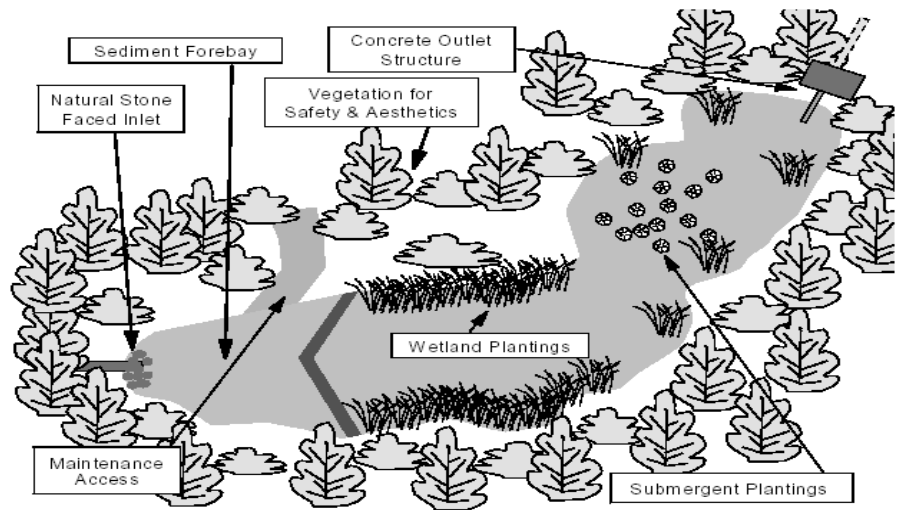


Retention and Detention Ponds and Maintenance



Wet ponds are constructed basins that have a permanent pool of water throughout the year. Wet ponds are also referred to as retention basins or wet extended detention ponds. They are among the most cost-effective and widely used storm water treatment practices around. The primary removal mechanism for wet ponds is settling of pollutants and nutrient uptake through biological activity while storm water runoff resides in the pool.

Dry ponds are similar in many ways. The pollutant removal is the same but dry ponds, also known as detention basins, do not have a permanent wet pool throughout the year. Often times there are two smaller wet pools around pipes draining into the pond and by the outlet structure. They are called forebays and micro pools and provide storage for sediment and allow for the placement of reverse-slope pipes.

Several design features can be incorporated to ease the maintenance burden of storm water ponds. The most prolific maintenance concern in ponds is the potential clogging of the pond outlet. Ponds should be designed with a non-clogging outlet such as a reverse-slope pipe, or a weir outlet with a trash rack. A reverse slope pipe draws from below the surface of the permanent or micro pool, extending in a reverse angle up to the riser and establishes the water elevation of the permanent pool in wet ponds. Because these outlets draw water from below the surface level of the permanent pool, they are less likely to be clogged by floating debris. Another general rule is that no low flow orifice should be less than 2" in diameter since smaller orifices are more susceptible to clogging. Direct access is needed to allow maintenance of the forebay, micro pool or main pool areas and outlet structure of the pond. In addition, wet ponds should have a drain to draw down the permanent pool to enable periodic sediment clean outs.

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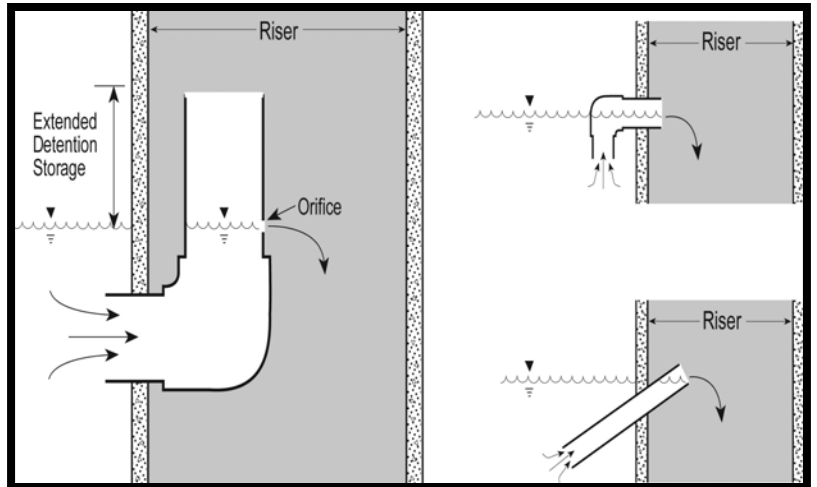
One result of urbanization is stream channel erosion, down cutting or instability caused by increased volume of storm water runoff. By designing ponds to capture and treat the most frequent 3/4 inch rainfalls and providing longer detention time (usually 24 to 48 hours), ponds are now considered to be one of the best methods to reduce stream channel instability.

Typical Maintenance Activities for Extended Retention and Detention Ponds

Activity	Schedule
<ul style="list-style-type: none"> Repair undercut or eroded side slopes or embankments 	As needed
<ul style="list-style-type: none"> Remove debris from inlet and outlet structure Mow embankment 	Monthly
<ul style="list-style-type: none"> Inspect sides & outlet structure for damage & flow Monitor sediment accumulation & hydrocarbons 	Once per year
<ul style="list-style-type: none"> Remove sediment from forebay or micro pools 	3-7 years
<ul style="list-style-type: none"> Monitor sediment accumulation in the main pool and clean as pond becomes eutrophic or pool volume is reduced significantly. 	15 to 20 years



Typical Retention Basin



Designs of Reverse Flow Pipes that are typically used

This brochure is not a legal document but only to be used as a general guide because each site may have specific requirements or physical differences. Always resort to the most recent edition of the ODNR "Rainwater and Land Development Handbook" and Ohio EPA General Construction Permit or contact the Trumbull SWCD Office at (330) 637-2056 ext. 101 or the Trumbull County Engineers Office at (330) 675-2640 for assistance.