City of Seattle
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City of Seattle
Integrated Pest Management Plan for Mosquito Control
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Background
On March 7, 2007, the Washington Department of Ecology (Ecology) issued a general permit (Aquatic Mosquito Control National Pollutant Discharge Elimination System State Waste Discharge General Permit - Permit No. WAG-992000) (the "General Permit") covering all mosquito control activities that discharge insecticides directly into surface waters of the state.

In order to obtain coverage under the General Permit, agencies are required to prepare and implement a Best Management Practices(BMP)/Integrated Pest Management Plan (IPMP). Permittees may either adopt the BMP plan developed by Ecology or develop their own IPMP and submit the plan to Ecology, in accordance with the General Permit.

This document constitutes the City of Seattle's IPMP for mosquito control which the General Permit requires the permittee to implement. The City expects to revise its IPMP from time to time, based on guidance from Ecology or other valid reasons that promote the principles of IPM as is allowed by the General Permit.

Introduction
Mosquito-borne diseases pose both human health and ecological risks. While mosquitoes have always been potential vectors for diseases including St. Louis encephalitis, West Nile Virus became an increasing concern after it was first detected in the eastern United States in 1999. The virus spread rapidly to the west coast.

As a large land and facility owner/operator, employer, drainage system owner/operator, and municipality, the City of Seattle can help manage the risk of West Nile Virus by initiating efforts to minimize mosquito breeding habitat, control mosquito larvae in City facilities when the City determines it is appropriate and to educate City employees about personal protection.

The City will expect and rely on the local health department (Public Health - Seattle & King County), which is part of King County, to perform primary surveillance and primary public education and outreach functions for the purposes of general public health.

The City anticipates that any application of pesticides by the City under the General Permit would be limited to City property, City facilities, other areas of concern for City activities, and possibly surrounding areas and/or other property within the treatment area by order or by arrangement with the property owner or operator, the jurisdictional health authority, or WDOH; the IPMP is based on that assumption.

Some City property, facilities, and rights-of-way are located in Washington but outside of King County. The City will use this same general approach to permit compliance and pesticide application in those areas, and will also expect and rely on local and jurisdictional health authorities to perform the primary surveillance and primary public education and outreach functions for the purposes of general public health.

Approach
The City of Seattle recognizes that West Nile Virus poses risks to human health and ecology and intends to undertake prudent measures to mitigate that risk on or near City property and facilities, potentially including the judicious use of larvicides. However, the City will not use larvicides in treated drinking water such as drinking water in a reservoir. In addition, the City will not use larvicides within its watersheds unless approved by the SPU director on a case-by-case basis.

Seattle's overall approach is based on the assumption that the following general management steps are the most effective:

1) Conduct City employee education and awareness of risks, risk reduction steps, and personal protection
2) Support public education and outreach focused on the steps City residents can take to reduce breeding habitat
3) Monitor local, state and federal West Nile Virus developments and related information
4) Inventory certain major City owned or operated structures that may provide breeding habitat
5) Attempt to reduce breeding habitat in City facilities, taking steps such as general facility housekeeping to eliminate unnecessary standing water
6) If appropriate, encourage natural predators in potential mosquito breeding habitat, in accordance with state and federal requirements.
7) Larvicide at the City's discretion following the criteria listed in "Implementation - Step 6."´

The City may choose other methods permitted by Ecology's General Permit to control mosquitoes and will follow all applicable laws, rules and best practices in doing so.

Implementation
The City will implement the following steps during mosquito seasons:

Step 1: Employee Education & Awareness
City Safety Officers and/or other appropriate city staff will initiate an effort to inform affected City employees about steps that can be taken to avoid mosquito bites and to reduce breeding habitat. The effort is intended to be aimed at employees most at risk of mosquito bites while on the job during City employment.

A wide distribution City employee e-mail will be sent including general information, resources links, and steps for avoiding mosquito bites and reducing breeding habitat.

Step 2: Public Outreach
The City expects to include information in a mailing to drainage utility customers that reinforces the prevention and protection messages developed by Public Health - Seattle & King County (Public Health).

Step 3: Monitor bird and human surveillance conducted by Public Health
Through subscription to the Public Health e-mail information service, the City will monitor the incidence of West Nile virus in Washington State, King County and the City of Seattle to help determine appropriate City response.

Step 4: Inventory Breeding Habitat
Seattle Public Utilities, Seattle Parks and Recreation, Seattle City Light, Seattle Department of Transportation, Seattle Center, Fleets & Facilities, and Seattle Public Library will inventory selected structures and facilities that may provide mosquito breeding habitat as needed.

Step 5: Minimize Breeding Habitat
The City will take steps to eliminate unnecessary standing water from City facilities at a level of effort that the City shall determine.

Step 6: Larviciding
When a site is considered by the City to be a potentially significant source of mosquito larvae, the City may decide to assess the site for breeding potential at the City's discretion considering the following:

Is it a natural system with natural mosquito and larval predators?
Is the water in the facility greater than 3 feet deep?
Is there a base flow in the facility or water that will exchange the water within seven days?
Does the standing water drain a minimum of every 7 days?
Are more significant sources of larvae present on adjacent properties?

If the answer to each of these questions is "no," larvicide applications might occur at the site at the City's discretion. If not all of the above are answered "no," but use of larvicide is determined to have the potential to reduce a significant larval population and larviciding can occur meeting General Permit requirements, then the City may use larvicide at its discretion. In deciding whether to apply larvicide, the City may also consider available resources, whether larviciding has a reasonable potential to reduce mosquito populations in an area, whether a measure or measures other than larviciding are feasible alternatives to reduce breeding habitat potential, and treatment costs.

When considering larviciding a site, the City would sample the site for abundance of larvae to the extent required by the General Permit. If target thresholds or other applicable General Permit conditions are met (i.e., the site is exempted from the dipping requirement, a site sampling protocol has been submitted, etc.), larvicide may be applied.

If larvicides are used, the City intends to use the pesticide that is effective in controlling the mosquito population and that is the least toxic to non-target species and appropriate to the attributes of the site, except in response to documented development of resistance, in cases of effectiveness, or in a declared public health emergency.

The following is the list of products, in order of preference, which will be considered for use:

Bacillus sphaericus (H-5a5b)
Bacillus thuringiensis israelensis (Bti)
Methoprene
Monomolecular Surface Films
Paraffinic white mineral oil – this larvicide shall be used only in accordance with General Permit restrictions

Spills of pesticides will be promptly reported to the appropriate local and state authorities.