



# Long-Term Management and Maintenance

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# Key Points

- All stormwater systems require maintenance
- With traditional infrastructure often maintenance only occurs when there is failure because it is ‘out of sight and out of mind’
- Most BMPs are visible, and often are considered an aesthetic amenity; it’s harder to ignore maintenance needs
- Small problems, if addressed, are less likely to turn into system failures
- Shift to distributed practices presents challenges



# Why is it Important



# Factors Affecting Performance

	Sediment Buildup	Litter & Debris	Pipe Clogging	Invasive Vegetation
Surface Sand or Soil Filter	50%	30%	10%	0%
Infiltration Basins or Trenches	36%	21%	10%	5%
Wet Ponds	26% *	19%	21%	10%
Underground Sedimentation Devices	58%	21%	11%	0%
Rain Gardens	33%	22%	7%	26%
Filter Strips or Swales	21%	26%	5%	26%

- \* PAH's becoming a significant concern for wet pond sediments
- Maintenance Survey of 38 cities and counties in Minnesota and Wisconsin
- Multiple-answers allowed

*Erickson, A.J., Gulliver, J.S., Weiss, P.T., and Wilson, C.B. (2009). "Survey of Stormwater BMP Maintenance Practices." Proceedings of the Universities Council on Water Resources/National Institutes for Water Resources Annual Conference. July 7-9, Chicago, IL.*

# Key Reasons Why BMP Maintenance Has Historically Been Difficult to Implement

- Inability to physically locate the management practices
- Inability to track responsible parties
- Dedicated staff not assigned to inspection
- Designs not conducive to easy maintenance
- Lack of enforcement authority and access
- Owners are unaware of their responsibilities
- Proliferation of management practices that require intensive maintenance
- Insufficient funding sources

*WERF 2005, CWP 2004*

# Elements of a Successful Maintenance Program

- Strong inventory
- Defined responsibility
- Available funding
- Adopted policies/procedures
- Validation/inspection
- Enforcement mechanism
- Education and outreach



# Keep Your Own House in Order: Models for BMP Maintenance of Public BMPs

- Centralized: A single managing department takes responsibility to ensure all BMPs are maintained
- Distributed: Each individual department or entity is responsible for BMPs at their facilities
- Dual: One department oversees the maintenance while one or more departments conducts the maintenance
- Ala carte' options
  - External Contractors
  - Partnerships



# Key Questions to Answer

- Is there a real strategy for success?
- Are adequate resources available?
- Have all stakeholders “bought in”?
- Are roles clearly defined?
- Is the enforcement mechanism robust?







# Questions and Discussion

