

## VECTOR AND NUISANCE CONTROL – ADMINISTRATIVE GUIDELINES

SUBJECT: FIELD POLICIES AND PROCEDURES      NUMBER: 1126(1)

TITLE: WEST NILE VIRUS RESPONSE PLAN FOR 2006-07 MOSQUITO SEASON

EFFECTIVE: 03/01/07      LAST REVIEWED DATE: 02 13 07

APPROVED: Gary Oxman      PAGE: 1      OF 17

### **OVERVIEW**

Includes the following components of the Multnomah County Health Department, 2007 Mosquito Season West Nile Virus Response Plan;

- PLAN INTRODUCTION – Introduction/Purpose
- PRINCIPLES
- SUMMARY
- RISK ASSESSMENT TOOL
- RESPONSE GUIDELINES
- GLOSSARY

### **PLAN INTRODUCTION - *Introduction/Purpose***

This *West Nile Virus Response Plan* describes how Multnomah County Health Department will manage the problem of West Nile Virus (WNV) during 2007. The *Plan* consists of four parts:

- *Plan Introduction*– This gives background on how the plan was developed and the thinking behind the plan.
- *Plan Summary* – This gives a brief overview of the main features of the plan and how it will work.
- *Response Guidelines* – This describes how the Health Department will respond to various degrees of the threat posed by West Nile Virus.
- *Human Health Risk Assessment Tool* – This describes the methods the Health Department will use to assess the risk to human health posed by WNV as circumstances change through the mosquito season.

Although the number of people in Multnomah County likely to suffer serious illness from this mosquito-borne disease is small, the Health Department is committed to minimizing the risks and impacts of WNV. It will do this through a comprehensive prevention-based plan that emphasizes public education and control of mosquitoes before they are able to fly and spread WNV.

This *Plan* was developed during the Spring of 2004 with the assistance of the Health Department's WNV Task Force made up of stakeholders with a wide range of knowledge, interests and values.

The primary purpose of this *West Nile Virus Response Plan* is to provide guidance to decision makers in Multnomah County Health Department. Staff at all levels will use this *Plan* as they anticipate and respond to the potential human health impacts of West Nile Virus (WNV) in Multnomah County in 2007.

S:\WestNile\GO KIT\policy\wnv response plan, 3-1-07.doc

AND

M:\Manuals\MCVNC Policies and Procedures\wnv response plan for 2006-07 mosquito season, 1126(1) 3-1-07.doc

This *Plan* was developed before the arrival of WNV in Multnomah County. It is based on “best practices” for managing the human health impacts of WNV developed by the Centers for Disease Control and Prevention (CDC) and selected state and local health departments across the country. It is a “mainstream” plan; it is consistent with CDC’s recommendations, and is similar to the plans of many communities across the US. Because the *Plan* was developed before WNV arrived in our community, it does not benefit from local experience in managing WNV.

The Health Department intends to follow this *Plan* closely in managing the impacts of WNV in Multnomah County. The Department recognizes its responsibility to use professional judgment in applying this *Plan* to deal with specific WNV-related situations that threaten the public’s health.

## **PRINCIPLES**

This *West Nile Virus Response Plan* is based in the best available science and also embodies several important principles and beliefs:

- The human health impacts of WNV can be reduced but not entirely avoided. Thus, the goal of the *Plan* is to ensure that the Health Department and our community takes appropriate and reasonable actions to reduce the impacts of WNV.
- WNV infection and disease is likely to be with us for the foreseeable future. Therefore, prevention and response activities must be effective, and environmentally and economically sustainable over a long period of time.
- WNV is carried to humans as part of a larger cycle of infection that primarily involves birds and mosquitoes. To be effective, WNV prevention and control activities must decrease the potential for infected flying adult mosquitoes to bite people. This is best accomplished by consistently applying long-term preventive actions that reduce populations of mosquitoes that can transmit WNV, and that engage the public in reducing mosquito breeding habitat and in protecting themselves.
- Multnomah County Health Department utilizes Integrated Pest Management (IPM) as its approach to controlling mosquito populations. IPM is an integrated strategy that uses multiple methods to achieve long-term control of mosquito populations, and has been proven to be the most effective approach. In using IPM to address WNV, the Department will target its mosquito control activities at specific areas and situations that clearly contribute to the risk of transmitting WNV.
- Some actions to reduce WNV infection in people can have unintended negative consequences on people and the environment. Thus, reducing WNV impacts involves balancing the risks and benefits of these control activities with their potential negative consequences.
- Multnomah County Health Department is committed to using the least harmful interventions that are likely to be effective in a given situation. The Department is also committed to choosing and targeting its interventions based on reliable scientific information to the maximum extent that is practical.

## **SUMMARY**

This section is a summary of Multnomah County Health Department’s *West Nile Virus Response Plan* for the 2007 mosquito season. The original *Plan* was based on recommendations made by the Department’s West Nile Virus Task Force in 2004. The 2007 plan was made available to the Vector and Nuisance Advisory Committee on March 20, 2007. The Department is committed to evaluating the effectiveness of this *Plan* at the end of each mosquito season, and will revise the *Plan* as necessary.

While the number of people likely to suffer serious illness from this mosquito-borne disease is small, the Health Department is committed to minimizing the risks of WNV and its serious impacts (brain/nervous system infection).

S:\WestNile\GO KIT\policy\wnv response plan, 3-1-07.doc

AND

M:\Manuals\MCVNC Policies and Procedures\wnv response plan for 2006-07 mosquito season, 1126(1) 3-1-07.doc

The Plan is based on the risk of human West Nile virus disease as periodically assessed by the West Nile Virus Human Health Risk Assessment Tool included in this Plan. The Tool defines four risk levels representing a range from no risk to high risk of acquiring infection locally. To ensure that decision-making about intervention is appropriate to the situation at a given point in time, the risk level is reset to Level A (no local risk) at the end of each adult mosquito season (typically November 1<sup>st</sup>). Level A will apply until there is evidence of WNV activity in the greater Portland metropolitan area that justifies a change in risk level.

This Multnomah County Health Department *West Nile Virus Response Plan* focuses on reducing the potential human health impacts of WNV. At the same time, Health Department will continue to respond to residents' concerns related to nuisance mosquitoes. However, when WNV is detected in the greater Portland metropolitan area priority will be given to area wide disease prevention rather than nuisance control.

The Department's typical response to nuisance mosquitoes will be based on an inspection of property to determine mosquito activity. Response activities may include small group and public education utilizing direct contact, printed materials, and other methods as appropriate. Use of chemical adulticides to control adult nuisance mosquitoes will be done only with the permission of the property owner, using application methods that minimize spread of these materials off the property.

This plan has supporting documents that explain how activities described in the *Plan* will be carried out. Additional supporting documents and plans will be developed as needed each mosquito season. These will explain activities included in the County's comprehensive approach to vector control.

Two elements make up the heart of the plan. They are used together to classify and respond to the risk of human infection with WNV as the situation changes over the season.

- *West Nile Virus Human Health Risk Assessment Tool*
- *West Nile Virus Response Guidelines*

West Nile Virus Human Health Risk Assessment Tool

The *Assessment Tool* was adapted from a model used by the state of California. The *Tool* considers eight different factors that reflect the risk of people in our community getting West Nile Virus infection. Each factor is given a score from 1 to 5. The scores for individual factors are averaged to give an overall measure of the risk of people becoming infected with West Nile Virus. The *Assessment Tool* uses two scales:

- 1) A Seasonal Human Health Risk Scale to represent risk over the course of 2007 season. This scale provides information to guide surveillance, public education, and control activities other than spraying intended to reduce adult mosquito populations.
- 2) A Short Term Human Health Risk Scale to reflect human health risk in the short-run (i.e., over a period of days or a few weeks). This will be used to guide short-term response activities, including the possibility of spraying intended to reduce adult mosquito populations.

The scores of the two scales are "semi-quantitative." Larger numbers mean that there is more risk, but (for example) a value of 4 cannot be interpreted as being twice as risky as a value of 2. The table below shows the relationship between response scores and response levels.

<i>Level</i>	<i>Description</i>	<i>Seasonal Risk Score</i>	<i>Short Term Risk Score</i>
Level A	No WNV In Community	1.0 – 2.5	
Level B	WNV in community, Low Human Health Risk	2.6 – 4.5	
Level C	Human Health Risk in Localized Area(s)		4.6 – 4.7
Level D	Human Health Risk in Multiple Areas or Throughout the County		4.8 or higher

### West Nile Virus Response Guidelines

The *West Nile Virus Response Guidelines* use four risk levels based on the results of the *Assessment Tool* at a given time. The levels (A-D) represent increasing human health risk from WNV. The risk levels are defined by *Assessment Tool* scores, and presence (or absence) of WNV in the County. Each level includes specific response actions that the Health Department can take. Each level builds on the activities of the previous level(s).

The *Response Guidelines* utilize a comprehensive prevention-oriented approach. This approach emphasizes public education and control of mosquitoes before they are able to fly and spread WNV. Use of Ultra Low Volume (ULV) chemical insecticides to reduce adult mosquito populations is reserved for special high-risk situations.

#### Level A: No WNV in the Community

The response in Level A establishes basic monitoring, public education and mosquito control activities. It emphasizes targeted, user-friendly public education that is culturally appropriate and does not invoke fear. It realistically describes the risk of getting WNV, how it is spread, what members of the public can do to reduce their own risk, and what they can do to help mosquito control efforts. Level A also features extensive monitoring to detect the arrival of WNV, and decrease the potential for its spread in coming months. This is done by reducing mosquito habitat, and applying biologic materials to prevent immature mosquitoes from hatching and becoming flying adults. In Level A, there can also be attempts to create assistance for low-income high-risk individuals and communities to decrease their WNV risk. Approaches could include promoting community clean-ups, and finding subsidies for window screens and other simple preventive steps.

#### Level B: WNV in the Community, Low Human Health Risk

The response in Level B maintains most of the prevention and control activities in Level A. It increases public education through outreach and use of the mass media. Messages emphasize personal protection steps, and updates on the current risk situation. At Level B, there are increased efforts to reduce the sources of mosquitoes, and reduce immature mosquito populations. The Health Department will also start to actively look for infection in people.

#### Level C: Human Health Risk in Localized Area(s)

In the response to Level C, public education is intensified and further focused on communities at increased risk of WNV exposure (for example, communities near sites where there are large numbers of infected mosquitoes). At Level C, the Health Department may choose to spray ULV insecticides to reduce adult mosquito populations. This would be done only when the Department has good reason to judge that spraying is likely to be effective in reducing the risk of WNV infection in humans in a given situation. In addition, the Health Department would have to address an extensive list of factors to ensure that spraying could be done in a way that is as safe as possible for people and the environment. ULV applications will only be done in a defined area that is targeted at controlling adult populations of a WNV carrying mosquito. No aerial applications of adulticides will be done. Only the County Health Officer will have the authority to approve ULV spraying for control of WNV.

#### Level D: Human Health Risk in Multiple Areas or Throughout the County

At Level D, the Response Guidelines call for a shift towards further public education about self-protection. There would also be an emphasis on communications to keep the risk of WNV in context, and reduce unreasonable fears. Monitoring activities would be re-focused to track harmful mosquito populations, and assure that human cases are identified. Use of adulticides would likely be reduced for two reasons: 1) The development of widespread infection in the face of adulticide use suggests that further adulticide use would not be effective. 2) County resources could be better applied to promoting effective personal protection in the short-term. It is also possible that the Department would act to cancel outdoor activities that present an unreasonable risk of WNV transmission.

S:\WestNile\GO KIT\policy\wnv response plan, 3-1-07.doc

AND

M:\Manuals\MCVNC Policies and Procedures\wnv response plan for 2006-07 mosquito season, 1126(1) 3-1-07.doc

S:\WestNile\GO KIT\policy\wnv response plan, 3-1-07.doc

AND

M:\Manuals\MCVNC Policies and Procedures\wnv response plan for 2006-07 mosquito season, 1126(1) 3-1-07.doc

# WEST NILE VIRUS HUMAN HEALTH RISK ASSESSMENT TOOL

Multnomah County Health Department  
West Nile Virus (WNV) Response Plan  
2007 Mosquito Season

WNV Surveillance Factor	Value	Benchmark	Seasonal Risk Score	Short-Term Risk Score
<b>1. Environmental Conditions</b> Environmental conditions that favor WNV transmission in Oregon are unknown. Based on findings elsewhere, high temperatures are associated with increased risk.	1	Temperature well below average		
	2	Temperature below average		
	3	Temperature average		
	4	Temperature above average		
	5	Temperature well above average		
<b>2. Abundance* of adult mosquito species with known ability to increase WNV infection in birds (amplification vectors) or transmit WNV to humans (bridge vectors)</b> (examples: Aedes vexans, Coquillettidia perturbans, Culex pipiens, Culex tarsalis, Culex territans, Culiseta inornata)  * Relative to previously documented levels	1	Vector abundance well below average		
	2	Vector abundance below average		
	3	Vector abundance average		
	4	Vector abundance above average		
	5	Vector abundance well above average <i>[NOTE: Specific measures of abundance for the 2004 season are being developed]</i>		

S:\WestNile\GO KIT\policy\wnv response plan, 3-1-07.doc

AND

M:\Manuals\MCVNC Policies and Procedures\wnv response plan for 2006-07 mosquito season, 1126(1) 3-1-07.doc

WNV Surveillance Factor	Value	Benchmark	Seasonal Risk Score	Short-Term Risk Score
3. Virus isolation in adult mosquito species with known competence to serve as a bridge or amplification vector of WNV (see #2 above for species definitions)	1	No WNV infection detected in vector-competent species		
	3	WNV infection detected in 1-4 pools of vector-competent species (either localized or geographically dispersed)		
	4	WNV infection detected in 5 or more pools of vector-competent species (geographically dispersed in a way that indicates intense localized WNV activity)		
	4	WNV infection detected in 5 or more pools of vector-competent species (geographically dispersed in a way that indicates widespread WNV activity)		
	5			
4. WNV Testing of Sentinel Chickens. Number of chickens in a flock that show laboratory evidence of new infection with WNV	1	No new positive tests among sentinel chickens in Oregon		
	2	New positive tests among sentinel chickens in Oregon or SW Washington but outside the 6 county Metropolitan area		
	3	One new positive test in one Multnomah County flock		
	4	One new positive test in two or more Multnomah County flocks		
	5	Two or more new positive tests per flock in one or more Multnomah County flocks		

WNV Surveillance Factor	Value	Benchmark	Seasonal Risk Score	Short-Term Risk Score
<b>5. Dead bird infection</b> Includes zoo collections; excludes sentinel chickens NOTE: Interest is in bird populations whose characteristics (including local residence time and ranges in the Portland Metropolitan area) make it likely that the population(s) will contribute to WNV transmission and amplification.	1	No WNV positive dead birds in Oregon		
	2	WNV positive dead bird in Oregon, Washington, but none in 6 county Portland metropolitan area		
	3	One confirmed WNV positive dead bird in a Portland metropolitan area county other than Multnomah County		
	4	One confirmed WNV positive dead bird reported in Multnomah County		
	5	Multiple confirmed WNV positive dead birds in Multnomah County		
<b>6. Horse (equine) cases</b> NOTE: Includes only horse cases that have been investigated and classified as locally-acquired	1	No horse cases in 6 county Portland metro area		
	3	One horse case in 6 county Portland metro area		
	4	One horse case in Multnomah County		
	5	Multiple horse cases in Multnomah County		
<b>7. Human cases</b> NOTE: Includes only human neuroinvasive cases that have been fully investigated by the appropriate health department and classified as locally-acquired	1	No human cases in Oregon		
	2	One human case in Oregon or SW Washington outside the 6 county Metropolitan area (i.e., none within the Metro area)		
	3	One human case in the 6 county Metropolitan area		
	4	One human case in Multnomah County		
	5	Multiple human cases in Multnomah County (geographically dispersed in a way that suggests either intense localized WNV activity or widespread WNV activity)		

<b>WNV Surveillance Factor</b>	<b>Value</b>	<b>Benchmark</b>	<b>Seasonal Risk Score</b>	<b>Short-Term Risk Score</b>
<b>8. Proximity of virus activity to populated areas</b> (scored only if virus activity is detected)	1	Virus activity detected primarily in unpopulated areas beyond usual flight range of infected human-biting species		
	3	Virus activity detected in areas of low population density that are within usual flight range of infected species		
	5	Virus activity detected in areas of high population density that are within usual flight range of infected species		
<b>TOTAL OF FACTOR SCORES</b>				
<b>NUMBER OF FACTORS SCORED</b>				
<b>OVERALL SCORE</b> (TOTAL/Number of Factors Scored)				

<i>Level</i>	<i>Description</i>	<i>Seasonal Risk Score</i>	<i>Short Term Risk Score</i>
Level A	No WNV In Community	1.0 – 2.5	
Level B	WNV in community - Low Human Health Risk	2.6 – 4.5	
Level C	Human Health Risk from WNV in Localized Area(s)		4.6 – 4.7
Level D	Human Health Risk from WNV in Multiple Areas or Throughout the County		4.8 or higher

S:\WestNile\GO KIT\policy\wnv response plan, 3-1-07.doc

AND

M:\Manuals\MCVNC Policies and Procedures\wnv response plan for 2006-07 mosquito season, 1126(1) 3-1-07.doc

# WEST NILE VIRUS RESPONSE GUIDELINES

Multnomah County Health Department  
West Nile Virus (WNV) Response Plan  
2007 Mosquito Season

## **RESPONSE LEVEL A**

### *NO WNV DETECTED*

#### Criteria:

- Seasonal and Short-Term Human Health Risk Assessment Score 1.0 – 2.5
- AND**
- **NO** WNV activity detected in Multnomah County or elsewhere in the 6 county Portland metropolitan area (Clackamas, Columbia, and Washington counties in Oregon and Clark, and Skamania Counties in Washington)

Basic Public Information and other Communication Actions	Basic Surveillance and Control Actions	Additional Assessment and Action Options
<ul style="list-style-type: none"> <li>• Emphasize coordinated public education that:               <ul style="list-style-type: none"> <li>○ is user friendly &amp; does not invoke fear;</li> <li>○ is culturally and time appropriate;</li> <li>○ targets at-risk populations;</li> <li>○ describes the relative risk of the disease;</li> <li>○ includes importance of ecology;</li> <li>○ describes how mosquito-borne diseases are spread, and the public's role in reducing the risk of transmission and in identifying WNV in the community;</li> <li>○ includes information describing the County's IPM and source reduction activities.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Track dead bird reporting by the public and agencies' personnel.</li> <li>• Collect and test appropriate sample dead birds for WNV.</li> <li>• Continuously collect and test adult &amp; larval mosquitoes per established protocols to assess abundance of mosquito species and presence of WNV.</li> <li>• Test sentinel chickens for WNV.</li> <li>• Land managers identify ecologically sensitive areas.</li> <li>• Assess County demographics to assess sizes, locations and characteristics of at-risk populations</li> <li>• Perform passive surveillance for WNV infection in humans &amp; horses.</li> </ul>	<ul style="list-style-type: none"> <li>• Emphasize reducing mosquito breeding sites on public &amp; private property; coordinate efforts with state and other local agencies.</li> <li>• Secure funding for long-term public education &amp; program to assist at risk &amp; low income populations to reduce risks of WNV in the</li> </ul>

S:\WestNile\GO KIT\policy\wnv response plan, 3-1-07.doc

AND

M:\Manuals\MCVNC Policies and Procedures\wnv response plan for 2006-07 mosquito season, 1126(1) 3-1-07.doc

<ul style="list-style-type: none"> <li>• Conduct proactive media campaign that introduces “No Spray” option for the public, and that distinguishes between adulticide and aerial larvicide applications with language such as “spraying for adult mosquitoes.”</li> <li>• Begin public education at least one month prior to mosquito season.</li> <li>• Routinely communicate with state and local health departments re: WNV surveillance findings.</li> </ul>	<ul style="list-style-type: none"> <li>• Conduct targeted larvicide applications based on assessment of local populations of immature mosquitoes that have significant potential to carry and transmit WNV. Larvicide applications will consider and reflect and land managers’ sensitive area designations.</li> <li>• Promote source reduction activities by the public and personnel in appropriate agencies.</li> <li>• Monitor effectiveness of mosquito control activities.</li> <li>• Monitor human health impacts of mosquito control activities.</li> <li>• Collaborate with land managers to monitor environmental impacts of mosquito control activities.</li> </ul>	<p>home (e.g., window screens &amp; neighborhood clean-ups)</p>
--	---	---

**RESPONSE LEVEL B:**

*WNV IN THE COMMUNITY, LOW HUMAN HEALTH RISK*

**Criteria:**

- Seasonal and Short-Term Human Health Risk Assessment Score: 2.6 – 4.5
- WITH**
- WNV activity detected in Multnomah County or elsewhere in Portland Metropolitan Area

***NOTE: All actions described in RESPONSE LEVEL A can be used in RESPONSE LEVEL B if they are appropriate and do not conflict with LEVEL B activities.***

Additional Public Information and other Communication Actions at This Level	Additional Surveillance and Control Actions at This Level	Additional Assessment and Action Options at This Level
<ul style="list-style-type: none"> <li>• Notify mass media via news release re: positive WNV surveillance finding(s) utilizing public education guidelines in Level A.</li> <li>• Initiate local information hotline.</li> <li>• Enhance public education as appropriate (e.g., through links with communities/organizations, outreach workers, community health nurses in course of regular duties, posters/flyers, web updates).</li> <li>• Assure communication of vector surveillance data among Oregon’s local and state health departments.</li> <li>• Enhance education to address factors related to biology of mosquito species of concern (as identified by current local surveillance data).</li> <li>• Intensify public education on personal protection measures, including via mass media news releases.</li> <li>• Provide direct updates to affected communities.</li> <li>• Update information on WNV on Health Department web site.</li> </ul>	<ul style="list-style-type: none"> <li>• Intensify source reduction efforts as appropriate.</li> <li>• Intensify targeted larvicide applications as appropriate in light of surveillance findings.</li> <li>• Institute active human surveillance if:               <ul style="list-style-type: none"> <li>○ any human cases are detected,</li> <li style="text-align: center;"><b>OR</b></li> <li>○ multiple indicators of infection in birds/mosquitoes are positive,</li> <li style="text-align: center;"><b>OR</b></li> <li>○ positive indicators of infection in birds/mosquitoes are widely dispersed.</li> </ul> </li> <li>• Adjust surveillance on dead birds/sentinel chickens to assure these activities provide significant information about the extent and intensity of WNV infection in the community.</li> </ul>	<ul style="list-style-type: none"> <li>• Local Health Officer, Epidemiologist, and other senior public health staff are continuously involved in evaluation of surveillance results to:               <ul style="list-style-type: none"> <li>○ Assess disease transmission risk;</li> <li>○ Contribute to decisions on communication, surveillance and control .</li> </ul> </li> </ul>

**RESPONSE LEVEL C:**

***HUMAN HEALTH RISK FROM WNV IN LOCALIZED AREA(S)***

Criterion:

- Short-Term Human Health Risk Assessment Score: 4.6 – 4.7

***NOTE: All actions described in RESPONSE LEVELS A and B can be used in RESPONSE LEVEL C if they are appropriate and do not conflict with LEVEL C activities.***

Additional Public Information and other Communication Actions at This Level	Additional Surveillance and Control Actions at This Level	Additional Assessment and Action Options at This Level
<ul style="list-style-type: none"> <li>• Intensify public education, emphasizing preventive measures public can take to reduce transmission.</li> <li>• Publicize Health Department’s determination of <i>Human Health Risk in Localized Areas(s)</i> through mass media news releases.</li> <li>• Provide direct updates to affected communities using risk communication techniques to allay undue fear and anxiety.</li> <li>• Include appropriate</li> </ul>	<ul style="list-style-type: none"> <li>• Intensify surveillance for infected mosquitoes in localized area(s) of concern</li> <li>• Intensify targeted larvicide applications as appropriate in light of surveillance findings.</li> </ul>	<ul style="list-style-type: none"> <li>• Local Health Officer is directly involved in:               <ul style="list-style-type: none"> <li>○ Evaluation of all relevant data related to human health risks, and</li> <li>○ Decision-making related to ULV use, acting as the final decision maker.</li> </ul> </li> <li>• Health Department may consider focused ULV application as a tool to reduce further transmission to humans.</li> <li>• Health Department will take into account at least the following factors in considering possible ULV use in this situation:               <ul style="list-style-type: none"> <li>○ Potential effectiveness of ULV application in light of current information on mosquito ecology, mosquito population abundance, intensity of WNV infection, and adulticide resistance as determined by data from localized area(s) of concern;</li> <li>○ Time of year;</li> <li>○ Proximity of virus activity to at-risk human populations;</li> <li>○ Concerns of specifically impacted communities;</li> <li>○ Potential human health risks associated with ULV applications, and possible strategies to mitigate these risks;</li> <li>○ Potential environmental risks associated with ULV applications, and possible strategies to mitigate these risks; and</li> <li>○ Applicable environmental regulations.</li> </ul> </li> </ul>

<p>notification re: ULV spraying as part of public information approach.</p>		<ul style="list-style-type: none"> <li>• The Department will undertake ULV applications only in situations where: <ul style="list-style-type: none"> <li>○ It can perform post-application evaluation of effectiveness; post-application evaluation data will be used to decide whether to continue or stop adulticide use;</li> <li>○ There is a system in place for tracking and responding to potential adverse human health impacts;</li> <li>○ It has notified wildlife/habitat area managers about planned adulticide use so that those agencies and their partner agencies can collaborate with the Health Department in monitoring for environmental impacts as appropriate.</li> </ul> </li> <li>• After considering the above factors, if the Health Department chooses to perform ULV applications it will develop an application plan specific to the localized area(s) of concern. This plan will take into account: <ul style="list-style-type: none"> <li>○ Local geographic and topographic factors in the natural and built environments that could affect success of application (e.g., road patterns, buildings, vegetation, etc.),</li> <li>○ Weather and atmospheric conditions,</li> <li>○ Access to equipment and materials to allow ULV applications that are extensive enough that they are likely to be effective, and</li> <li>○ Timing of application (i.e., time of day) to maximize effectiveness and minimize human exposure.</li> </ul> </li> <li>• The localized ULV application plan will also address appropriate notification and information to be provided in the localized area(s) as well as the broader community.</li> </ul>
--	--	--

**RESPONSE LEVEL D:**

***HUMAN HEALTH RISK FROM WNV IN MULTIPLE AREAS OR THROUGHOUT COUNTY***

Criterion:

- Short-Term Human Health Risk Assessment Score: 4.8 or higher

***NOTE: All actions described in RESPONSE LEVELS A, B and C can be used in RESPONSE LEVEL C if they are appropriate and do not conflict with LEVEL D activities.***

Additional Public Information and other Communication Actions at This Level	Additional Surveillance and Control Actions at This Level	Additional Assessment and Action Options at This Level
<ul style="list-style-type: none"> <li>• Shift public education to focus primarily on preventive actions public can take to reduce transmission, and personal protective measures.</li> <li>• Publicize Health Department determination of <i>Human Health Risk in Multiple Areas or Throughout County</i> through mass media news releases and other educational approaches.</li> <li>• Shift communication channels to emphasize:               <ul style="list-style-type: none"> <li>○ Use of mass media appropriate to various communities, and</li> <li>○ Use of specialized communication pathways to address communities that tend not to utilize mass media.</li> </ul> </li> <li>• Use risk communication techniques to allay undue fear and anxiety.</li> <li>• Include appropriate notification re: adulticide spraying as part of public information approach.</li> </ul>	<ul style="list-style-type: none"> <li>• Shift foci of surveillance to:               <ul style="list-style-type: none"> <li>○ Monitoring overall mosquito population distributions and dynamics,</li> <li>○ Identifying potential targets for feasible vector control interventions, and</li> <li>○ Intensifying actions to identify and confirm human cases.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Health Department will decrease ULVuse, but may consider focused ULVapplication to address localized areas of increased transmission risk within the broader pattern of human health risk.</li> <li>• Any such localized use of ULV adulticides would follow procedures and restrictions as described in Level C.</li> <li>• Health Department will consider other community-level control actions (e.g., canceling outdoor public events that present unusual risk of WNV infection to attendees).</li> </ul>

## WNV GLOSSARY

### Note:

Multnomah County Health Department developed this *Glossary* to support the WNV Task Force as it created its recommendation to the Health Department. The contents represent Multnomah County Health Department perspectives, ideas and definitions, but they are closely aligned with common scientific usage.

### Terms

#### *Sentinel chickens*

Flocks of domestic chickens that are maintained in cages for the purpose of detecting transmission of mosquito-borne diseases. The county currently has 4 flocks located at Sauvie Island, SE Portland, N Portland and SW Portland. Each flock has about 6 number] chickens. Blood is taken from the chickens every two weeks, and is tested for signs of exposure to WNV and related viruses.

#### *Passive & active human and horse surveillance*

Surveillance is the process that public health agencies use to detect cases of disease in the community.

- In passive surveillance, a health department establishes which diseases, conditions or events are reportable, and who (e.g., medical providers, laboratories) is required to report them. The department then waits to receive reports.
- In active surveillance, a health department periodically contacts selected providers or agencies and inquires whether they have noted any occurrences of identified reportable events. For example, for active surveillance of possible WNV in humans, a health department might call selected neurologists (brain specialists) every week during the summer to see if they have seen any patients with encephalitis symptoms.

#### *Adulticide*

Chemical insecticides that are used to kill adult mosquitoes. Multnomah County would depend on the following adulticides in 2007 – all synthetic pyrethroids; some include synergists.

- Anvil 10+10
- Pyronil 525
- Scourge
  
- ULV (Ultra Low Volume) application. Adulticides are sprayed into the air with the intent of killing mosquitoes that are flying or resting in the sprayed area. ULV application is typically done with truck-mounted sprayers, but can be done with aircraft. ULV produces very small droplets that hang in the air for a few hours. ULV application is done during atmospheric conditions that promote slow drift of the adulticide for a distance of a few hundred feet from the path (or point) of application. By definition, ULV uses that smallest possible amount of adulticide that will kill adult mosquitoes. ULV can also kill other (“non-target”) insects.

#### *Larvicide*

Natural and synthetic insecticides that are used with the intent of killing immature mosquitoes during the phases of their life when they live in water. Multnomah County depends on the following larvicides in 2004:

- Biorationals
  - Altosid – various formulations
  - *Bacillus thuringiensis* var. *israelensis* (BTi) – various formulations
  - *Bacillus sphaericus* – various formulations
- Surfactant
  - Golden Bear Oil

Larvicides also kill immature forms of other (“non-target”) insects.

There are two basic techniques used for applying larvicides:

S:\WestNile\GO KIT\policy\wnv response plan, 3-1-07.doc

AND

M:\Manuals\MCVNC Policies and Procedures\wnv response plan for 2006-07 mosquito season, 1126(1) 3-1-07.doc

- Ground-based application. Larvicides are placed into bodies of water by vector control staff by hand or dispersed by backpack sprayers.
- Aerial application. Granular larvicides (e.g., BTi on corn-cob granules) are broadcast into bodies of water by spraying them from a helicopter. Aerial application has the benefits of being able to efficiently treat large areas or areas that are not accessible by Vector Control staff.

***Ecologically sensitive areas***

Areas that are maintained or preserved primarily for their habitat value, or that have local ecosystems that are particularly sensitive to disruption

***Environmental Impact Evaluation***

Environmental Impact Evaluation – a process using reasonable scientific judgment to:

- Define potential adverse impacts of proposed mosquito control activities on an ecologically sensitive area, and
  - Identify necessary, appropriate and practical modifications to the proposed mosquito control activities.
- This process should be carried out cooperatively between Vector Control and the agency responsible for stewardship of the ecologically sensitive area.

*NOTE: An Environmental Impact Evaluation is not the same thing as an Environmental Impact Statement (EIS) such as those required under the Endangered Species Act.*

***High***

Numerically-defined levels of immature or adult mosquitoes that are used as guidelines for control activities.

- Larval – 1 larva per standard dip (random 400 mL dip in body of water)
- Adult –more than 100 adult mosquitoes collected in an EVS (encephalitis viral surveillance), Gravid, or New Jersey Light trap in 8 hours

***Abundant***

Synonym for high

***Adjacent community***

The five counties adjacent to Multnomah County – Clackamas and Washington and Columbia Counties in Oregon, and Clark and Skamania counties in Washington

***Multiple***

More than one. When used in public health decision-making, the concept of multiple can also imply both the actual number of events and how fast they are increasing over time.

***Biorational***

Biorational pesticides are derived from a variety of biological sources, including bacteria, viruses, fungi and protozoa. They also include chemical analogues of naturally occurring biological chemicals such as pheromones and insect growth regulators (IGRs). These analogues are considered third-generation pesticides that are more environmentally sound and closely resemble or are identical to chemicals produced by insects and plants. Biorational products are quite different from conventional, broad-spectrum pesticides in that they are typically target-specific and have little to no acute impact on most non-target organisms.

***Synergist***

A substance added to a pesticide to enhance the effectiveness of the active ingredient. In adult mosquito control, synergists typically prevent detoxification of the adulticide by the mosquito.

***Chemical sensitivity***

The experience of having adverse effects after exposure to a given chemical or chemical combination.

S:\WestNile\GO KIT\policy\wnv response plan, 3-1-07.doc

AND

M:\Manuals\MCVNC Policies and Procedures\wnv response plan for 2006-07 mosquito season, 1126(1) 3-1-07.doc

***Corvid***

Member of the family of birds including jays and crows

***Equine***

Horse

***Vector***

A species that is capable of carrying disease organisms to another species

***Competent vector***

A vector species that is relatively efficient as a vector for transmitting a particular disease-causing organism

***Bridge vector***

A vector species that has a relatively wide range of host species with which it interacts and can transmit disease-causing organisms. Because they interact with different host species, bridge vectors can transmit disease among multiple host species (serving as a “bridge” between species).

***Amplification vector***

A vector that serves as a primary pathway for transmission of disease within a species or within narrow group of species. These vectors have relatively narrow range of host species to which it transmits disease-causing organisms. This results in increasing rates of infection within those hosts (“amplification”).

***Lag time*** (for human or horse infections)

The period of time between the actual transmission of a disease-causing organism (e.g., by a mosquito) and the occurrence and recognition of disease in a host (e.g., a person). In a broader sense, lag time can be thought of as the period between the ecological phenomena that drive disease transmission and the agency/societal recognition of significant disease transmission in a population. Example: The period between establishment of a high rate of mosquito infection with WNV, and reporting of a human case to a health department. Lag time is important in considering targets and potential effectiveness of proposed interventions.