Sustainable, Multi-Use Components

How Do They Fit In with Today's Stormwater Management?

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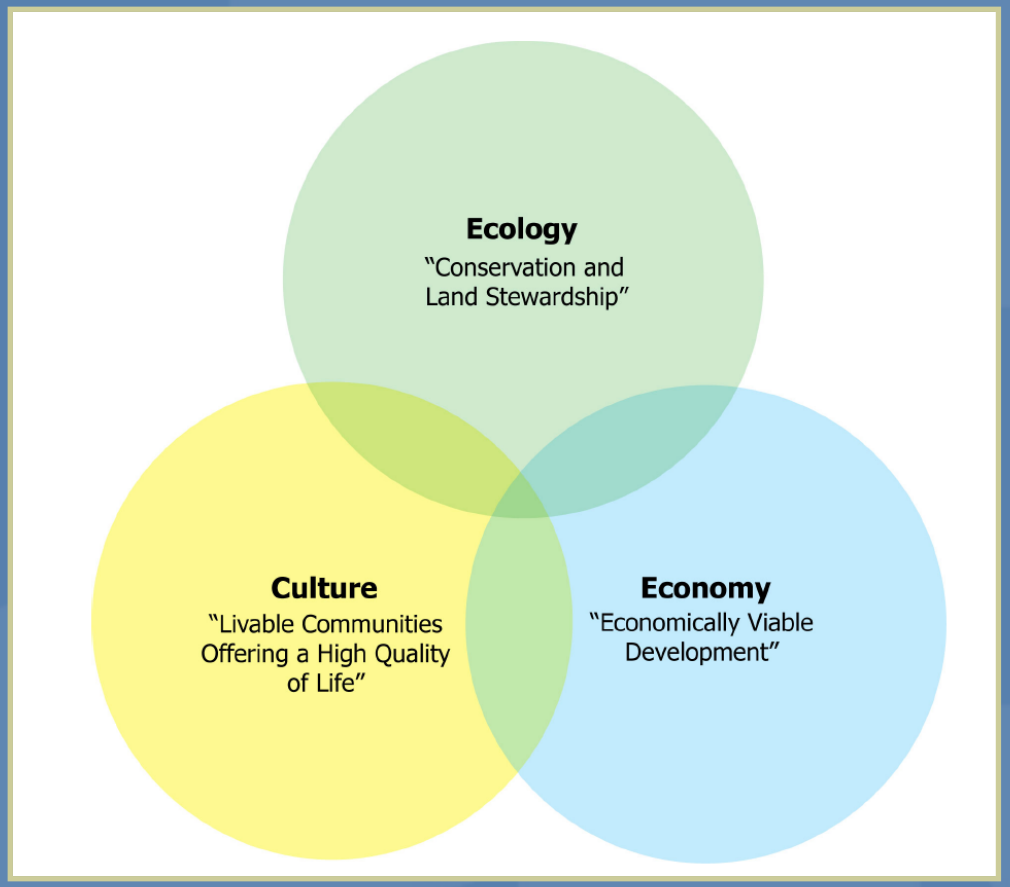
Sustainability

"Development which meets the needs of the present without compromising the ability of future generations to meet their own needs."

-1987 World Commission on the Environment

- Protect, enhance, and integrate natural and water resources
- Preserve cultural resources
- Promote human health and well-being

Triple-bottom line



- Environmental Protection
- Social Progress
- Economic Prosperity

Storm water-specific sustainability

- Preserve and incorporate existing resource areas into development
- Rainwater as a resource rather than waste
- Preserve or enhance soil permeability
- Utilize appropriate BMPs for effective storm water treatment

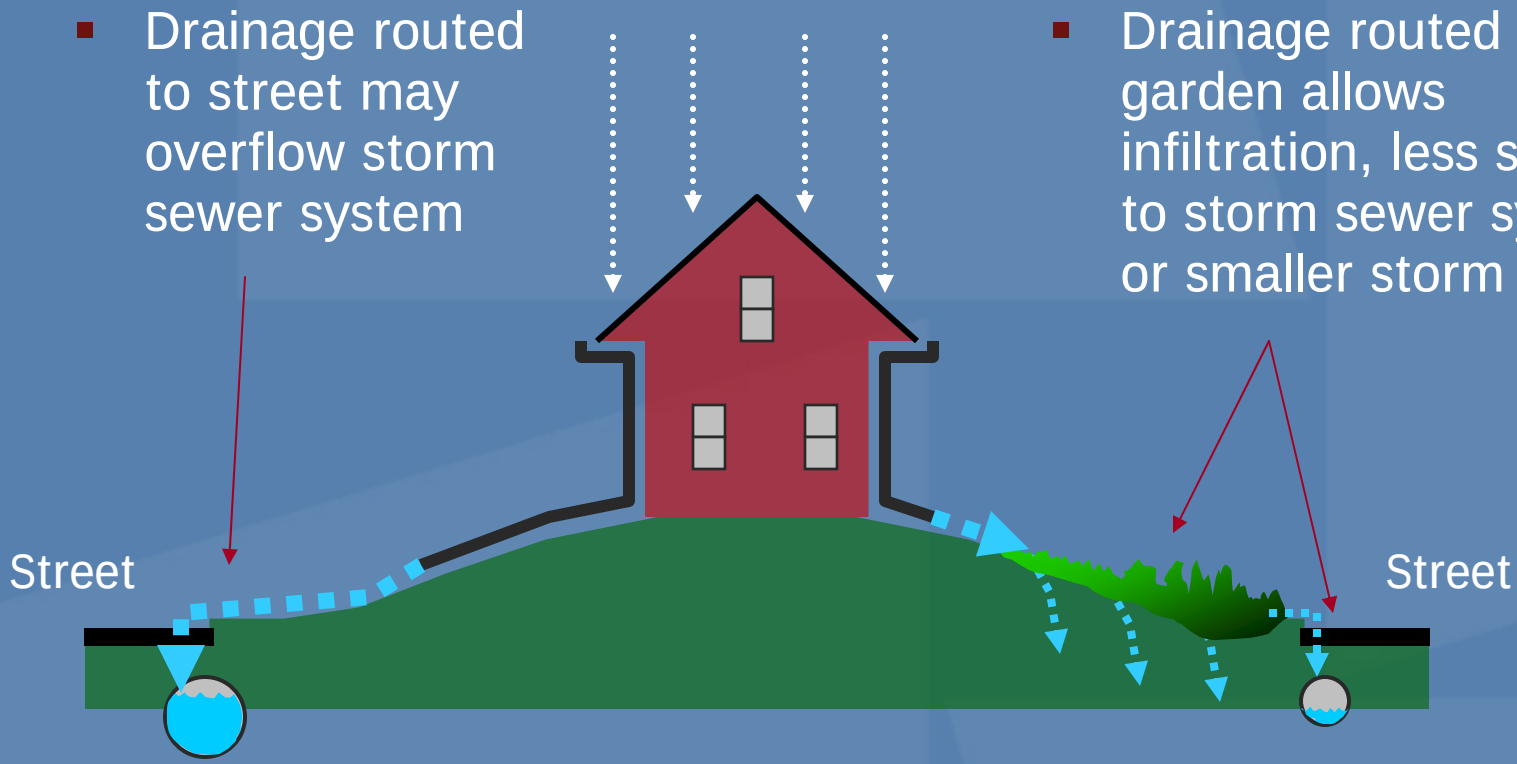
Sustainable Stormwater Components

- Buffers
- Rain gardens
- Native Vegetation
- Permeable pavements

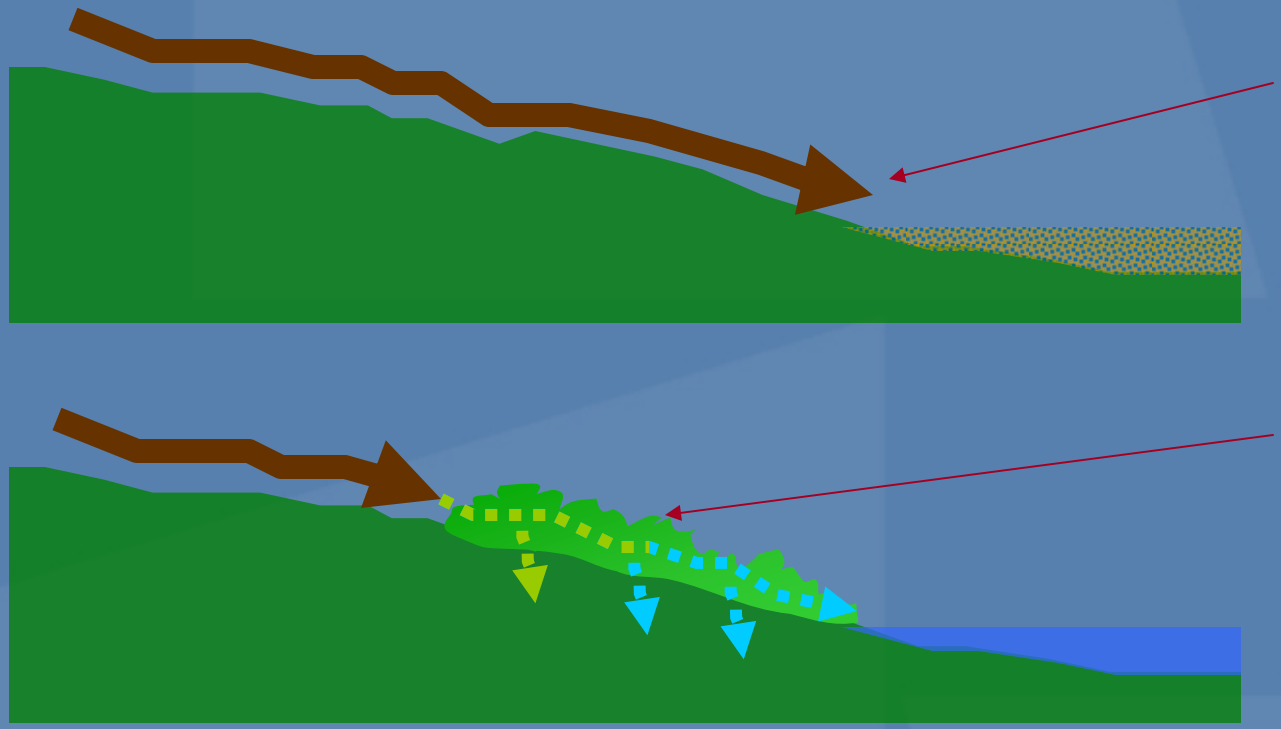
Let’s look at ways to incorporate multi-use components

Stormwater Routing

- Drainage routed to street may overflow storm sewer system
- Drainage routed to rain garden allows infiltration, less stress to storm sewer system, or smaller storm pipe



Buffers



No buffer – runoff is relatively unimpeded

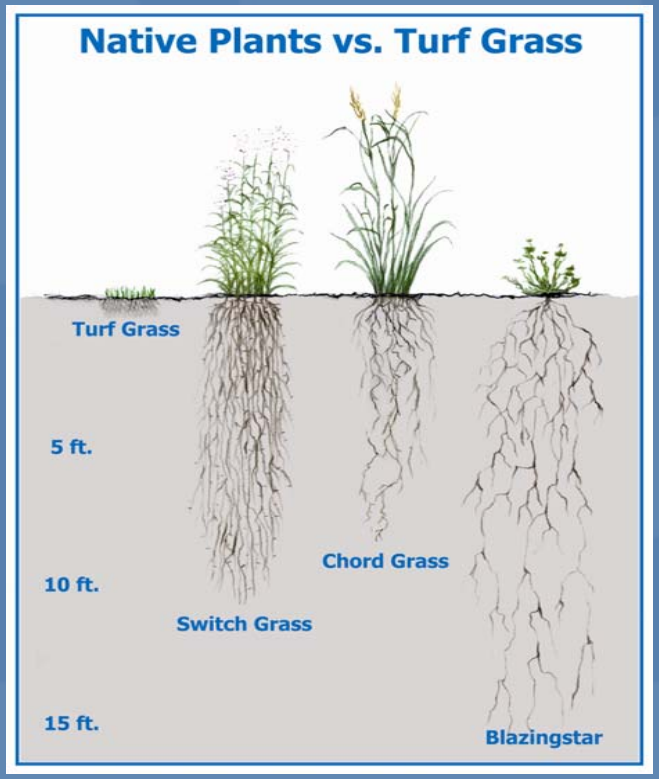
Buffer – runoff is slowed, filtered, infiltrated before entering wetland or water body

Infiltration Strategies

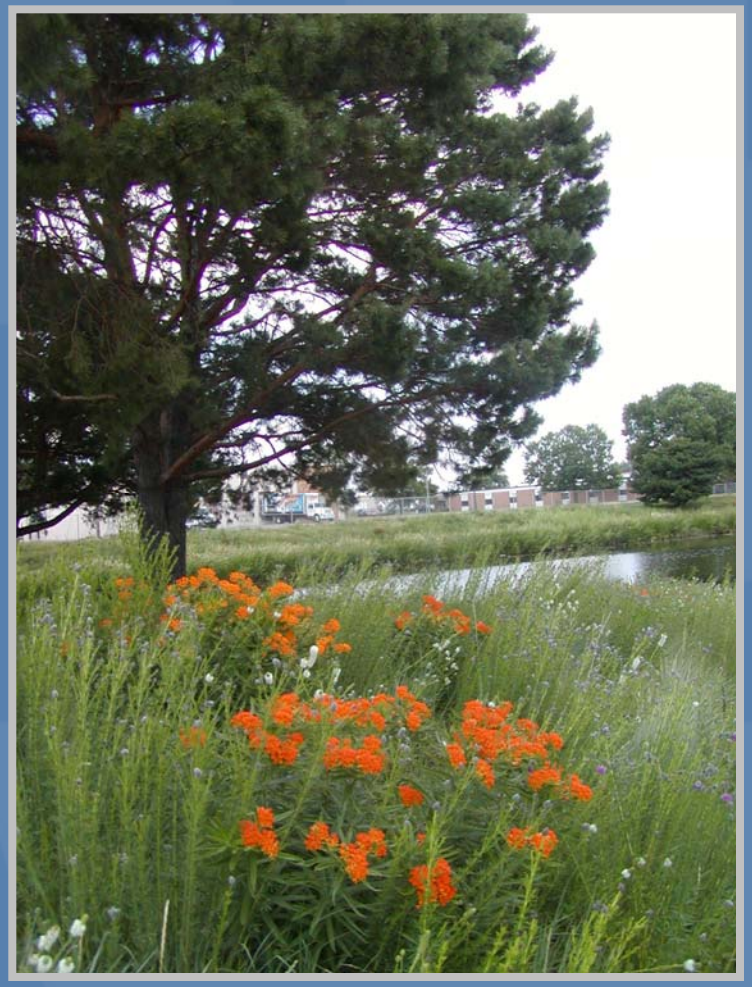
- Groundwater recharge/volume control
- Water quality benefits
- Maintain stream base flows
- Spruces up the neighborhood
- Provides habitat

Native plants

- Deep root systems
- Filter-out/absorb pollutants
- Wide variety of species



Native Plants Add Aesthetics



Education

- Community Involvement
- Promotes Awareness
- Promotes Imitation

Funding Opportunities

- Water Quality
- Recreation
- Natural Resource Protection
- Flood Hazard Mitigation
- Community Development

Case Studies

- Shoreline and Streambank Stabilization
- Stormwater Management
- Outdoor Recreation
- Energy Conservation

Long Lake Shoreline Stabilization

Erosion Problems

- Bank undercutting

- Fallen and leaning trees

Multi-use Components

- Rock Riprap
- Native and Emergent Vegetation

- Tree Wells

Multi-use Components

- Pedestrian access
- Educational signs

Sustainable Success

- Water quality & habitat
- Neighborhood aesthetics
- Grant funding

White Pine Channel

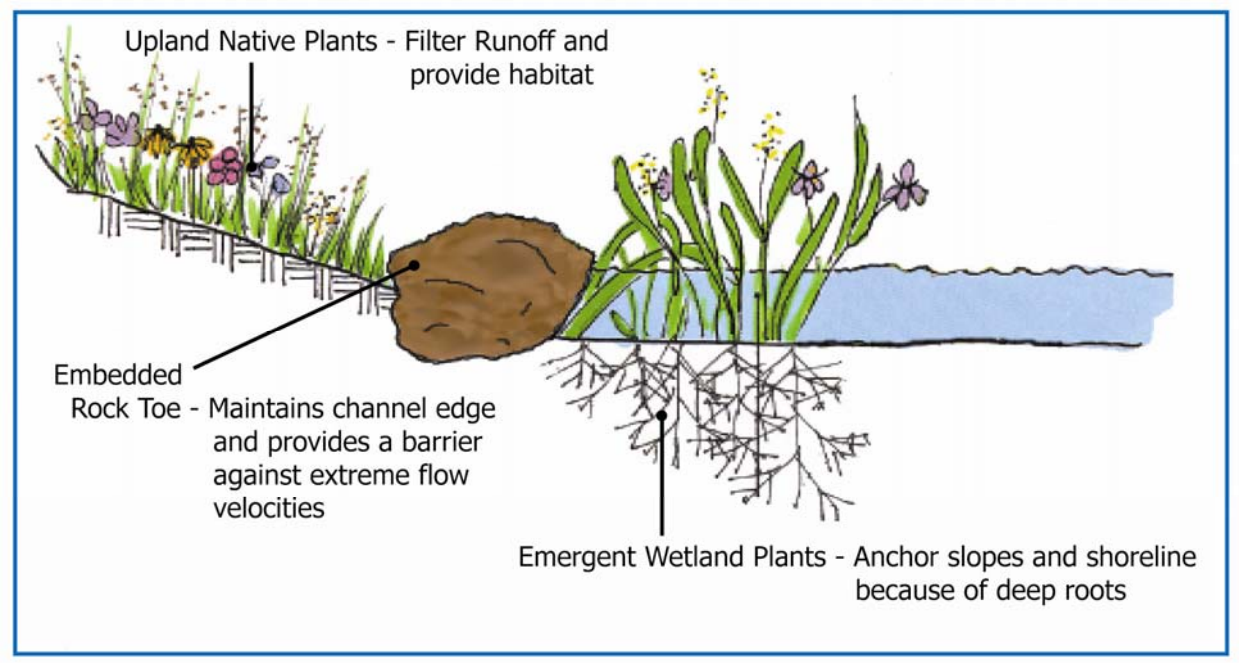
Problems

- Eroded banks

- NPS Pollutants
- Sump discharge lines

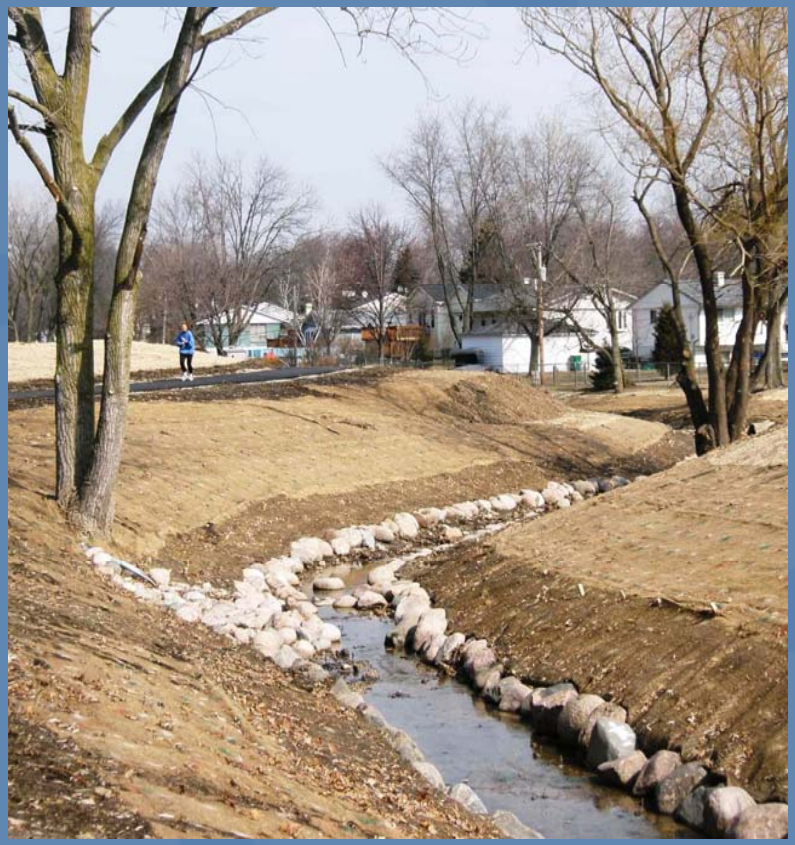
Multi-use Components

- Rock Toe
- Native Vegetation



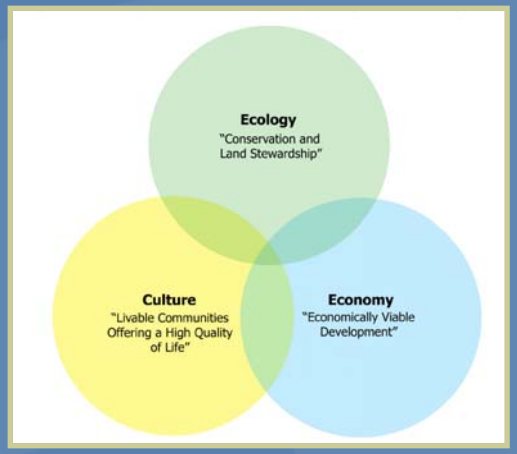
Multi-use Components

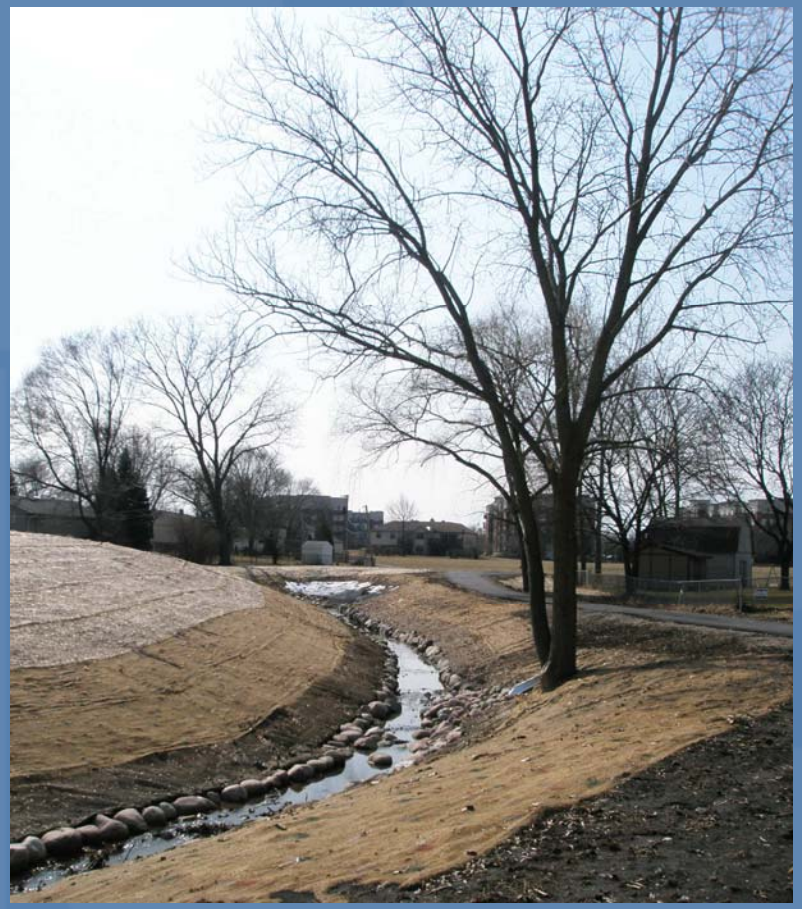
- Meanders
- Riffle/pool
- Recreational Trail



Sustainable Success

- Water quality
- Community use
- Grant funding

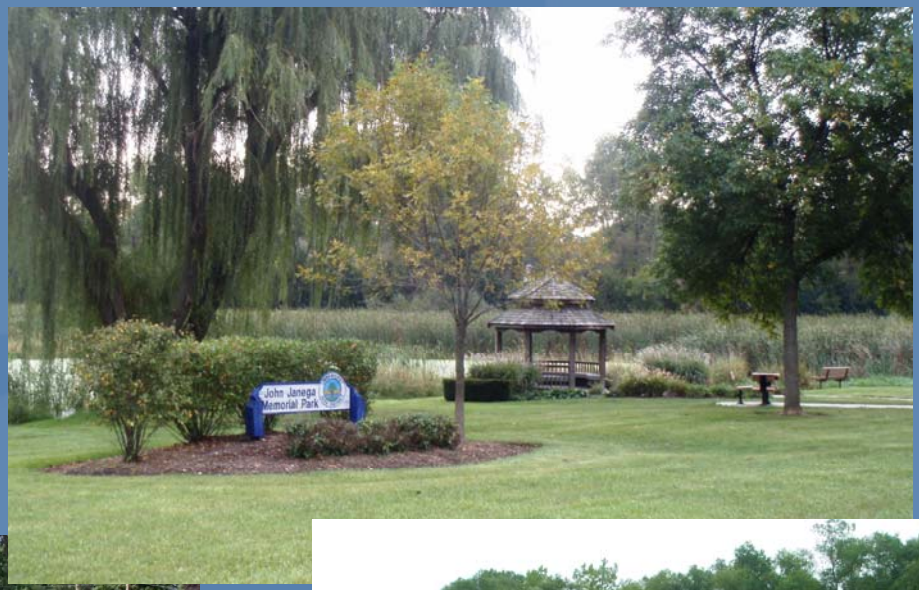




John Janega Memorial Park

Problems

- Sedimentation
- Dense Cattails



Problems

- Diminished Recreational Space
- Outdated playground

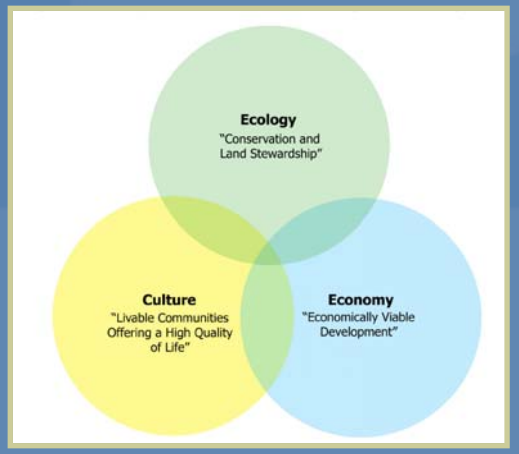
Multi-use Components

- Storage Volume
- Vegetation Management
- Native Vegetation
- Recreation

Sustainable Success

- Stormwater management
- Water quality

- Community use
- Educational Signs
- Grant funding



Barefoot Bay Aquatic Center

Multi-use Components

- Rain gardens
- Native vegetation
- Wetland detention

Sustainable Success

- Stormwater management
- Water quality
- Community use

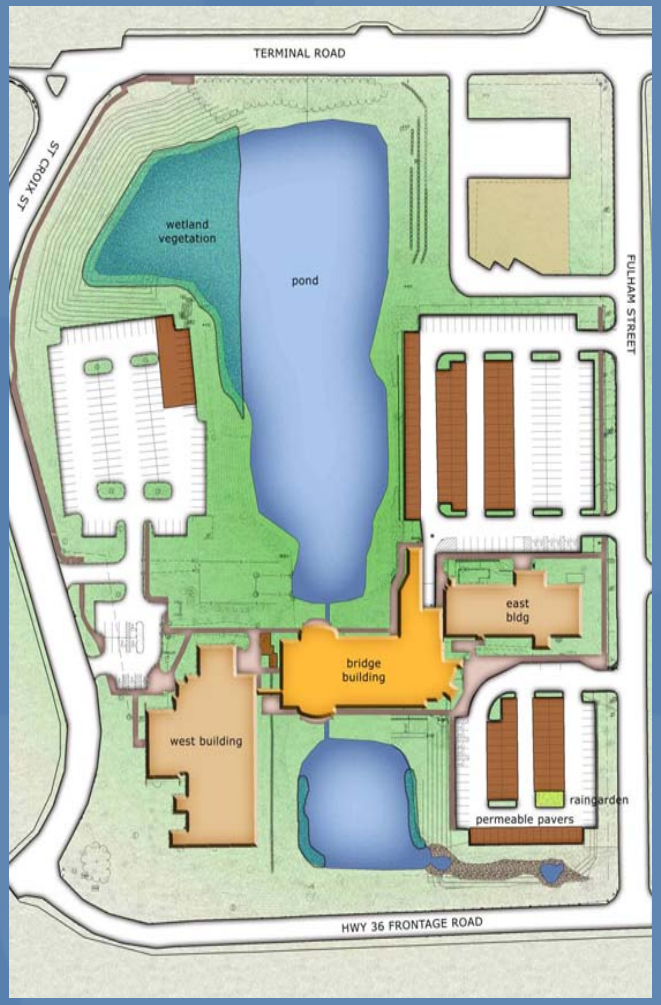
Bonestroo Campus

Development Issues

- Maximize site potential, building and parking size
- Fragmented site
- Regional stormwater pond
- Periodic site flooding
- Poorly draining soils

Integrated Design Solutions

- Reconfigure regional pond
- Permeable pavements
- Rain gardens
- Energy efficient building

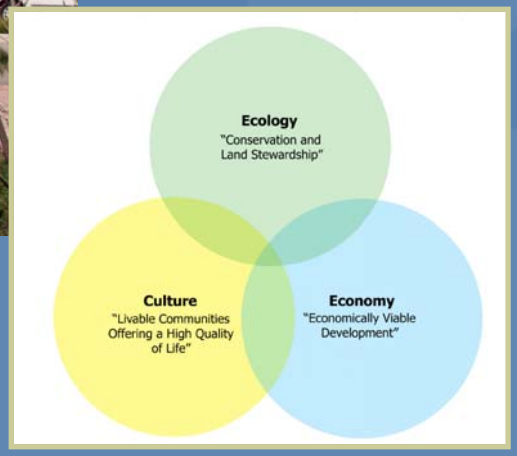


LEED Design Principles

- “Cool” roof
- Low-E windows
- LED lighting
- Regulated lighting
- Water conservation

Sustainable Success

- Energy conservation
- Pollution Mitigation
- Aesthetics



Summary

- Integrated design solutions enhance function and aesthetics.
- Employing multiple-use design strategies provides better solutions.
- Meeting the triple bottom line is a success for everyone.

Community. Economy. Environment.

Questions?

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