

Stormwater Management and Vector Breeding Habitats

The Public Health Problem

Stormwater management regulations and practices developed by environmental management agencies address the environmental problem of sediments and other pollutants entering surface waters but do not address public health issues, such as preventing habitat production for disease-carrying mosquitoes and other vectors.

Certain stormwater management structures designed to reduce sediment and other pollutant loads in runoff (e.g., dry detention basins, retention ponds, media filtration devices, below-ground devices) frequently hold standing water for more than 3 days, creating potential mosquito breeding habitats. This in turn leads to the potential for mosquito-borne diseases such as West Nile virus and St. Louis encephalitis.

Even those stormwater facilities that are properly designed and constructed to minimize mosquito breeding habitat may collect standing water if they are not maintained properly, thus creating the potential for mosquito breeding.

Methods to Address This Public Health Issue

A more integrated, systems-based approach is needed when developing and implementing solutions to environmental problems such as stormwater-runoff management. Local vector-control agencies (where they exist) or environmental health programs should be consulted during preconstruction design review to ensure that vector breeding habitat is minimized. These agencies and programs should also be consulted when developing maintenance schedules for stormwater management structures.

Taking the following actions can help to ensure that mosquito-management programs incorporate a systems-based approach:

- Properly design and construct stormwater control structures (especially regarding slopes, pipe inverts, and volumes) to minimize the inadvertent creation of standing water. Water should be held less than 72 hours whenever possible (shorter than minimum mosquito-breeding time).
- Minimize mosquito breeding for longer term or permanent stormwater storage (> 4 days) by introducing mosquito fish, by larviciding, and by developing vegetation management plans. Include design depths greater than 4 feet to limit emergent vegetation that can enhance mosquito breeding habitat (e.g., cattails).
- Make resources available and allocate specific responsibility for ongoing operation and maintenance of stormwater facilities, including monitoring and treatment if necessary. Clean accumulated sediments and clear brush and other debris to minimize standing water build-up.

Top Photo: John A. Read/FEMA

