PARK WEST DRAIN
GREEN INFRASTRUCTURE PROJECT
Joe Bush
Ottawa County Water Resources Commissioner

Brian McKissen, PE, CFM
FTCH
Michigan Drain Code

Drain Commissioner/Water Resources Commissioner

- Drain Commissioners are public officials charged with administering Michigan laws related to flood protection, storm water management, and soil erosion

- Several Counties also manage drinking water and sanitary systems

- Elected or appointed for each county
Ottawa County, Michigan
Park Township, Michigan

Park West Drainage District

Park West Drain
Before
- Proposed Park West Drain
- Landfill Plume and Buffer
- Sedimentation Basin
- Wetland Dredge

After
- Proposed Park West Green Infrastructure Drain

Park West Drain Plan
• High groundwater
• Flooding
• Recirculating sump pumps
• Township petition

• Traditional drain concept
• Green infrastructure drain concept
• Community concerns
• SAW grant
• SAW grant received from MDEQ
  • Testing and demonstration of innovative technology (only one awarded in the state)
  • 1.7 million dollars
  • Low interest loan to finance remainder
• Utilize infiltration soil capacity
• Sewer size reduction
• No need for expensive basins
  • Water quality
  • Flood control
• Half cost of traditional design
• Bioswales
• Vegetated swales
• Infiltration basins
• Perforated storm sewer/underdrain
• Sump line collection
Typical Bioswale Design
Typical Bioswale Design

Design Innovations
Typical Bioswale Design

- Bioswale
- Catch Basin
- Groundwater Table (High)
- Perforated Storm Sewer

Design Innovations
Infiltration Swale Design

- Grassed Infiltration Swale
- Storm Manhole
- Perforated Storm Sewer (sized to backup storm flow into swale)

Groundwater Table (Low)
Infiltration Swale Design

- Grassed Infiltration Swale
- Storm Manhole
- Perforated Storm Sewer (sized to backup storm flow into swale)

Groundwater Table (Low)
• Volume reduction
• Water quality
• Cost
• Constructability
• O&M
• Lake Macatawa
  • Phosphorus TMDL
  • 173.9 acres removed from Drain No. 23
• Annual load reductions to Lake Macatawa
  • Phosphorous
  • TSS
  • Nitrogen
• Groundwater for blueberry farms
• Floodplain protection
• Wetland recharge
• Avoid landfill contaminated plume
• 10-year, 24-hour design capacity
• 100-year, 24-hour partial capacity
• Discharge volume reduction
• Water quality
• SAW grant requirement
• Paired watershed approach (Pine Creek is a similar tributary to Lake Macatawa)
• Monitoring hydrologic differences between the two drainage systems may be the best indicator of water quality
• This data will provide both stormwater volume and peak flow per acre for at least 3 rainfall events
NOAA Monthly Total, December 2008

Park Township 8-10" Total
Questions?