Urban Stream Dynamics

In nature, there is a balance between the function of terrestrial (land) and aquatic ecosystems. Changes in land use in our urban environments have significantly altered this balance and degraded the aquatic environment.

Disturbances to a stream corridor system typically result in a causal chain of alterations to stream structure and function. Negative urban impacts include increased flooding, increased stream velocity, erosion, sedimentation, and loss of habitats.

Reducing factors like impervious surfaces and restoring riparian corridors and streams are ways to foster a return of stable conditions. This would enhance the stream's potential to meet the designated or potential aquatic life, and recreational and water-supply uses.

DEFINITIONS

ECOSYSTEM: A system formed by the interaction of a community of organisms and their environment.

RIPARIAN CORRIDOR: The land that is adjacent to a stream channel, generally considered to be 100 feet on each side of the channel. This area provides stream bank stability, cover and shade, and energy dissipation in times of high flow.

STREAM VELOCITY: The speed at which water flows through a stream. The higher the velocity, the greater the erosive force of the stream.

EXCISION: The process of wearing away of land by various forces. Flash hydrology and currents acting on unconsolidated stream banks cause erosion. As the hydrology becomes flashier and current velocities increase, bank erosion increases. Erosion results in large volumes of sediment being deposited within the channel, which can contribute to unwanted flooding and loss of habitat.

SEDIMENTATION: The accumulation of sediment derived from erosion within a stream channel. As sediment builds, it obstructs the current and diverts it toward adjacent banks, also increasing erosion.

IMPERVIOUS SURFACES: Mainly constructed surfaces (rooftops, sidwalks, roads, and parking lots) covered by impervious materials such as asphalt, concrete, brick, and stone. These materials seal surfaces, repel water and prevent precipitation and water from infiltrating through the soils. These surfaces increase the volume and velocity of stormwater that reaches our waterways.

WATERSHED: An area of land that drains downhill to the nearest point. The water moves through a network of drainage pathways, both underground and on the surface. Generally, these pathways converge into streams and rivers, which become progressively larger as the water moves downstream, eventually reaching a lake or estuary.

WATERSHED PARTNERSHIP: A group of individuals representing various types of stakeholders actively working to protect their watershed by taking direct action into the hands of local people.