



SELECTION CRITERIA

Meets Ohio EPA Criteria for New Development	Yes
Drainage Area	> 10 ac
Soils	Hydrologic Soil Group C/D
Land Required	2 to 3%
Cold Weather Issues	Impacts of pavement deicers
Location Conflicts	Basins that allow infiltration require at least a 15-foot separation distance from buildings and sanitary sewers.
Mosquito and Vector Control Issues	Excessive aquatic vegetation Habitat for mosquito predator species
Pollutant Removal	Dry ponds address particulates Wet ponds address dissolved constituents

DESCRIPTION

Basins are structures that primarily detain stormwater, provide treatment, and discharge the stormwater to a surface water body. The duration of detention varies from a few hours to several days, depending on the basin type, and stormwater control objectives. A fraction of the stormwater may be evaporated, evapotranspired (if plants are present), or infiltrated through the bottom of the basin. The basin may also receive flow during dry weather, known as base flow.

Basins can be designed to have a permanent pool volume (wet pond) which helps to increase pollutant removal efficiencies. Basin BMPs include cisterns, constructed wetlands, wet ponds, dry ponds and stormwater treatment vaults. These BMPs can be placed both above and below ground.

Basin BMPs

OPPORTUNITIES

- Can be designed to incorporate flood control and channel protection volumes.
- Can be designed to maximize infiltration and as a filter BMP.
- Can be designed as a public amenity and include walking trails and fountains.
- Most appropriate for use on larger sites (> 20 acres for wet ponds and > 10 acres for dry ponds) to avoid small outlet sizes susceptible to clogging.
- Existing flood control ponds may be retrofit to meet water quality control criteria and provide channel protection.
- May be suitable for areas with low permeability where infiltration BMPs are less feasible.

BARRIERS

- Depending on volume and depth, pond designs may be subject to state dam safety regulations.
- Basins are more often dedicated to storm water rather than available for planting beds, etc.
- For wet ponds, site conditions must be able to maintain a permanent pool and a monthly/seasonal water balance should be performed.
- Basins on the land surface can have high stream warming potential. Thermal impacts can be reduced by incorporating shading measures.

DESIGN CONSIDERATIONS

- Basin BMPs should be sized using the WQv.
- The WQv should be drained over a 24 – 48 hour period.
- Forebays and micropools improve effectiveness and ease of maintenance.
- Incorporating wetland features can increase pollutant removal efficiencies.

MAINTENANCE REQUIREMENTS

- Clear accumulated trash and debris.
- Maintain adequate vegetative cover and provide vector control.
- Repair any areas of erosion and maintain outlet structure

COSTS (2010 DOLLARS)

- \$1,000 - \$4,800 per acre drainage area, \$5,000- \$24,000/ year maintenance for extended dry detention basins.

REFERENCES

- Hamilton County Storm Water District, 2010. Storm Water Management Guidelines for Construction and Development
- Ohio Department of Natural Resources, 2006. Rainwater and Land Development.
- Water Environment Research Foundation (WERF), 2009. BMP and LID Whole Life Cost Models Version 2.0
- Water Environment Federation (WEF), 2010. DRAFT Urban Runoff Quality Management Manual of Practice.



DESCRIPTION

The practice of minimizing impervious area on new development and reducing impervious area on redevelopment sites can minimize storm water runoff volumes and the amount of pollutants that are transported to water resources. As a result, storm water management practices are smaller in size and, in the case of re-development projects the need for additional storm water practices may be eliminated.

OPPORTUNITIES

- Reduces storm water runoff volumes, peaks, and pollutants.
- Re-development sites can meet storm water performance standards without additional practices.
- Reduction in storm water utility user fee may apply
- Maintains groundwater recharge and preservation of stream baseflow

BARRIERS

- May need to increase building height to meet project objectives
- May be difficult to meet building and zoning regulations in some areas.

METHODS

- Minimize the number of parking spaces, width of walkways, and number of travel lanes.
- Choose multiple level building designs with a smaller footprint than single level designs.
- Direct downspouts to pervious surfaces.
- Practice conservation development techniques and preserve open spaces

REFERENCES

- Ohio Department of Natural Resources, 2006. Rainwater and Land Development.
- Water Environment Federation (WEF), 2010. DRAFT Urban Runoff Quality Management Manual of Practice.
- Center for Watershed Protection.2008. Technical Memorandum: The Runoff Reduction Method



Source: Dr. Rick Fisher

DESCRIPTION

Stream and wetland setbacks are protected areas around streams and wetlands in which certain development activities are restricted. Setbacks are implemented similar to front, side and rear yard setbacks and keep development activities a set distance from streams and wetlands.

OPPORTUNITIES

- Stream setbacks enhance water quality, provide stream bank stability, and temperature control.
- Variable width setbacks and setback averaging can add flexibility to setback regulations.
- Aesthetically pleasing riparian areas can enhance property values.
- Setback variances can be used to ensure that lots remain buildable and allow flexibility with setback widths to protect water resources while allowing development.

BARRIERS

- Differing setback widths across jurisdictions may make compliance difficult for projects crossing jurisdictional boundaries.
- Wooded riparian areas still need to be maintained to be aesthetically pleasing.
- Stream setbacks are difficult to apply to existing developments.

REFERENCES

- Riparian and Wetland Buffers for Water Quality Protection. 2009. Stormwater Magazine
- Ohio Lake Erie Commission. Linking Land Use and Lake Erie: Best Local Land Use Practices.