

**PIERCE COUNTY
PROGRAM FOR RESPONSE TO WEST NILE VIRUS
Amended 2007**

Introduction

Pierce County staff has been tracking the progress of the West Nile Virus (WNV) as it proceeds from East Coast to West Coast. In the Fall of 2003 it arrived in Washington State, causing two known cases in birds, and two in horses. The appearance of the disease in Snohomish County alerted us to begin planning for its arrival in Pierce County.

Intent of Program

Pierce County owns stormwater systems, road systems, and parks facilities that can potentially provide a breeding ground for mosquitoes, which may carry the WNV. Current public health wisdom indicates that personal protection exercised by the individual, in the form of using mosquito repellants, wearing long clothing, and avoiding outdoor activity at dawn and dusk, as well as other measures, are by far the best protective measures in avoiding mosquito bites, and thus reducing chances of contracting the disease. However, in addition to these measures, along with encouraging the public to reduce mosquito habitat in their own yards, it is prudent to plan the means to reduce mosquito larvae in County-owned facilities if it becomes necessary. The remainder of this program description details the steps the County will take based on indicators consistent with findings and recommendations of the Washington Department of Health (DOH) and the Tacoma-Pierce County Health Department (TPCHD).

Our program will emphasize existing goals of safe and efficient operation of County facilities. One of the best ways to reduce mosquito populations in facilities we manage is to insure proper maintenance. To that end, prior to treatment, any maintenance needs of facilities will be assessed, and treatment will only occur if standing water cannot be eliminated through these means. Inspectors who regulate private property owners will convey a similar message. We have advertised our stormwater facility courtesy inspection program with the goal of encouraging proper maintenance as a means of reducing mosquito breeding habitat.

Necessary Permits and Licenses

There is one permit and one license needed before the County can engage in any mosquito larvae control activities. Pesticide application must be done by a licensed applicator with the proper endorsements. The licensed applicator must have either the Aquatic Pest control endorsement, or, if a public employee, the Public Operator - Public Health endorsement. A number of public works staff members have tested and hold proper endorsements to legally apply mosquito control pesticides in facilities we operate.

A National Pollutant Discharge Elimination System (NPDES) Aquatic Mosquito Control General Permit is needed. This permit is administered by the Washington State Department of Ecology (DOE). Pierce County made application for this permit on April 11, 2003. There are requirements for public notice, mapping, State Environmental Policy Act (SEPA) review, Integrated Pest Management plan (IPM), and a monitoring program. Coverage under the permit took effect on May 23, 2003.

It should be noted that, after April 15, 2003, DOE no longer accepts applications for individual permits for aquatic mosquito control. The Department of Health now holds a state-wide umbrella permit for this activity, and application for coverage under their permit should be made through them. It is our understanding that the local health department will be reviewing these applications prior to sending them to DOH. Their role in coordinating/administering these permits is currently unknown.

Coordination with Other Agencies

Since January 2003, Pierce County has been actively participating in seminars run by the DOE, DOH and TPCHD. These seminars vary from presentations on how to obtain a permit, bi-weekly gatherings of jurisdictions within the county to share the latest news on how to prepare for arrival of the virus, and learning the latest methods of mosquito surveillance and obtaining equipment. Individual meetings between Pierce County staff, the TPCHD, and the City of Tacoma have also taken place to define roles and limitations in dealing with public inquiry and expected actions once WNV arrives in the County. Coordination and discussion with other Puget Sound counties and cities is also ongoing via the American Public Works Association Stormwater Managers' group.

Within County government, discussions between the Water Programs and Road Maintenance divisions have been frequent, and joint planning has been essential in developing a cohesive response program that is also environmentally sound.

We recognize that government relationships and strategies may change if we are faced with a sudden, severe influx of WNV in the region. Pierce County is willing to meet and discuss options with other governments, agencies, and groups.

Education Activities

As mentioned previously, personal protection is by far the best method to avoid mosquito bites and the risk of acquiring WNV. Agencies across the country have developed education materials to inform the public of actions they can take to avoid contact with WNV. The WADOH has printed a pamphlet with this information, and is distributing it to the public. They also have a web site which is being updated with WNV information, and links to other WNV web sites. A dedicated phone line for WNV information (253-798-6578) has been activated to answer questions directly.

Pierce County will put information regarding our actions for WNV control relating to County facilities on the County web site, and will have links to the TPCHD web site for general information. We will also include items we will not treat (i.e., private stormwater structures, wetlands, etc.) and information as available on how to deal with structures not owned by the County.

Pierce County Water Programs inspections personnel also educate businesses, industries and developments they routinely inspect through ongoing programs on appropriate activities for reducing areas on-site that may be conducive to mosquito hatching by emphasizing proper maintenance of private stormwater facilities.

Surveillance

In 2003 County personnel from Water Programs, Road Maintenance, and Parks examined records and maps to determine which County facilities were most likely to be provide breeding habitat during mosquito season. Personal experiences from long-term employees were found to be invaluable in developing this information. Field confirmation was done to ground-truth these observations. A list of potential treatment areas was developed, taking into account factors such as proximity to urban areas, presence of natural predators, location of potentially vulnerable facilities in relation to the County structure, etc.

Response Thresholds

One of the most difficult aspects of developing a sound program of mosquito control in County facilities has been trying to determine when to initiate treatment. Fortunately, DOH and DOE have published two documents that help greatly in making those determinations. The ***Mosquito-borne Disease Response Plan, DOH, December 2003***, and ***Best Management Practices for Mosquito Control – draft update, DOE, Publication 03-10-023, February 2004*** are valuable resources for making response decisions. We took the phased response guidelines from the DOH document, and customized them to reflect our abilities and limitations with regard to County facilities.

0 Risk Category

Probability of outbreak in humans: NONE

Definition: Off-season: adult vectors inactive, climate unsuitable.

Recommended response: Secure surveillance and control resources necessary to enable emergency response. Initiate outreach and public education programs for potentially affected County employees, and coordinate with TPCHD and other entities on education and surveillance.

1a Risk Category

Probability of outbreak in humans: REMOTE

Definition: Spring, summer or fall; areas unlikely to have arbovirus epizootic activity during the year based on lack of previous or current arbovirus activity in the region.

Recommended response: Response as in Risk Category 0, plus: Conduct surveys of County facilities likely to provide mosquito breeding habitat in summer months, GPS and map those facilities in order to plan efficient routes for treatment, modify current Service Response System to enable logging of specific mosquito complaints, decide on phone numbers to be used for complaints, continue outreach and cooperation with TPCHD.

1b Risk Category

Probability of outbreak in humans: REMOTE

Definition: Spring, summer, or fall; areas anticipating arbovirus epizootic activity during the year based on previous or current arbovirus activity in the region; no current surveillance findings indicate arbovirus epizootic activity in the area.

Recommended response: Response as in Risk Category 1a, plus: Respond to public complaints of mosquito activity in County facilities, source reduction, use larvicides at specific sources identified by larval or adult mosquito survey, continue cooperating with TPCHD and other entities in public education emphasizing source reduction.

2 Risk Category

Probability of outbreak in humans: LOW

Definition: Spring, summer or fall; areas with initial, sporadic, or limited arbovirus activity in birds and/or mosquitoes.

Recommended Response: Response as in Risk Category 1b, plus: Continue larval control and source reduction at County facilities appropriate for treatment continue to cooperate with TPCHD and other entities in public education emphasizing personal protection.

It should be noted that the DOH document continues with additional risk categories outlining probability of outbreaks in humans. We do not include any of these further actions in this program, since we will already be at the stage of treating County facilities at Risk Category 2. Any further actions on the part of the County would have to be initiated as part of a public health emergency initiated by the DOH, and even then, would need to be funded by the state. At that point, formation of a Mosquito Control District, and associated funding paid via a new fee, may be an option the County wishes to consider. However, as it currently stands, the County will treat only County facilities as outlined in this program, and has no intention of treating private facilities, natural water bodies, or wetlands. The County also does not intend to treat for adult mosquitoes by any means.

Integrated Pest Management Program and Best Management Practices

On April 10, Pierce County adopted ***Best Management Practices for Mosquito Control, DOE, Publication 03-10-023, March 2003 or the most recent version***, as our official Integrated Pest Management (IPM) program. This document will guide our response at County Facilities through the application of the following actions:

1. Minimization of mosquito breeding sites (maintenance, education, cooperative effort with DOH and TPCHD)
2. Monitoring for high mosquito populations and disease (cooperative effort with DOH and TPCHD)
3. Establishing the targeted density of the population based on health, public safety, economic and aesthetic thresholds (cooperative effort with DOH and TPCHD)
4. Treating mosquitoes to reduce populations below the targeted threshold using strategies that may include biological, cultural, mechanical and chemical control methods which must consider human health, ecological impact, feasibility, and cost effectiveness
5. Evaluating the effects and efficacy of pest treatments

These tenets will be followed for County facilities as described below:

1. Minimization of mosquito breeding sites and biting opportunities

County facilities will be examined for the potential to produce mosquitoes. This will include all County buildings, shops, parks, and stormwater facilities with the potential to hold water. The Road Maintenance division is not expected to inspect every County ditch or catchbasin to see where standing water is present, since there are thousands of miles of ditch in the County. Road Maintenance will respond on a complaint basis, and then evaluate if the ditch or catchbasin is in need of maintenance to allow water to drain. Other County agencies will evaluate their facilities to determine if maintenance is required to drain water from potential breeding areas. **At no time is this recommendation to be construed as advocating the filling or draining of wetlands as a mosquito prevention measure.**

County personnel will receive education on controlling biting opportunities via their Safety Committee and email, at a minimum. Some divisions are providing mosquito repellent to their employees.

Educational efforts in cooperation with the TPCHD aimed at educating the public on measures they can take to minimize mosquito habitat and biting opportunities on their own property will continue. County staff will meet with the TPCHD and other municipalities as needed to exchange information, ideas, sampling equipment and methods, as well as to hear about changes in regulations and permits. We have obtained brochures from TPCHD, and have posted links to their website so any visitors to the

County site can link directly to additional WNV information. Pierce County has also altered its Service Response System to provide tallies and locations of mosquito complaints to the TPCHD for mapping purposes.

2. Monitoring for high mosquito populations and disease

Most of the responsibility for general monitoring and tracking of mosquito populations and the actual disease will be the responsibility of the DOH and TPCHD. The County will do some limited capturing of adults, and hatching of larvae, which will be forwarded to the DOH for analysis. As stated above, the County will log and respond to complaint calls on mosquitoes in County Facilities. The County will respond to complaints for private facilities or property with an offer to inspect for maintenance needs and advice on permits and applicators, but will not apply mosquito treatments on any private property.

3. Establishing the targeted density of mosquito populations

Most of the County's monitoring will be in relation to population thresholds in county facilities, such as stormwater retention ponds. We will be following information from DOH and DOE on vector species, and will be doing dips for larva. We will rely on the guidance in the DOE **BMPs for Mosquito Control** that indicates one larva of a vector species in 3 dips is sufficient to warrant treatment.

4. Mosquito treatment

Once vector mosquitoes have been identified in the area, this may trigger control activities beyond the maintenance measures indicated in 1 above. We have carefully considered treatments, cost, benefit, proximity to receiving water bodies, Endangered Species Act listed species, and proximity of facility to homes. We have chosen the following treatments for the following facilities:

Bacillus thuringensis israelensis (Bti)

Bti is comprised of bacterial spores, which, once activated, cause disease in mosquito larvae and kill them. These bacteria are specific pathogens for mosquitoes, black flies and fungus gnats, so would be safe to use in facilities that discharge to natural water bodies. The 21 day biscuit formulation will be used in structures such as catchbasins and ponds that have an outlet to natural water bodies. Reapplication would be needed every 30 days, or after sufficient rainfall to flush the biscuits out of the structure (assuming we are not anchoring them, which we are considering).

Bacillus sphaericus

This pesticide is also composed of bacterial spores. Its specific target is the *Culex* species of mosquito larvae, which are frequently found growing in stormwater control structures. This compound is also more effective

than Bti in water containing high levels of organic matter. We will use the 21 day biscuits in catchbasins and ponds which have high levels of organic matter, and are tributary to natural waters.

Methoprene

This growth inhibiting compound will be utilized in County retention/detention facilities that hold water during mosquito season (May-October). This compound has a lot of advantages. We will be buying it in the 150 day biscuit form, which means that it will only need to be applied once during the entire season. The cost is reasonable, and manpower costs are reduced to a minimum. Our intent is to use it only in man-made depressions that have no possibility of overflow to natural waters during the mosquito season. Keeping it away from natural waters means that there should be minimal to no effect on aquatic macroinvertebrates and other insect species. It will not be applied to wetlands. It may be considered for use in problem areas that are not conducive to the use of the bacterial products listed above, but only after careful consideration of possible effects if they reach natural waters.

Keep in mind that the County does not intend to treat every County facility. Application will take place using the criteria established above, as well as other factors. For instance, if a retention pond is holding water, but is located in a remote area, there may be no need to treat, since there is no population density close by.

Monitoring and reporting

As a condition of the NPDES permit, Pierce County is required to file a report to DOE by the beginning of February for the previous year's pesticide usage. Items required for the report include:

- Waterbody name applied to (or just "stormwater structure")
- WRIA number where located
- Latitude and longitude (Pierce County will GPS locate all sites)
- Larvicide name
- EPA registration number of larvicide
- Date applied
- Pounds or gallons used
- Methoprene concentrations, if applicable

Information will be kept in an Excel or ACCESS database to facilitate transfer to DOE.