

Ingham County Drain Commissioner Plans Massive Urban Retrofit

Montgomery Drain project to address Lansing area's most polluted outlet to the Red Cedar River.

On the western edge of Michigan State University lies a floodplain and storm drain that are part of the Montgomery Drain Drainage District. The Drain serves a commercialized urban area that encompasses the Frandor Shopping Center and high-volume traffic arteries.

During rain storms or as snow melts, runoff from paved surfaces travels quickly through the Drain, carrying **engine oil, debris and other dangerous pollutants** directly to the Red Cedar River. Testing along the Drain found **arsenic, cadmium, copper, lead, selenium and zinc** in excess of levels permissible under state rules for soil concentrations and/or drinking water protection.

The Drainage District includes old combined sewers that transport sewage and storm water together to a nearby treatment facility. The sewer produces an offensive odor; heavy rain events can overwhelm the old system, resulting in the discharge of **sewer overflows** to the Red Cedar.

This already developed area will see significant additional private development in the coming months. The **Red Cedar Renaissance District** is a plan for mixed-use development in or near the floodplain along the river.

Ingham County Drain Commissioner Pat Lindemann is charged with assuring that new and existing development sites have **adequate drainage systems to guard against flooding, assuring the protection of life, property and public health**. The Montgomery Drain retrofit project will use Low Impact Design (LID) techniques to store and clean storm water flows, while also eliminating combined sewers and any illicit connections to the drain.

Clean Water Mandates

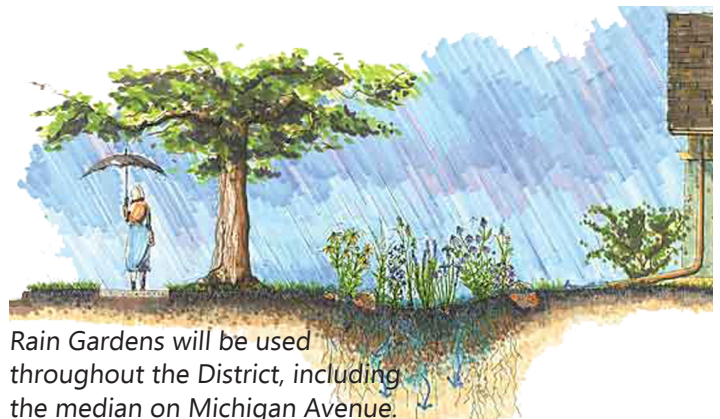
The Federal Clean Water Act protects water resources through the Environmental Protection Agency's National Pollutant Discharge Elimination System (NPDES.) NPDES regulates pollutant discharge into rivers, lakes and streams. In Michigan, the Department of Environmental Quality (MDEQ) reviews development plans to assure clean water standards are met.

Because of the known pollution problems and the need to provide drainage for the new Red Cedar Renaissance development, the City of Lansing and Ingham County petitioned for improvements to the Montgomery Drain. Drain Commissioner Lindemann's team of engineers and scientists are designing a system that will store and clean storm water runoff from 95% of storms without any discharge to the Red Cedar River.

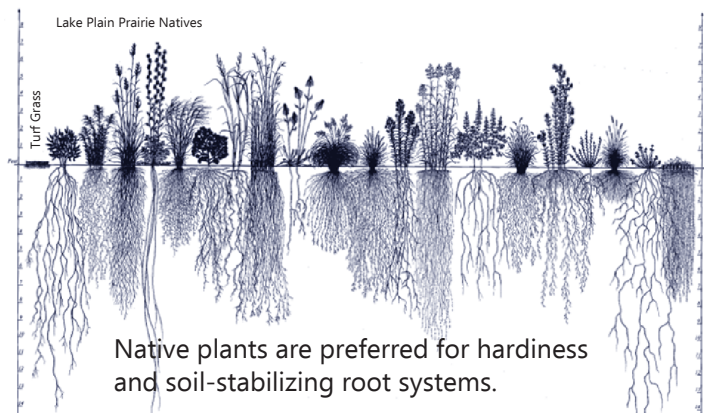
LID: The Green Infrastructure Solution

Under Lindemann's leadership, Ingham County drainage projects have pioneered affordable LID initiatives. Green infrastructure projects are a fraction of the cost to install as compared to conventional "gray infrastructure" (concrete pipes and retention areas.)

LID uses plants, soil, stone and water to develop storm drains that function like natural ecosystems. Geotextile fabrics may also be used to ensure a stable base. The engineered soil profile allows water to filter through lower layers and recharge groundwater.



Rain Gardens will be used throughout the District, including the median on Michigan Avenue.



Images courtesy of USDA/NRCS

The Montgomery Drain retrofit project will feature constructed wetlands, rain gardens, bio-retention areas, ponds and bio-digestive green walls. Given that the current system rushes contaminated storm water directly to the Red Cedar River, project planners expect the retrofit to reduce pollutant loading by 95%.