ANNE ARUNDEL COUNTY
MARYLAND

***STAFF ONLY***

*Permit No.*_____
*Revision No.* _____
*Date* _____

# ***BMP Group 1 Checklist***
## *Stormwater Ponds*

*Instructions: All stormwater management plan submissions that use a Stormwater Pond from BMP Group 4 (P-1; micropool extended detention pond, P-2;wet pond, P-3; wet extended detention pond, P-4; multiple pond system, and P-5; pocket pond) shall contain the following information for each facility that is a Stormwater Pond. Any submissions brought to the County with missing or incomplete plans, may be rejected and not reviewed until all necessary information has been provided. It should be noted that not all items contained below will, necessarily, be required for every project.*

*Consulting Engineer shall place one of the following marks (as appropriate) on each line (engineering reviewer shall verify each mark).*
***N/A** - not applicable **Y** - provided*

*Note: The following checklist is provided to assist the design professional in developing a complete stormwater management plan set and to expedite review by the Department. All final stormwater management plans submitted for review are to include a copy of the checklists(s) signed by a registered design professional in responsible charge with the firm. Submittals made that do not include the checklist will be returned without review, comments, or approval. Compliance with the checklist, however, in no way is meant to relieve the design professional of responsibility for project design.*

***1. Performance Criteria for BMP #_____*** *(see 2000 Maryland Stormwater Design Manual page 3.8)*

*a) Stormwater Ponds Feasibility Criteria*
1) minimum contributing drainage area of 10 acres, unless for pocket pond,
2) Army Corps of Engineers Section 404 permit and/or MDE Wetlands permit for ponds located within jurisdictional waters, including wetlands,
3) dam safety permit from MDE Dam Safety Division for ponds located within USE III watersheds, proposed embankment of 20 feet or greater, a contributing drainage area of one square mile or greater and/or a high or intermediate hazard structure as classified by MD Dam Safety Manual,
4) design and construction in accordance with the latest version of the NRCS-MD 378 Pond Code Standards and Specifications for Small Pond Design, and SCD approval.
5) design to significantly reduce and/or eliminate thermal impacts on cold water streams (Use III and IV)

*b) Stormwater Ponds Conveyance Criteria*
1) a forebay at each inlet, unless the inlet provides less than 10% of the total design storm inflow,
2) applicable modifications to the channel immediately below the pond outfall to prevent erosion,

*c) Stormwater Ponds Pretreatment Criteria*
3) provision of a separate cell sediment forebay or equivalent upstream pretreatment,
4) size the forebay to contain 0.1 inches per impervious acre to count towards the total Wqv requirements,
5) non-erosive exit velocities from the forebay,
6) hardened bottom of forebay using concrete, paver blocks, reinforced grass, etc.,
7) fixed vertical sediment depth marker in forebay to measure deposition overtime.

*c) Stormwater Ponds Treatment Criteria*
1) design to capture and treat the computed $WQ_v$ through any combination of permanent pool, extended detention or wetland,
2) separate routing for $Wq_v$ and $Cp_v$ storage, if extended detention is provided in a pond,
3) maximum possible flow paths from inflow points to outlets.

*d) Stormwater Ponds Landscaping Criteria*

1) the perimeter of all deep permanent pools (deeper than 4 feet) surrounded by two benches with a minimum combined width of 15 feet,
2) maximum slope of the safety bench is 6%,
3) landscape plan for a pond and its buffer in accordance with the State landscaping guidance,
4) large and deep holes around the proposed planting sites backfilled with loose topsoil,
5) a 25 feet outward buffer from the maximum water surface elevation of the pond,
6) clearance within 15 feet of the toe of the embankment and 25 feet of the principal spillway structure.

*e) Stormwater Ponds Maintenance Criteria*

1) Maintenance access easement at a minimum of 12 feet wide, and have a maximum slope of 15%,
2) minimum diameter of 3 inches for the low orifice and adequate protection from clogging,
3) use of a submerged reverse-slope pipe or alternative methods other than the horizontal perforated pipe,
4) location of the riser within the embankment for maintenance, safety and aesthetics,
5) drain pipe to completely or partially drain the pond within 24 hours,
6) a note to notify the approving jurisdiction before draining a pond,
7) valve controls inside the riser at a point to prevent inundation, and provide safe operation,
8) no unauthorized access to riser openings, and include safety railings for tops that are more than 4 feet high,
9) fence all endwalls above pipe outfalls greater than 48 inches in diameter.

*f) Additional Criteria required by Anne Arundel County Practices and Procedures Manual*

1) Stormwater ponds located within USE III *(Jabez Branch)* watersheds have obtained small pond approval from SCD or a dam safety permit from the MDE Dam Safety Division and are designed by a professional engineer.
2) Any other stormwater management BMP pond has followed the latest version of the NRCS-MD 378 Pond Code Standards and Specifications for Small Pond Design, obtain approval from the local SCD, and been designed by a professional engineer.
3) Any stormwater ponds designed in USE III and IV watersheds must be designed to significantly reduce and/or eliminate thermal impacts (the Department may prohibit the use of stormwater management ponds on coldwater streams capable of supporting trout). Therefore, to minimize temperature increases caused by new development in USE III watersheds, stormwater management pond designs must:
   (a) minimize permanent pools;
   (b) limit extended detention times for $Cp_v$ to 12 hours;
   (c) provide shading for pools and channels by adding landscaping and plantings within the pond;
   (d) maintain existing forested buffers; and
   (e) bypass available baseflow and/or springflow.
4) Each pond shall have a sediment forebay or equivalent upstream pretreatment. The forebay shall consist of a separate cell, formed by an acceptable barrier. The bottom of the forebay shall be hardened (e.g. using concrete, paver blocks, Class II or grouted riprap, reinforced grass, etc.) to make sediment removal easier. A fixed vertical sediment depth marker shall be installed in the forebay to measure sediment deposition over time.
5) Note containing the following is on plans. *Large and deep holes shall be excavated around the proposed planting sites, and shall be backfilled with uncompacted topsoil. Planting holes should be at least 6" larger than the diameter of the rootball of balled and burlap stock, and 3" wider for container grown stock. This practice should enable the stock to develop unconfined root systems. Avoid species that require full shade, are susceptible to winterkill, or are prone to wind damage. Extra mulching around the base of the tree or shrub is strongly recommended as a means of conserving moisture and suppressing weeds.*
6) The use of horizontal perforated pipe protected by geotextile and gravel is not recommended.