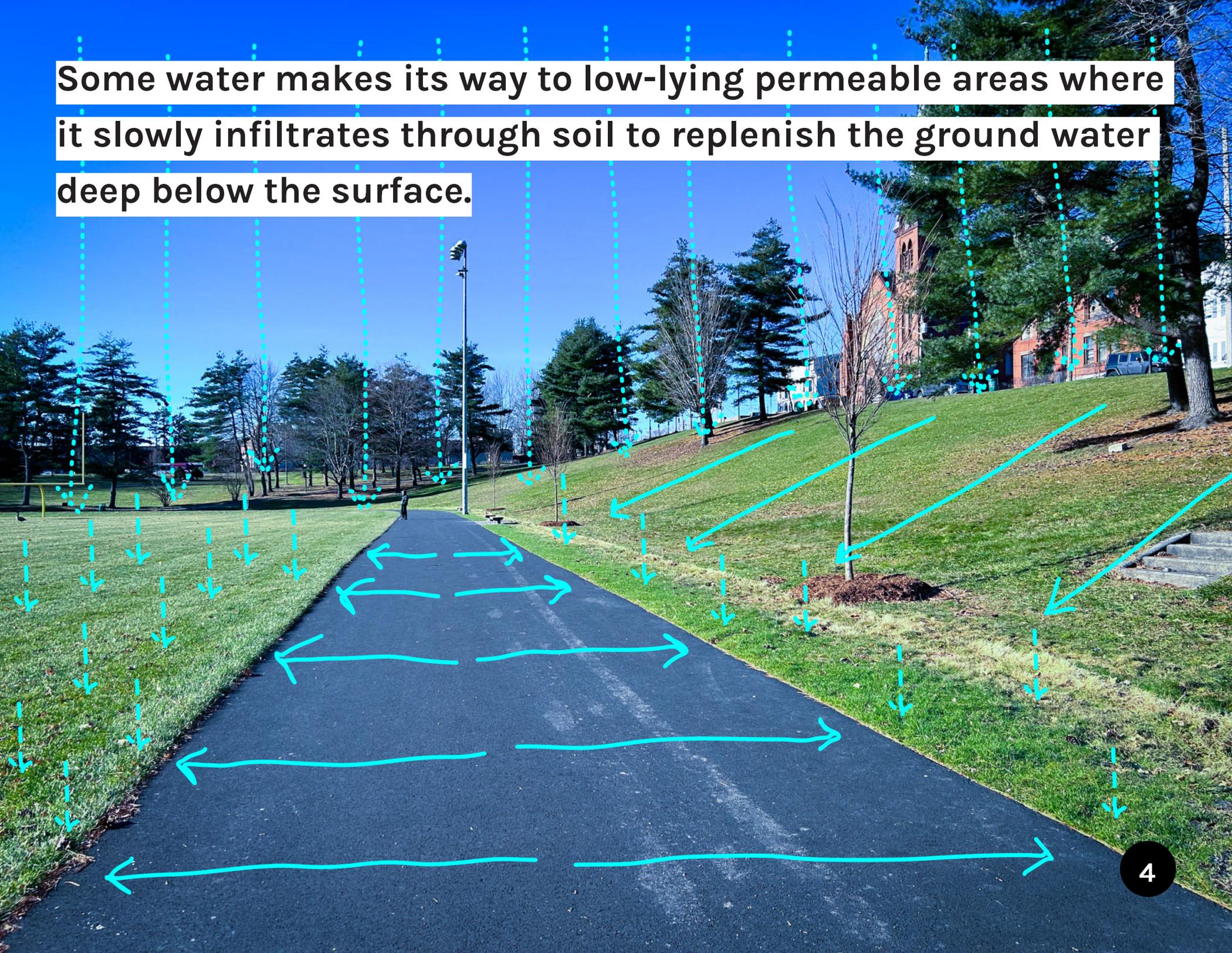
South Common is a bowl-shaped park in a dense urban area, which makes it great for holding excess storm water.



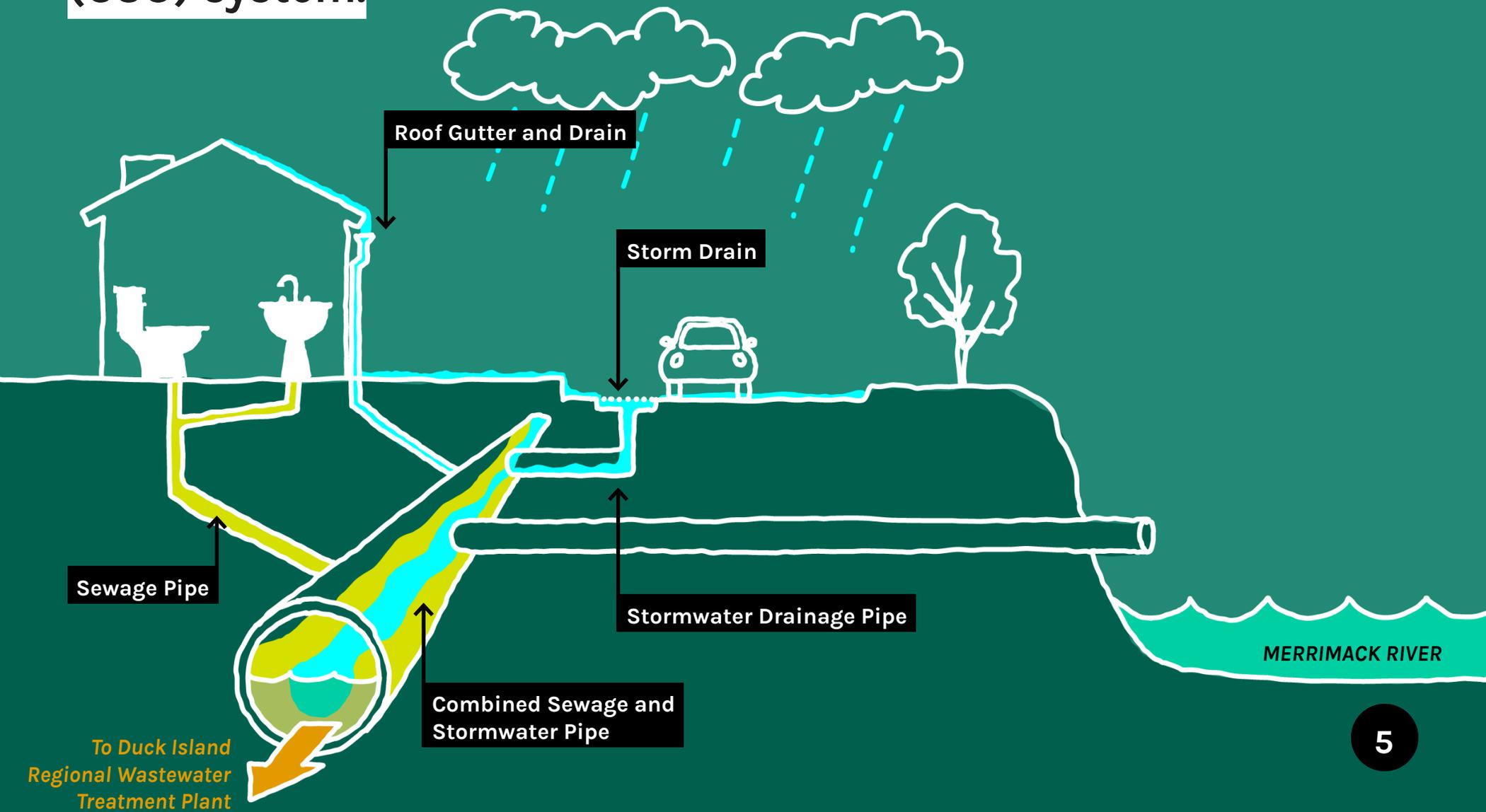
When it rains, water flows off of buildings, roads, parking lots, and steep hills. Most of this water enters underground pipes through a storm drain.



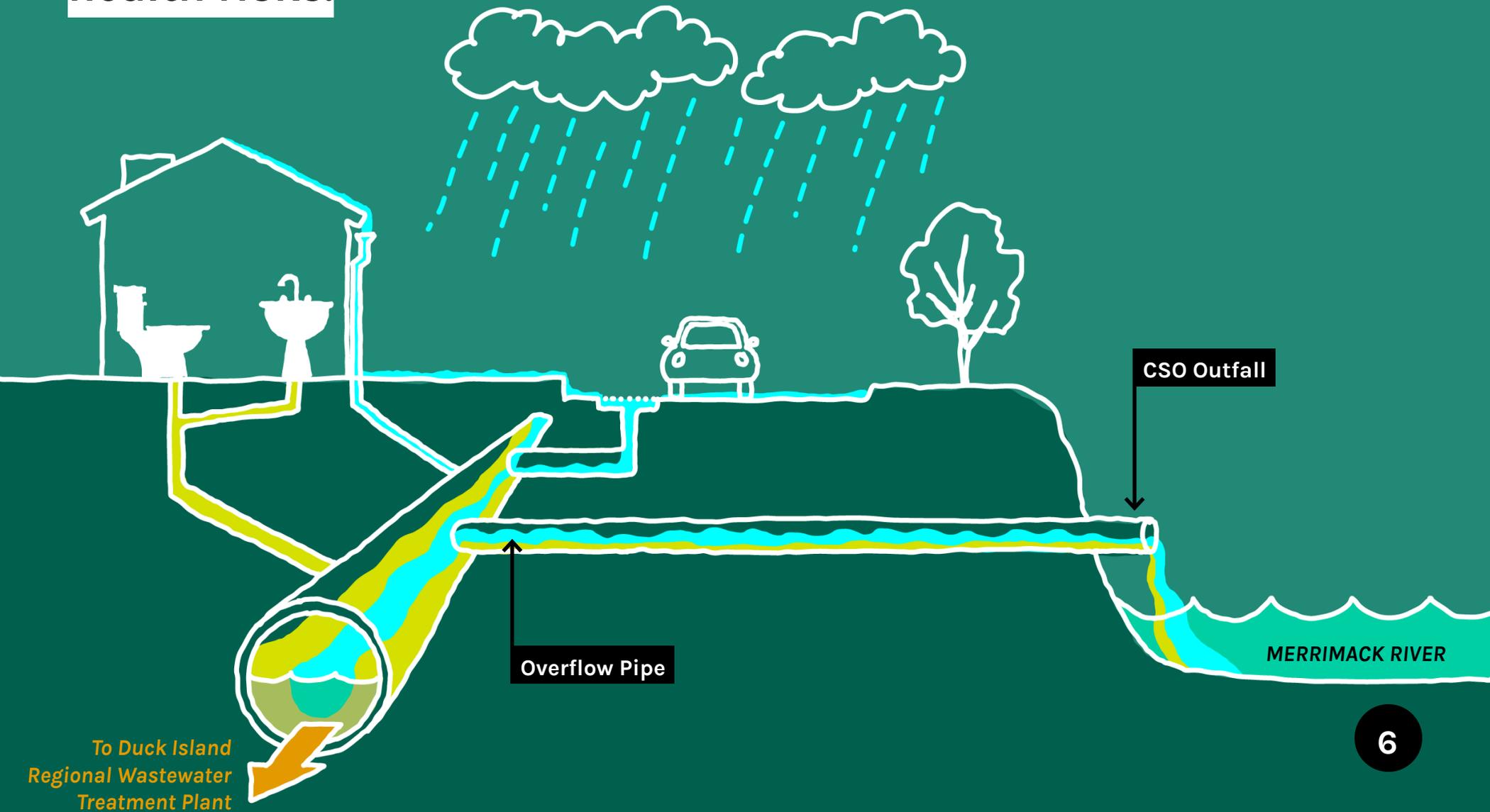
Some water makes its way to low-lying permeable areas where it slowly infiltrates through soil to replenish the ground water deep below the surface.



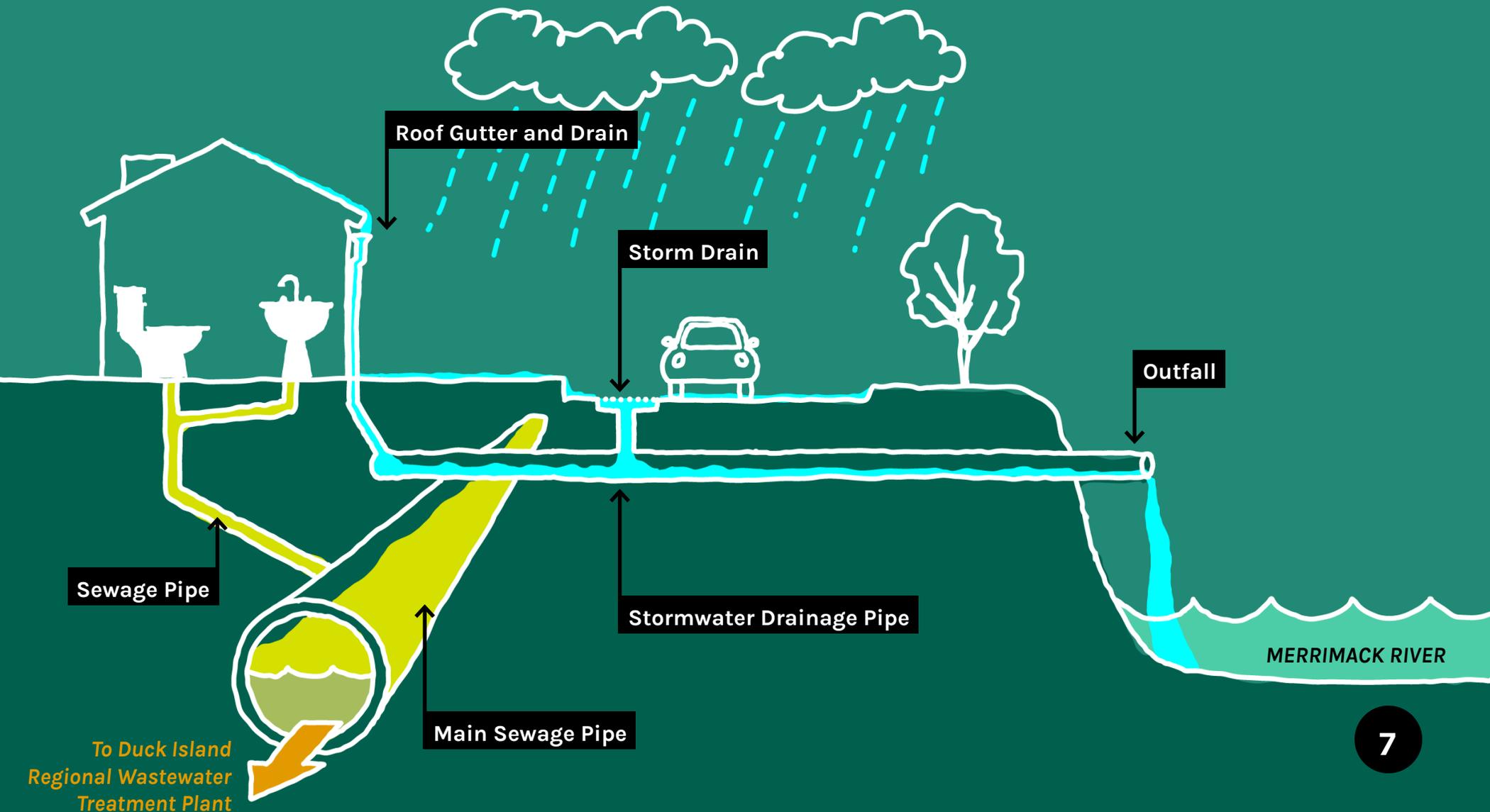
In Lowell's Back Central neighborhood where South Common is, stormwater and wastewater (sewage) enter the same system of pipes. This is called a Combined Sewer Overflow (CSO) system.



During heavy rainfall, CSOs discharge excess water, including raw sewage, into the City's rivers and tributaries. This contributes to environmental contamination and public health risks.



The City is working to separate the sewer system to comply with the EPA Clean Water Act, but it is an expensive project that will take many years to complete.



**The Duck Island Regional Wastewater Utility treats an average of 25 million gallons of wastewater per day from from approximately 135,000 homes and businesses in Lowell, Chelmsford, Dracut, Tewksbury, and Tyngsborough.**



To help reduce the amount of stormwater entering the CSO system in Back Central, the City built a 6,000sf rain garden at the bottom of the South Common basin. The project was completed in 2024.



The rain garden surrounds a renovated stage with a stone seat wall and multilingual educational signage.



**A wooden boardwalk bridges over the rain garden, providing ADA access from the stage to the multi-purpose athletic field, which was also renovated in 2023.**



**Before renovation, the stage was crumbling and the paths and grass often flooded. Water was unable to infiltrate through the degraded/compacted soil. (This photo was taken March 2024).**

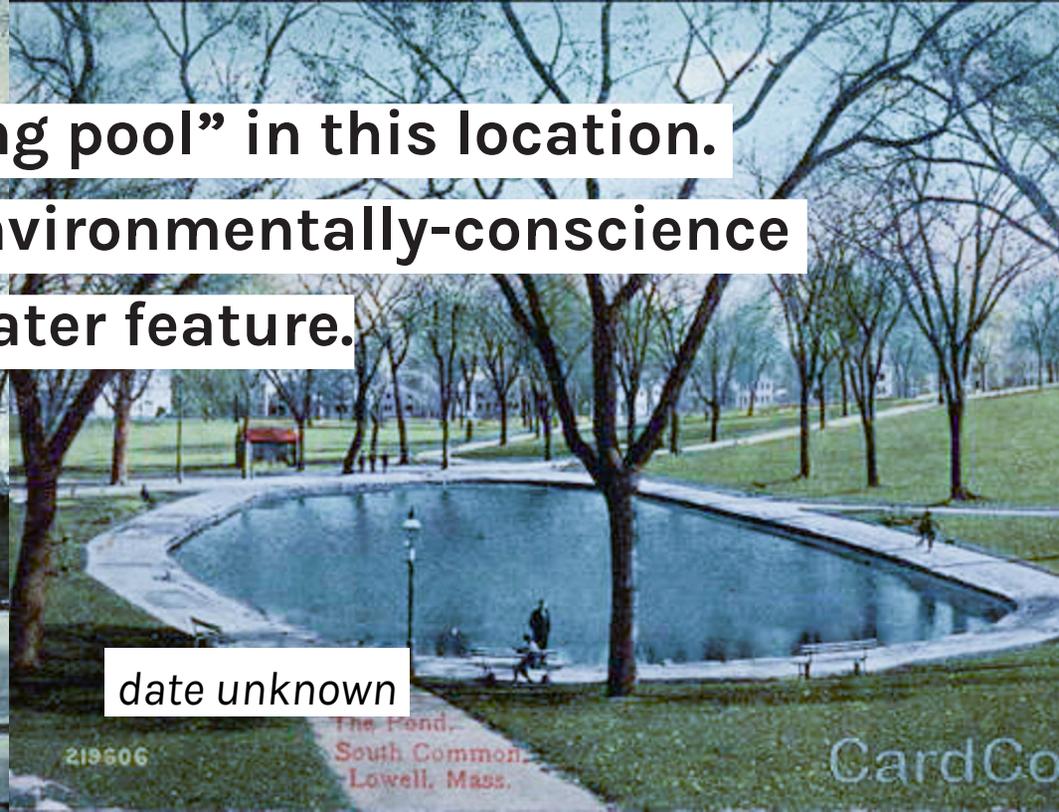


Historically, there was a “wading pool” in this location.

The rain garden is a modern, environmentally-conscious interpretation of the historic water feature.



1919



date unknown



date unknown



1884

The rain garden is designed to temporarily hold water, giving it a chance to infiltrate into the ground at a slow, natural pace.



When the rain garden gets full, the excess water overflows into the storm drain, but it is able to filter and divert most water.



# The Rain Garden has 5 Primary Functions:

**COLLECT:** Stormwater runoff is collected at the inlet flume and diverted to the sediment forebay.

1

**CAPTURE:** Sediment, trash, and debris is captured and accumulates over time in the sediment forebay.

2

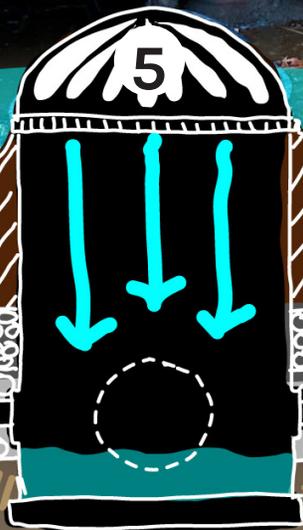
**MOVE:** The stormwater discharges directly to the bioretention area via a granite check dam weir.

3

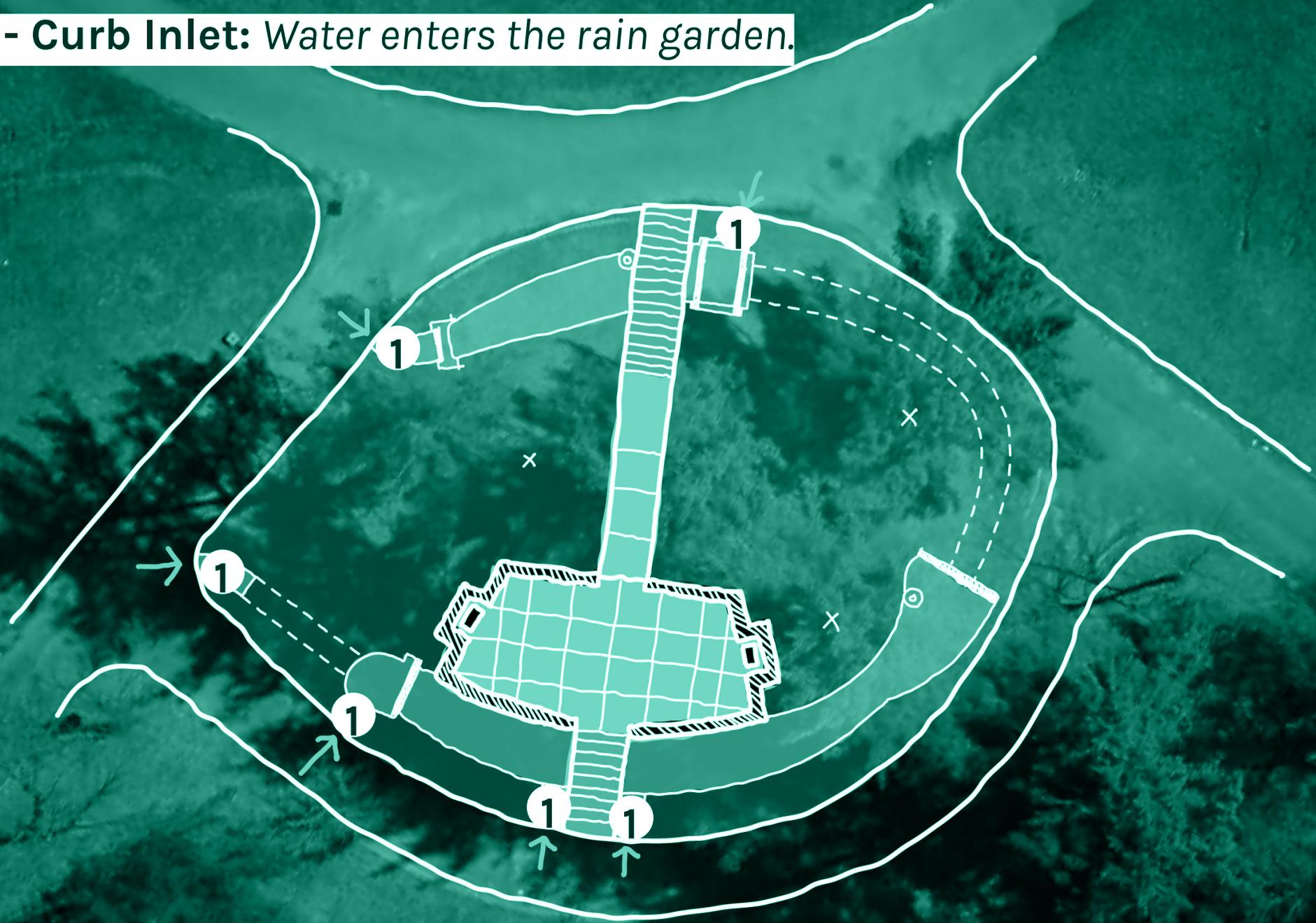
**FILTER:** Stormwater overtops the forebay check dam weir and flows through the planted bioretention area. Plants slow the water down, and the soil and plant roots filter the runoff, removing harmful nutrients and bacteria. The treated water then infiltrates through the soil and into the perforated underdrain, which drains through the overflow structure.

4

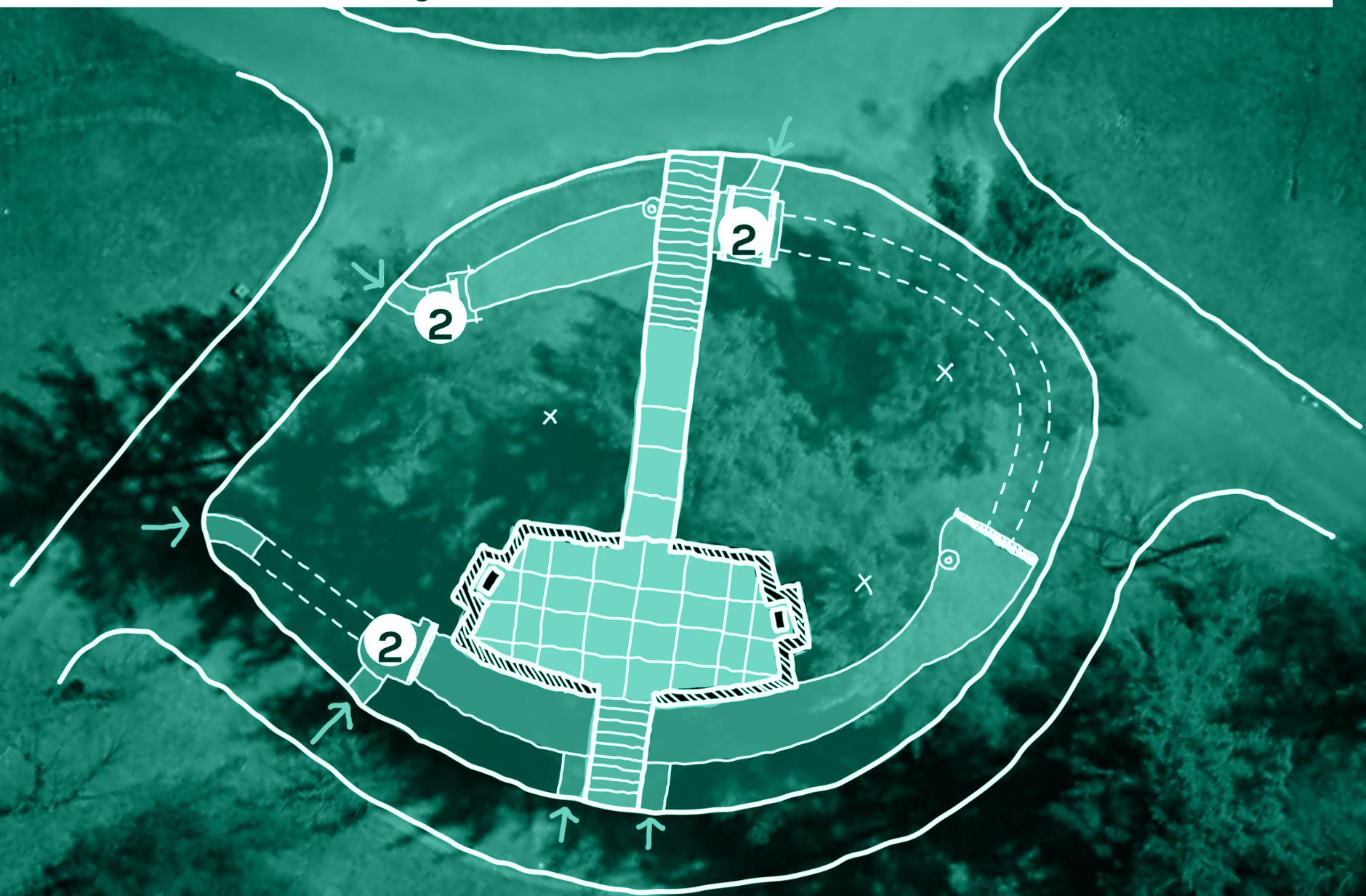
**OVERFLOW:** During large rain events, the water level will rise and once the bioretention area reaches capacity, runoff will overflow into a domed grate overflow structure and piped to the existing drainage system.



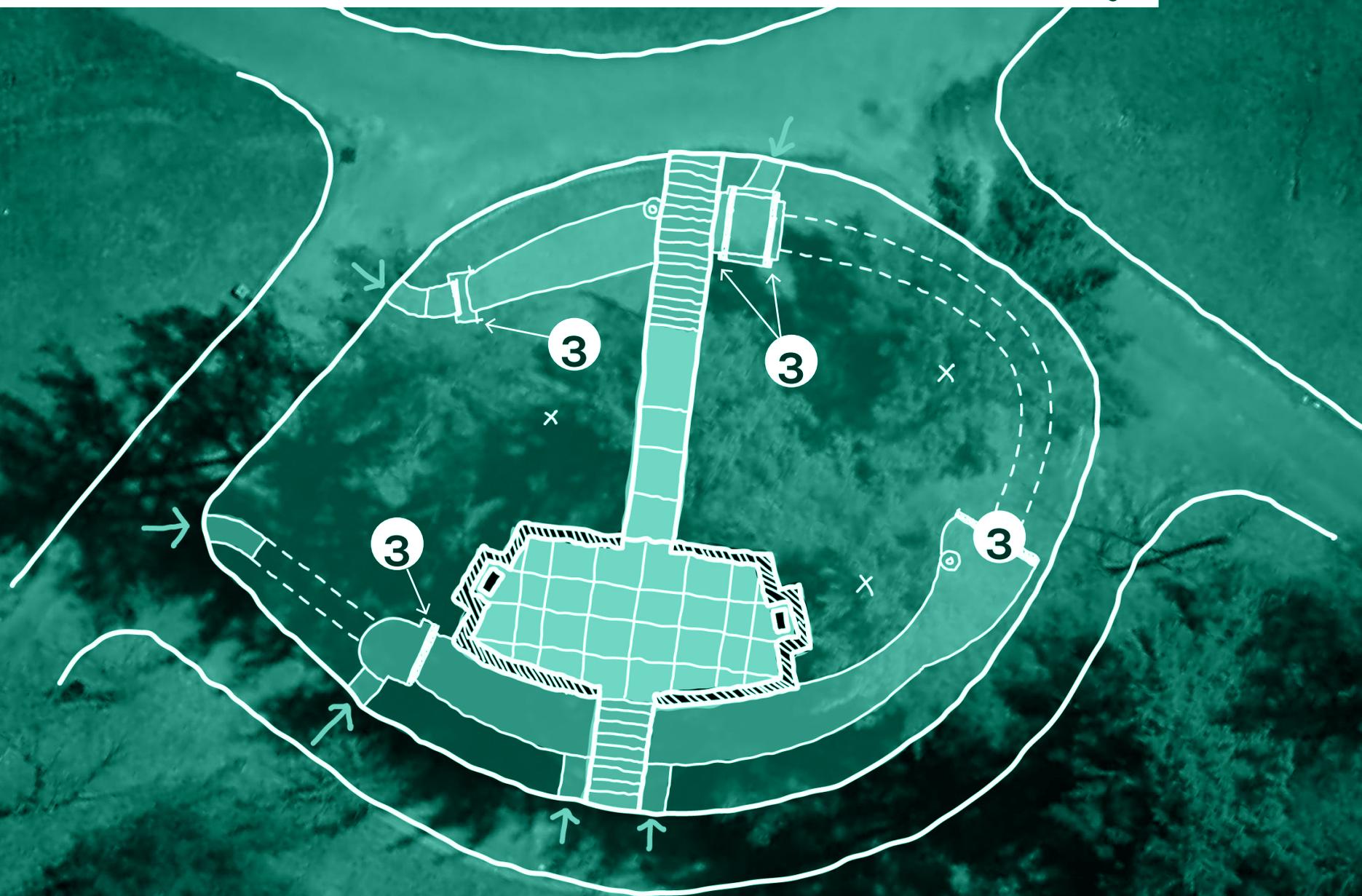
**1 - Curb Inlet:** Water enters the rain garden.



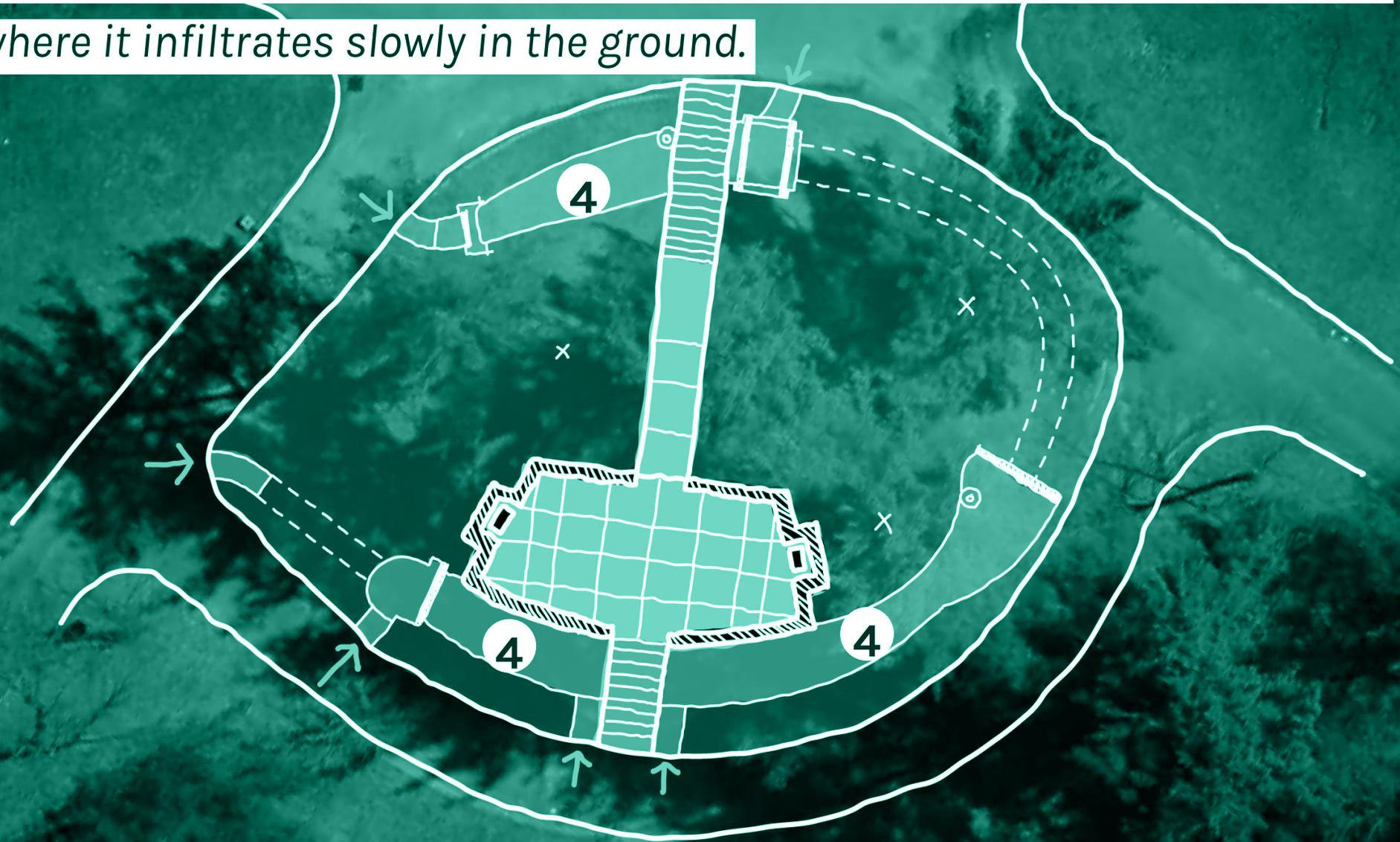
## 2 - Sediment Forebay: Sediment and trash is filtered from the water.



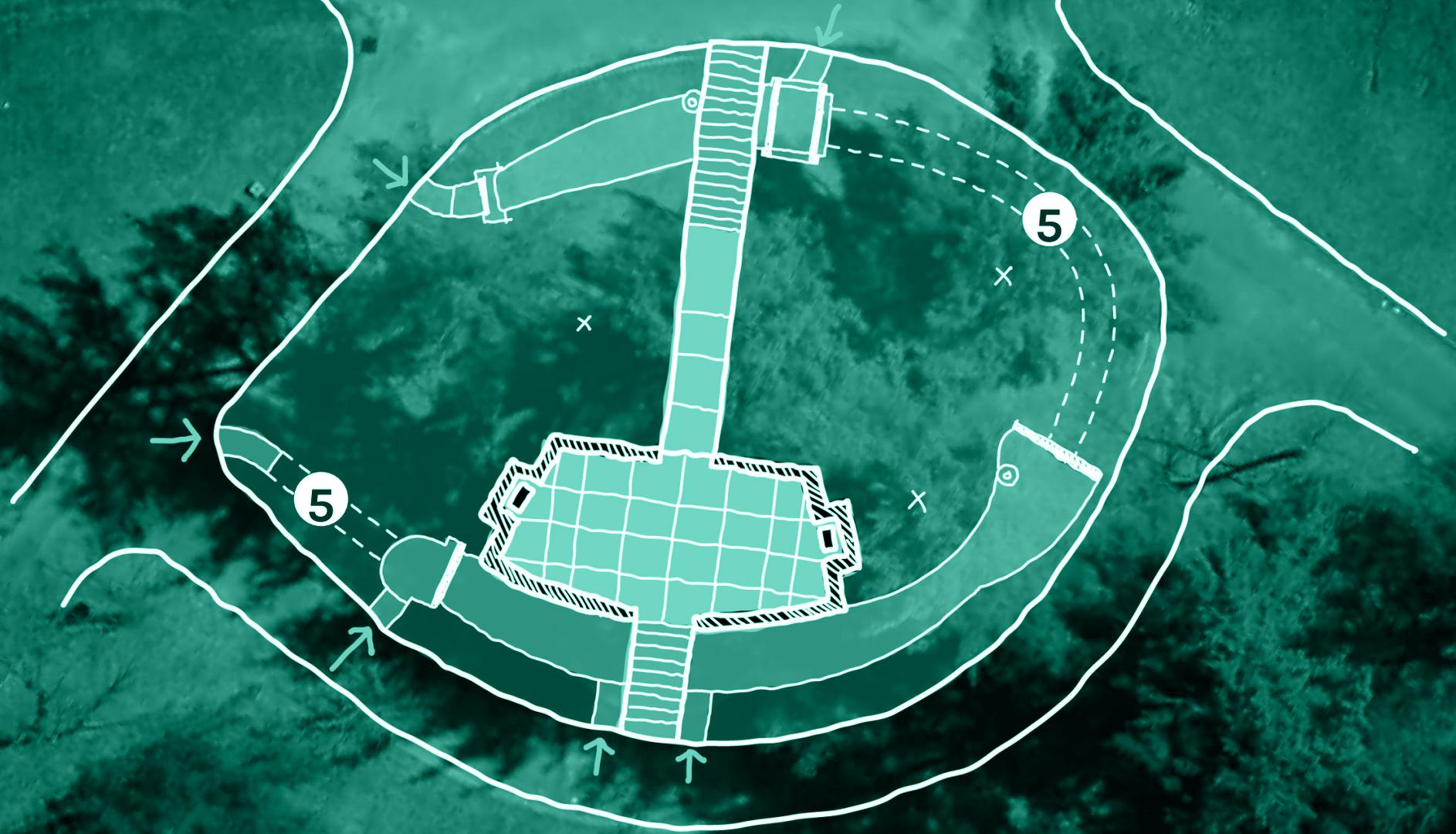
**3 - Check dams:** *Water is retained in the sediment forebays.*

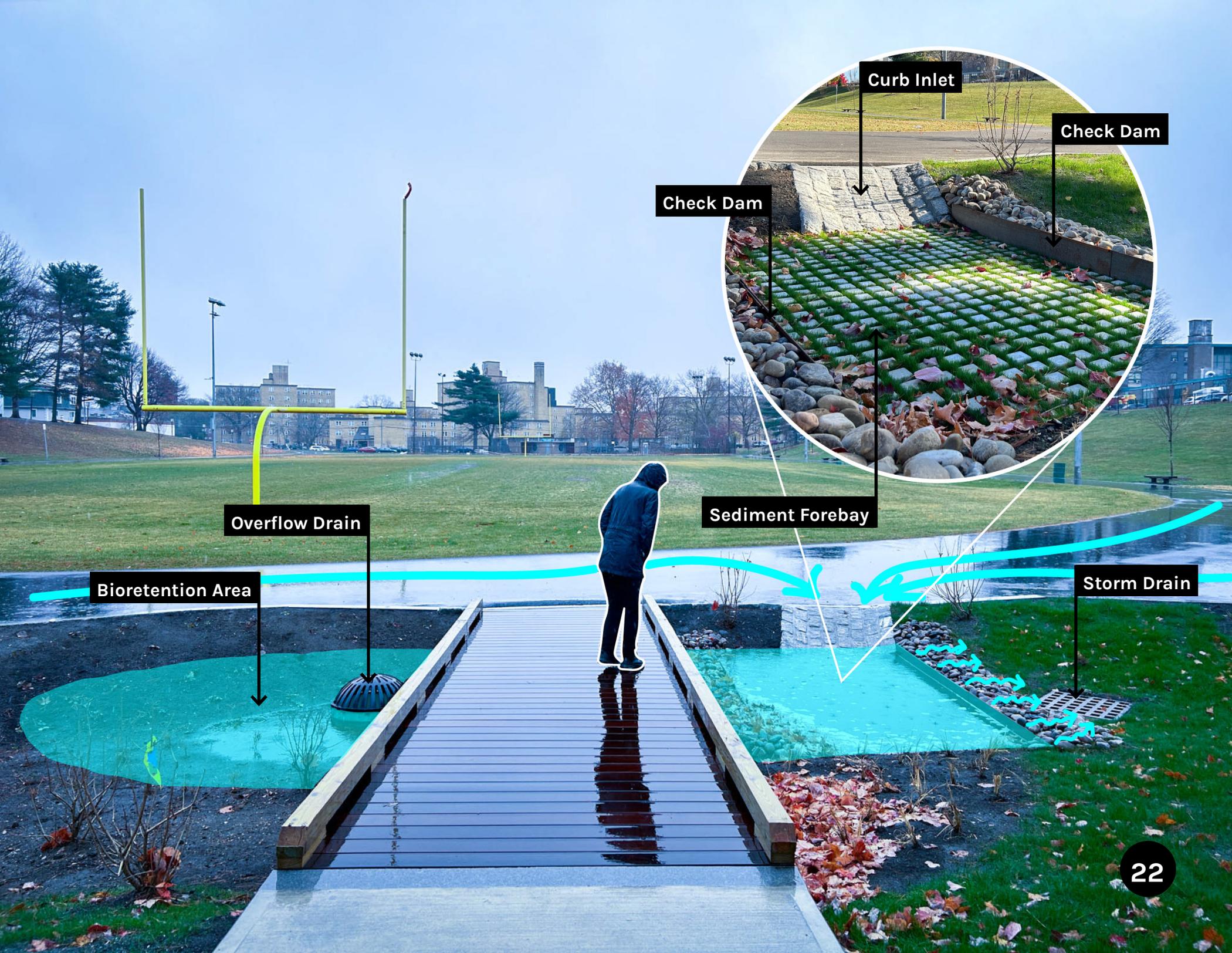


**4 - Bioretention Areas:** When the water in the sediment forebays reaches the top of the check dam, it spills over into the bioretention area where it infiltrates slowly in the ground.



**5 - Vegetated Swale:** These planted depressions are graded to direct rainfall to the bioretention areas.





Curb Inlet

Check Dam

Check Dam

Overflow Drain

Sediment Forebay

Bioretention Area

Storm Drain

The bioretention area is designed with special soil that can hold extra water, and plants that remove toxins through their roots. (In this photo, the plants are very young / not fully established).





*Andropogon virginicus*  
Little Bluestem



*Panicum virgatum* 'Shenandoah'  
Switchgrass



*Juncus tenuis*  
Path Rush



*Clethra alnifolia* 'Hummingbird'  
Summersweet



*Ilex verticillata* 'Red Sprite'  
Winterberry



*Ilex verticillata* 'Jim Dandy'  
Male Winterberry



*Monarda fistulosa*  
Wild Bergamot



*Solidago graminifolia*  
Grass-Leaved Goldenrod



*Aclepias incarnata*  
Swamp Milkweed

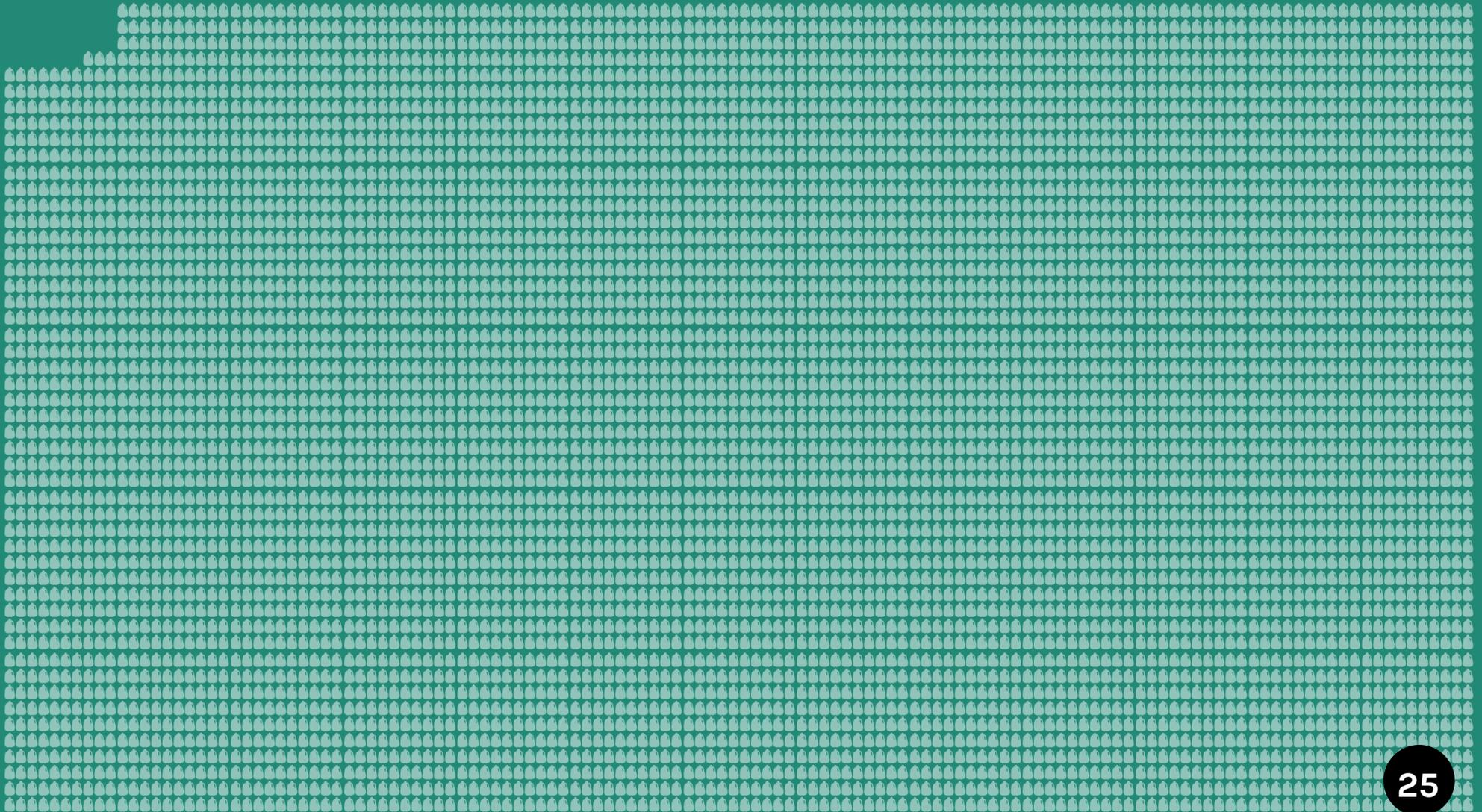
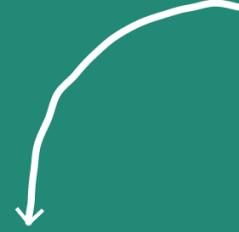


*Zizia aurea*  
Golden Alexander

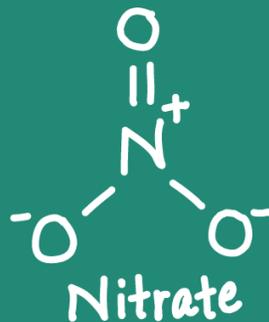


*Eutrochium maculatum*  
Joe Pye Weed

The South Common Rain Garden treats **6,463** gallons of stormwater for every inch of runoff!

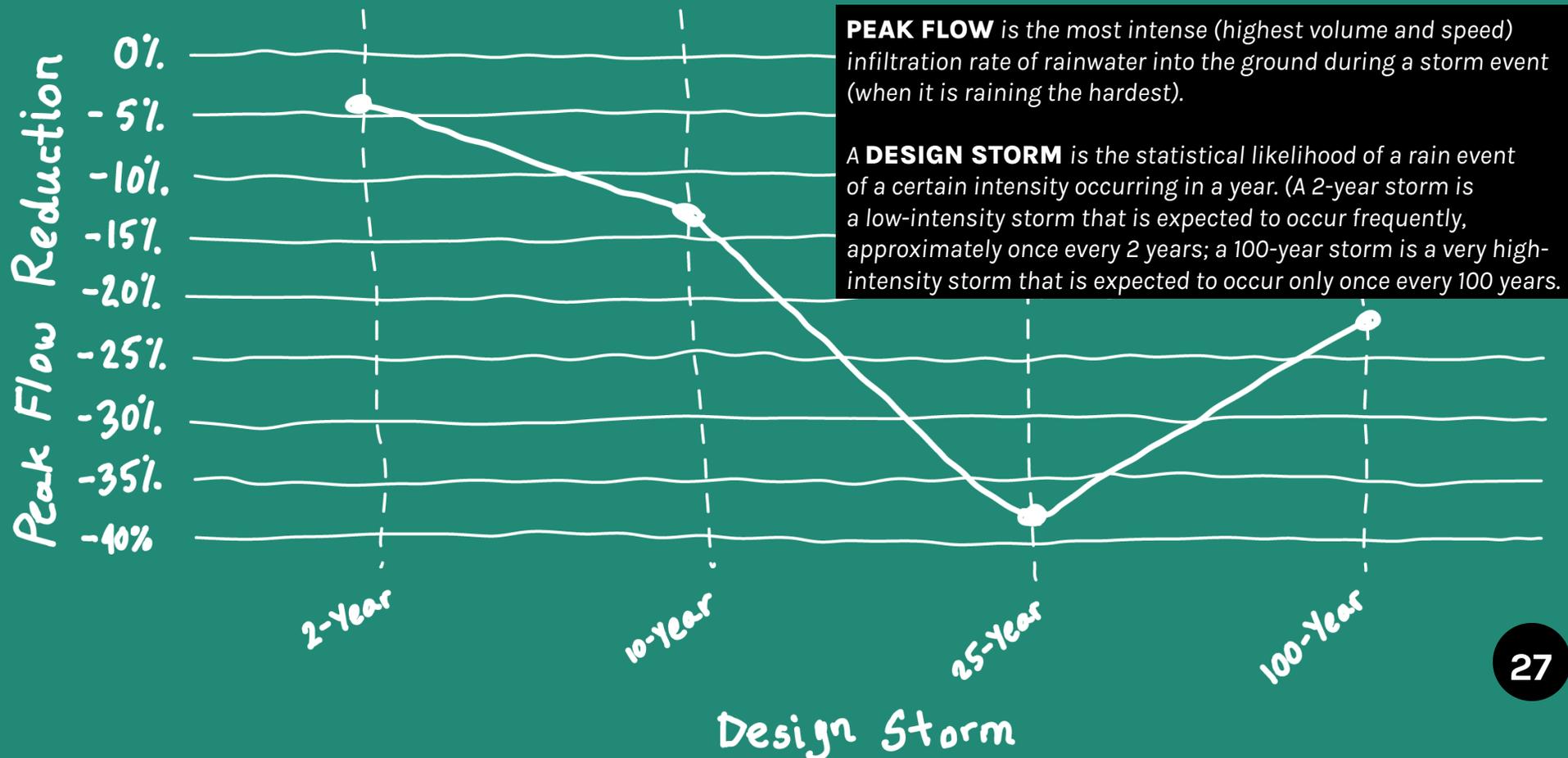


Each year, the South Common Rain Garden removes 53% of Phosphorus, 32% of Nitrate, and 90% of suspended solids from the stormwater that flows through it.



The South Common Rain Garden can reduce **peak flow** by 4% during a 2-year **design storm**, 13% in a 10-year storm, 38% in a 25-year storm, and 22% in a 100-year storm.

This means that the harder it rains, the more slowly stormwater infiltrates into the ground through the rain garden, until about the 100-year storm when heavy rain starts to outpace the rain garden's infiltration capacity.



**Climate change projections tell us that the severity and frequency of storms is increasing, so the 100-year storm might happen more than once a century.**

**The long-term success of the South Common Rain Garden and other green infrastructure projects depends on community stewardship. Here are some ways you can help:**

- Remove and dispose of trash and debris you see in or near the rain garden.**
- Educate others about rain gardens and why they're important.**
- Install a rain garden in your own yard. There are many resources available online with guidance on how to build a wide variety of rain gardens from simple to complex.**

**Together, we can make Lowell a more climate-resilient City one green infrastructure project at a time!**

