



## Three Rivers Mosquito and Vector Control

651 Market Street

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### INTEGRATED PEST (MOSQUITO) MANAGEMENT PLAN City of South Bend, Washington Created 14 March 2014

#### A. Plan Objectives

1. Ensure that discharges from mosquito control activities do not cause or contribute to a violation of Water Quality Standards for Surface Water of the State of Washington (chapter 173-201A WAC), Ground Water Quality Standards (chapter 173- 200, WAC), Sediment Management Standards (chapter 173-204 WAC), and human health-based criteria in the National Toxics Rule (*40 CFR* 131.36).
2. Adequately control adult mosquitoes while minimizing the incidental discharges to waters of concern.
3. Document the decision process of where, when, and how mosquito control is implemented within a TRMVC's permit coverage area for the City of South Bend, Washington.

#### B. General Information

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**Physical Address:**  
651 Market Street  
Klamath Falls, Oregon 97601-6252

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**Permit coverage area;**  
Area affecting the City of South Bend, Washington

**Map showing permit coverage area**  
(attached)

**Emergency reporting** (e.g. pesticide exposure or spills to waters of the state)  
All reportable spills will be reported to CEMTRAC (800) 424-9300



## C. Surveillance

### Larval Mosquito Surveillance

Larval mosquito surveillance will be conducted through the use of mosquito dipper counts. Sources are inspected bi-weekly; mosquito larval counts are obtained and recorded in the GIS data base. Larval surveillance is used to justify larval control. The following minimal information is recorded with each Larval Mosquito Surveillance location:

- |                   |                                |                   |
|-------------------|--------------------------------|-------------------|
| 1. GPS location   | 5. # of dips                   | 8. Species        |
| 2. Date           | 6. Average # of larvae present | 9. Inspector Name |
| 3. Time           | 7. Instar                      |                   |
| 4. Site Condition |                                |                   |

Post inspections are conducted at each source treated in order to determine efficacy and any non-target affects.

### Adult Mosquito General Surveillance

When TRMVC applies pesticides for the control of adult mosquitoes, TRMVC implements an adult mosquito surveillance program. Adult mosquito surveillance that TRMVC includes with our project is, but is not limited to:

1. Complaints by residents and City Staff
  - a. Service requests will be utilized to focus control efforts and locate mosquito sources. Requests will be mapped and recorded in the GIS data base and used in conjunction with landing rates and trap counts to justify control operations.
  - b. TRMVC and City staff observations will be incorporated in the surveillance to justify all control operations.
2. Historical data
3. Landing rate counts, counting and recording the number of female mosquitoes landing on the inspector in 60 seconds.
4. Mosquito ID will be conducted by TRMVC to identify the species in order to help pinpoint the sources.
5. Mosquito population density, using landing rate counts throughout the control project, mapping the locations of densities and recording the data in a Geographic Information System (GIS database).
6. Mosquito trapping (e.g. female mosquito counts) utilizing CDC Light traps when landing rates do not confirm resident complaints.

## D. Mapping

TRMVC utilizes ESRI based Geographic Information System (GIS) data bases for all mapping, record keeping and data analysis.

TRMVC implements a mapping/tracking system utilizing GIS and GPS technology to document the following:

1. Mosquito breeding sites,
2. Mosquito larval inspections,
3. Mosquito larval treatment sites,
4. Adult mosquito inspections, surveys and landing rates,
5. Adult mosquito treatment locations and records,
6. No-spray zones including organic farms, beehives, requests for no-spray, etc.,
7. Chemically sensitive individuals/properties,
8. Properties requested to be on the “opt-out”/”No spray” list,
9. Spray buffer zones,
10. Any endangered species critical habitats within the coverage area, and
11. Other relevant information decided mutually between the City of South Bend and TRMVC.



## **E. Action Thresholds**

### **Larval Mosquito Action Thresholds**

TRMVC conducts larval surveillance prior to any larval control operations. Industry standard mosquito dipper count methods are utilized. Dips are conducted throughout the sources. At least one (1) mosquito larvae is required in three (3) dips, in order to justify larviciding the source.

### **Adult Mosquito Action Thresholds**

TRMVC conducts adult mosquito surveillance as outlined in the above Surveillance Section of this document. TRMVC has established the following thresholds in order to justify adult mosquito control operations.

TRMVC treats for adult mosquito populations when and where mosquito landing rate thresholds meet and/or exceed three (3) mosquitoes per minute. Adult mosquito control will also occur when and where CDC light trap counts meet or exceed three (3) mosquitoes per trapping hour (sunset to sunrise). i.e., if traps are set for five (5) hours, a minimum of fifteen (15) mosquitoes must be present in the light trap. Complaints and service requests alone do not justify control of adult mosquitoes. All complaints and service requests are investigated, surveyed, and adult control is only justified when verified through landing rates and/or CDC light trap counts.

### **Action Thresholds for pesticide-resistant-mosquito population**

Action threshold for any pesticide-resistant-mosquito population remains the same above.

If mosquito populations are not reduced during post-treatment inspections, and it is determined that there is resistance through the conducting of resistance bioassays, TRMVC will request to add an alternate adulticide with another mode of action.

## **F. Mosquito Control Methods**

TRMVC only implements Integrated Mosquito (Pest) Management (IMM) programs. Mosquito control methods that are focused on for the City of South Bend, Washington include:

### **Physical Control and/or Source Reduction**

TRMVC will work with the City of South Bend, Washington to identify mosquito sources that can be reduced or eliminated, thus reducing the need for mosquito control pesticides and provide the City recommendations that can be accomplished by their authority. Any source that can be reduced or eliminated by TRMVC will be addressed by TRMVC staff including dumping standing water and recommending to property owners what they can do to reduce mosquitoes. Door hangers are distributed to homes where standing water is identified on properties that could be easily eliminated by the resident.

City Staff has established a vegetation management plan which will work in conjunction with mosquito control operations. City Staff has also implemented cleaning of storm drains to improve water flow and reduce mosquitoes and the need for mosquito pesticides.

### **Biological Mosquito Control**

Isolated backyard ponds are promoted when properly maintained. Some homeowners have stocked their ornamental ponds with guppies and other goldfish species. City ponds have been stocked with local fish, which have helped reduce mosquito larvae as well as giving residents recreational fishing spots for children. While this could be debated as either biological or pesticide control, TRMVC will utilize *Bacillus thuringiensis israelensis (Bti)*, *Bacillus sphaericus (Bs)* and *Spinosad* as biological pesticides as a primary treatment.



### **Pesticide-Based Larval Mosquito Control**

TRMVC utilizes *Bacillus thuringiensis israelensis* (*Bti*), *Bacillus sphaericus* (*Bs*), *Spinosad*, *Monomolecular Films* and *Methoprene* for larvicides. (Labels attached)

All used pesticide labels are available at <http://www.sbwmc.com/products-used.html>

Catch basins that produce mosquito larvae will be treated with *Altosid*® XR and/or *Natular*™ XRT (Labels attached)

Granular and liquid *Bti* formulations are applied with Maruyama and similar blowers. Liquid and water dissolvable granular *Bti* and *Bs* and methoprene are also applied utilizing a 12-volt powered sprayer mounted to both a pick-up truck and an ATV.

All larval control applications are only used in accordance with the label and with justification in accordance with threshold levels.

All equipment is routinely maintained in accordance with the equipment manufactures recommendations and pesticide labels and calibrated to ensure the optimized operational conditions.

### **Pesticide-Based Adult Mosquito Control**

TRMVC utilized a permethrin/PBO pesticide *Aqualuer*® 20-20. *Aqualuer*® 20-20 is a water-based adulticide that when applied in accordance with the label, poses little risk to non-target species.

TRMVC applies permethrin at mid to low label rates, as needed, utilizing both an ATV mounted London Fogger MAG and a Clarke model Cougar ULV fogger, with variable flow technology and both equipped with GPS/GIS tracking systems for accurate record keeping.

Foggers are calibrated monthly and after each service, ensuring droplet sizes are within the specifications of the label.

All ULV equipment is routinely maintained in accordance with the equipment manufactures recommendations and pesticide labels and calibrated to ensure the optimized operational conditions.

#### **G. Pesticide Resistance Monitoring**

TRMVC conducts resistance/efficacy testing once a year utilizing the bottle bio-assay methods as approved by the Centers for Disease Control. ([Guideline for Evaluating Insecticide Resistance in Vectors Using the CDC Bottle Bioassay](#))

#### **H. Public Education and Outreach**

TRMVC produces public information brochures and pamphlets for distribution for our clients. In addition, TRMVC maintains a website for the City of South Bend's Mosquito Control Program ([www.sbwmc.com](http://www.sbwmc.com)). This website contains information about our products, techniques, schedules, what homeowners can do to reduce mosquitoes around their property and thus reduce pesticide application needs, and documents that are available for public information and request. TRMVC is also including links to sites such as the Washington Department of Ecology and scientific and professional organizations with research and papers on pesticides used, techniques and general mosquito control information.

TRMVC hands out informational doorhangers to help homeowners identify mosquito breeding sites on their own property.

We are also implementing an educational program for South Bend, to teach school aged children how to help reduce mosquitoes themselves, in hopes that they relay it to their parents and neighbors.



**a. Notification**

All treatments/inspection dates will be published to the District’s website. Anyone requesting to be notified by text, phone or email can request to be added to the notification list via phone, email, text or website notification form. An automated message will be sent out prior to treatments being conducted.

**I. New Staff Training and Continuing Training for Existing Staff**

TRMVC maintains licensing and Continued Education Credits through National, State and local events, training and conferences. All new staff is trained through book work required testing and in the field with hands on training and demonstration, by a trained and qualified supervisor for two (2) or more weeks. New staff is only allowed to work on projects once the new employee has successfully passed State licensing exams and have demonstrated their ability to professionally conduct mosquito control surveillance and control operations.

**J. Record Keeping and Reporting**

TRMVC maintains records for all inspections/surveys and treatments utilizing a GIS database and linked to GIS shapefiles. The following information (and more) is recorded and retained for 5 years:

- |                    |                       |                    |
|--------------------|-----------------------|--------------------|
| 1. Location by GPS | 6. Active ingredients | 11. Number of Dips |
| 2. Date            | 7. Area treated       | 12. Species        |
| 3. Time            | 8. Weather data       | 13. Adult Counts   |
| 4. Equipment type  | 9. Technician         |                    |
| 5. Amount used     | 10. Larval Counts     |                    |

**K. Signature Requirement**

“I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information in the IPM is, to the best of my knowledge and belief, true, accurate, and complete and will be updated as necessary. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. Unless the Department of Ecology Permit has more stringent requirements, all FIFRA label directions and requirements will be followed.”

Edward S Horvath

Name

Owner/Vector Ecologist

Title

  
Signature

25 April 2023

Date



# Pesticide Labels