



**Cowlitz County
Mosquito
Control District**

Integrated Mosquito Management Plan for Cowlitz County

Our Mission Statement:

We will minimize mosquito borne disease by reducing mosquito populations in Cowlitz County.

Policy Statement:

It is impossible to eliminate all mosquitoes from the county. But, by larviciding those areas where mosquitoes breed, we can greatly reduce mosquito populations, and thereby reduce the chance of mosquito borne disease. Adult mosquito treatments will only be made when public health is threatened by large populations of mosquitoes that cause extreme annoyance or carry disease.

Office Location:

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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 who manages the system and gathered the 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.

**Trevor Schneider
Program Manager
Cowlitz County Mosquito Control District**

Date: 8-15-2019

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**Cowlitz County
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Integrated Mosquito Management

Introduction:

Cowlitz County Mosquito Control District is designed to keep mosquito populations below levels where they become a nuisance or a threat to public health throughout Cowlitz County.

The District utilizes Integrated Pest Management (IPM) to formulate operation strategies and respond appropriately to mosquito borne disease threats. IPM is an effective, integrated strategy endorsed by the Department of Ecology and the Centers for Disease Control (CDC) that emphasizes using multiple methods to achieve long-term control of mosquito populations before they become adults and are able to spread disease. Prevention is achieved through public education, surveillance, monitoring of treatment threshold levels, and control activities that use the least toxic and most environmentally friendly methods available.

It is expected through continual community involvement, changing circumstances in mosquito populations and mosquito borne diseases that the IMM can be adapted to respond to those changes.

I. Surveillance - Adult and Larval

CCMCD utilizes a number of surveillance methods: Crews go out in the field sampling standing water for mosquito larva and investigate service requests from the public in response to mosquitoes or standing water concerns. Lab Technicians trap and identify the populations and specific species of adult mosquitoes. They also test adult mosquito samples for WNV using the RAMP test in the district lab and maintain collection data on mosquitoes and mosquito-borne diseases. CCMCD routinely communicates with other regional mosquito districts, sharing information about mosquito populations and species as an important part of surveillance. CCMCD reports all trapping data including RAMP test results to the Zoonotic Disease Program, Environmental Public Health Sciences, and Washington State Department of Health.

Larval Surveillance

Immature mosquito surveillance can provide early warning to forecast the size of future adult mosquito populations and provide estimates of control effectiveness. The data collected from dipping immature mosquito breeding sites are recorded and maintained. The sites that are found positive for mosquitoes will be mapped by Global Positioning System (GPS). The mosquitoes collected are brought to the CCMCD laboratory for identification. When sufficient data is obtained, the information will be utilized in the control process.

Adult Mosquitoes Surveillance and Testing

Monitoring adult mosquito populations provides essential information on population size, infectivity rate and effectiveness of larval and adult control efforts. The primary method used by CCMCD to sample adult mosquito populations is the EVS trap. CCMCD has predetermined locations for placement of these traps, mapped using GPS. The mosquitoes collected in these traps will be returned to the CCMCD laboratory for identification and WNV testing using a RAMP test. All trapping data and test results are reported to the Zoonotic Disease Program / Washington State Department of Health (DOH). Results from these tests will be a key factor in determining the areas requiring adult control measures.

Washington State Department of Health WNV surveillance.

The Zoonotic Disease Program (ZDP) at the Washington State Department of Health, collects all WNV surveillance and test results throughout the state involving mosquitoes, birds, equines, and humans. The ZDP reports these results to all county health departments and mosquito control districts in the state.

Public Requests

We also have a Phone "Hot Line" and a request form on our website where citizens can report mosquito problems in their area. All of these requests initiate the following actions.

- A return call is made to gather more information.
- A staff member visits the location to talk with the property owner and inspect the area for larva development sites.
- An adult trap is set in the area.
- When sufficient data is obtained, the information will be utilized in the control process.

II. Mapping and Database

Larval Development Sites: We have identified over 1,000 sites where mosquito larvae have been found in our county. The sites are entered in our mapping program with such data as the GPS coordinates, Address, site type, etc.

Adult Trap Sites: We have identified over 200 sites throughout the county where we set adult mosquito traps. The sites are entered in our mapping program with such data as the GPS coordinates, Address, site type, etc.

Larval and Adult Surveillance records: Surveillance records are kept in our database and associated with the corresponding larval or trap sites in our database and mapping program.

Larvicide and Adulticide treatments: Treatment records are kept in our database and associated with the corresponding larval or trap sites in our mapping program. Treatment records contain the information required by Washington Department of Agriculture and NPDES permit. Adulticide treatments are mapped via onboard GPS system in our spray trucks and recorded in our database and mapping program.

No Spray Zones: A No Spray list is maintained for the district, it is displayed on our bulletin board and distributed to all staff. The locations of the areas of No Spray are recorded in our Mapping program and database. The no spray list contains a combination of State Chemical Sensitive Persons and citizens of the county who request no spray such as Apiary and Organic Farms.

Areas of Concern: There is currently no critical habitat or endangers species locations within the district. If areas are reported these will be immediately communicated to the staff and entered into the district's database and mapping program.

Reports: At the end of our season the amount of each product used is reported to the Washington State Department of Ecology. This report complies with our NPDES permit.

III. Action Thresholds

Larval Control: One or more larvae or pupae per dip based on the average from 10 dips. Mosquitoes are identified and data is recorded. Site monitored later and only treated if threshold is again met or exceeded.

Adult Control: Twenty or more adult mosquitoes in one EVS trap during one night. Mosquitoes are identified and data is recorded. Those areas where we do adulticide are checked later with an EVS trap and only treated again when the trap count exceeds 20 or more mosquitoes in one night.

IV. Mosquito Control Methods

Control of mosquitoes using the principles of IPM includes 1) breeding source reduction, 2) habitat modification, 3) larviciding and 4) adulticiding. Non-chemical methods are always considered first, but if a chemical pesticide is required, then it will be the lowest toxicity (and least persistent) pesticide that is efficacious on mosquitoes.

Source Reduction and Habitat Modification: Whenever possible CCMCD will reduce mosquito breeding sites through the elimination of standing water. We urge residents to eliminate breeding sites around their homes and commercial properties and to report potential standing water in their neighborhoods. Additionally, CCMCD will collaborate with local, state, federal, and private agencies to identify water sources that create mosquito breeding problems and reasonable efforts will be made to reduce mosquito development in these zones.

Larval Control: If surveillance indicators meet established thresholds, the district will reduce development of larvae and pupae by selective use of larvicides in areas that cannot be emptied or drained. CCMCD will consider the toxicity and environmental impact when selecting pesticides and will make efforts to choose the least toxic and environmentally friendly pesticide that meets treatment requirements. The accuracy, quality and efficacy of the larvicide application will be closely monitored to ensure compliance with Federal and State guidelines. The materials to be used are given in Appendix G along with pertinent information on the use of each product.

All larvicide application equipment are cleaned and calibrated on an annual basis or more frequent if needs arise. Equipment maintenance is performed on an annual basis or as needs arise. Equipment checks are preformed before every use.

Adult Control: If surveillance indicators meet established thresholds, adult mosquitoes will be controlled through the use of adulticides. Mosquito density and distribution, mosquito species, persistence of WNV activity, weather, time of year, and the proximity to human populations will be carefully considered in determining the necessity for adult mosquito control. The accuracy, quality and efficacy of the adulticide application will be closely monitored to ensure compliance with Federal and State guidelines. When adulticiding is required, the least toxic products possible will be applied using truck-mounted Ultra Low Volume (ULV) sprayers. If a major outbreak of WNV should occur in Cowlitz County, consideration would be given to aerial ULV application. The materials to be used are given in Appendix G along with pertinent information on the use of each product.

All adulticide application equipment are cleaned, calibrated and droplet tested on an annual basis or more frequent if needs arise. Equipment preventative maintenance is performed on an annual basis or as needs arise. Equipment checks are performed before every use.

V. Pesticide Resistance Monitoring:

Larval Mosquitoes: Sites are checked after larviciding to determine if treatment was effective and whether resistance to these products is developing.

Adult Mosquitoes: Several times during the season we set EVS traps both before and after adulticiding. This documents efficacy and will reveal resistance if it develops.

VI. Public Education and Outreach

Getting the message out to the public regarding personal prevention and breeding source reduction is a major part of our IMM Program. The more people know about mosquitoes and WNV, the better they can protect themselves and help in reducing breeding sources.

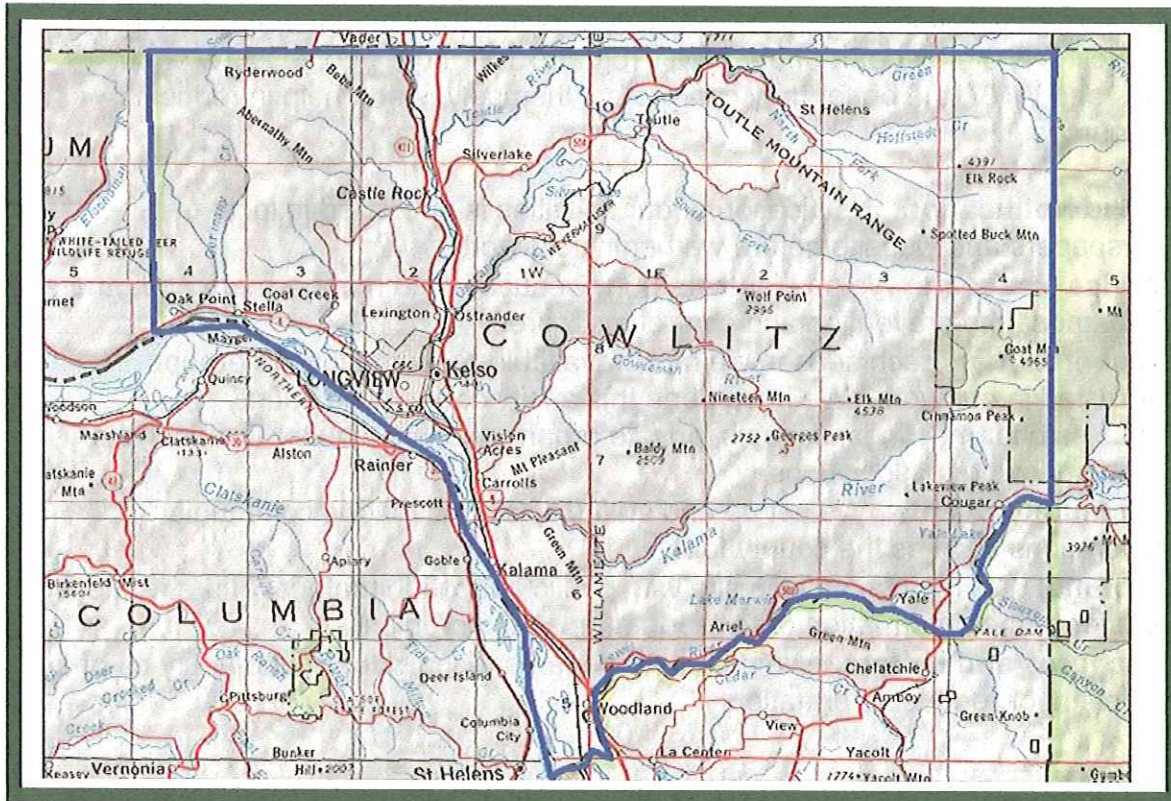
- **Public Notification:** Notification of our activities is published in local newspapers and website before we begin field work.
- **Service Requests:** We provide community education to homeowners and others about mosquito prevention and control measures
- **Presentations:** Each season we make available presentations to groups interested in our work. We have done this at city council and county commissioner meetings, schools, private organizations such as Kiwanis, Rotary, and homeowner associations.
- **Community Events:** We set up and staff displays at various community celebrations such as the county fair.
- **Web Site:** We maintain a web site with public education material and a request form for further information or to report a mosquito problem.
- **Brochures and Letters:** We provide brochures to individuals who notify us of a complaint or request information.

VII. Training:

All staff Maintain a state pesticide license or work under the supervision of a state licensed pesticide applicator. Staff are also offered the necessary training to meet state certification requirements. Staff members attend local, regional and national mosquito association conferences to learn new technological advances. Specialized training in mosquito identification and surveillance, equipment maintenance and use, and other training is provided as needs are identified. Staff are required to review and understand district policy and procedures. Additionally, anyone who handles mosquito control products must attend our annual and monthly staff and safety meetings where we review label and SDS data and discuss the requirements to legally and safely apply each product.

APPENDIX A: AREA COVERED BY THE COWLITZ COUNTY MOSQUITO CONTROL DISTRICT

The Cowlitz County Mosquito Control District covers the entirety of Cowlitz County.



County boundaries are highlighted in blue on the map above.

APPENDIX D: PUBLIC NOTIFICATION

The following notice is published in the Daily News at least 10 days before mosquito control activities begin.

Public Notice of Mosquito Control Activities

The Cowlitz County Mosquito Control District will begin seasonal activities soon.

Only when mosquito larva is found will they use one of the following larvicides.

1. VectoBac G (*Bacillus thuringiensis*, subspecies *Israelensis*): specific for mosquito larva
2. Vectolex-CG (*Bacillus sphaericus*): specific for mosquito larva
3. Vectomax (*Bacillus thuringiensis*, subspecies *Israelensis* and *Bacillus sphaericus*): specific for mosquito larva
4. Natular (Spinosad) the first mosquito larvicide evaluated as a Reduced Risk Product by the EPA
5. Altosid (S-Methoprene) a growth inhibitor active on mosquito larva
6. Agnique (poly-alpha -w-hydroxy): a monomolecular surface film used for late stage larva and pupa
7. COCOBEAR Oil (white mineral oil): for late stage larva and pupa on impounded water bodies

Later in the season and only in areas where adult mosquitoes cause extreme annoyance or mosquito transmitted disease is present will the district adulticide using:

- Permanone (permethrin) which is Ultra Low Volume fogged at a rate between 0.024 and 0.112 ounces per acre.

Mosquito control activities will continue throughout the season until mid-October.

For further information or to report mosquito problems, visit their website at www.cowlitzmosquitocontrol.com or phone the Mosquito Control Hot Line (360) 425-5658. Additional information and schedule changes will be posted on their website.

You may also contact the Ecology Aquatic Pesticides Permit Manager, Jon Jennings at: (360) 407-6283

Appendix E: Equipment Calibration and Maintenance Procedures

Equipment used for applying mosquito control products is calibrated at the start of each season and periodically if the need arises due to repair, maintenance or evidence of malfunction. If a maintenance issues are found the equipment is tagged and will not be used until issues are fixed. Maintenance are performed at manufacture suggested intervals or sooner.

The attached procedures are followed and records are kept in the district office along with treatment data

1. Calibration procedure for the Maruyama and Solo sprayer (used to apply larvicide)
2. Maintenance Procedure for Maruyama and Solo
3. Calibration procedure for Guardian ULV Fogger (used to apply adulticide)
4. Maintenance Procedure for Guardian ULV Fogger

1. Maruyama and Solo Sprayer Calibration

Speed and Swath

Layout

Mark off a 100-foot course in a field, parking lot or any area that has the length and width you may need. Marking off the 100-foot course at an actual site will give a better estimate on walking speeds at real sites.

Sprayer Prep

Fill your sprayer half full (50%) and pump it (or set it) to a normal operating pressure (or level), to simulate the average spray situation.

Calibrate

1. Traverse the course three times (3), walking in a straight line and using whatever swath style you normally would use (e.g. side to side, held on one side and moving closer to farther with tip, etc). Keep the tip height at a normal height, just as you would if you were actually applying material.

2. Record the time of each pass (from stake A to stake B) to the nearest second and measure the effective swath width.
3. Pick multiple points along your line to measure swath, so that you can average out the numbers to get an accurate average or effective swath width (ESW).

Speed

For the purpose of calculations, you'll want to know what miles per hour (mph) calculates into for feet per second (fps).

1 mile per hour (mph) = 1.47 feet per second (fps)

$$\frac{1 \text{ mile}}{1 \text{ hour}} \times \frac{1 \text{ hour}}{(3,600 \text{ seconds})} \times \frac{5,280 \text{ feet}}{1 \text{ mile}} = \frac{1.47 \text{ feet}}{1 \text{ second}}$$

In the above equation, the "hours" and "miles" cancel each other out, leaving us with 5,280 feet per 3,600 seconds; the math then gives us the above answer.

Walking Speed Example

$$\frac{2 \text{ miles}}{\text{hour}} \times \frac{\text{hour}}{(3,600 \text{ seconds})} \times \frac{5,280 \text{ feet}}{\text{mile}} = \frac{2.93 \text{ feet}}{\text{second}}$$

Or, we can go the other direction...

$$\frac{2.93 \text{ feet}}{\text{second}} \times \frac{1 \text{ mile}}{5,280 \text{ feet}} \times \frac{3,600 \text{ seconds}}{1 \text{ hour}} = \frac{2.0 \text{ miles}}{\text{hour}}$$

Output

Introduction

You should now have your walking speed and effective swath width (ESW) in a normal spray situation.

While it is best to use water or some other neutral material when determining speed and swath, for the purpose of determining output, try and use a blank material (provided by the product manufacturer) or a neutral medium that is close in physical characteristics to the product. You can also use the product itself to get the most accurate calibrations, but **be sure to use all Personal Protective Equipment and to have proper containment** in case there is a spill and/or leak.

Items Needed

1. Field equipment to calibrate
2. Personal Protective Equipment (as warranted)
3. Stop watch
4. Large graduated cylinder (or other liquid holding container),

5. Pantyhose (or similar material)
6. Scale

Liquid Output

Using a normal pressure/setting for the sprayer, start the stop watch/timer and fill your graduated container for 60 seconds. This will give you the output per minute. Run the test 4 times.

Once you have run the test 4 times, add up the totals and take an average volume by dividing it by the number of tests you ran (4 in our example). For example, if your volumes collected were 34 fluid ounces, 36 fl oz, 35 fl oz and 35.5 fl oz; then your average would be 35 fluid ounces.

$$(34 + 36 + 35 + 35.5) fl\ oz = 140.5\ fl\ oz$$

$$\frac{140.5\ fl\ oz}{4} = 35.125\ fl\ oz$$

This number will be your output per minute. You can leave it as it is or convert at this point. Using our example from above, the Output would be:

$$\frac{35\ fl\ oz}{60\ seconds} \times \frac{60\ seconds}{1\ minute} = \frac{35\ fl\ oz}{minute}$$

Or,

$$\frac{35\ fl\ oz}{60\ seconds} \times \frac{60\ seconds}{1\ minute} \times \frac{1\ gallon}{128\ fl\ oz} = \frac{0.27\ gallons}{minute}$$

Dry Output

The process for dry output is very similar to liquid output. The main difference is that instead of collecting material into a graduated container, you will be collecting dry material into a pantyhose sock (or some other item that allows air movement but can contain granular material).

Using a normal setting (throttle & gate opening) for the sprayer, start the stop watch/timer and fill the "sock" for 60 seconds. This will give you the output per minute. You will need to weigh the sock after each test and subtract the weight of the empty sock (with a pantyhose sock, this weight is negligible and will not need to be recorded). Run the test 4 times.

Once you have run the test 4 times, add up the totals and take an average weight by dividing it by the number of tests you ran (4 in our example). For example, if your volumes collected were 16 oz, 18 oz, 16.5 oz and 16.3 oz; then your average would be 16.7 ounces (dry).

$$(16 + 18 + 16.5 + 16.3) oz = 66.8\ oz$$

$$\frac{66.8\ oz}{4} = 16.7\ oz$$

This number will be your output per minute. You can leave it as it is or convert at this point. Using our example from above, the Output would be:

$$\frac{16.7 \text{ oz}}{60 \text{ seconds}} \times \frac{60 \text{ seconds}}{1 \text{ minute}} = \frac{16.7 \text{ oz}}{\text{minute}}$$

Or,

$$\frac{16.7 \text{ oz}}{60 \text{ seconds}} \times \frac{60 \text{ seconds}}{1 \text{ minute}} \times \frac{1 \text{ lb}}{16 \text{ oz}} = \frac{1.04 \text{ lbs}}{\text{minute}}$$

Application Rate

When you start combining calculated variables like speed and swath you will end up with "coverage". In essence, if you are walking at a certain speed with a certain swath, then you are covering/treating a certain area in a certain amount of time.

This coverage number can then be used in combination with your output rate, which is determined by taking the amount of material that is collected in a specific amount of elapsed time, to ultimately determine your "Current Application." The Current Application is in essence the pounds per acre that will be applied given your walking speed and swath width.

Output Example; using a speed of 2 mph and a swath of 40 feet.

Walking Speed (feet per second)

$$\frac{2 \text{ miles}}{\text{hour}} \times \frac{1 \text{ hour}}{60 \text{ minutes}} \times \frac{5,280 \text{ feet}}{\text{mile}} = \frac{176 \text{ feet}}{\text{minute}}$$

Coverage (speed x swath; square feet)

$$\frac{176 \text{ feet}}{\text{minute}} \times 40 \text{ feet} = \frac{7,040 \text{ sq ft}}{\text{minute}}$$

Convert to Acres

$$\frac{7,040 \text{ sq ft}}{\text{minute}} \times \frac{1 \text{ acre}}{43,560 \text{ sq ft}} = \frac{0.16 \text{ acres}}{\text{minute}}$$

Output will originally be determined as an amount per time (lbs per minute for example).

Output @ Endpoint Amount: 1.04 lbs

Output @ Endpoint Time: 60 seconds

Output Rate (converted to minutes)

$$\frac{1.04 \text{ lbs}}{60 \text{ seconds}} \times \frac{60 \text{ seconds}}{\text{minute}} = \frac{1.04 \text{ lbs}}{\text{minute}}$$

Current Application (Output Rate divided by the Coverage)

$$\frac{1.04 \text{ lbs}}{1 \text{ minute}} \times \frac{1 \text{ minute}}{0.16 \text{ acres}} = \frac{1.04 \text{ lbs}}{0.16 \text{ acres}} = \frac{6.5 \text{ lbs}}{\text{acre}}$$

Now you would determine if this "Current Application" is within the label rate allowed for the product with which you are calibrating the equipment. Remember, the label is the law!

2. Maintenance for Maruyama and Solo

Maruyama Checks

1. Check that gas lines are secure and in good order.
2. Gas cap is fitted properly.
3. Tank latches are secure.
4. Tank lid fitted properly
5. Selector rod in proper position and clip in place.
6. Check fan area for large pieces of debris.
7. Proper PPE worn. Labels and SDS on hand.
8. Liquid applications – check tubes for cracks/kinks, attachment points secure, lid fitted properly, check mist cock and proper nozzle setting.
9. Clean out hopper from time to time to remove gummy or granular residue from past treatments.
 - 1)Open tank levers. Pull out pin but don't move pin rod.
 - 2)Remove hopper and dump all leftovers out in a specified receptacle.
 - 3)Clean and Replace hopper tank.

Solo Checks

1. Check hose for cracks and kinks.
2. Check connecting point of hose for leaks.
3. Check diaphragm pump for leaks
4. Periodically check tightness of all fasteners.
5. Make sure filter and lid is fitted properly.
6. Tip in wand is free of debris.
7. Proper PPE, tank correctly labeled, SDS on hand.
8. Clean out tank after use, follow label directions for rinse-ate

3. Calibration for Guardian ULV Fogger

Calibration is performed annually by the district before every season along with droplet testing by one of our Vendors. Maintenance is performed following the manufacture recommendations listed below.

FLOW CALIBRATION FMI PUMP

Calibrating the insecticide pump is essential to applying the proper dosage of chemical or insecticide calculated for the average or fixed intended speed of the vehicle installed on. For instance, if the average intended speed of the vehicle is 10 mph, then the insecticide flow should match the calculated value to maintain the correct active ingredient per acre as noted plainly on the product label. Complete the following steps in order to calibrate the insecticide pump:

1. Determine what the desired flow rate per minute is before going further.
2. Loosen the nylon fitting at the nozzle elbow and redirect the chemical tube back into the formulation tank or a clean catch container (1 gallon minimum).
3. Place the toggle switch on the insecticide pump to the UP position to allow the pump to operate without blower air pressure.
4. On the Control Pendant, turn Power ON illuminating the red power LED. Turn Spray ON illuminating the green LED. The pump will begin to run at a steady RPM and flow established from the formulation tank through the filter and fluid system and pumped back into the tank.
5. Setting the course adjustment: Once a steady flow is established, loosen the knurled thumb nuts at both sides of the pump and adjust the pump pointing device in a positive or negative direction to increase or decrease flow. The 0 (center) position is the least flow position, and the further away from the 0 center position increases flow. Tighten the knurled nuts after each adjustment.
6. Refer to quick start appendix and use dial to fine tune flow rate.
7. Using a graduated cylinder with adequate volume, place the flowing chemical tube into the graduated cylinder for 1 minute exactly then quickly remove the chemical line and redirect it back to the formulation tank. Turn the spray switch OFF on the control pendant.
8. Read the volume captured in the graduated cylinder and compare it to the desired rate per minute established in step 1. Repeat step 6 as necessary until reaching the desired flow rate.

DROPLET SPECTRUM CALIBRATION

Droplet calibration is accomplished by setting the engine RPM to produce a specific atomization nozzle back pressure as viewed on the air pressure gauge. An increase in engine RPM produces an increase in nozzle back pressure. Use the method for measuring droplet diameters based on the calibrated flow rate of the insecticide pump and adjust the throttle and pressure as required to meet the specific product guidelines.

4. MAINTENANCE of Guardian ULV Fogger

CHECKING ENGINE CRANKCASE OIL LEVEL

1. The engine oil level should be checked after every 8 hours of operation or daily as instructed in the Engine Operator's Manual furnished with this machine. 2. Level the machine and clean around oil dipstick before removing it. 3. Remove the oil dipstick and wipe it clean with a cloth. 4. Insert the dipstick back into the gauge hole and let it seat fully down, then remove the dipstick and check the oil level. 5. The oil level should be between the "H" and "L" marks on the dipstick. 6. Add engine oil by removing the engine oil cap as required to maintain a level between the H and L marks, refer to the Engine Owner's Manual for viscosities according to geographic temperature ranges.

CHANGING ENGINE CRANKCASE OIL

After the first 8 hours of operation, change the engine crankcase oil. Thereafter, change the engine crankcase oil every 100 hours of operation or annually whichever occurs first. Refer to the Engine Owner's Manual for proper oil change procedure. Check and verify the engine oil level to be between the "H" and "L" marks on the dipstick with the engine level as described in the Engine Owner's manual.

ENGINE AIR CLEANER

For any air cleaner, the operating environment dictates how often the air cleaner should be serviced. Refer to the Engine Owner's Manual for Instructions. CAUTION- To prevent excessive engine wear, do not run the engine with the air filter removed.

BLOWER LUBRICATION

DRIVE END LUBRICATION- For re-lubrication, select compatible grease with NLGI Grade 2 EP, contain rust inhibitors, and be suitable of blower discharge temperatures up to 350°F (177°C).

GEAR END LUBRICATION- The factory recommended lubricant is Synthetic blower oil at an ISO viscosity of 220. This Dresser Roots URAI-45 PD blower oil capacity is approximately 14.5 oz.

A clear sight gauge or window is located on the blower indicating lubrication oil level. Ensure the oil level is maintained in the middle of the sight gage.

CHEMICAL LINE FITTINGS

Periodically Check the chemical line fittings for tightness. Note: do not over tighten, only hand tighten fittings.

CLEANING THE MACHINE

- Keeping this ULV machine clean is paramount in maintaining a well running and efficient ULV sprayer.
- Washing this machine after each use is highly recommended.
- Use warm water and general duty cleaners. Pressure washing is not recommended!

- DO NOT spray electrical components directly.

BELT TENSION

Correct belt tension and alignment is essential for proper operation and longevity of this ULV sprayer. When adjusting the belt tension, ensure the alignment is maintained when the fasteners are loosened and retightened after adjustment. Use a straight edge across the face of the blower pulley and align the engine's pulley face with it before securing the engine mounting bolts. The best method for setting the proper tension is the "Deflection" method. A good rule of thumb is 1/64" of deflection for every inch between the pulley centers. In the case of the Guardian 190ES & 210 IS, the center to center dimension is approximately 18" thereby calculating a deflection of .281" or approximately 1/4" deflection.

APPENDIX F: SPILL PROCEDURES

Every product spill must be cleaned up immediately.

Each vehicle has a spill kit with all equipment needed to contain and clean up a spill. In addition, there is a spill kit located in the storeroom.

- Solid spills can be swept up and usually used on areas listed on the product label, if not they must be disposed of as directed on the product label.
- Liquid spills are absorbed on pads and any contaminated soil is removed and disposed of as directed on the product label.
- All spills must be completely removed from the environment.
- If the spill may endanger health or the environment it must be reported to the Washington State Department of Ecology.

The following two notices are posted in the shop and also located in each area treatment book to facilitate this.

Spill Report:

Date / Time: _____

Product Spilled: _____

Amount Spilled: _____

How contained or cleaned up: _____

Reported to whom: _____

Responsible person: _____

Report Spills that may Endanger Health or the Environment

WA DOE (south west region): (360) 407-6300

WA Emergency Management: (800) 258-5990

National Response Center: (800) 424-8802

For help to clean up large spills, call our local specialists

Cowlitz Clean Sweep: (360) 423-6316

APPENDIX G: MOSQUITO CONTROL PRODUCT

Below are the mosquito control products we plan to use. If new products are brought into the program they will be added.

Product Name	Active Ingredient	EPA Number	More Information
Altosid P35	S- Methoprene	89459-95	https://www.centrallifesciences.com/
Altosid Pellets	S- Methoprene	2724-448	https://www.centrallifesciences.com/
Altosid XR Briquets	S- Methoprene	2724-421	https://www.centrallifesciences.com/
Aquabac 200G	Bti	62637-3	https://beckermicrobialproductsinc.com/
Aquabac XT	Bti	62637-1	https://beckermicrobialproductsinc.com/
Cocobear	Mineral Oil	8329-93	https://www.clarke.com
Fourstar Briquets	Bti/Bs	83362-3	https://www.centrallifesciences.com/
Natular G30	Spinosad	83229-83	https://www.clarke.com
Natular XRT	Spinosad	83229-84	https://www.clarke.com
Permanone RTU	Permethrin	432-1277	https://www.environmentalscience.bayer.us
Spheratax SPH 50G	Bs	84268-2	https://beckermicrobialproductsinc.com
Vectobac G	Bti	73049-10	https://www.valentbiosciences.com
Vectobac 12AS	Bti	73049-38	https://www.valentbiosciences.com
Vectolex FG	Bs	73049-20	https://www.valentbiosciences.com
Vectomax FG	Bti/Bs	73049-429	https://www.valentbiosciences.com
Vectoprime FG	Bti/Methoprene	73049-501	https://www.valentbiosciences.com