

CITY OF COLUMBUS, CAPITAL IMPROVEMENT PROJECT - RESERVOIR POLLUTION REDUCTION

Metropolitan Columbus, Franklin County

Date Completed: 2011

Description: The City of Columbus put in place Green Infrastructure Best Management Practices (GI BMPs) to improve and protect the water quality and safety of its three drinking water reservoirs. "The Big Walnut Creek watershed, with a land mass of 190 square miles, supplies the largest of Columbus' reservoirs. Hoover Reservoir has 3,073 water surface acres and holds around 20 billion gallons of water. More than 500,000 people receive their drinking water from Hoover. O'Shaughnessy and Griggs Reservoirs are located within the 1,000 square mile Upper Scioto River watershed. O'Shaughnessy has a water surface area of 845 acres and a volume of nearly 5 billion gallons. Further downstream, Griggs Reservoir has a water surface area of 385 acres and a volume of around 1 billion gallons."¹



Project Size: BMPs were put in place at all three reservoirs. Williams Creek Consulting designed the BMPs for the Hoover Reservoir -- following were the total square footages installed at 14 Hoover sites:

- Pervious Concrete Parking Area: 105,633
- Rain Gardens: 130,728
- Stormwater Wetlands: 26,235
- Vegetated Swale: 19,314
- Native Revegetation: 262,196
- Native Revegetation - Prairie: 24,010
- Native Revegetation - No Mow Turf: 8,332
- Grass Paver Parking Area: 14,653
- Filter Strip: 3,040
- Native Reforestation: 18,864

Hoover Reservoir
(photo: City of Columbus, Department of Public Utilities)

1. Watershed management program. (n.d.). Retrieved from <http://publicutilities.columbus.gov/content.aspx?id=36978>



SUSTAINABLE INFRASTRUCTURE PLANNING AND DESIGN

Columbus Reservoir Improvement Project

OWNER • City of Columbus, Department of Public Utilities

CLIENT • Stantec

LOCATION • Franklin County, Ohio

COMPLETED • 2009 - 2011

KEY STAFF • Mr. Ted Blahnik, PE; Mr. Neil Myers

The majority of land immediately adjacent to the O'Shaughnessey, Griggs, and Hoover Reservoirs has been developed over the years as active public park land. As such mowed turf grass and large parking lots have become predominant landscape features resulting in eroding shorelines, undercut banks and increased direct stormwater discharges. Combined with the development of housing, roads, and other infrastructure surrounding the reservoirs, large volumes of stormwater runoff and associated non-point source pollution are further compromising the water quality of the drinking water reservoirs. The City of Columbus received \$4.5 M in American Recovery and Reinvestment Act of 2009 funding to improve and protect water quality and safety of the three drinking water reservoirs through Green Infrastructure Best Management Practices (GI BMPs) improvements such as bioretention, pervious pavements, rain gardens and restoration efforts.

Utilizing its extensive ecological engineering experience, Williams Creek was the technical design authority completing the analysis, project prioritization, cost estimation, engineering design, and construction oversight of the schedule. The engineering design documents for 14 separate project sites were completed and approved for bid in four months.

Community Added Benefits:

- cleaner supply for drinking water
- stabilized waterways
- improved safety
- improved public landscape



Developer/Client/Owner:

City of Columbus, Department of Public Utilities
910 Dublin Rd
Columbus, OH 43215
<http://utilities.columbus.gov/>

Designer/Consultant:

Williams Creek Consulting
247 E. Livingston Avenue, Suite B
Columbus, OH 43215-5747
www.williams creek.net

Stantec

1500 Lake Shore Drive, Suite 100
Columbus, Ohio 43204
www.stantec.com

Key Features:

Bioretention Swales
Pervious Pavements
Rain Gardens
Natural Areas Restoration

Project Details: The City of Columbus Department of Public Utilities (DPU) mission is to enhance the quality of life for people living, working, and raising a families in central Ohio through the economic, efficient, and environmentally responsible stewardship of superior public utilities. The Division of Power and Water (DWP), Watershed Management Section has a more targeted mission to improve the quality of the City's raw water supply. The City currently has three surface water reservoirs - Hoover, O'Shaughnessy, and Griggs - that provide raw water for a large portion of the City. In general, stormwater flows directly into these reservoirs with little or no water quality treatment. This issue was a concern for the Division of Sewerage and Drainage (DOSD) that was tasked with stormwater management and regulatory compliance programs that were to protect surface water quality.

28 potential pollution reduction opportunities were identified and then prioritized, each site was evaluated based on site data and performance measures including watershed area and primary land use, current system conditions, impervious surface managed, project volume reduction, construction and maintenance costs, and engineering judgement of non-monetary implications. The evaluation of the 28 locations was a screening process leading to a recommended prioritization schedule for implementation.

Project Cost: The American Recovery and Reinvestment Act of 2009 (ARRA) provided approximately \$ 4.5 million in funding to identify, design, and construct Green Infrastructure Best Management

Practices (GI BMP's). The funds were administered by the Ohio Environmental Protection Agency (OEPA) through the existing Ohio Water Pollution Control Loan Fund (WPCLF).

Maintenance Cost: Currently under investigation by the City of Columbus Watershed Management Program.

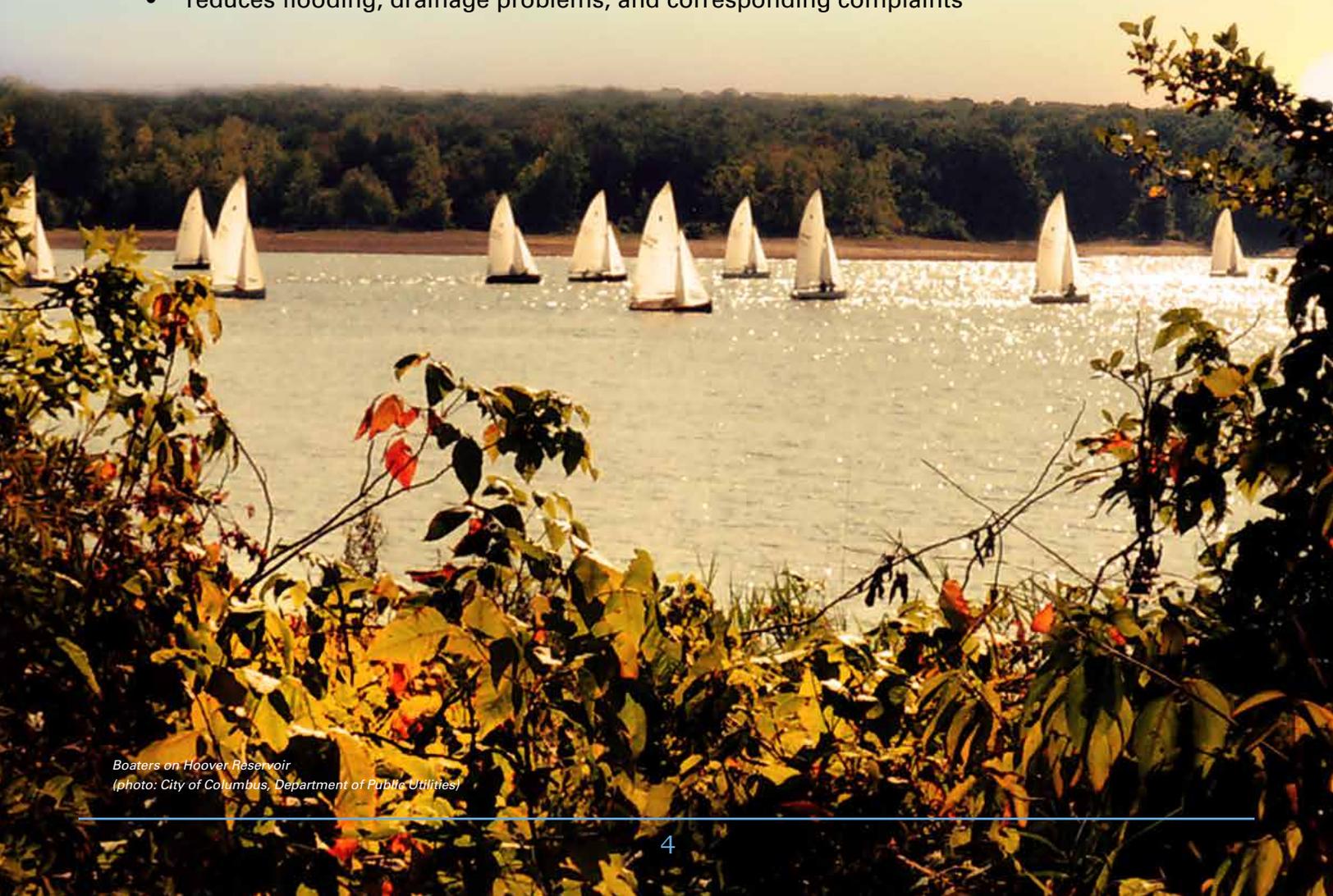
Funding Sources / Incentives: The American Recovery and Reinvestment Act of 2009 funded the project.

Applicable Zoning Regulations: None

Lessons Learned:

Green Infrastructure:

- is cost effective when implemented in a prioritized method
- can have a significant impact on water quality
- increases aesthetic and values associated with public green space
- improves public spaces and access to water resources
- enhances quality of life and economic development benefits
- enhances existing natural features, restores habitat, and improves biodiversity
- reduces flooding, drainage problems, and corresponding complaints



Boaters on Hoover Reservoir
(photo: City of Columbus, Department of Public Utilities)