



Dam and Small Pond Approval Guidelines in Coldwater Resource Watersheds

Coldwater resources provide a unique and important function for Maryland's ecosystems and economy. Certain species of fish and benthic macroinvertebrates are sensitive to thermal impacts. In Maryland, the aquatic organisms typically associated with coldwater streams include the fish species brook trout, brown trout, and rainbow trout and the benthic macroinvertebrates *Tallaperla* and *Sweltsa* (coldwater obligate stoneflies). Because water temperatures above the water quality criterion (68°F) for Use Class III (or III-P) streams can limit coldwater obligate species' ability to survive, protecting these coldwater resources from thermal pollution is critical.

Nontidal cold waters that have the potential or are suitable for the growth and propagation of self-sustaining trout populations and other coldwater species are referred to as Use Class III (or III-P) waters. To protect surface water quality, the Code of Maryland Regulations (COMAR) Section 26.08.02 requires that waters of the state be designated a Use Class. The Use Class determines the water quality criteria that must be maintained to support those uses.

In addition to the Use Class III waters, the Maryland Department of Natural Resources (MDNR) has identified those 12-digit watersheds where wild trout or coldwater obligate benthic macroinvertebrate taxa are present (see here: [MDNR Freshwater Fisheries - Coldwater Resources Mapping Tool](#)). These watersheds should also be protected from potential thermal impacts. This includes the potential impacts that dams and small ponds may have on these resources.

Dams and small ponds collect and store water, increasing the surface area exposed to sunlight and thereby its temperature. Therefore, proper design and construction is necessary to prevent stream warming and habitat degradation for coldwater aquatic life. The cumulative, thermal impact of ponding on receiving coldwater resources is a primary concern. Therefore, if a dam or small pond is to be considered in a coldwater resource watershed, the following are some of the requirements to minimize any thermal impacts to receiving waters:

1. New small ponds located within the flow path of perennial and intermittent streams are prohibited in mapped coldwater watersheds.
2. Direct discovered groundwater outflows to the nearest receiving stream through an underground conveyance.
3. New dams and small ponds with wet pools are prohibited in mapped coldwater watersheds.
4. New dams and small dry ponds are acceptable in mapped coldwater watersheds. However, forebays and micropools shall be dewatered within 12 hours.
5. New or existing small pond extended detention times should be limited to 12 hours.
6. For all repairs or retrofits to existing small wet ponds:
 - a. *In the pond*
 - No more than 50% of springflow shall be captured by the pond;

- Minimize the surface area of permanent pools;
- Avoid ponding in forebays and micropools;
- Maximize shading for pools, channels, and impervious surfaces;
- Maintain existing forested buffers and consider opportunities for new forested areas; and,
- Replace existing water release infrastructure with appropriate cooling design features (see: Guidance for Reviewing Stormwater Management Practices in Use III and IV Watersheds.
https://dnr.maryland.gov/fisheries/Documents/UseIIISWMMGuidance_2021.pdf).

b. *At the pond outlet*

- Minimize tree clearing along the downstream channel;
- Reestablish any lost forested riparian zone;
- Use rip-rap only in steep locations prone to soil erosion where vegetation is lacking; if feasible, use a deep rock trench in situations requiring rip-rap; and,
- Reseeding, with appropriate erosion control blankets, of disturbed soils should occur immediately once site construction is complete.

7. Considerations for sediment basins and traps during construction

a. Sediment basins and traps in place for erosion and sediment control during site construction have the potential to cause a thermal pulse when dewatered. The following guidelines shall be considered to mitigate the heating of water from a sediment trap or pond prior to entering a receiving stream:

- Stored water shall be released at a rate to allow for treatment of sediment and prevent thermal impacts and erosion downstream;
- Dewatering of heated surface water should not occur in warm weather at all unless avoidance of heating downstream reaches is assured (i.e. infiltrated, spray irrigated, discharge very gradually before the natural stream occurs, or removed from site);
- Sediment basins should be converted to a final stormwater management pond as early as possible; and,
- Use deep rock trenches between sediment traps and receiving streams.