

Project Summary

Leading Partners: City of Minneapolis, Minneapolis Park and Recreation Board, Mississippi Watershed Management Organization

The Mississippi Watershed Management Organization (MWMO) found that a two-year storm event would pose a high risk of street flooding in the Minneapolis neighborhood of Hoyer Heights, based on stormwater modeling results. Additionally, stormwater runoff from the area received minimal treatment before entering the Mississippi River. In 2020, the MWMO partnered with the City of Minneapolis to implement a series of tree trenches, a form of green stormwater infrastructure along street rights-of-way. This effort complemented the city's planned replacement of sanitary sewer lines and restoration of neighborhood streets.

Improvement Approach

The tree trenches were designed to maximize the capture of street runoff, using curb cuts with sediment traps. They were also planted with a diverse mix of trees, deep-rooted grasses, and other native vegetation to help filter out pollutants. The function of the tree trenches is to pass runoff through several feet of soil, absorbing contaminants before reaching a perforated PVC pipe at the bottom of the trench.

Outcomes

Total benefited area: 3.71 acres

Annual statistics: 305,000 gallons of runoff captured, 562 pounds of suspended solids removed, along with 2.8 pounds of phosphorus

Lessons Learned

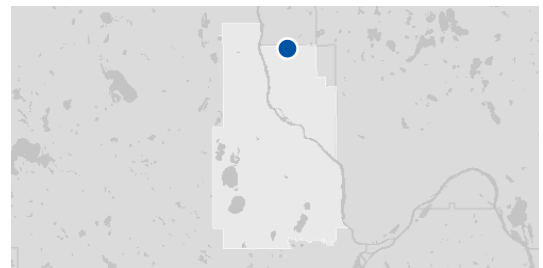
Having a well-developed maintenance plan is essential to the expansion of green infrastructure. Identifying partners with capacity to carry out routine tree trench maintenance and native vegetation upkeep was a long-term challenge. While initial efforts relied on neighborhood volunteers, it soon became clear a long-term approach was needed. The City of Minneapolis took over maintenance, handling sediment removal and contracting native vegetation upkeep. In partnership with the MWMO, the city also engaged residents in best management practices.

Ongoing monitoring is also essential to green infrastructure success, as these systems can have unintended trade-offs. Monitoring by the city and the Saint Anthony Falls Laboratory at the University of Minnesota revealed that phosphorus in compost used for rain gardens was leaching into stormwater. To address this, the city is exploring use of low-phosphorus compost. The design of the tree trenches also allows the underdrains to be sealed so that water is infiltrated on-site instead of being sent downstream, thereby preventing pollution.



Image credit: MWMO

An example of a sediment trap located adjacent to a curb cut.



The location of the project, as shown by the blue dot.



Image credit: MWMO

Placing of the perforated PVC pipes into the trenches.

Resources

+ [MWMO Project Webpage](#)

+ [MWMO Project Image Library](#)