

Application of the Wetland Conservation Act to temporary storage of floodwaters in areas having existing wetlands.

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Projects constructed to enhance the storage of runoff in areas that contain previously existing, natural wetlands may fall under the jurisdiction of the WCA and trigger the need for wetland replacement. These types of projects include constructed off-channel and on-channel storage areas designed to capture and detain runoff in order to moderate flood peaks. Depending on the frequency and duration of flooding and the type and quality of the wetland, such projects can have adverse impacts¹. The WCA calls for no net loss in the quantity, quality and biological diversity of wetlands (M.S. 103A.201, Subd.2). To the extent that temporary flood storage projects can adversely affect all of these parameters, such projects may fall under WCA regulation.

The following types of impacts associated with flood storage projects are potentially sufficient to assert WCA jurisdiction:

Significant sedimentation – The runoff that enters these temporary storage impoundments is likely to be laden with sediment that will be deposited within the wetland. Technically, this sedimentation can be classified as “fill” and is regulated under the WCA. A recently published study showed that as little as 0.5 cm of sediment burial caused a 91.7% reduction in wetland seedling emergence and a 99.7% reduction in invertebrate emergence². At the extreme, sediment deposition can completely bury the wetland, converting it to non-wetland.

Long-term inundation greater than 2 meters – Aquatic areas having water depths exceeding 2 meters are classified as deepwater habitats³ and are considered “nonwetland” under WCA rules (Ch. 8420.0110, Subp. 32b). Converting a wetland to deepwater habitat by excavation requires wetland replacement under the WCA (Ch. 8420.0105). In principle, it seems reasonable to require replacement for similar conversions accomplished by inundation if the inundation persists long enough to eliminate or significantly diminish wetland functions and values.

Elimination or degradation of wetland plant community – Different wetland plant communities vary in their tolerance to changes in the hydrologic regime^{1,4}. Some communities, such as sedge meadows and wet prairies are quite intolerant to hydrologic perturbations. Other wetland communities, such as floodplain forests or emergent wetlands dominated by hybrid cattail or reed canary grass may tolerate frequent and relatively long duration flooding. However, prolonged and frequent inundation can eliminate wetland plant communities entirely. Degrading or eliminating existing wetland plant communities violates the requirement of the WCA to achieve no net loss in wetland quality and biological diversity.

Because of the variability in the type and operation of temporary flood storage projects and in the types of wetlands potentially affected, it's not practical to identify precise thresholds that trigger WCA jurisdiction or to pre-determine the type and amount of wetland replacement required. Such determinations must be made on a case-by-case basis. Any of the impacts described above may be sufficient to assert WCA jurisdiction, including the sequencing requirements to avoid and minimize impacts.

The type and amount of wetland replacement required for unavoidable impacts should reflect the severity of the impact. A wetland functional assessment method such as Minnesota Routine Assessment Method (MnRAM) (Ver. 3) can be used to evaluate the existing wetland and compare it to the projected, with-project conditions. Reduced functional ratings for functions such as Vegetative Diversity/Integrity, Maintenance of Hydrologic Regime, Maintenance of Wetland Water Quality, Maintenance of Characteristic Wildlife, Fishery or Amphibian Habitat, or Aesthetics/Recreational/Education/Cultural Values are indications of a project-specific degradation of wetland quality and/or biological diversity and would require compensatory mitigation. The replacement ratios could be based on the functional assessment, and, if done under the context of a local comprehensive wetland management plan, the ratios could vary from the standard ratios specified in the WCA rules.

Summary: Although temporary flood storage projects are not typical of the majority of “drain and fill” projects regulated under the WCA, they can entail impacts that may trigger WCA jurisdiction. Determining jurisdictional status and the type and amount of wetland replacement required must be done on a case-by-case basis and may be best evaluated using a wetland functional assessment method.

¹ Apfelbaum, S. and L. Lewis. Working Paper No. 1: An Overview of the Impacts of Water Level Dynamics (“Bounce”) on Wetlands.

² Gleason, R., N. Euliss, D. Hubbard, W. Duffy. 2003. Effects of sediment load on emergence of aquatic invertebrates and plants from wetland soil egg and seed banks. *Wetlands* 23: 26-34.

³ Cowardin, L., V. Carter, F.C. Golet and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish and Wildlife FWS/OBS-79/31.

⁴ Minnesota Storm-Water Advisory Group. 1997. Storm-Water and Wetlands: Planning and Evaluation Guidelines for Addressing Potential Impacts of Urban Storm-Water and Snow Melt Runoff on Wetlands. Minnesota Pollution Control Agency, St. Paul.