Chagrin River Watershed Partners, Inc.
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Comparison of Traditional Storm Water Management to Low Impact Development

Case Study:
Visually and numerically compare a 9 acre condominium development with traditional storm water management to one using low impact development storm water management practices. The storm water management must treat the quantity and quality of the site runoff and comply with applicable local, state and federal requirements.

Low Impact Development (LID):
Combines storm water management and site design to control non-point source pollutants and mimic natural site hydrology through site design focused on storing, infiltrating, and detaining storm water.

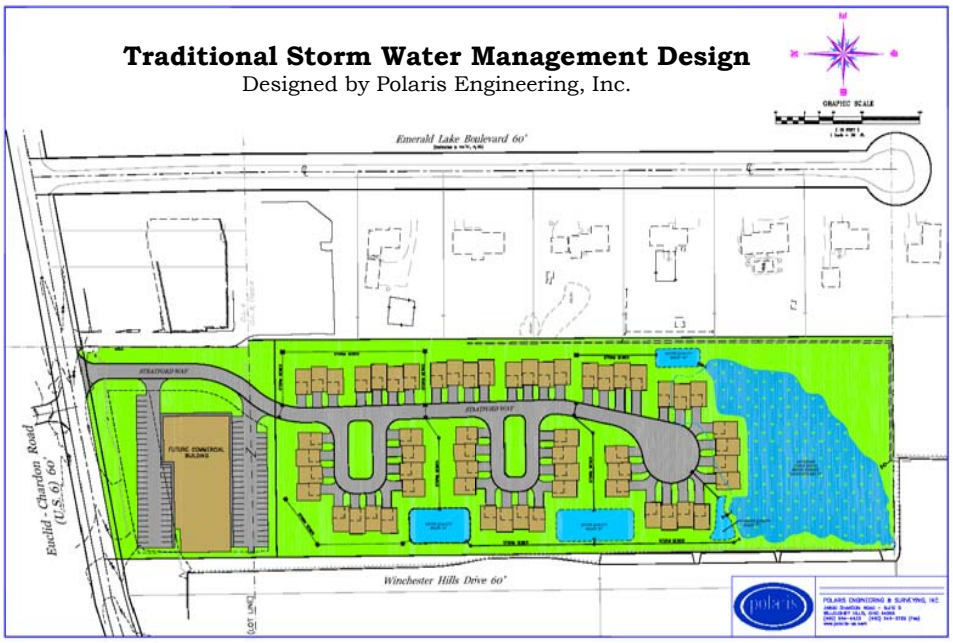
Traditional Practices

Centralized Storm Sewer System
- Curb and gutter system.
- 4 water quality basins.
- Basins flow into wetland (USACE permit required).
- Wetland discharges to public storm sewer system.

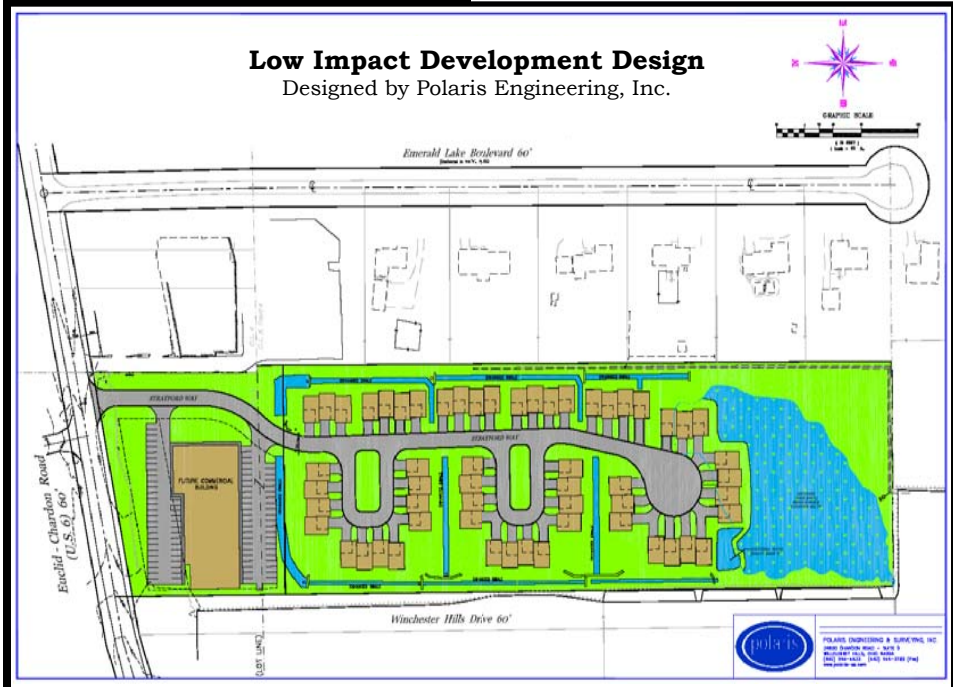
Benefits:
- Standard practice well understood by designers, reviewers, installers and home buyers.

Storm Sewer Pipe	=	$58,630
Storm Sewer	=	$41,000
Water Quality Basins	=	$5,500
Total Cost		**= $105,130**

Traditional Storm Water Management Design
Designed by Polaris Engineering, Inc.



Low Impact Development Design
Designed by Polaris Engineering, Inc.



LID Practices

Enhanced Swale System with Underdrain
- Treats quality and reduces quantity.
- Drains to a wetland and then to the public storm sewer system. (USACE permit required).

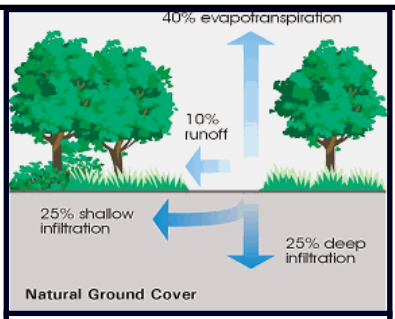
Benefits:
- Reduces runoff volumes and peak storm water flows.
- Allows for smaller storm water conveyance system.
- Minimizes infrastructure costs.

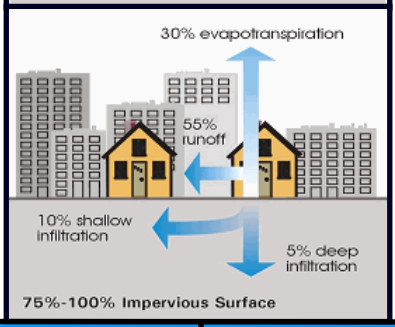
Enhanced Swale System	=	$45,400
Storm Sewer Structure	=	$8,900
Sediment Trap/Basin	=	$325
Total Cost		**= $54,625**

Low Impact Development: Structural and Non-Structural Practices to Maintain Site Hydrology

Changing Land Use =

- **Increase in impervious cover.**
- **Fewer riparian and wetland areas to absorb runoff.**
- **Increase in flooding, erosion, and water quality problems.**
- **Increase in public and private infrastructure.**
- **Increase in complaints from residents.**
- **Increase in local government costs.**





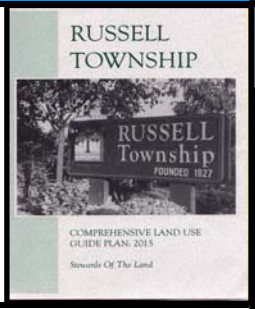
Solution

- **Better site design on new projects.**
- **More, and better, retrofits in built areas.**
- **Low Impact Development approaches to new development and redevelopment.**

Contact Chagrin River Watershed Partners, Inc. for more information.

Non-Structural Tools

- Comprehensive Planning >
- Riparian and Wetland Setbacks
- Conservation Development v



Conservation Development Design
Designed by Oxbow Engineering, Inc.

- Update parking requirements to reduce impervious areas >

Structural Tools

- Bioretention >

- Disconnected Downspouts v
- Pervious Pavements ^

- Road Side Swales ^
- Residential Rain Gardens >

This information was prepared by Chagrin River Watershed Partners, Inc. under award NA04NOS4190052 from the National Oceanic and Atmospheric Administration, U.S. Department of Commerce through the Ohio Department of Natural Resources, Office of Coastal Management. The statements, findings, conclusions, and recommendations are those of Chagrin River Watershed Partners, Inc. and do not necessarily reflect the views of the National Oceanic and Atmospheric Administration, Department of Commerce, Ohio Department of Natural Resources or the Office of Coastal Management.