STORMWATER RUNOFF & MANAGEMENT

Addressed by 9 management objectives, 27 action plans

Stormwater runoff is generated when rain or melting ice and snow flows over land surface to natural or man-made channels and water bodies. In a natural setting, storm flow can be slowed, filtered, or absorbed by vegetation and soil materials before it enters wetlands, ponds, streams, or rivers.

Land development typically changes the natural patterns of hydrologic flow and adds impervious surfaces, such as pavement, buildings and hardscaping, which prevent infiltration of water into the soil and increases the volume and rate of stormwater runoff. Stormwater runoff from developed areas carries trash and pollutants such as fertilizers, pesticides, de-icing chemicals and sand, eroded sediments, automobile fluids, and pet waste, which build up on developed surfaces between precipitation events until they are carried into the nearest storm drain and water body. Conventional site development practices – large roofs, parking lots and lawns, plus drainage ditches and pipes discharging directly into streams – dramatically increase the volume and rate of stormwater leaving a site, as well as the pollution load to the adjacent waterway. The cumulative impacts of conventional development techniques can affect the hydrology of entire watersheds by increasing the intensity and destructive potential of flood events, decreasing groundwater infiltration and recharge (which reduces resilience of aquatic systems to drought events), eroding and de-stabilizing river channels, reducing water clarity and filling stream and rivers with silt and sediment, and increasing water temperatures in streams.

Based on work completed in 2005, the total area of impervious surface in the entire Piscataqua Region watershed was calculated at 7.5%, almost doubling since the year 2000 (Justice D, Rubin F, 2006). Nine of the 40 sub-watersheds in the Piscataqua Region watershed have impervious areas greater than 10%; these sub-watersheds are mostly located along the Piscataqua River and the Atlantic coast. Where impervious cover reaches more than 10% as it does in developed areas, water quality is further degraded due to increased stormwater volume and pollutant loading. However, water quality impacts often are observed below 10% impervious cover.

In small and less developed watersheds, impervious cover should be maintained below five percent (5%) to sustain the quality of headwater streams and riparian habitat, as well as support wildlife species that are particularly sensitive to the impacts of development and land conversion, such as Eastern brook trout.

In the 1990s, managing stormwater from large municipalities was a focus of the U.S. Environmental Protection Agency's Phase I program under the Clean Water Act. Phase II of the program began in 1999 and addressed stormwater issues in smaller urbanized municipalities that need to separate storm and sewer systems. These communities are known as Municipal Separate Storm and Sewer Systems (MS4). Phase II stormwater EPA regulations, along with changes in development patterns and practices, are meant to reduce the water quality impacts of stormwater on freshwater and estuary systems. Controlling the volume and peak rates of stormwater runoff will decrease the threat of flooding and increase the volume of water available to recharge groundwater.

Improving stormwater management in the Region requires a broad range of activities such as,

- Raising public awareness about the impacts of stormwater
- Decreasing amount of fertilizer in stormwater runoff by changing agricultural practices and homeowner behaviors
- Improving buffer zones
- Improving and providing training on best management practices (BMPs)
- Decreasing or limiting impervious surfaces using Low Impact Development (LID) methods
- Improving municipal regulations/standards that apply to new development or redevelopment projects
- Supporting implementation of the EPA MS4 stormwater program in regulated communities

"THE KEY TO EFFECTIVE MANAGEMENT OF STORMWATER RUNOFF IS TO REDUCE THE AMOUNT OF STORMWATER GENERATED IN THE FIRST PLACE BY MAINTAINING AND WORKING WITH THE HYDROLOGY OF A SITE AND MANAGING STORMWATER AT THE SOURCE."

- New Hampshire Stormwater Manual: Volume I, 2008