COUNTY of VENTURA

County Government Center Parking Lot Green Streets Urban Retrofit

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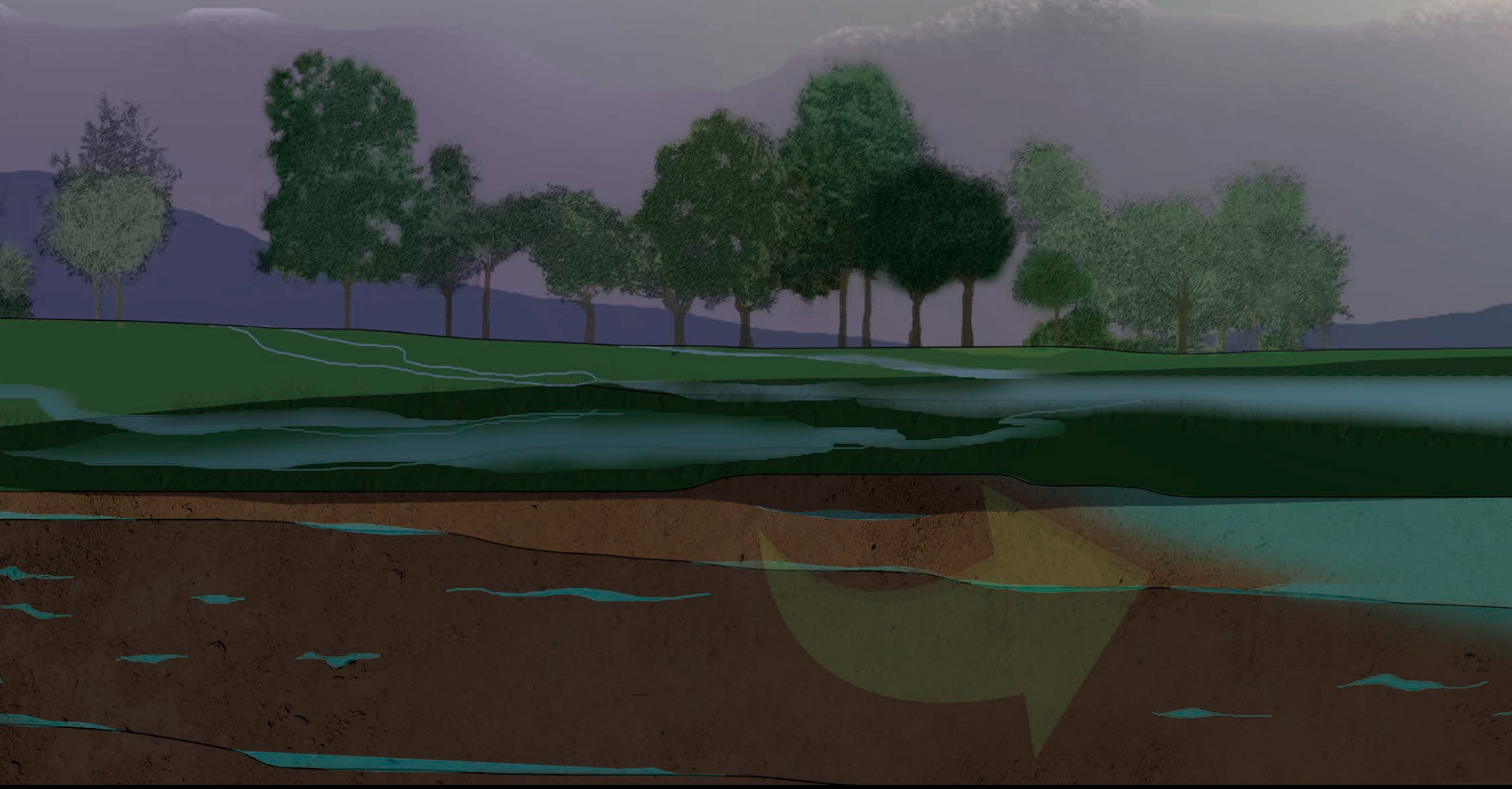
As part of our commitment to protect, preserve and enhance water quality in Ventura County, the County of Ventura is developing innovative ways to reduce the stormwater pollution from paved streets and parking lots.

To better understand the problems created by urban development, we need to know what the environment was like before development.

Water Cycle in Undeveloped Areas

Before the land in Ventura County was developed, the natural movement of water was effective and efficient. The majority of rainwater would infiltrate the soil.



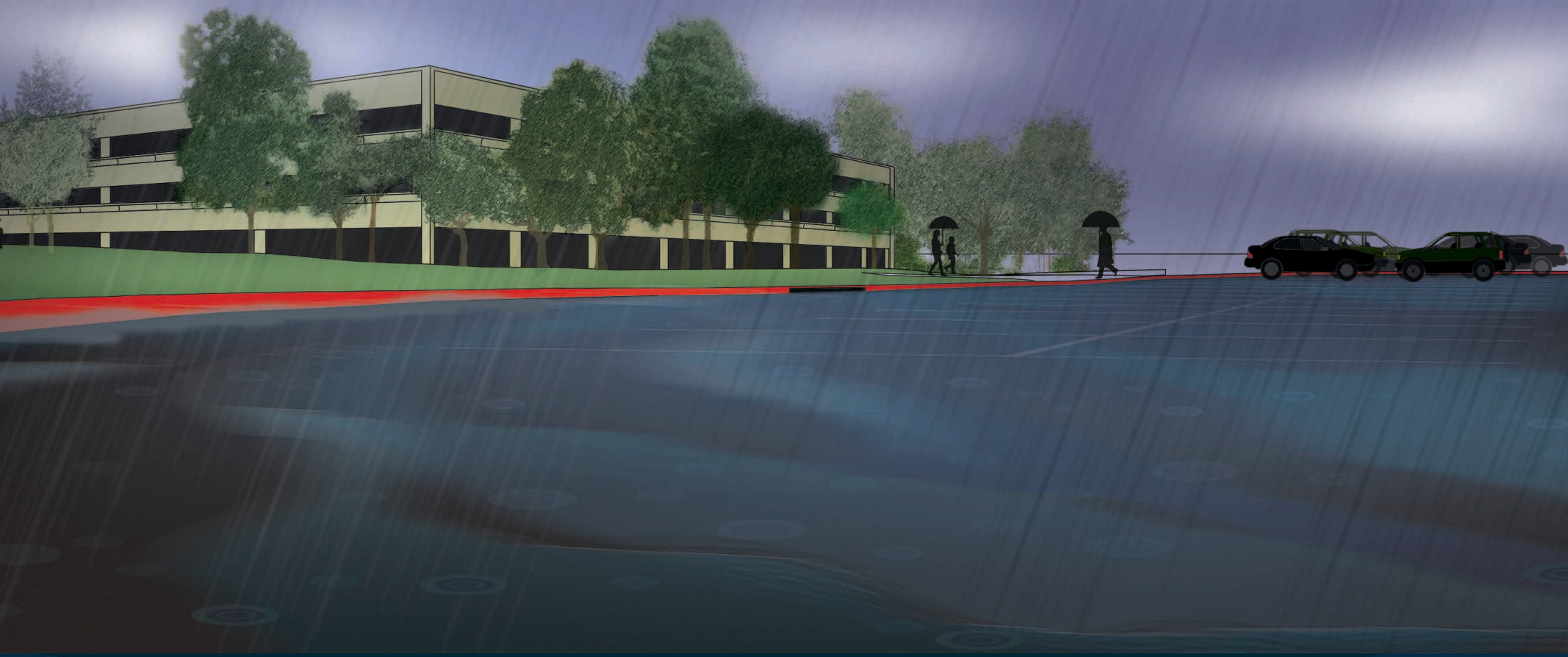
The rainwater would also replenish groundwater supplies.

Vegetation released rainwater into the atmosphere through evapotranspiration.

The small amounts of rainwater that did not infiltrate became stormwater runoff.

Water Cycle in Urban Areas

Traditionally, as the undeveloped land is urbanized, the naturally absorbent soil is paved over and covered with houses, streets, parking lots and other impervious surfaces through which water cannot infiltrate. This greatly increases the amount of stormwater runoff.

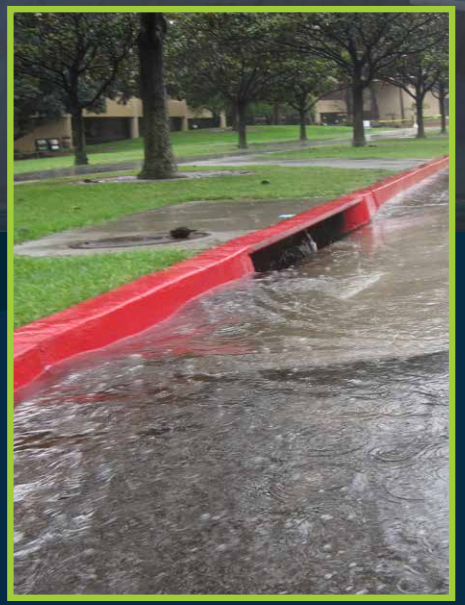


Stormwater Runoff

Debris, automotive fluids, metals from brake pads, fertilizer, bacteria and other pollutants accumulate on impervious surfaces during dry periods. When it rains, stormwater flushes these pollutants through curbs, pipes and stormdrains. It flows into creeks, rivers and the ocean where they can harm people, the animals and the environment.

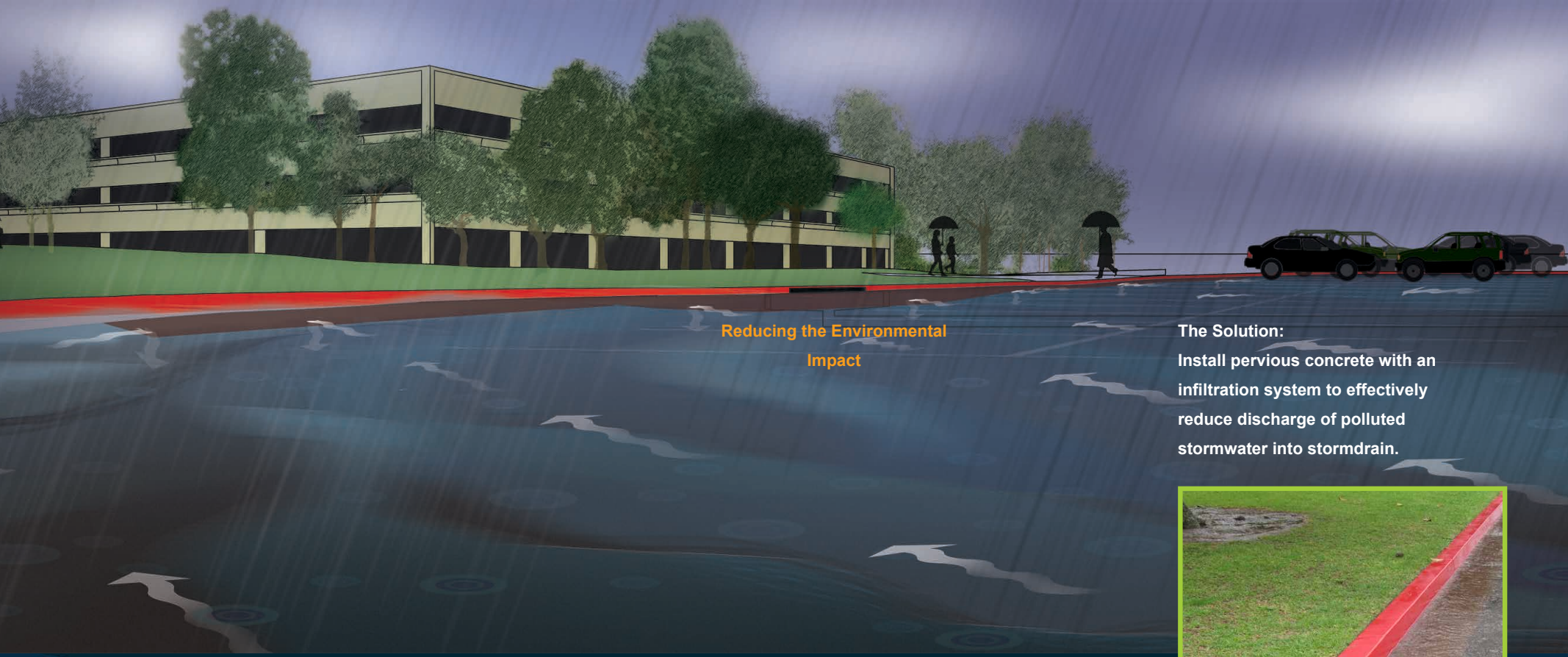
Inharmonious with the Environment

The Problem:
Pollution to the creeks, rivers and the ocean with no infiltration.



First Stormwater Runoff

The dirtiest stormwater occurs after pollutants have accumulated over the dry period. At the start of the rain season, the first stormwaters carry the pollutants to the stormdrain. This is referred to as the first flush.

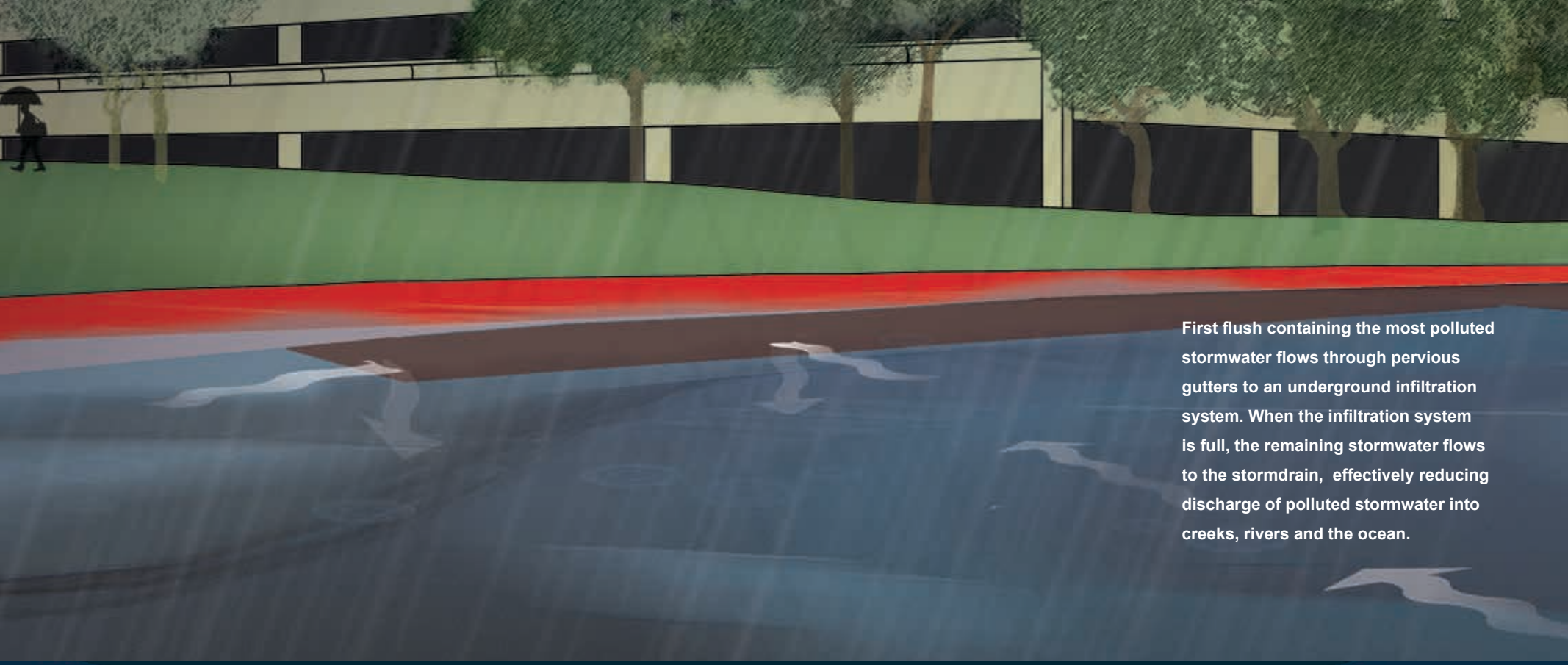


Reducing the Environmental Impact

The Solution:
Install pervious concrete with an infiltration system to effectively reduce discharge of polluted stormwater into stormdrain.

Reducing Stormwater Pollution

Green Streets design is an innovative approach to land development or redevelopment that maintains or mimics natural processes to reduce the impacts of stormwater pollution from roads, parking lots and other impervious surfaces.

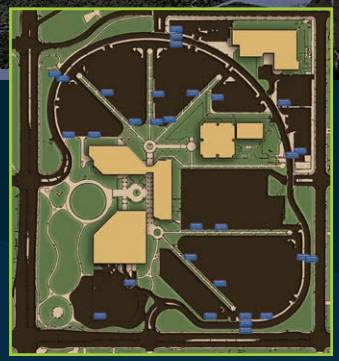


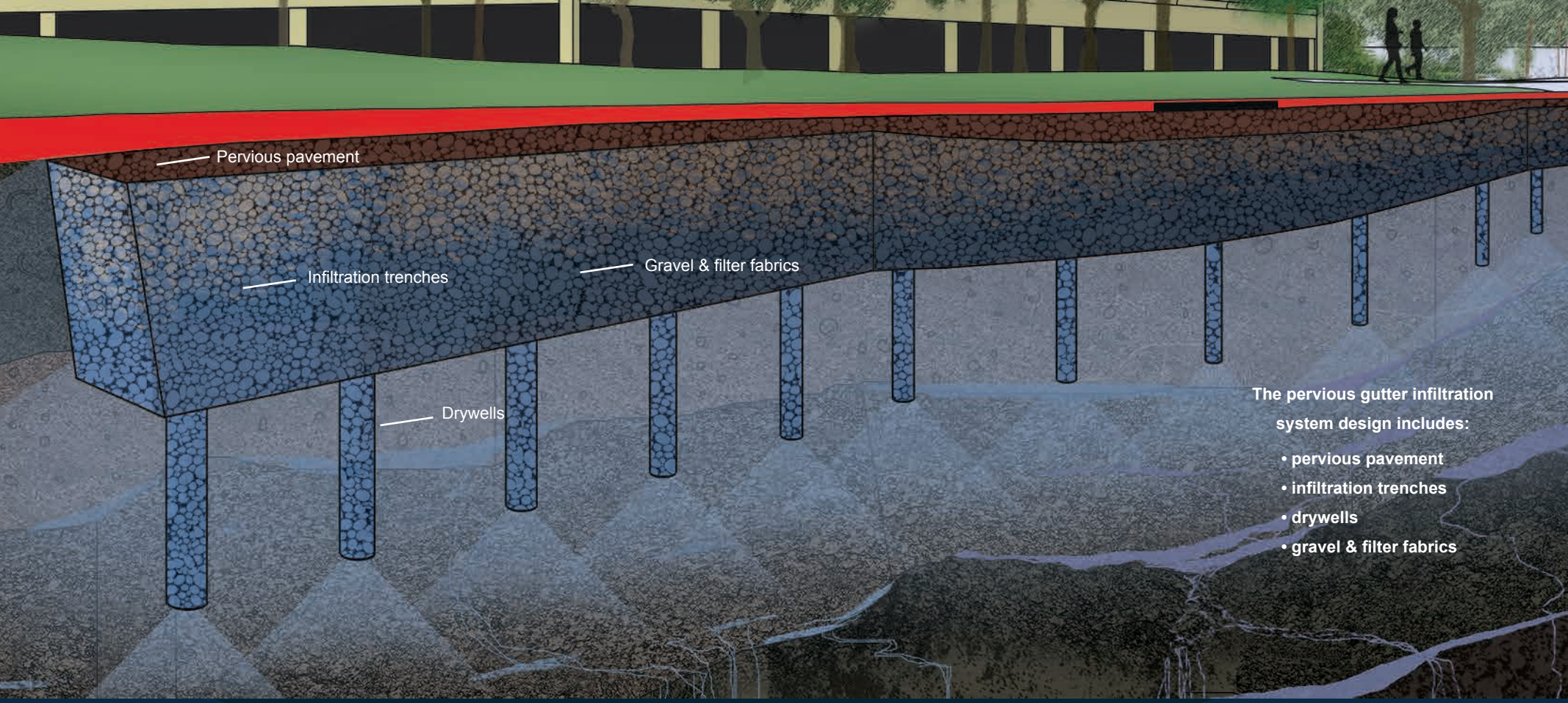
First flush containing the most polluted stormwater flows through pervious gutters to an underground infiltration system. When the infiltration system is full, the remaining stormwater flows to the stormdrain, effectively reducing discharge of polluted stormwater into creeks, rivers and the ocean.

Green Streets designs create infiltration systems to catch, retain and clean the stormwater through the use of sidewalk planters, vegetated swales and pervious pavement. This approach of keeping water where it falls reduces the risk of flooding downstream while treating stormwater as a resource, instead of a waste product.

Underground view of the pervious gutter infiltration system cleaning and distributing the first flush of stormwater to help replenish local groundwater supplies.

This Green Streets Project is designed to capture, filter and infiltrate the first flush of stormwater runoff using a pervious gutter infiltration system from the entire 39-acre Government Center parking lot.





The pervious gutter infiltration system design includes:

- **pervious pavement**
- **infiltration trenches**
- **drywells**
- **gravel & filter fabrics**

The project contributes to groundwater supplies while reducing stormwater pollution to creeks, rivers and the ocean.

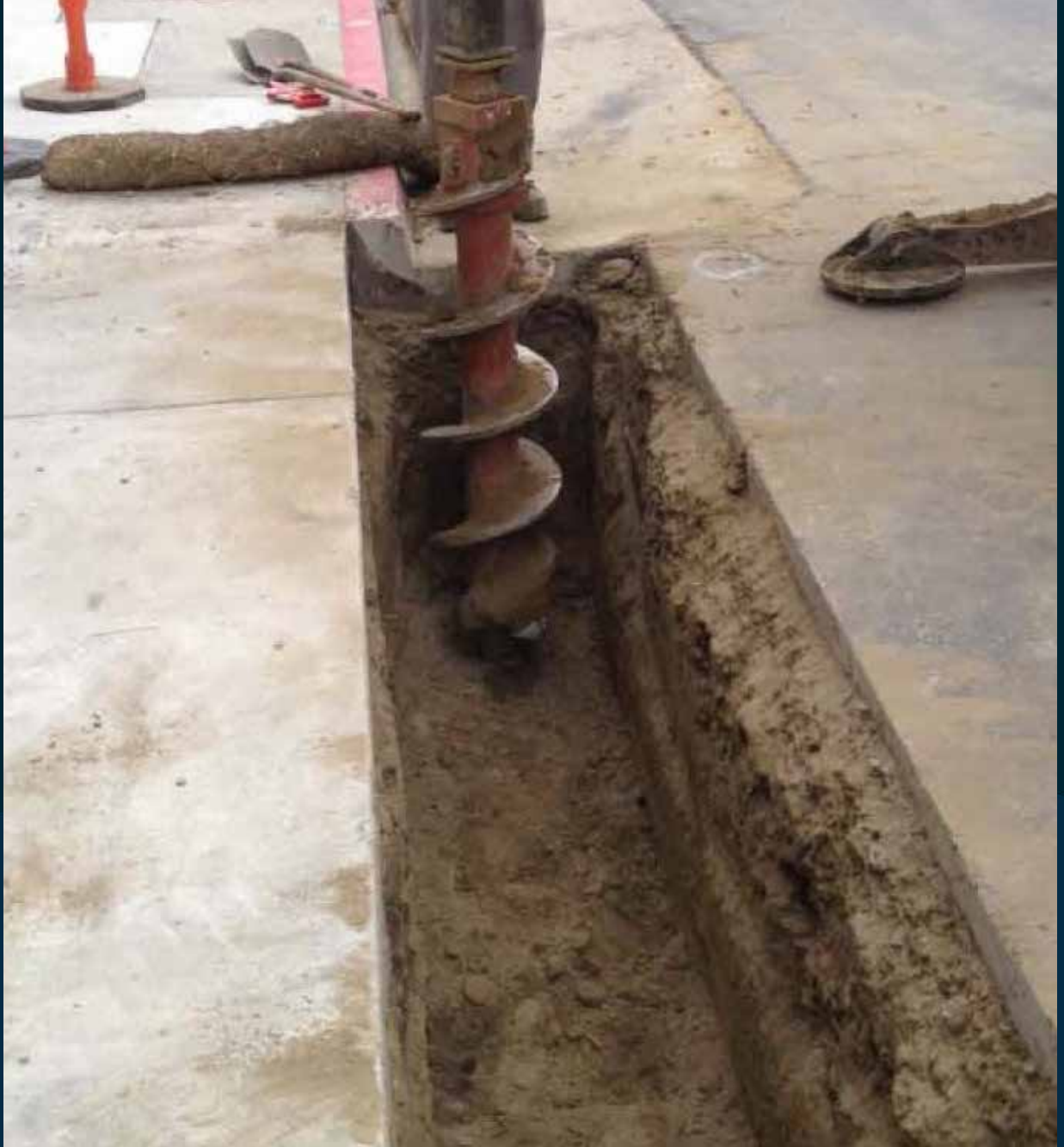
Pervious Concrete

Pervious concrete contains small spaces that allow water to pass through and into the ground below. When built over infiltration trenches, the volume of water captured is increased. Pervious concrete can be used for large pavement areas or in strategic gutter locations that capture stormwater from large areas.

Pervious Pavement Asphalt

Infiltration Trench

Infiltration trenches are long narrow trenches filled with coarse gravel where water is stored in the spaces between the gravel. Microbes that live on the surface of the gravel help break down pollutants like oil and grease, excess nutrients and bacteria.

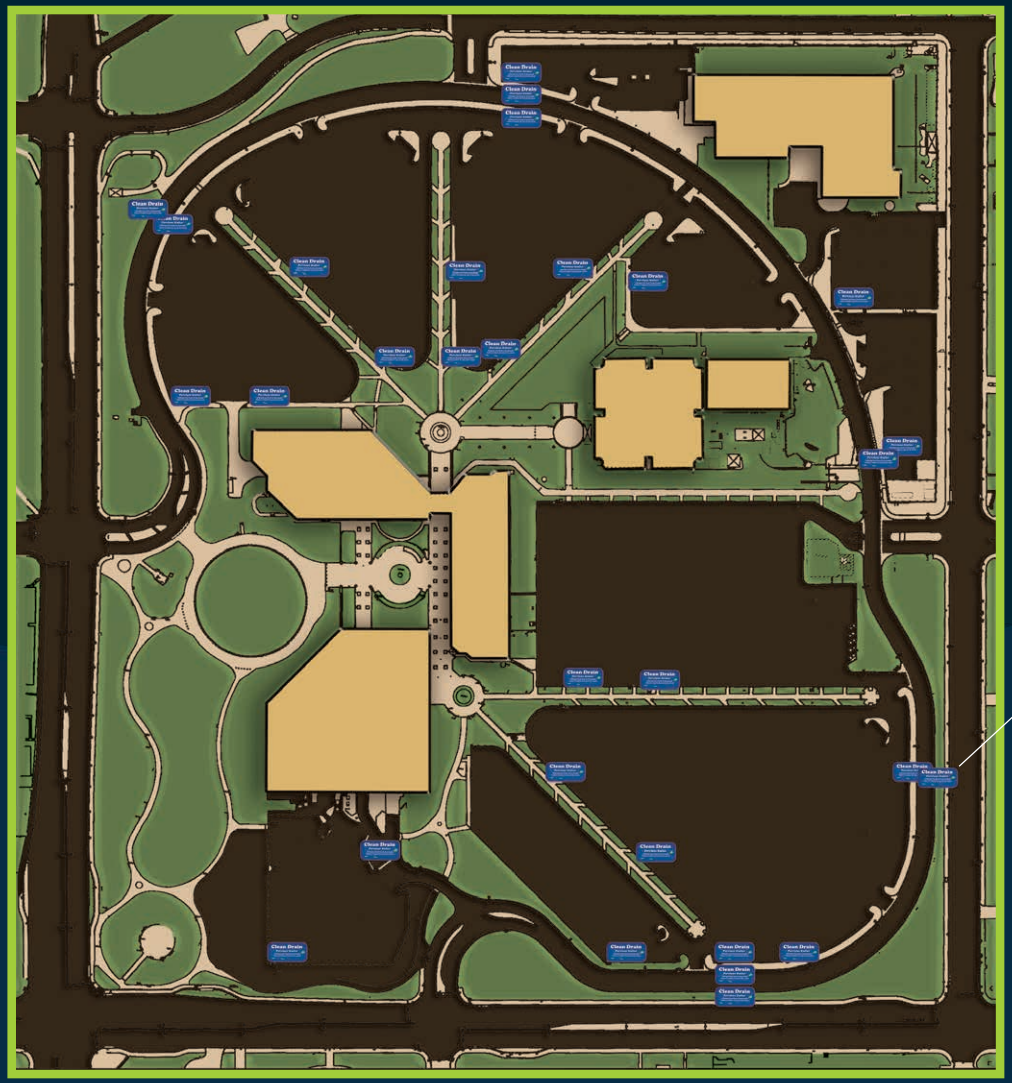


Drywells

Drywells are drilled holes filled with coarse gravel that increase the volume of retained water. They help water soak into the ground and replenish groundwater supplies.

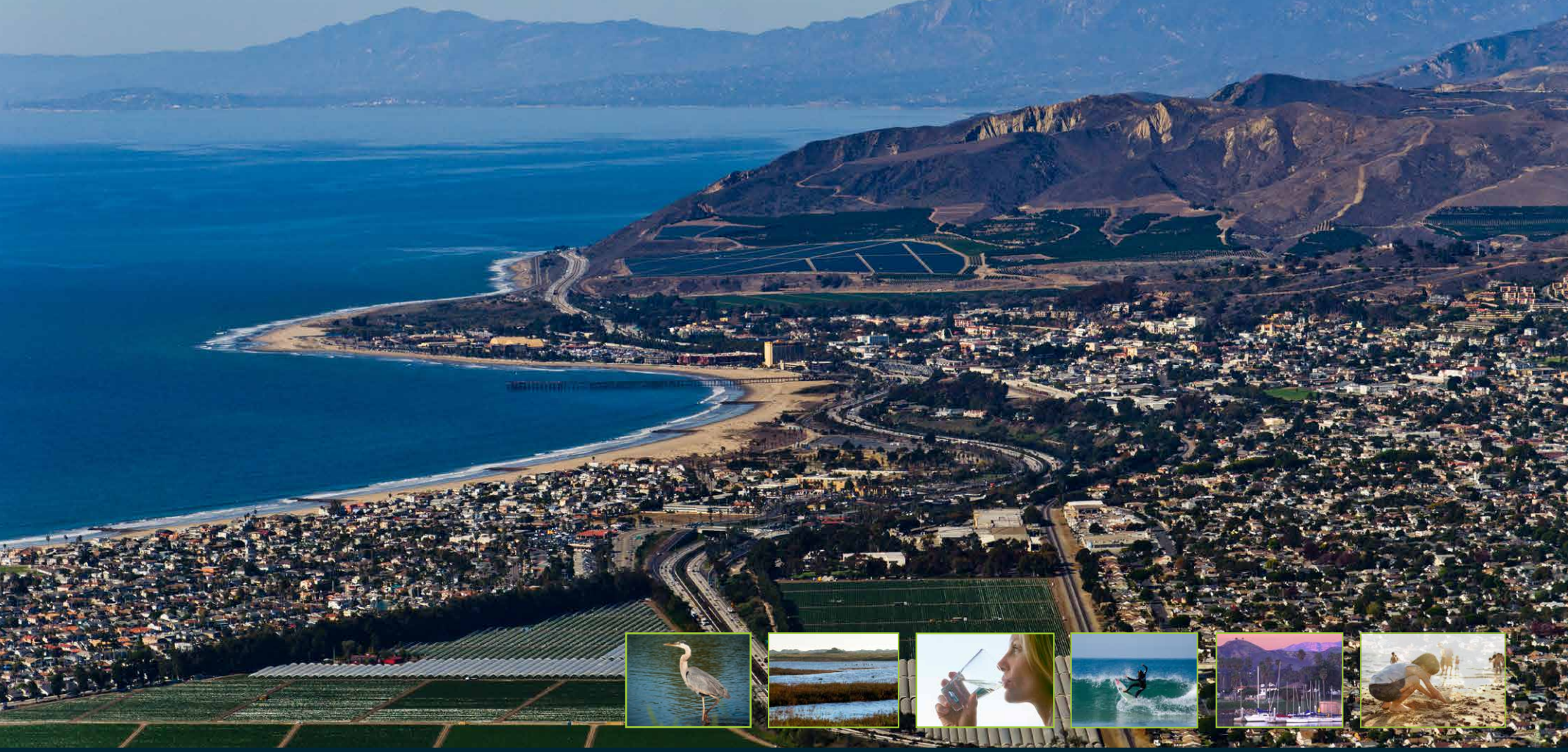
Infiltration System

Stormwater flows through the gravel-filled infiltration trenches and drywells. It then seeps into the adjacent soil through filter fabrics that line the bottom and sides of the infiltration system.



Clean Drain Locations

Aerial view of the Government Center parking lot identifying the locations of the pervious concrete infiltration systems. They are easily identified by the blue Clean Drain symbol on the curb.



Benefits of this Project

By promoting the natural movement of water within a watershed, Green Streets retrofit projects enhance stormwater infiltration and increase groundwater recharge, helping to maintain local groundwater supplies while reducing pollution entering creeks, rivers and the ocean.

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Funding for this project has been provided
in part through an agreement with the
State Water Resources Control Board

Funded in part by CalRecycle
The Department of Resources Recycling
and Recovery