



Three Rivers Mosquito and Vector Control

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INTEGRATED MOSQUITO MANAGEMENT PLAN

City of South Bend, Washington

Updated 15 February 2017

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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Three Rivers Mosquito and Vector Control
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Physical Address:

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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

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 counts, counting and recording the number of female mosquitoes landing on the inspector in 60 seconds.
4. 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).
5. Mosquito trapping (e.g. female mosquito counts) utilizing CDC Light traps when landing rates do not confirm resident complaints.
6. Mosquito ID will be conducted by TRMVC to identify the species in order to pinpoint the sources.

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.

D. Mapping

TRMVC utilizes an ESRI based Geographic Information System (GIS) data base 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. Spray buffer zones,
8. Any endangered species critical habitats within the coverage area, and
9. 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. Mosquito dipper count methods are utilized. Dips are conducted throughout the sources. At least one (1) mosquito larvae is required in 3 or more dips, in order to justify larviciding.

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 (evening to sun rise). 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.

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 things they can do to reduce mosquitoes. 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

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. (Labels attached)

Pesticide-Based Larval Mosquito Control

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

Bti with Ffast™ technology is applied at mid to high label rates, as needed, utilizing both a Clarke model Cougar ULV fogger, with variable flow technology and an ATV mounted Dyna-fog fogger or London Fogger MAG, both equipped with GPS/GIS tracking systems for accurate record keeping.



Catch basins that produce mosquito larvae will be treated with Altosid® XR and/or Natular™ XRT.

Granular and liquid *Bti* formulations are applied with Maruyama blowers. Liquid *Bti* 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 and calibrated to ensure the optimized operational conditions.

Pesticide-Based Adult Mosquito Control

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

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

Foggers are calibrated weekly, ensuring droplet sizes are within the specifications of the label.

Maintenance is routinely conducted to ensure the machines are in top operating condition.

G. Monitoring for Efficacy/Resistance

TRMVC conducts resistance/efficacy testing once a year utilizing bio-assay methods as approved by the Centers for Disease Control.

H. 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 | |

I. Education and Outreach

TRMVC produces public information brochures and pamphlets for distribution for our clients. In addition, TRMVC is producing a website for the City of South Bend's Mosquito Control Program and will be operational prior to the start of the mosquito season. This website will contain 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.



J. 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.

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 IMM 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

15 February 2017

Date