



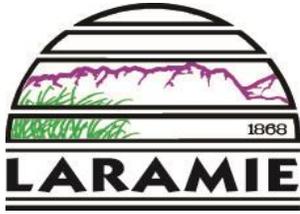
# **WEST NILE VIRUS PLAN**

**for the**

**City of Laramie, Wyoming**

As Amended and Adopted by the  
Laramie City Council

March 15, 2016



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## 2016 West Nile Virus Plan

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The City of Laramie Parks Division, Mosquito Control section has drafted the following plan in accordance with the guidelines set forth by The Centers for Disease Control (CDC) for the prevention of human cases of West Nile virus (WNV). These guidelines were most recently updated in late 2013 and are based on previous versions in 2000, 2002, and 2003. The document addressing this process is available through the Centers for Disease Control online at <http://www.cdc.gov/westnile/resources/pdfs/wnvguidelines.pdf>. (69 pages) The following excerpt is from the introduction (Page 10).

The unpredictable nature of WNV outbreaks necessitates the establishment and maintenance of surveillance systems capable of detecting increases in WNV transmission activity and the ability to respond to the surveillance data with effective, disease-reducing interventions. Such surveillance and control programs can be costly to maintain. However, it is important that communities with large human populations in areas with documented WNV risk establish and maintain surveillance for human cases and effective integrated vector management programs that incorporate environmental surveillance components capable of providing indicators predictive of human risk.

The 2016 West Nile Virus Plan will supersede the six (6) tiered hierarchy that was adopted by City Council in June of 2010 and is currently being implemented by the City of Laramie. The new plan concentrates effort on the use of mosquito surveillance as the most practical and timely surveillance system to detect the presence of WNV, but still accounts for the use of additional surveillance data when it is available. The 2016 plan places the risk of human infection associated with a positive sample from surveillance systems into a hierarchy that corresponds to a particular response. Some of the surveillance systems have been in place as a part of the City's mosquito control program to combat nuisance mosquitoes since the early 1970's. Others have been more recently instituted by the City, beginning in 2003. Still others are outside of the scope of mosquito control and will be administered by other agencies such as the State of Wyoming Department of Health, and the Wyoming State Veterinary Laboratory. Each of these organizations has an essential part to play in reducing the risk of WNV.

The City of Laramie nuisance mosquito control program will continue to operate and co-exist with the WNV control program. The strategies and control methods used are similar; however, different thresholds of mosquito activity will trigger control efforts in each program.

The following chart is "The Suggested Guidelines for Phased Response to West Nile virus", and is taken directly from the CDC document. This is a very broad outline and the following pages will identify specifics for the City of Laramie Program.

# Suggested Guidelines for Phased Response to West Nile virus

Set forth by the Centers for Disease Control

## City of Laramie West Nile Virus Plan

Risk Category	Probability of Human Outbreak	Definition	Recommended Response
0	None	No adult mosquito activity ( vector species )	<ul style="list-style-type: none"> <li>• Develop and review West Nile Virus response plan.</li> <li>• Review mosquito control program</li> <li>• Secure surveillance and control resources necessary to enable emergency response.</li> <li>• Maintain Source reduction projects</li> <li>• Review and update community outreach and public education programs.</li> </ul>
1	Low	<ul style="list-style-type: none"> <li>• Biting adult mosquitoes active (vector species)</li> <li>-or-</li> <li>• Epizootic (non – human WNV) activity expected based on onset of transmission in prior years.</li> <li>-or-</li> <li>• Limited or sporadic epizootic (non – human WNV) activity in birds or mosquitoes</li> </ul>	<ul style="list-style-type: none"> <li>• Response as in category 0, plus:</li> <li>• Conduct Integrated Vector Management program to monitor and reduce vector mosquito abundance.</li> <li>• Conduct environmental surveillance to monitor virus activity (mosquitoes, sentinel chickens, avian mortality, etc...)</li> <li>• Initiate community outreach and public education programs focused on personal protection and residential source reduction.</li> </ul>
2	High	<ul style="list-style-type: none"> <li>• Sustained transmission activity in mosquitoes or birds.</li> <li>-or-</li> <li>• Horse cases reported</li> <li>-or-</li> <li>• Human case or viremic blood donor reported.</li> </ul>	<ul style="list-style-type: none"> <li>• Response as in category 1 plus:</li> <li>• Intensify and expand adult mosquito control in areas using ground and/or aerial applications where surveillance indicates human risk</li> <li>• Intensify visible activities in community to increase attention to WNV transmission risk and personal protection measures.</li> <li>• Intensify and expand surveillance for human cases</li> </ul>
3	Outbreak in Progress	<ul style="list-style-type: none"> <li>• Conditions favor continued transmission to humans (i.e., persistent high infection rate in mosquitoes, continued avian mortality, seasonal mosquito population decreases not anticipated for weeks)</li> <li>-or-</li> <li>• Multiple confirmed human cases or viremic blood donors.</li> </ul>	<ul style="list-style-type: none"> <li>• Response as in category 2 plus:</li> <li>• Intensify emergency adult mosquito control program repeating applications as necessary to achieve adequate control</li> <li>• Monitor effectiveness of vector control efforts</li> <li>• Emphasize urgency of personal protection including use of repellents, through community leaders and media.</li> </ul>

**Level 0  
NO  
risk of  
human  
infection**

**This level of risk requires no specific action to control mosquito larvae or adults for WNV prevention. At this level WNV transmission risk is zero because mosquitoes are inactive during the winter season. Planning, preparation, and training are the important tasks to be undertaken at this level. City of Laramie responses to level 0 are as follows:**

Personnel have been trained in surveillance techniques for WNV and other mosquito borne illnesses at specialized training offered by CDC in 2002 and at the National West Nile conference in 2004. Additional training is conducted during state and regional meetings annually.

Mapping of larval mosquito sites has been an ongoing process for the City of Laramie program for over 25 years. Currently over 1,500 sites are cataloged. This data is necessary for both nuisance and vector mosquito control. Sites range from backyard fountains to 1,000-acre hay meadows. Most of these sites are outside the City Limits. The use of an interactive GIS database was implemented in 2012 to track sites and application data.

The adult mosquito surveillance program was instituted in 2004 for WNV detection and has evolved to enhance our ability to predict and respond to immediate threats. Surveillance trapping at 25 selected locations, utilizing two different kinds of traps over a wide geographic area provides detailed analysis of mosquito abundance and virus activity.

Larviciding and adulticiding equipment and programs are in place for the City's nuisance mosquito program as well as the vector control program. The same equipment and control strategies are often utilized for control of vector mosquito species even though the seasonality of population peaks are different and larval habitats are often different.

Source reduction is an Integrated Vector Management (IVM) method, which eliminates larval habitat. This can range from something as simple as a homeowner dumping rainwater out of an empty bucket, to an irrigation project costing millions of dollars. Source reduction is the most permanent and cost effective form of mosquito control long term but often sources cannot be eliminated due to wetland preservation laws and costs associated with large projects on private lands. Source reduction will be specifically targeted at sites that are known *Culex tarsalis* habitats when practical.

The City of Laramie will apply for grant funding annually through the State Department of Agriculture to fund surveillance supplies, technicians and mosquito control chemicals to help further protect our citizens. This funding source has been available since 2002 but is not guaranteed and must be approved by the legislature each biennium.

Community outreach is ongoing including: Public service announcements to media, newspaper articles, radio interviews, informative signs, City web page, and public informational meetings.

The City Chemical Hotline provides daily city wide information on Mosquito Control applications as well as City Parks Division Integrated Pest Management applications on City properties. The application schedules are updated at 4pm daily during the appropriate seasons. Call 721-5056 for a recording of planned applications. This same information is now also available via internet utilizing the City web page at <http://www.cityoflaramie.org/index.aspx?nid=485>

Risk Category

City of Laramie Response

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**Level 1  
LOW  
risk of  
human  
infection**

**Risk Level 1 is established each spring as female vector mosquitoes leave winter hideaways in search of blood meals; when animals or mosquitos test positive for WNV; or when animal positives are expected based on historical activity levels. The risk associated with this level is low because the virus transmission cycle occurs naturally in birds and mosquitoes but may not move to other hosts outside that cycle.**

**WNV has become established in our region and it is anticipated that the potential for animal and human infections can recur on an annual basis.**

**City of Laramie responses to level 1 are as follows: Continue activities of risk level 0, plus:**

**Larval control** will be employed as a normal part of nuisance mosquito control during the spring floodwater and irrigation season. Larval control is recommended by CDC and the Environmental Protection Agency (EPA) for many reasons: Environmentally friendly treatments are available for larval control; it is more efficient to control mosquitoes in confined larval habitats rather than the huge acreages that require treatment once mosquitoes emerge and disperse; larval control reduces the risk of adult mosquitoes spreading disease. Larval control targeted at nuisance mosquitoes will also control vector mosquitoes when they share larval habitats. Targeted larval control will be conducted specifically in vector species habitats later in the season when floodwaters recede.

**Residential adult mosquito control** if surveillance indicates there is a likely potential for human risk to persist or increase. This control will include city wide applications of adult control insecticide from truck mounted ultra-low volume foggers. This is the same method and chemical presently used to control nuisance mosquitoes. The object of these applications is to limit mosquito numbers and break the cycle of mosquito-bird virus transmission. The City is divided into four zones that can each be treated during an evening shift. (South of Grand and east of the Union Pacific Railroad tracks, Aquifer Protection Overlay zone, North of Grand and east of the Union Pacific Railroad tracks, and West of the Union

Pacific Railroad tracks.) Normally the South Zone and the Aquifer Protection Overlay zone are done on the same night since they are the smallest of the four zones and are geographically related. The applications will be made to each of the four zones of the City on a rotating basis every 72 hours, until each zone has received three treatments. This level of application is normal and used for nuisance mosquitoes as well. Surveillance traps in each area will be closely monitored to determine if the treatment is having the desired effect.

**Adult mosquito surveillance** will be used to track the abundance of vector mosquitoes and determine if those mosquitoes are infected with WNV. Mosquito surveillance has become the standard platform for virus detection due to the decrease in the availability of other surveillance methods. Two types of mosquito traps will be used to sample mosquitoes at 25 permanent locations in and around Laramie as well as utilizing multiple roving traps at experimental sites. Sample populations will be tested with the City's RAMP system to determine if WNV is being transmitted within the mosquito-bird cycle. Samples that test positive with RAMP will be confirmed by PCR at the Wyoming State Vet Lab. Mosquito species other than the known vectors may also be tested to determine if other species are involved in the transmission cycle.

Samples will also be tested from surveillance sites operated by the Big Laramie Mosquito Control District, the Little Laramie Mosquito Control District and the Town of Rock River. This broadened surveillance area will enhance the safety of many Albany County residents and provide the City with greater advanced warning of vector populations that could migrate into the City. Timely detection of virus in vector mosquito populations will allow pre-emptive targeted applications to prevent widespread infections.

**Surveillance of avian species** for WNV has been an important diagnostic tool since 2002. Federal funding for this program was cut during the 2007 season leaving this surveillance tool in the hands of state and local agencies. City of Laramie will continue to collect potentially useful specimens for testing. Currently American Crows are the only bird that can be tested with the City's Rapid Analyte Measurement Platform (RAMP). Any samples which test positive with RAMP will be submitted to the Wyoming State Veterinary Laboratory for confirmatory testing. Call mosquito control at 721-5258 to report dead birds.

**Surveillance of equine species** for WNV has been conducted by the Wyoming State Vet Lab (WSVL) since 2002. Positive test results on horses are reported to the animal owner and health officials in the local area when appropriate. Many of the state's horses have been vaccinated. The vaccination program has decreased the number of horses that could potentially be infected and has lessened the usefulness of equine infections as a sentinel of disease transmission. WSVL still reports equine cases through the State Health Department's WNV website [www.badskeeter.org](http://www.badskeeter.org) when infections do occur. Mosquito control will monitor any equine infections reported within Albany County and include that data in assessing the risk of human infection. Contact your

veterinarian for information on horse vaccinations and testing of suspected WNV cases.

**Human Surveillance** has been conducted by Wyoming Dept. of Health each summer since 2002. General information regarding human infections is reported at the State Health Department's WNV website [www.badskeeter.org](http://www.badskeeter.org), and at the Center for Disease Control website- [www.cdc.gov/ncidod/dvbid/westnile](http://www.cdc.gov/ncidod/dvbid/westnile). Mosquito control will monitor any human infections reported within Albany County and include that data in assessing the risk of human infection.

**Inventory and mapping of specific larval sites** containing *Culex tarsalis* mosquitoes was begun in the 2002 season and is ongoing. *Culex tarsalis* is considered the key vector for the Laramie area. Surveillance to determine if other important vector species live in the Laramie will also be conducted.

**Community outreach** includes public appearances at the annual Ag Expo (reaches all 3<sup>rd</sup> grade students in Albany County), public meetings and club events as requested by the public. Signage that relates the current risk of WNV infection and suggestions for prevention are placed in City recreation areas, golf courses and at the Albany County Public Health office. Articles and press releases with information to educate citizens about risks and benefits of an integrated mosquito control program and personal protection are published weekly. Information on scheduled applications of treatments and mapping of recent treatments will be posted daily on the City web page.

Risk Category

City of Laramie Response

**Level 2  
HIGH  
risk of  
human  
infection**

**Risk level 2 is reached when: Sustained WNV transmission activity is documented in mosquitoes or birds; Horse cases reported; or a Human infection or viremic blood donor is reported. The risk is rated HIGH because the virus is persistent in nature and has ample opportunity to infect multiple hosts and multiple species.**

**Responses to level 2 are as follows: Continue activities from levels 0, 1 plus:**

**Residential adult mosquito control** applications would be increased to include each of the three zones once every 36 hours. Permethrin based adult mosquito control insecticide would be applied from truck mounted ultra- low volume foggers using extra trucks on the evening shift. It is possible that nuisance control and vector control will overlap in the same time frame. This will not however result in multiple applications. Surveillance traps will be monitored to determine the effect of the application. The threshold to suspend or reduce this application level will be when surveillance indicates that the risk factors have decreased.

**Aerial adult mosquito control in rural areas** may be considered if

surveillance shows high populations of vector mosquitoes or sustained viral infection in areas adjacent to the City. The object of this application would be to extend a buffer zone around the City that would reduce the number of vector mosquitoes that could easily migrate into the City. This application would also be targeted to break the cycle of mosquito-bird virus transmission in the area and lower the risk of infection.

Organophosphate insecticide will be applied at the label mandated rate. This treatment and rate of application is also commonly used when reducing the number and migration of nuisance mosquitoes. Surveillance traps will be monitored to determine the effect of the treatment.

**No-Spray** zones may be suspended if surveillance indicates that the risk of infection is not reduced by these treatments. The City would make every effort to pre-notify affected property owners of the suspension.

**Public education** at this stage will be directed towards information that will help citizens understand the risk and emphasize personal protection measures that will reduce the risk of contact with infected mosquitoes. This could include various media outlets: Paid advertisements; Print Media; Press releases; Web page updates; Twitter; Facebook; Radio PSA; and Public access TV. Topics would include information on repellents, clothing, window screens, and changing activities or schedules to avoid peak mosquito activity times. This information is especially important for the elderly since they are the group most likely to have serious illness associated with WNV infection. Work with Albany County Public Health, Epsom Center, and elder care facilities to educate their clientele.

**Consider cancellation or re-scheduling of City sponsored events** at times that correspond with peak mosquito activity. (Examples: Evening softball, soccer, and baseball games).

Risk Category

City of Laramie Response

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**Level 3  
OUTBREAK  
In  
Progress**

**Risk Level 3 is reached when multiple local human cases are confirmed and surveillance indicates conditions are still favorable for transmission to humans despite all previous control efforts. This level would be considered an epidemic outbreak in progress. It requires the highest possible level of mosquito control, public awareness and multi-agency teamwork to immediately decrease the risk of infection.**

**Responses to level 3 are as follows: Continue all activities from level 0, 1, 2, plus:**

**Aerial adult mosquito control to rural areas** targeting areas of high vector mosquito numbers as outlined in level 2.

**Citywide aerial application of adult mosquito control chemicals** may be necessary to break the transmission cycle and eliminate vector transmission to human and animal hosts. This application would be made using a permethrin based adult control insecticide in a blanket coverage

pattern to establish control citywide. This type of application must be pre-approved by the FAA and a flight plan must be on file before the application can be made. The FAA requires strict guidelines be followed regarding citizen notification of the operation and sets rules regarding pilot and aircraft certification for safety. The City requires pre-arrangement with the FAA annually by our contractor for this event. Aerial application over the City would be a last choice alternative when faced with serious health risks from WNV to Laramie citizens. This type of application requires constant monitoring of all surveillance systems to determine when the risk has been reduced and could require multiple applications.

**Suspension of No Spray Program** to insure complete coverage of all areas within the City limits. (May have been enacted in level 2) The City would make every effort to pre-notify affected property owners of the suspension.

**Cancellation or re-scheduling of City sponsored events** at times that correspond with peak mosquito activity. (Examples: Evening softball, adult and youth soccer, volleyball, and baseball games).

**Public information and education is expanded** to include television, radio, newspapers, and any other avenues available. Information may be broadcast using public access TV to keep citizens up to date on current events, pesticide applications and infection prevention strategies. Mailings may be included with city utility bills. Public officials utilized to provide information on vector avoidance and use of repellents.