



DAM SAFETY
POLICY MEMORANDUM #9

TO: Dam Owners, Operators, and Engineers
FROM: Sediment, Stormwater, and Dam Safety Program
Water and Science Administration
DATE: February 24, 2020 (Updated August 3, 2020)
SUBJECT: Water Storage and Collection Tanks

Policy Statement

It is the policy of the Maryland Department of the Environment (the Department) that the design of water retaining structures should consider potential failure modes and incorporate defensive design measures as appropriate. In certain circumstances, the applicability of dam safety statutes and regulations to storage tanks has come into question. This policy seeks to clarify this issue and supplements all other design requirements for construction of dams and impoundments.

Background

In accordance with the Annotated Code of Maryland, Environment Article, §5-503:

“A person shall obtain a permit from the Department to construct, reconstruct, or repair any **reservoir**, dam, or waterway obstruction, to make, construct, or permit to be made or constructed any change or addition to any reservoir, dam, or waterway obstruction, to make or permit to be made any change in, addition to, or repair of any existing waterway obstruction, or in any manner to change in whole or part the course, current, or cross section of any stream or body of water within the State, except tidal waters. The permit is obtained upon written application to the Department.

Further, the Code of Maryland Regulations (COMAR) 26.17.04.02 defines a reservoir as:

"Reservoir" means any basin, either natural or artificial, used for the collecting or storing of water.

In some cases, particularly in drinking water and stormwater applications, an enclosed basin (i.e., tank) has been determined by the project owner and their engineer to be the preferred means to collect or store water. In such cases, it is not explicitly understood if a Waterway Construction Permit issued by the Department's Dam Safety Division is required. The following paragraphs are intended to provide clarity on the need for a Waterway Construction Permit issued by the Dam Safety Division.

Tanks with Storage Volume less than 1.5 acre-feet

Tanks constructed for the purpose of collecting or storing water with a total internal volume less than 1.5 acre-feet do not require review by the Dam Safety Division. Proprietary devices or concrete structures should be designed and detailed to ensure water tightness. In all cases, the use of sound engineering principles and judgement must be applied to all designs.

Tanks with Storage Volume between 1.5 acre-feet and 10 acre-feet

Tanks constructed for the purpose of collecting or storing water with a total internal volume between 1.5 acre-feet and 10 acre-feet must be submitted to the Dam Safety Division for screening. The submission must be made through the “Joint Federal/State Application for the Alteration of Any Floodplain, Waterway, Tidal or Nontidal Wetland in Maryland” (Joint Permit Application, or JPA) and include, at a minimum, location plans and sections through the tank. Screening will consist of an assessment of potential downstream hazards. If the Division concludes that there is a potential downstream hazard, the applicant will be required to submit a breach analysis. Structures that are determined to have a low hazard potential will not require a Waterway Construction permit issued by the Dam Safety Division.

Structures determined to be significant or high hazard must be constructed as cast-in-place concrete, and the provisions of ACI 350 “Code Requirements for Environmental Engineering Concrete Structures” must be applied, unless used for drinking water, in which case AWWA criteria may be acceptable. Structures that are determined to be low hazard may be designed as cast-in-place or pre-cast concrete structures, provided watertight joints are provided. Low hazard structures may also employ a proprietary design provided by a product manufacturer. The materials used in proprietary designs are not limited to concrete, but the functional lifespan of the material and feasibility of replacement should be considered by the designer. In all cases, the use of sound engineering principles and judgement must be applied to all designs.

Tanks with Storage Volume greater than 10 acre-feet

Tanks constructed for the purpose of collecting or storing water with a total internal volume greater than 10 acre-feet will be required to obtain a permit from the Dam Safety Division unless the applicant demonstrates that the tank is fully buried below the surrounding terrain, such that a failure of the structure cannot release water downstream. The applicant must submit a Joint Permit Application and a breach analysis for review.

Such structures must be constructed as cast-in-place concrete, and the provisions of ACI 350 “Code Requirements for Environmental Engineering Concrete Structures” must be applied, unless used for drinking water, in which case AWWA or other nationally recognized standards acceptable to the Department may set the design criteria. In all cases, the use of sound engineering principles and judgement must be applied to all designs.

Additional Information

Questions about this policy or other items relating to ponds and dams can be directed to the Chief of the Dam Safety Permits Division at 410-537-3552.