

FAIRFAX COUNTY, VIRGINIA

MEMORANDUM

DATE: August 21, 2002

TO: Board of Supervisors

FROM: Anthony H. Griffin, County Executive

SUBJECT: County Practices Related to Stormwater Facilities and Mosquito Control

Several members of the Board of Supervisors have raised questions regarding County practices for construction and maintenance of stormwater facilities in the context of mosquito control, particularly in light of the increasing threat posed by the West Nile Virus. The responsibility for construction and maintenance of stormwater facilities is a complex issue, even without the heightened concern about mosquito-borne diseases. It may be helpful to review a few basic facts.

There are 1,608 stormwater control impoundments, including several major lakes, in Fairfax County. Of these, 329 are “wet” facilities; that is, they are *designed* to contain water at all times. Of these “wet” facilities, the County is responsible for the maintenance of only 16, including 7 large lakes; the remaining 313 “wet” facilities are privately owned and maintained. Of the 1,608 stormwater impoundments, 1,279 are “dry” facilities; that is they are *designed* to hold water for brief periods of time (usually a maximum of 48 to 72 hours) and allow gradual release into the receiving streams or other water bodies. Of the 1,279 “dry” facilities, 893 are maintained by Fairfax County and 386 are privately maintained.

There are varying opinions about the environmental benefits of “wet” and “dry” ponds, but suffice it to say that there is general agreement that the longer water running off of developed surfaces is retained and then released slowly, the better will be the environmental benefit for the receiving waters. For this reason, state and federal laws *require* the retention of stormwater runoff. Where and how it is retained is largely a matter of local determination.

As already described, the County has only limited ownership and maintenance responsibility for “wet” stormwater impoundments. To some residents, these “wet” facilities are viewed as a desirable aesthetic and recreational amenity while, to others, they are viewed as a nuisance and a health and safety concern. For the most part, these “wet” facilities do not create significant mosquito habitat, as long as the water quality is sufficient to maintain aquatic life and other natural mosquito predators. Some limited treatment of the edges of these “wet” facilities, when inspection reveals the presence of mosquito larvae, is appropriate and is currently being done on an as needed basis.

Thus, the vast majority of County owned and maintained stormwater impoundments are “dry” facilities, although that description is somewhat misleading. These facilities are dry during most of the year; however, after rainfall, they are designed to retain water for up to 48 to 72 hours, allowing sediments to settle and water to be released at decreased velocity to minimize erosion and sedimentation problems in the receiving streams and water bodies. In order to achieve this important function, and to achieve compliance with applicable state and federal standards and permits, the ponds must be maintained to function *as designed*. This maintenance includes periodic cleaning or dredging and removal of debris and obstructions to ensure continuing function, as well as other maintenance to ensure safety.

Even before the advent of heightened concern about West Nile Virus, some residents have misunderstood or disagreed with the purpose and function of these “dry” ponds. Some residents have viewed *any* retention of water as undesirable and have contacted our staff to seek modification of the facilities to evacuate the water more rapidly. Usually, when the purpose of these facilities is explained, coupled with an understanding that mosquito larvae require a minimum of seven to 10 days in standing water to produce mosquitoes, most residents are willing to accept the temporary impoundment of water in these “dry” facilities. Other residents, however, not being aware of these facts, have made unauthorized modifications of these County “dry” facilities, usually by removing the control plate that covers part of the orifice for exiting water. When these modifications are made, the facilities no longer serve their intended function and the County, therefore, is in violation of federal and state laws and permit conditions.

The County has approximately 80 “dry” stormwater facilities which require some maintenance construction, many for the unauthorized removal of the water level control plates. Continued work of this nature is essential in order to maintain the environmental benefits of the facilities and County compliance with state and federal laws and permit conditions. This work and continued inspection to ensure unobstructed evacuation of the water at *designed* rates, will not present any additional exposure to mosquito breeding activity.

It is possible, of course, that irregularities in the floor of all “dry” ponds can cause small pools of water to remain in the ponds for longer than designed, which could, in turn, create a potential mosquito breeding problem. As will be described later, we are increasing our inspection and maintenance of these potential problems and welcome the vigilance of residents to bring such matters to our attention. It is important to realize, however, that this potential problem would exist even in ponds where unauthorized modifications have been made and that County efforts to return the ponds to their designed function will not exacerbate the potential problem. Along with individual residents, the County must make extraordinary efforts to avoid situations where water stands for extended periods of time.

A related County initiative has caused some concern about its potential adverse affect on mosquito populations. Over the past year, as construction work has been undertaken to maintain “dry” ponds, the County has worked with area residents to install shallow

wetland marshes in these otherwise “dry” ponds. These marshes will generally retain less than 18 inches of water for some period of time after the main body of water has exited the pond. These shallow wetland marshes provide additional filtration of the stormwater by further settling of sediments and nutrient uptake, and create habitat for wildlife, as well. The installation of these shallow wetland marshes, after they have been explained to nearby residents, have been exceptionally well received. In those instances where a significant number of residents do not wish to have these shallow wetland marshes installed in the pond, we proceed with the other maintenance work and do not install the marshes. This approach seems to be working very well.

After the shallow wetland marshes have been allowed to establish themselves in a natural state (usually in about one year), they have the ability to control mosquitoes because the natural habitat provides an ecosystem that maintains an appropriate balance among the species. Natural predators of mosquitoes (dragonflies, frogs, salamanders, etc.) emerge and control mosquito populations more effectively than even in mowed lawns and other developed areas. Staff who visit both types of “dry” ponds report less mosquito activity in even recently developed shallow wetland marshes than in conventional dry ponds.

In the meantime, however, as these newer shallow wetland marshes are in the process of developing a natural condition that controls mosquitoes, it will be necessary to inspect them more often and treat them appropriately when evidence of mosquito breeding activity is found. County staff, assisted by the Health Department contractor, has already initiated this inspection and treating process of the shallow wetland marshes.

On August 14, 2002, we communicated with you to inform you about an increase in the level of activity associated with inspection and treatment of various areas potentially susceptible to mosquito breeding, including various types of stormwater facilities. I am confident that this increased level of support will address all of the near term issues recently raised regarding mosquito control. Unfortunately, no system is foolproof and some increased incidence of West Nile Virus bearing mosquitoes will be seen in our traps and bird surveillance. As the current mosquito breeding season draws to a close, staff will collaborate across agency lines to determine the best long term strategy to deal with the emerging and likely long term phenomenon associated with West Nile Virus.

I have attached a Quick Reference Guide that you might find helpful to orient your staff and residents on issues associated with stormwater ponds. Please feel free to distribute copies as you deem appropriate. We will be printing additional copies for general distribution and will post this information on our County website.

QUICK REFERENCE GUIDE

Stormwater Management Ponds

Fairfax County, Virginia

KEY POINTS

- All dry stormwater management ponds are designed to retain stormwater temporarily and drain within 2- to 3-days after the rain stops.
- Mosquito larvae require a minimum of seven to 10 days in standing water or other suitable breeding environments to produce mosquitoes.
- The County has an inspection and treatment program for mosquito control through the Health Department.
- The County provides maintenance on 893 dry ponds and private property owners provide maintenance on additional 386 dry ponds.
- Almost all wet ponds (313 of 329 ponds) are privately maintained; only 5% (16 of 329 ponds) are maintained by the County. (See below for contact information concerning public and private maintenance responsibilities.)
- State and federal laws require that stormwater be controlled to prevent flooding and to reduce pollutants. Stormwater management ponds are constructed to address these impacts of development.
- A dry pond with a shallow wetland marsh provides better treatment of polluted stormwater and poses less of a mosquito problem than a dry pond with lawn grass because of the natural controls, such as fish, frogs, or dragonflies, associated with a wetland marsh eco-system.
- Additional information is provided in the pamphlet from the Fairfax County Health Department “Put the Bite on Mosquitoes”.

DEFINITIONS

- Wet Pond. A wet pond has a permanent pool of water.
- Dry Pond. A dry pond temporarily fills-up with water during a storm but is dry most times.
- Flood Control Pond. A flood control pond is a dry pond that stores stormwater run-off and then releases it slowly over a one to two hour period. It performs very little pollution treatment.
- Pollution Treatment Pond (also known as a BMP). A BMP (Best Management Practice) is a dry pond that treats stormwater by retaining the water for 48 to 72 hour, allowing sediments and other pollutants to settle.
- Shallow Wetland Marsh. A shallow wetland marsh is a dry pond with 6 to 18 inch deep pools of water planted with a variety of wetland grasses, flowers, shrubs, and trees.

CURRENT INVENTORY OF STORMWATER MANAGEMENT PONDS

Dry Ponds (Temporarily Retain Water for up to 48- to 72-Hours):

Number of Ponds Maintained by the County	893	
Number of Ponds Maintained Privately	<u>386</u>	
Total Dry Ponds		1,279

Wet Ponds (Have a Permanent Water Body)

Number of Ponds Maintained by the County	16	
Number of Ponds Maintained Privately	<u>313</u>	
Total Wet Ponds		<u>329</u>

Total Stormwater Management Ponds: 1,608

COUNTY CONTACTS

To report a malfunctioning/blocked dry pond (e.g., standing water for more than three days), please contact the Department of Public Works and Environmental Services.

- Publicly Maintained Stormwater Management Ponds:
Larry Tapper, Maintenance and Stormwater Management Division, Ph: 703/934-2800, e-mail: larry.tapper@fairfaxcounty.gov
- Privately Maintained Stormwater Management Ponds: Phil Miley, Maintenance and Stormwater Management Division, Ph: 703/934-2860, e-mail: phil.miley@fairfaxcounty.gov

To request an inspection for the presence and possible treatment of mosquitoes in a dry pond, please contact the Health Department.

- Roy Eidem, Community Health and Safety Section, Division of Environmental Health, Ph: 703/246-2300, e-mail: roy.eidem@fairfaxcounty.gov