Depression Storage
Current Plan

Depression storage plays an important role in the watershed's hydrology. Lower level, long duration flows are associated with watersheds where water concentrates over a longer period of time. A short concentration time can produce floods of shorter duration and higher level. Because water travels through wetlands at low velocity or is detained in ponds, the time of concentration is decreased and peak flow rates are reduced.

Approximately one-half of the wetlands and essentially all of the ponds within the District have restricted outlets. In the case of partially drained wetlands, water outlets to a ditch through subsurface flow, resulting in a low rate of outflow. During runoff events, wetlands and ponds temporarily store water until the outlet overflows. The result is reduced peak runoff.

An exception to this is when ponds or wetlands are at capacity and can not store additional water.

Trends in Depression Storage

The volume, in inches that must be filled prior to the occurrence of runoff. It represents the loss or "initial abstraction" caused by such phenomena as surface ponding, surface wetting, interception and evaporation.

Separate depression stores are required for pervious and impervious areas.

Impervious Depression Storage There has been an increase in impervious surface in the last ten years and therefore an overall decrease in the initial abstraction

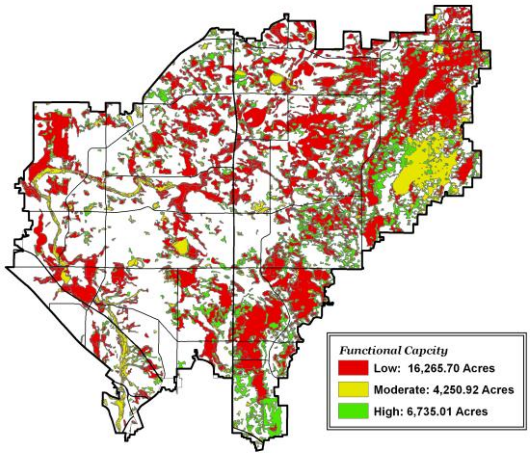
Pervious Depression Storage Likewise there has been a general decrease in pervious area within the watershed through the conversion and smoothing of land.

Stormwater Ponds There has been a considerable increase in the number and acreage of stormwater and water quality ponds within the watershed during the past 10 years. A complete inventory of stormwater ponds is being conducted by the Cities within the watershed as part of the NPDES program. The

Depression Storage

inventory should be completed by the summer of 2011

Wetlands



The degree of outlet restriction and inlet/outlet classification had the greatest influence on wetlands functional capacity to retain or detain water. Most wetlands within the watershed are flow through systems with unrestricted outlets.

Implications of Changes in Depression Storage

Increased Duration of Flow

On average, over the last 10 years, there has been a 3.5 day increase in time it takes for the system to return to base flow after a two inch rainfall across the watershed. The increased duration is likely from the ponding constructed during development over the past ten years. The exception is the headwaters of Coon Creek, where little development has occurred.

Decreased Peak Flows

Peak flows have decreased an estimated 44% across the system. The greatest decrease has occurred on Sand Creek at Central Avenue where peak flows have decrease 80% to 35 cfs. Ditch 58 has seen a 20 cfs increase in peak flows.

Management Needs

Restrict Wetland Outlets

Outlets to wetlands should be restricted where there is no upstream interference with drainage needs. The restrictions can serve to not only detain water but encourage infiltration