Nonpoint Source Management Program :: Hydromodification

Hydromodification is the alteration of the natural flow of water through a landscape, and often takes the form of channel modification or channelization. Hydromodification is almost always undertaken out of a desire to improve our ability to use land or water resources, or to protect human health or safety. Sometimes however, it doesn't completely accomplish its objectives or has greater impacts than benefits in the long run. Almost always, hydromodification results in water quality and habitat impacts.

For example, hydromodification resulting from channelization generally occurs for the purpose of flood control, navigation, drainage improvement, and reduction of channel migration. It often occurs as straitening, widening, deepening, or relocating existing stream channels, but it can also involve excavation of borrow pits or canals, building of levees, underwater mining, or other practices that change the depth, width, or location of waterways or embayments, especially in coastal areas.

Channel modification often results in increased instream water temperature and unstable conditions that result in both streambank erosion and deposition of sediment in the streambed. This creates an environment that doesn't support the plants and animals otherwise present and disrupts the food chain and local ecosystem. In coastal areas, sudden and extreme changes in salinity can result as increased volumes of freshwater run off the land, making it harder for the aquatic life to exist. Hydromodification can also result in an increase in the amount and rate of pollutants delivered from the upper reaches of watersheds to downstream locations. Where levees are used, wetlands and estuarine shorelines may also be deprived of enriching sediments that would normally occur be deposited by natural floodwaters topping a channel's banks.

As our understanding of the impacts and benefits of hydromodification improves, most people in government agree that it makes sense to maintain some hydromodification projects. However, there is growing realization that many hydromodification activities are not only not useful but are counterproductive, contributing to the general degradation of our natural environment and specifically to the decline of things like commercial and recreational fishing (including shellfishing), as well as tourism and public health.

Hydromodification Links

Regulatory Agencies

- Division of Coastal Management - Permitting
- United States Army Corps of Engineers
- North Carolina Division of Water Quality, 401 Wetlands Unit

Funding Sources

- NCDENR Ecosystem Enhancement Program
- NC DENR Clean Water Management Trust Fund
- NC 319 Grant Program
- Potential federal funding sources may be identified by searching the federal website One-Stop Shop: The Federal Commons to search the catalog of federal grant programs.