Effects of Urbanization on Streams

The Events

1. Areas of bare soil and vegetation are replaced by asphalt, concrete, and roofs. Water cannot readily soak into the ground, so it runs into the creek.
2. When property is changed from farming to a housing tract, the water running directly to the creek increases over 60%.
3. With this increase in runoff, floods which may have occurred once in 25 years take place every 2 to 5 years.
4. This increased frequency of flooding decreases the stability of stream banks and increases erosion and degradation of the stream channel.
5. During the dry season, when there would have been little or no flow, there are non-flood low flows generated by urban development.
6. Pollutants such as pesticides, herbicides, metals, oil, grease, other hydrocarbons and sediment are moved into and down the stream.

The Impacts

1. Streamside vegetation is uprooted due to the increased runoff.
2. Aquatic life may be flushed downstream as water flow is increased.
3. Pollutants, toxic to aquatic life, enter the stream.
4. Bottom dwelling plants, animals, and fish eggs are smothered by sediment.
5. Deposition buries whole aquatic habitats.
6. Trees may be lost to clearing and to bank erosion. This reduces shade and increases temperatures, reducing the amount of oxygen and making the stream uninhabitable for many organisms other than algae.
7. Scouring occurs.

The Solutions

1. Clean up waste, debris and spills on public and private land, streets, and parking areas.
2. Properly store substances such as oil, solvents, and paint.
3. Incorporate open space and landscaping into project designs to catch and filter runoff.
4. Use porous materials for or near driveways and walkways.
5. Protect bare land by covering it with vegetation, organic mulch, or artificial materials.
6. Divert the flow of water from impermeable areas to ones where infiltration can take place.
7. Let parks and playfields do double duty as detention basins, to slow the flow of water and reduce flood peaks in streams.
8. Use these and other techniques to minimize the amount of stormwater runoff leaving a property.
9. Use retention/detention basins in or beside streams to reduce flooding downstream.
10. Some of these basins may be permanent wetlands that are host to a variety of wildlife that filter and detoxify pollutants.

In general, all areas altered by man, whether agricultural or urban, need conservation practices applied to them to prevent erosion, minimize pollutant discharge into streams, and maximize recharge of groundwater from streams and adjacent areas.