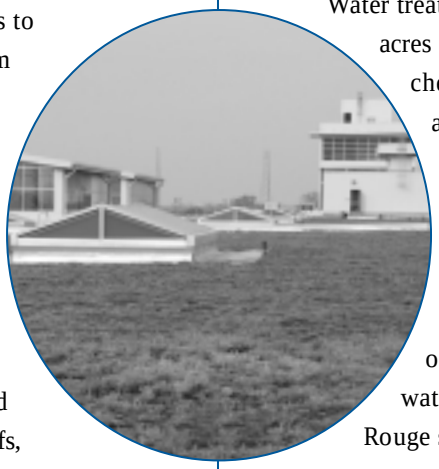
a natural storm water system

Ford Rouge Center is a world-class workplace where innovation thrives

Of all the environmentally inspired innovations at the Ford Rouge Center, the 10.4-acre living roof *(see inset photo)* receives the most attention. But the living roof is actually just one part of an extensive storm water management system constructed around the Dearborn Truck Plant. The system uses natural methods to catch and clean storm water runoff.



The problem of storm water runoff

When rain falls on industrial sites, it lands on hard surfaces. The storm water scours dust and dirt from factory roofs, roads, and parking lots and within minutes, the impacted water runs off into nearby rivers and lakes.

A challenging site

The Rouge is not an easy place to manage storm water. Back in 1917, Henry Ford built the complex in a low-lying area with poorly draining soil. Storms have flooded the Rouge complex and caused production delays. Plus, the Dearborn Truck Plant and surrounding buildings occupy nearly two million square feet of land, leaving little space to build a conventional water treatment plant.

Water treatment plants require acres of space, use lots of chemicals and energy, and can create unpleasant odors. That's why Ford engineers looked for a better way to handle the millions of gallons of storm water falling on the Rouge site annually.

An innovative solution

Instead of a chemically based storm water treatment plant, Ford installed a system that mimics nature.

The living roof is part of this large, fully integrated system which includes porous pavement on the shipping lot, a network of underground storage basins, natural treatment wetlands, and vegetated ditches called swales. Working in harmony, the system significantly reduces the amount of storm water leaving the site and entering the Rouge River Watershed. It filters out dirt particles, adds oxygen to rivers and lakes, and prevents major flooding, at one-third the projected cost of building a conventional water treatment plant.

"The storm water management system we installed uses natural processes to clean runoff before returning it to the Rouge watershed. We hope it serves as a model for other large industrial sites because water conservation and water quality are among the most important environmental issues of the 21st Century."

Tim O'Brien
Vice President
Corporate Relations

An innovative system cleans storm water naturally at the revitalized Rouge.

Frequently asked questions

How does the system reduce runoff?
At the Ford Rouge Center, a natural storm water management system reduces water volume in four ways. First, sedum growing on the living roof—and vegetation in the swales and treatment wetlands *(see photo above)*—absorbs water as nourishment. Second, some water evaporates into the air during photosynthesis. Third, rain seeps into the ground wherever there is green space and porous pavement. And fourth, more evaporation occurs as water flows through the wetlands and swales, on its way to the Rouge watershed.

How does it clean storm water?
The living roof and porous paving act as filters, sifting dust and dirt out of storm water. Further filtering occurs as storm water is channeled through the thick roots of plants in the treatment wetlands and swales, as well as through stone filtration beds located underneath the porous pavement lots. Another benefit to this system is that water rippling through wetlands and swales acquires oxygen, making it healthier for fish and other aquatic life in nearby rivers and lakes.

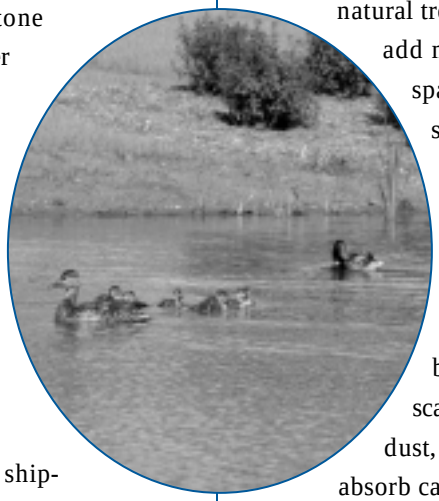
How does porous pavement work?
Porous pavement is honeycombed with tiny holes that allow rainwater and melting snow to trickle down through gravel into stone storage beds that filter out dirt particles.

Porous pavement also reduces standing water, cuts the cost of winter maintenance, and improves traction. The world's largest porous pavement lot, located at the vehicle shipping yard by the Dearborn Truck Plant, covers more than 16 acres.

Has Ford set performance targets?
Ford's natural storm water management system significantly reduces the amount of storm water leaving the site. The system is expected to reduce suspended solids by at least 85 percent, and reduce bacteria levels in the water. The system helps protect buildings against water damage, even during a rare 100-year flood event.

How big are the cost savings?
For a site as large as the Ford Rouge Center, the cost to build a conventional storm water treatment plant is estimated at $50 million, with annual operating costs running into the hundreds of thousands of dollars. By installing a natural storm water system at the Dearborn Truck Plant, Ford reduced construction expenses by two-thirds. Plus, the system has virtually no annual operating costs.

Does a natural system provide any other benefits?
Together, the living roof, swales and natural treatment wetlands add many acres of green space to the Rouge site. Dozens of plant species such as New England aster, prairie cone flower, Indian grass, and great spike rush beautify the landscape, trap airborne dust, create oxygen, absorb carbon dioxide, and reduce the urban heat affect caused by acres of paved surfaces. Plus, a natural storm water treatment system like this one provides food and shelter for a diverse animal habitat.



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