

Impacts of Watershed Specific Release Rates on Disproportionately Impacted Communities

WMO Article 208.2

Goals of the Study

Study the impacts of watershed specific release rates on disproportionately impacted communities that are located within watershed planning areas with higher release rates.

Watershed Management Ordinance (WMO) Detention Release Rate History

During the development of the WMO in 2007, a white paper distributed to the Technical Advisory Committee (TAC) recommended either a single release rate of 0.10 cfs/acre for the 100-year, 24-hour storm event or a dual release rate of 0.04 cfs/acre for the 2-year, 24-hour storm event and 0.15 cfs/acre for the 100-year, 24-hour storm event. A draft version of the WMO, for which public comments were solicited in 2009, included the dual release rate option. Due to widespread public concerns about the ramifications of the dual release rate, the MWRD undertook a study of the economic impacts of implementing this option. The study concluded that development costs would increase with the requirement of a dual release rate, and this concerned many members of the public. Furthermore, the TAC concluded that although collar counties require a 2-year release rate of 0.04 cfs/acre, this is more appropriate for large greenfield development, which is far less common in Cook County than in the collar counties. In addition, there are maintenance problems associated with very small restrictors that are required for lower release rates, such as 0.04 cfs/acre. Recognizing these concerns and facts, in October 2013, the Board of Commissioners adopted the WMO with language allowing a release rate of no more than 0.30 cfs/acre for the 100-year, 24-hour storm event until May 1, 2019. After this date, a watershed specific release rate shall be used. Detention requirements apply to property holdings equal to or greater than three acres. In lieu of a dual release rate, the WMO stormwater management provisions included the requirement for volume control. Volume control is a surrogate for a detention release rate of 0.04 cfs/acre for smaller storms, such as a 2-year, 24-hour storm event. Volume control requirements apply to property holdings equal to or greater than 0.5 acre and have resulted in construction of new green infrastructure throughout Cook County.

Watershed Specific Release Rate Study

The MWRD contracted with Illinois State Water Survey in 2015 to complete a watershed specific release rate study as directed in §504.3 of the WMO. The Watershed Specific Release Rates limit the discharge from sites to a set value applied across each watershed planning area. The goal of the study was to determine the maximum allowable release rates that will not exacerbate flooding due to development. The study was divided into two phases. Phase 1 evaluated two pilot study areas, the Stony Creek subwatershed and the Upper Salt Creek watershed, to test the methodology. These watersheds typify the various land uses across Cook County's urban and suburban areas. Phase 2 evaluated each of the watershed planning areas throughout Cook County. The release rates were determined by comparing results from future scenario models to base model results. The base models were derived from the Detailed Watershed Plans (DWPs) prepared for the MWRD in 2010.

The DWP models were updated to incorporate major recent stormwater projects. Future scenario models assumed 40% of the land area as developed or redeveloped meeting WMO stormwater management requirements. These models were run using release rates of 0.15 cfs/acre, 0.20 cfs/acre, 0.25 cfs/acre, and 0.30 cfs/acre to determine if there were any increases or decreases in water surface elevations of the streams. The criteria for the selected release rates was based on limiting increases in water surface elevations to no more than one tenth of a foot. This is consistent with FEMA's regulations. The length of stream and percentage of total stream length were analyzed to determine the maximum release rate that can be allowed before development causes increases in flood elevations.

The adopted watershed specific release rates in Appendix B of the WMO provide a uniform and minimum stormwater management regulation throughout Cook County. Communities that are located within watershed planning areas with lower watershed specific release rates must provide more detention volume storage compared to communities located within watershed planning areas with higher release rates. It is essential that all communities, regardless of local economic conditions or other factors, comply with the watershed specific release rates to avoid the risk of flooding downstream areas. As such, the Watershed Specific Release Rate Study addressed impacts on disproportionately impacted communities that are located within watershed planning areas with lower watershed specific release rates and an additional study is not proposed.