



Dark Hollow Dam Debate: Alternative Solutions to Flooding

FACT SHEET #3 — The Proposed Dark Hollow Dam and Neshaminy Creek Stormwater Management

Flooding in the Neshaminy is a serious and continuing problem. Throughout the watershed, excessive stormwater runoff turns rainstorms into raging floodwaters. The Natural Resources Conservation Service and Bucks County are updating the Neshaminy Watershed Plan in an effort to reduce flood damage in the lower Neshaminy. Over the last 20 years, pursuant to the original Watershed Plan, eight flood control dams have been built, but this system doesn't afford enough flood protection. So the question now is whether or not to complete the original plan by building the Dark Hollow Dam, an impoundment proposed for the main stem of the Neshaminy on the border of Buckingham and Warwick Townships.

Flood control solutions fall roughly into two categories: non-structural and structural. **Nonstructural alternatives** focus on prevention, on keeping precipitation on the land to recharge groundwater and prevent polluting run-off. They include changing municipal development regulations so that all land disturbance allows nature to work and maximize infiltration.

This is accomplished by: protecting streambanks, floodplains, wetlands and headwaters to soak up and hold would-be stormwater; and by limiting impervious surfaces and best management practices (BMPs) to decrease run-off.

BMPs include: vegetated buffers along streams and hedgerows on slopes; stormwater infiltration basins or marshes (which recharge aquifers) rather than detention basins (which don't reduce the volume of run-off); the use of natural, mixed vegetation and land contouring (which retains and slows runoff) rather than grass on graded expanses (which is less effective).

Structural alternatives can offer site-specific as well as overall protection.

Many existing **stormwater detention basins** are not functioning as they were designed and fixing these malfunctions will immediately benefit those downstream. The Bucks County Planning Commission has studied how to do this in the *Lower Neshaminy Creek Watershed Water Quality and Stormwater Management Study* (1997). Taking this a step further, **retrofitting existing basins** in key positions so that they infiltrate rather than simply temporarily hold back runoff, will afford protection to those directly below.

Direct benefit will also result from **re-engineering existing point discharges** to the creek. Storm sewer and sanitary sewer systems empty flow into the creek, sometimes too close to low-lying communities. The rate and volume of discharge from these pipes can be re-engineered to maximize flood protection: fix systems which leak (taking in groundwater and stormwater) and overflow (due to lack of storage); reduce volume by employing zero-discharge technology for all new wastewater and retro-fitting wherever possible; re-route the point of discharge to avoid damage.

Diking or berming may be spot solutions for stream-side communities who suffer repeated damage, especially to historic structures. The restoration of a forested bend in the stream where it has been channelized in the past can slow floodwater velocity. The removal of obstructions in the stream way or floodplain can ease backflooding.

Floodproofing of existing structures is economically beneficial.

Removing repeatedly damaged **structures** through a voluntary buy-out program offered to those who want to get out of harm's way, or moving historic structures upland, is the most economical alternative, and the one being employed most often on the national level. To reduce the cost of flooding and human risk, this alternative makes sense.

All of these alternative structural solutions will cost money. Many of these alternatives will fix problems that have fallen between the cracks due to lack of attention or funds to remedy them.

The Neshaminy Creek Stormwater Management Plan developed a watershed-wide plan which relies primarily on non-structural solutions to reduce both the volume and velocity of stormwater in the Creek, affording better flood control and improving the quality of the stream. The Plan acknowledges the value of structural solutions for addressing local flooding issues. Coupled with the implementation of the Stormwater Management Plan, the structural solutions provide benefits which far outweigh those of the proposed Dark Hollow Dam: reducing flood volume and velocity; recharging groundwater; protecting floodplains, wetlands, headwaters, and creek and feeder creek ecosystems and habitat; improving water quality; and conserving soil. The fact is, letting nature's protections work is the key to maximizing the flood damage reduction benefits of a Watershed Work Plan for the Neshaminy. The Dam won't do that; the alternatives will. And because they are preventive in nature, the maintenance and operation expenses that come with a main-stem dam are minimized and the cost of implementation is borne by developers as well as the public.

The Dark Hollow Dam will not solve the flooding problems in the Neshaminy Creek basin. The Dam is only designed to provide 2.8 feet of flood stage reduction during the 100 year storm directly below the dam and merely inches for those farther downstream; the lower reaches of the stream, particularly Croydon, is subject to tidal flooding which is not controlled by any upstream dams; the frequent (two year) storms which cause local problems will not be contained by the Dark Hollow Dam in any way; much of the flooding today is the result of development on tributaries and in the floodplain below the dam.

NRCS has funds to implement the Neshaminy Watershed Plan. If the Plan focuses on fixing the problems that contribute to the flooding rather than building another impoundment, then these structural alternatives can be funded by the federal government. Other federal programs are offering funding to remove flood-prone structures from the floodplain. Flooding in the lower Neshaminy will be reduced far more quickly than the years required to build the dam and the benefits will be much greater.