Streams in Virginia

The Office of Wetlands and Water Protection (OWWP) regulates activities in streams that alter the physical, chemical, or biological nature of stream. Some typical stream impacts include:

- installing culverts and bridges
- filling and/or relocating a stream
- channelizing
- placing riprap or other hardening on stream banks,
- impounding (blocking or damming stream flow)
- piping (such as redirecting a stream into an underground stormwater system, placing a stream in a pipe to create a buildable area)

Other stream pollution is regulated by the Virginia Pollution Discharge Elimination System (VPDES) Permit Program. Discharges of pollutants from point sources under Section 402 of the Clean Water Act and even some discharges of stormwater require permits from the VPDES Permit Program..

Stream Functions and Values

Streams are an essential part of the aquatic ecosystem. Streams provide natural flood control, recharge groundwater, recycle nutrients, create and maintain biological diversity, and sustain the biological productivity of downstream rivers, and estuaries. Streams provide habitat for plants, animals and microbes; such as shelter; food, protection from predators, spawning sites and nursery areas, and travel corridors.

The protection of headwater systems, intermittent and ephemeral systems, is essential to the health of downstream waters. Headwater streams make up approximately 75% of the stream network length and drain approximately 80% of the landscape, dissipating energy and reducing the magnitude of floods downstream. The aquatic insects that live in these streams break down leaves and wood for use in the food web further downstream and are food themselves for larger organisms such as fish.

Riparian buffers are essential to the health of stream systems. Riparian buffers shade streams and regulate water temperatures, provide food for aquatic organisms, provide habitat, filter pollutant, dissipate energy of raindrops and stormwater, and provide stability of stream banks.

Effects of physical alteration of streams

Many of the typical impacts of streams can be generally classified as channelization. Channelization defined in regulation as “the alteration of a stream channel by widening,

deepening, straightening, cleaning or paving certain areas." When streams are widened, deepened or straightened, the equilibrium of the stream is disrupted causing increased erosion and sediment load, changes in water velocities and depths, and destruction of habitat. The hardening of streams either through culverts or pipes, has similar negative effects to the stream system.

Dams are built to create impoundments for water storage, irrigation, farm ponds, hydropower, stormwater treatment, and recreation. The placement of dams in streams interrupts the flow of water, nutrients, food, sediment and aquatic organisms to downstream reaches. The dam and associated impounded water destroys stream habitat, alters the temperature and chemical nature of downstream waters, and changes the flow velocities of downstream and upstream waters.

Voluntary Stream Restoration

Voluntary stream restoration (stream restoration projects not associated with an impact) and mitigation banks are typically authorized by the U.S. Army Corps of Engineers (the Corps) -issued Nationwide Permit (NW) 27, for which DEQ has provided conditional certification. NW 27 permits are certified by DEQ provided that: (1) when used to permit a wetland mitigation bank, compensation for any surface water impacts is debited from the bank credits.; (2) natural stream design shall be used for stream restoration projects; (3) monitoring for success of these sites shall be conducted including submittal of as-built plans, surveys, and photographs. The text of the NW 27 and Norfolk District Corps contact information can be found on the Corps website.