

CURRENT LEVEL OF FLOOD PROTECTION

The current level of flood protection is fairly well known, having been previously analyzed in the Citywide Sewer Study. However, the SMP process provided the opportunity to refine that analysis using new information gathered in the wake of two major flood events that occurred after the Citywide Study was completed. Major storms in April and June of 2013 caused widespread flooding through the City. CBBEL staff observed and took photos of several of the known flooding areas immediately after those storms. During the SMP process, a project website was created with a link to a flood questionnaire that residents could complete; many residents shared photos of the flooding they experienced. The photographic record was extremely valuable and allowed “calibration” of the model. Calibration is a process where the sewer model is simulated using recorded rainfall data, and the simulation results are compared to the observed flooding. This comparison allowed the model parameters to be adjusted for maximum accuracy.

The modeling determined that unless a property has a flood control system such as overhead sewers, much of the City is at-risk of basement flooding through sewer backup from storms as frequent as the 1-year event (1.2” rain in 1 hour duration). A series of maps (Figure 1) were developed to depict the at-risk properties for a given storm event.

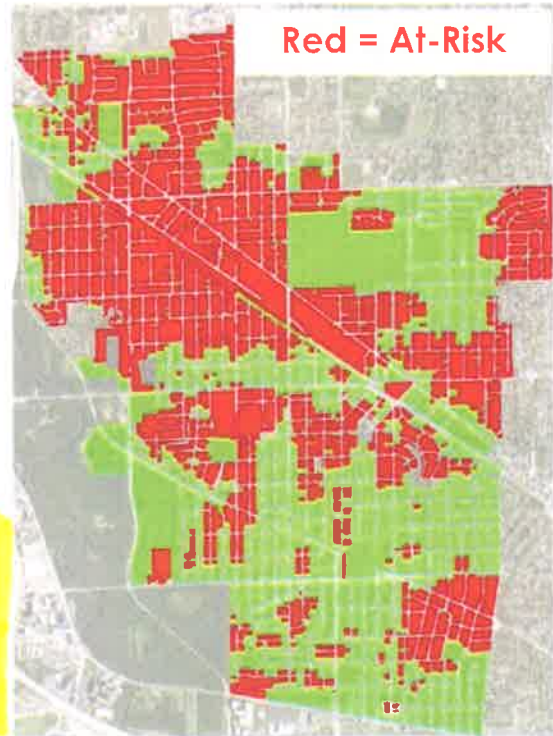


Figure 1. At-Risk Properties of Sewer Backup 1YR Event

The modeling also examined the overland flooding that occurs during major storms. Overland flooding occurs after the sewer system has filled to capacity, and stormwater starts to accumulate on streets, yards, etc., until water enters a structure and causes flood damage. To depict overland flooding, the model was simulated and the results were linked to a digital map of the City’s terrain. Shaded areas indicated presence of water that was ponded at some depth for some duration. The ponding areas were filtered using depth and reported flooding from flood questionnaires to identify specific areas that should be targeted by the flood control projects.

RECOMMENDED FLOOD PROTECTION LEVEL

The question of recommended flood protection level was divided into two categories between basement backup flooding and overland flooding. An analysis of each was done to estimate the costs associated with various levels of flood protection. For basement backups, it was demonstrated that the maximum protection level that could feasibly be provided would be in the 5- to 10-year range. It was also demonstrated that the most cost effective solution to basement backups would require individual property owners to implement their own flood control solutions; if the City were to do it, it would be