

PermaSense™ 4-4

For use as a spray by air and ground application to control adult mosquitoes, biting and non-biting midges, gnats, and black flies.

For use by federal, state, tribal, or local governmental officials responsible for public health or vector control, or by persons certified in the appropriate category or otherwise authorized by the state or tribal lead pesticide regulatory agency to perform adult mosquito control applications, or by persons under their direct supervision.

A synergized permethrin formulation that provides quick knockdown and effective control of mosquitoes, black flies, gnats, biting and non-biting midges, as well as other biting flies in residential, recreational, urban, rural, and agricultural areas where mosquitoes and flies are found.

- ULV application provides excellent control at rates from 0.001 up to 0.007 pounds permethrin per acre.
- May be applied undiluted or diluted.

ACTIVE INGREDIENTS:

Permethrin: (3-phenoxyphenyl) methyl (+/-) Cis/trans 3-(2,2-dichloroethenyl)

2,2-Dimethyl-cyclopropanecarboxylate: 4.6%

Piperonyl Butoxide*: 4.6%

OTHER INGREDIENTS:** 90.8%

TOTAL: 100.0%

*(butylcarbityl)(6-propylpiperonyl) ether and related compounds

**Contains a Petroleum Distillate Solvent

Contains 0.3344 lb. A.I. Permethrin and 0.3344 lb. A.I. Piperonyl Butoxide per gallon

KEEP OUT OF REACH OF CHILDREN CAUTION

See Inside Attached Booklet for Additional Precautionary Statements.

PRECAUCION AL USUARIO: Si usted no lee inglés, no use este producto hasta que la etiqueta haya sido explicado ampliamente. (To the User: If you cannot read English, do not use this product until the label has been fully explained to you.)



Distributed by:
ADAPCO LLC.
550 Aero Lane
Sanford, FL 32771

EPA Reg. No. 86291-3-96263

EPA Est. No. 53883-TX-002

FIRST AID

IF SWALLOWED:	Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to by a poison control center or doctor. Do not give anything by mouth to an unconscious person.
IF IN EYES:	Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
IF ON SKIN OR CLOTHING:	Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.
IF INHALED:	Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for treatment advice.

HOTLINE NUMBER

Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact SafetyCall® International (866) 897-8050 for emergency medical treatment information.

Note to Physician: Contains petroleum distillate-vomiting may cause aspiration hazard.

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

CAUTION: Harmful if swallowed, inhaled, or absorbed through the skin. Causes moderate eye irritation. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Remove contaminated clothing and wash clothing before reuse.

Environmental Hazards

This pesticide is extremely toxic to aquatic organisms, including fish and aquatic invertebrates. Runoff from treated areas or deposition of spray droplets into a body of water may be hazardous to fish and aquatic invertebrates.

Before making the first application in a season, it is advisable to consult with the state or tribal agency with primary responsibility for pesticide regulation to determine if other regulatory requirements exist.

Do not apply over bodies of water (lakes, rivers, permanent streams, natural ponds, commercial fish ponds, swamps, marshes, or estuaries), except when necessary to target areas where adult mosquitoes are present, and weather conditions will facilitate movement of applied material away from the water in order to minimize incidental deposition into the water body. Do not contaminate bodies of water when disposing of equipment rinsate or washwaters.

This product is highly toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds while bees are actively visiting the area, except when applications are made to prevent or control a threat to public and/or animal health determined by a state, tribal, or local health or vector control agency on the basis of documented evidence of disease causing agents in vector mosquitoes or the occurrence of mosquito-borne disease in animal or human populations, or if specifically approved by the state or tribe during a natural disaster recovery effort.

Physical and Chemical Hazards

Do not use, pour, spill, or store near heat or open flame.

DIRECTIONS FOR USE

It is a violation Federal law to use this product in a manner inconsistent with its labeling.

While using or handling this product wear long sleeved shirt and long pants, socks, and shoes.

Conditions and Rates to Use for Mosquito Control

PermaSease™ 4-4 is recommended for application as an Ultra-Low Volume (ULV) Thermal or Non-thermal aerosol (cold fog) to control adult mosquitoes, and other insects as listed on this label, in residential and recreational areas where these insect pests become a problem; such as urban areas, commercial areas, woodlands, roadsides, parks, campsites, animal quarters, barns, athletic fields, golf courses, residential areas, municipalities, gardens, playgrounds, recreational areas, non-crop waste areas, and over listed crops, range land, and pastures where mosquitoes and flies may be found. **PermaSease™ 4-4** may also be applied to treat outdoor aggregation and harborage sites including storm drains, underground drainage pipes and pipe chases. For best results, treat when insects are most active and conditions are conducive to keeping the fog in the air column close to the ground, (e.g. cool temperatures of the evening, night or early morning and wind).

Do not apply more than 0.007 lb. ai/A per day. Do not apply more than 0.18 lb. ai/A per year. More frequent treatments may be made to prevent or control a threat to public and/or animal health determined by a state, tribal, or local health or vector control agency on the basis of documented evidence of disease causing agents in vector mosquitoes or the occurrence of mosquito-borne diseases in animal or human populations, or if specifically approved by the state or tribe during a natural disaster recovery effort. Apply when wind speed is greater than or equal to 1 mph.

Spray Drift Management for Wide Area Mosquito Abatement

A variety of factors including weather conditions (e.g., wind direction, wind speed, temperature, relative humidity) and method of application (e.g., ground, aerial, airblast) can influence pesticide drift. The applicator must evaluate all factors and make appropriate adjustments when applying this product.

Both ground and aerial applications should be made when meteorological conditions are conducive to keeping the spray cloud close to the ground, such as when an air temperature inversion is present. Applications during the cool hours of early morning or evening are preferable. Air temperatures should be greater than 50° F when conducting all types of applications. Application in calm air conditions is to be avoided. Apply when wind speed is greater than 1 mph.

PermaSease™ 4-4 can be applied over specific growing crops and range grasses prior to harvest for the control of adult mosquitoes and biting flies within or adjacent to these areas. Application can be made where the following crops are present:

Alfalfa	Corn, fodder	Peaches
Almonds	Corn, forage	Pears
Apples	Corn, grain (field and pop)	Pepper, bell
Artichoke, globe	Corn, stover	Pistachio
Asparagus	Eggplant	Potato
Avocado	Filbert	Range grasses
Broccoli	Garlic	Soybeans
Brussels Sprouts	Horseradish	Spinach
Cabbage	Leafy vegetables (except Brassica)	Tomatoes
Cauliflower	Lettuce, head	Vegetable, cucurbits
Celery	Mushrooms	Walnuts
Cherries	Onion, dry bulb	
Corn, sweet kernel plus cob with husks removed		

Do not spray this product on or allow it to drift onto cropland (other than crops listed), or potable water supplies. In the treatment of corrals, feedlots, animal confinements/houses, swine lots, poultry ranges and zoos, cover any exposed drinking water, drinking fountains, and animal feed before application.

GROUND APPLICATION INSTRUCTIONS

Droplet Size Calibration for Ground Application Equipment

For ground-based application spray equipment must be adjusted so that the volume median diameter is less than 30 microns (Dv 0.5 < 30um) and that 90% of the spray is contained in droplets smaller than 50 microns (Dv 0.9 < 50 um). Directions from the equipment manufacturer or vendor, or pesticide registrant, or a test facility using a laser-based measurement instrument must be used to adjust equipment to produce acceptable droplet size spectra. Application equipment must be tested at least annually to confirm that pressure at the nozzle and nozzle flow rate(s) are properly calibrated.

ULV Non-Thermal Aerosol (Cold Fog)

To control adult mosquitoes, midges, gnats, and black flies apply **PermaSease™ 4-4** diluted or undiluted using any standard ULV ground applicator capable of producing the required droplet spectrum. Apply the product to deliver 0.001 to 0.007 lb. permethrin per acre. Under normal conditions a 300ft swath width is recommended but in dense vegetation, high mosquito populations, or open areas the swath width can be adjusted accordingly to establish the proper flow rates. See Rate Charts below for some suggested application rates for ground ULV applications based on a 300 ft swath width.

When applying this product undiluted, apply at a flow rate of 2.7-18.7 ounces per minute at an average vehicle speed of 10 mph. These rates are equivalent to 0.001 to 0.007 pound of permethrin and 0.001 to 0.007 pounds of piperonyl butoxide per acre with an assumed 300ft swath width. If a different vehicle speed or swath width is used, adjust the rate accordingly to achieve a rate between 0.001 and 0.007 lbs. of permethrin per acre. Vary flow rates accordingly to vegetation density and mosquito population. Use of the maximum flow rates and application rates listed on this label is recommended to treat heavy vegetation or when target insect populations are high. An accurate flow rate control system must be used to ensure proper flow rate. For optimum ground application performance, apply at speeds of 5 to 20 mph.

Flow Rate Chart for Use of PermaSease™ 4-4 Diluted and Undiluted

PermaSease™ 4-4 may also be applied by diluting, 1 part to 1 part of a light mineral oil or suitable solvent, applied so as not to exceed 0.007 lbs. of permethrin per acre. If an alternate dilution rate is required, adjust the flow rate, accordingly, provided the droplet size and spectrum remain within label specifications.

Ground Application Rate Chart – For Use of PermaSease™ 4-4: Undiluted						
Conditions and Rates to PermaSease™ 4-4 Undiluted for Mosquito Control						
lbs. A.I. acre		Application Rates Fluid Ounces per Minute				Fluid Ounces and (milliliters) per acre
Permethrin	PBO	5 mph	10 mph	15 mph	20 mph	
0.001	0.001	1.2	2.3	3.5	4.6	0.38 (11.32 mL)
0.00175	0.00175	2.0	4.1	6.1	8.1	0.67 (19.81 mL)
0.0025	0.0025	2.9	5.8	8.7	11.6	0.96 (28.39 mL)
0.0035	0.0035	4.1	8.1	12.2	16.2	1.34 (39.63 mL)
0.005	0.005	5.8	11.6	17.4	23.2	1.91 (56.60 mL)
0.007	0.007	8.1	16.2	24.4	32.5	2.68 (79.26 mL)

Ground Application Rate Chart – Dilute (1) Part PermaSease™ 4-4 in (1) Part Mineral Oil						
Amounts to Use After Diluting 1 PermaSease™ 4-4 With 1 Parts Mineral Oil						
lbs. A.I. acre		Application Rates Fluid Ounces per Minute				Fluid Ounces and (milliliters) per acre
Permethrin	PBO	5 mph	10 mph	15 mph	20 mph	
0.001	0.001	2.3	4.6	7	9.3	0.77 (22.77 mL)
0.00175	0.00175	4.1	8.1	12.2	16.2	1.34 (39.63 mL)
0.0025	0.0025	5.8	11.6	17.4	23.2	1.91 (56.49 mL)
0.0035	0.0035	8.1	16.2	24.4	32.5	2.68 (79.26 mL)
0.005	0.005	11.6	23.2	34.8	46.4	3.83 (113.27 mL)
0.007	0.007	16.2	32.5	48.7	65.0	5.36 (158.52 mL)

Thermal Aerosol Fogging

Apply **PermaSease™ 4-4** diluted or undiluted with suitable thermal fogging equipment such as vehicle mounted or handheld thermal fog generators capable of making thermal fog applications. Use only well maintained and properly calibrated thermal fogging equipment to ensure optimum performance and effectiveness. If diluted, use a light mineral oil, or another suitable non-phytotoxic diluent, to reduce oil requirement and sludge buildup in equipment. Do not exceed the maximum rate of 0.007 lbs. of permethrin per acre. Apply **PermaSease™ 4-4** to deliver 0.001 to 0.007 lb. a.i. per acre. Droplet size of thermal fog will be very small usually in the 0.5 to 1.0 micron range. For best results, fog downwind by directing thermal fog into the air and allowing it to drift through areas with active mosquitoes or where mosquitoes find harborage. Do not thermal fog when winds exceed 10 mph. Do not fog wet foliage.

Vehicle Mounted: May be applied with vehicle mounted sprayers at speeds of 5 to 20 mph using a treatment swath width of 300 ft.

Portable or Hand Carried: For use with hand carried and/or portable thermal foggers, use a walking speed of 2 mph and a 50-foot swath.

Use as An Insect Barrier Treatment

For use in Non-Thermal ULV, motorized, portable, backpack, handheld, or vehicle mounted fogging equipment or fog type mist blower equipment, apply **PermaSease™ 4-4** with equipment adjusted to deliver ULV particles of 50 to 120 microns volume median diameter. **PermaSease™ 4-4** may be applied undiluted or diluted. If diluted, use a light mineral oil, or another suitable non-phytotoxic diluent. Do not apply more than 0.007 lbs. of permethrin per acre using an appropriate swath width based on the capabilities of your equipment, typically a 50ft swath width is used. Direct spray onto foliage at the perimeter of areas from which mosquitoes or flies are to be excluded or direct spray into harborage areas where adult mosquitoes or flies may be found. May be used to treat aggregation and harborage sites such as abandoned buildings, residential buildings, warehouses, storm drains, and underground drainage pipes where adult mosquitoes find harborage. When this product is applied as a barrier treatment, do not apply within 100 feet (30 meters) of lakes and streams.

AERIAL APPLICATION INSTRUCTIONS

PermaSease™ 4-4 may be applied diluted or undiluted at rates of 0.001 to 0.007 pounds of permethrin per acre by fixed wing or rotary aircraft that are capable of making an ULTRA LOW VOLUME (ULV) application. For fixed wing and rotary aircraft with flat fan or rotary nozzles, apply at a sufficient airspeed to deliver the appropriate amount of a.i./acre and to achieve the appropriate droplet range as prescribed by this label. Apply when wind speed is equal to or greater than 1 mph. In order to compensate for windy and meteorological conditions and ensure drift into the target area, aerial applications with aircraft equipped with Global Positioning Systems (GPS) and/or spray cloud drift optimization software is recommended.

Do not apply by fixed wing aircraft at a height less than 100 ft, or by helicopter at a height less than 75 feet unless specifically approved by the state or tribe based on public health needs.

Spray Droplet Size Calibration

For aerial applications made ≤ 200 ft above ground elevation: Spray equipment must be adjusted so that the volume median diameter produced is less than 60 microns (Dv 0.5 < 60µm) and that 90% of the spray is contained in droplets smaller than 100 microns (Dv 0.9 < 100µm).

For aerial applications made > 200 ft above ground elevation: Spray equipment must be adjusted so that the volume median diameter produced is less than 70 microns (Dv 0.5 < 70µm) and that 90% of the spray is contained in droplets smaller than 145 microns (Dv 0.9 < 145µm).

The effects of flight speed and, for non-rotary nozzles, nozzle angle on the droplet size spectrum must be considered. Directions from the equipment manufacturer or vendor, or pesticide registrant or a test facility using a wind tunnel and laser-based measurement instrument must be used to adjust equipment to produce acceptable droplet size spectra. Application equipment must be tested at least annually to confirm that pressure at the nozzle and nozzle flow rate(s) are properly calibrated.

Prohibition on Aerial Use in Florida: Not for aerial application in the State of Florida unless specifically authorized by the Florida Bureau of Entomology and Pest Control and the Florida Department of Agriculture and Consumer Services.

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

Storage: Store product in its original labeled container in a cool, dry, locked place designated for such insecticides and out of reach of children. In case of spillage, soak up with absorbent material such as sawdust, or fullers earth; sweep up and place in a labeled container and dispose of as follows.

Pesticide Disposal: Wastes resulting from the use of this product may be disposed of on site, or at an approved waste disposal facility.

Container Disposal: Nonrefillable container. Do not reuse or refill this container. Triple rinse (or equivalent) promptly after emptying. Triple rinse as follows:

For Containers equal to or less than 5 Gallons: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with mineral oil and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Offer for recycling if available. If recycling is not available then dispose of container in a sanitary landfill or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

For Containers greater than 5 Gallons: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with mineral oil. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip back and forth several times. Turn the container over on its other end and tip back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Offer for recycling, if available. If recycling is not available then dispose of container in a sanitary landfill or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

For Bulk Containers (Refillable Container): Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller.

To clean the container before final disposal, empty the remaining contents from the container into application equipment or mix tank. Fill the container about 10 percent full with mineral oil. Agitate vigorously or recirculate mineral oil with pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing process two more times.

WARRANTY NOTICE

Read the entire Directions for Use and Warranty before using this product. By using this product, User or Buyer accepts the following warranty.

The Directions for Use of this product are believed to be adequate and must be followed carefully. It is impossible to eliminate all risks associated with the use of this product. Unintended consequences may result because of unknown factors. All such risks shall be assumed by the User or Buyer.

ADAPCO LLC. is committed to providing high quality products. To the extent consistent with applicable law, ADAPCO LLC. makes no warranties, express or implied, of merchantability or of fitness for a particular purpose or otherwise that extend beyond statements on this label. To the extent consistent with applicable law, ADAPCO LLC., the Manufacturer, or the Seller shall not be liable for indirect, special, incidental or consequential damages. To the extent consistent with applicable law, the exclusive remedy of the User or Buyer shall not exceed the purchase price paid.

PermaSense™ 4-4

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ACTIVE INGREDIENTS:

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Piperonyl Butoxide*:	4.6%
OTHER INGREDIENTS**:	90.8%
TOTAL:	100.0%

*[butylcarbityl][6-propylpiperonyl] ether and related compounds

**Contains a Petroleum Distillate Solvent

Contains 0.3344 lb. A.I. Permethrin and 0.3344 lb. A.I. Piperonyl Butoxide per gallon

KEEP OUT OF REACH OF CHILDREN CAUTION

See Inside Attached Booklet for Additional Precautionary Statements.

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FIRST AID

IF SWALLOWED:	Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to by a poison control center or doctor. Do not give anything by mouth to an unconscious person.
IF IN EYES:	Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
IF ON SKIN OR CLOTHING:	Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.
IF INHALED:	Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for treatment advice.

HOTLINE NUMBER

Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact SafetyCall® International (866) 897-8050 for emergency medical treatment information.

Note to Physician: Contains petroleum distillate-vomiting may cause aspiration hazard.

PRECAUTIONARY STATEMENTS Hazards to Humans and Domestic Animals

CAUTION: Harmful if swallowed, inhaled, or absorbed through the skin. Causes moderate eye irritation. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Remove contaminated clothing and wash clothing before reuse.

PHYSICAL AND CHEMICAL HAZARDS

Do not use, pour, spill, or store near heat or open flame.

DIRECTIONS FOR USE

It is a violation Federal law to use this product in a manner inconsistent with its labeling.

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

Storage: Store product in its original labeled container in a cool, dry, locked place designated for such insecticides and out of reach of children. In case of spillage, soak up with absorbent material such as sawdust, or fullers earth; sweep up and place in a labeled container and dispose of as follows.

Pesticide Disposal: Wastes resulting from the use of this product may be disposed of on site, or at an approved waste disposal facility.

Container Disposal: Nonrefillable container. Do not reuse or refill this container. Triple rinse (or equivalent) promptly after emptying. Triple rinse as follows:

For Containers equal to or less than 5 Gallons: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with mineral oil and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Offer for recycling if available. If recycling is not available then dispose of container in a sanitary landfill or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

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550 Aero Lane | Sanford, FL 32771

Net 2.5 Gal
(3.78 L)

Net 30 Gal
Drum

Net 55 Gal
Drum

Net 275 Gal
Totes

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Before making the first application in a season, it is advisable to consult with the state or tribal agency with primary responsibility for pesticide regulation to determine if other regulatory requirements exist.

Do not apply over bodies of water (lakes, rivers, permanent streams, natural ponds, commercial fish ponds, swamps, marshes, or estuaries), except when necessary to target areas where adult mosquitoes are present, and weather conditions will facilitate movement of applied material away from the water in order to minimize incidental deposition into the water body. Do not contaminate bodies of water when disposing of equipment rinsate or washwaters.

This product is highly toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds while bees are actively visiting the area, except when applications are made to prevent or control a threat to public and/or animal health determined by a state, tribal, or local health or vector control agency on the basis of documented evidence of disease causing agents in vector mosquitoes or the occurrence of mosquito-borne disease in animal or human populations, or if specifically approved by the state or tribe during a natural disaster recovery effort.

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Conditions and Rates to Use for Mosquito Control

PermaSease™ 4-4 is recommended for application as an Ultra-Low Volume (ULV) Thermal or Non-thermal aerosol (cold fog) to control adult mosquitoes, and other insects as listed on this label, in residential and recreational areas where these insect pests become a problem; such as urban areas, commercial areas, woodlands, roadsides, parks, campsites, animal quarters, barns, athletic fields, golf courses, residential areas, municipalities, gardens, playgrounds, recreational areas, non-crop waste areas, and over listed crops, range land, and pastures where mosquitoes and flies may be found. **PermaSease™ 4-4** may also be applied to treat outdoor aggregation and harborage sites including storm drains, underground drainage pipes and pipe chases. For best results, treat when insects are most active and conditions are conducive to keeping the fog in the air column close to the ground, (e.g. cool temperatures of the evening, night or early morning and wind).

Do not apply more than 0.007 lb. ai/A per day. Do not apply more than 0.18 lb. ai/A per year. More frequent treatments may be made to prevent or control a threat to public and/or animal health determined by a state, tribal, or local health or vector control agency on the basis of documented evidence of disease causing agents in vector mosquitoes or the occurrence of mosquito-borne diseases in animal or human populations, or if specifically approved by the state or tribe during a natural disaster recovery effort. Apply when wind speed is greater than or equal to 1 mph.

Spray Drift Management for Wide Area Mosquito Abatement

A variety of factors including weather conditions (e.g., wind direction, wind speed, temperature, relative humidity) and method of application (e.g., ground, aerial, airblast) can influence pesticide drift. The applicator must evaluate all factors and make appropriate adjustments when applying this product.

Both ground and aerial applications should be made when meteorological conditions are conducive to keeping the spray cloud close to the ground, such as when an air temperature inversion is present. Applications during the cool hours of early morning or evening are preferable. Air temperatures should be greater than 50° F when conducting all types of applications. Application in calm air conditions is to be avoided. Apply when wind speed is greater than 1 mph.

PermaSease™ 4-4 can be applied over specific growing crops and range grasses prior to harvest for the control of adult mosquitoes and biting flies within or adjacent to these areas. Application can be made where the following crops are present:

Alfalfa	Filbert
Almonds	Garlic
Apples	Horseradish
Artichoke, globe	Leafy vegetables (except Brassica)
Asparagus	Lettuce, head
Avocado	Mushrooms
Broccoli	Onion, dry bulb
Brussels sprouts	Peaches
Cabbage	Pears
Cauliflower	Pepper, bell
Celery	Pistachio
Cherries	Potato
Corn, sweet, kernel plus cob with husks removed	Range grasses
Corn, fodder	Soybeans
Corn, forage	Spinach
Corn, grain (field and pop)	Tomatoes
Corn, stover	Vegetable, cucurbits
Eggplant	Walnuts

Do not spray this product on or allow it to drift onto cropland (other than crops listed), or potable water supplies. In the treatment of corrals, feedlots, animal confinements/houses, swine lots, poultry ranges and zoos, cover any exposed drinking water, drinking fountains, and animal feed before application.

GROUND APPLICATION INSTRUCTIONS

Droplet Size Calibration for Ground Application Equipment

For ground-based application spray equipment must be adjusted so that the volume median diameter is less than 30 microns ($Dv\ 0.5 < 30\mu m$) and that 90% of the spray is contained in droplets smaller than 50 microns ($Dv\ 0.9 < 50\ \mu m$). Directions from the equipment manufacturer or vendor, or pesticide registrant, or a test facility using a laser-based measurement instrument must be used to adjust equipment to produce acceptable droplet size spectra. Application equipment must be tested at least annually to confirm that pressure at the nozzle and nozzle flow rate(s) are properly calibrated.

ULV Non-Thermal Aerosol (Cold Fog)

To control adult mosquitoes, midges, gnats, and black flies apply **PermaSease™ 4-4** diluted or undiluted using any standard ULV ground applicator capable of producing the required droplet spectrum. Apply the product to deliver 0.001 to 0.007 lb. permethrin per acre. Under normal conditions a 300ft swath width is recommended but in dense vegetation, high mosquito populations, or open areas the swath width can be adjusted accordingly to establish the proper flow rates. See Rate Charts below for some suggested application rates for ground ULV applications based on a 300 ft swath width.

When applying this product undiluted, apply at a flow rate of 2.7-18.7 ounces per minute at an average vehicle speed of 10 mph. These rates are equivalent to 0.001 to 0.007 pound of permethrin and 0.001 to 0.007 pounds of piperonyl butoxide per acre with an assumed 300ft swath width. If a different vehicle speed or swath width is used, adjust the rate accordingly to achieve a rate between 0.001 and 0.007 lbs. of permethrin per acre. Vary flow rates accordingly to vegetation density and mosquito population. Use of the maximum flow rates and application rates listed on this label is recommended to treat heavy vegetation or when target insect populations are high. An accurate flow rate control system must be used to ensure proper flow rate. For optimum ground application performance, apply at speeds of 5 to 20 mph.

Flow Rate Chart for Use of PermaSease™ 4-4 Diluted and Undiluted
PermaSease™ 4-4 may also be applied by diluting, 1 part to 1 part of a light mineral oil or suitable solvent, applied so as not to exceed 0.007 lbs. of permethrin per acre. If an alternate dilution rate is required, adjust the flow rate, accordingly, provided the droplet size and spectrum remain within label specifications.

Ground Application Rate Chart – For Use of PermaSease™ 4-4: Undiluted						
Conditions and Rates to PermaSease™ 4-4 Undiluted for Mosquito Control						
lbs. A.I. acre		Application Rates Fluid Ounces per Minute				Fluid Ounces and (milliliters) per acre
Permethrin	PBO	5 mph	10 mph	15 mph	20 mph	
0.001	0.001	1.2	2.3	3.5	4.6	0.38 (11.32 mL)
0.00175	0.00175	2.0	4.1	6.1	8.1	0.67 (19.81 mL)
0.0025	0.0025	2.9	5.8	8.7	11.6	0.96 (28.39 mL)
0.0035	0.0035	4.1	8.1	12.2	16.2	1.34 (39.63 mL)
0.005	0.005	5.8	11.6	17.4	23.2	1.91 (56.60 mL)
0.007	0.007	8.1	16.2	24.4	32.5	2.68 (79.26 mL)

Ground Application Rate Chart – Dilute (1) Part PermaSease™ 4-4 in (1) Part Mineral Oil						
Amounts to Use After Diluting 1 PermaSease™ 4-4 With 1 Parts Mineral Oil						
lbs. A.I. acre		Application Rates Fluid Ounces per Minute				Fluid Ounces and (milliliters) per acre
Permethrin	PBO	5 mph	10 mph	15 mph	20 mph	
0.001	0.001	2.3	4.6	7	9.3	0.77 (22.77 mL)
0.00175	0.00175	4.1	8.1	12.2	16.2	1.34 (39.63 mL)
0.0025	0.0025	5.8	11.6	17.4	23.2	1.91 (56.49 mL)
0.0035	0.0035	8.1	16.2	24.4	32.5	2.68 (79.26 mL)
0.005	0.005	11.6	23.2	34.8	46.4	3.83 (113.27 mL)
0.007	0.007	16.2	32.5	48.7	65.0	5.36 (158.52 mL)

Thermal Aerosol Fogging

Apply **PermaSease™ 4-4** diluted or undiluted with suitable thermal fogging equipment such as vehicle mounted or handheld thermal fog generators capable of making thermal fog applications. Use only well maintained and properly calibrated thermal fogging equipment to ensure optimum performance and effectiveness. If diluted, use a light mineral oil, or another suitable non-phytotoxic diluent, to reduce oil requirement and sludge buildup in equipment. Do not exceed the maximum rate of

0.007 lbs. of permethrin per acre. Apply **PermaSease™ 4-4** to deliver 0.001 to 0.007 lb. a.i. per acre. Droplet size of thermal fog will be very small usually in the 0.5 to 1.0 micron range. For best results, fog downwind by directing thermal fog into the air and allowing it to drift through areas with active mosquitoes or where mosquitoes find harborage. Do not thermal fog when winds exceed 10 mph. Do not fog wet foliage.

Vehicle Mounted: May be applied with vehicle mounted sprayers at speeds of 5 to 20 mph using a treatment swath width of 300 ft.

Portable or Hand Carried: For use with hand carried and/or portable thermal foggers, use a walking speed of 2 mph and a 50-foot swath.

Use as An Insect Barrier Treatment

For use in Non-Thermal ULV, motorized, portable, backpack, handheld, or vehicle mounted fogging equipment or fog type mist blower equipment, apply **PermaSease™ 4-4** with equipment adjusted to deliver ULV particles of 50 to 120 microns volume median diameter. **PermaSease™ 4-4** may be applied undiluted or diluted. If diluted, use a light mineral oil, or another suitable non-phytotoxic diluent. Do not apply more than 0.007 lbs. of permethrin per acre using an appropriate swath width based on the capabilities of your equipment, typically a 50ft swath width is used. Direct spray onto foliage at the perimeter of areas from which mosquitoes or flies are to be excluded or direct spray into harborage areas where adult mosquitoes or flies may be found. May be used to treat aggregation and harborage sites such as abandoned buildings, residential buildings, warehouses, storm drains, and underground drainage pipes where adult mosquitoes find harborage. When this product is applied as a barrier treatment, do not apply within 100 feet (30 meters) of lakes and streams.

AERIAL APPLICATION INSTRUCTIONS

PermaSease™ 4-4 may be applied diluted or undiluted at rates of 0.001 to 0.007 pounds of permethrin per acre by fixed wing or rotary aircraft that are capable of making an ULTRA LOW VOLUME (ULV) application. For fixed wing and rotary aircraft with flat fan or rotary nozzles, apply at a sufficient airspeed to deliver the appropriate amount of a.i./acre and to achieve the appropriate droplet range as prescribed by this label. Apply when wind speed is equal to or greater than 1 mph. In order to compensate for windy and meteorological conditions and ensure drift into the target area, aerial applications with aircraft equipped with Global Positioning Systems (GPS) and/or spray cloud drift optimization software is recommended.

Do not apply by fixed wing aircraft at a height less than 100 ft, or by helicopter at a height less than 75 feet unless specifically approved by the state or tribe based on public health needs.

Spray Droplet Size Calibration

For aerial applications made ≤ 200 ft above ground elevation: Spray equipment must be adjusted so that the volume median diameter produced is less than 60 microns (Dv 0.5 < 60µm) and that 90% of the spray is contained in droplets smaller than 100 microns (Dv 0.9 < 100µm).

For aerial applications made > 200 ft above ground elevation: Spray equipment must be adjusted so that the volume median diameter produced is less than 70 microns (Dv 0.5 < 70µm) and that 90% of the spray is contained in droplets smaller than 145 microns (Dv 0.9 < 145µm).

The effects of flight speed and, for non-rotary nozzles, nozzle angle on the droplet size spectrum must be considered. Directions from the equipment manufacturer or vendor, or pesticide registrant or a test facility using a wind tunnel and laser-based measurement instrument must be used to adjust equipment to produce acceptable droplet size spectra. Application equipment must be tested at least annually to confirm that pressure at the nozzle and nozzle flow rate(s) are properly calibrated.

Prohibition on Aerial Use in Florida: Not for aerial application in the State of Florida unless specifically authorized by the Florida Bureau of Entomology and Pest Control and the Florida Department of Agriculture and Consumer Services.

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

Storage: Store product in its original labeled container in a cool, dry, locked place designated for such insecticides and out of reach of children. In case of spillage, soak up with absorbent material such as sawdust, or fullers earth; sweep up and place in a labeled container and dispose of as follows.

Pesticide Disposal: Wastes resulting from the use of this product may be disposed of on site, or at an approved waste disposal facility.

Container Disposal: Nonrefillable container. Do not reuse or refill this container. Triple rinse (or equivalent) promptly after emptying. Triple rinse as follows:

For Containers equal to or less than 5 Gallons: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with mineral oil and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Offer for recycling if available. If recycling is not available then dispose of container in a sanitary landfill or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

For Containers greater than 5 Gallons: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with mineral oil. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip back and forth several times. Turn the container over on its other end and tip back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Offer for recycling, if available. If recycling is not available then dispose of container in a sanitary landfill or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

For Bulk Containers (Refillable Container): Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller.

To clean the container before final disposal, empty the remaining contents from the container into application equipment or mix tank. Fill the container about 10 percent full with mineral oil. Agitate vigorously or recirculate mineral oil with pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing process two more times.

WARRANTY NOTICE

Read the entire Directions for Use and Warranty before using this product. By using this product, User or Buyer accepts the following warranty.

The Directions for Use of this product are believed to be adequate and must be followed carefully. It is impossible to eliminate all risks associated with the use of this product. Unintended consequences may result because of unknown factors. All such risks shall be assumed by the User or Buyer.

ADAPCO LLC. is committed to providing high quality products. To the extent consistent with applicable law, ADAPCO LLC. makes no warranties, express or implied, of merchantability or of fitness for a particular purpose or otherwise that extend beyond statements on this label. To the extent consistent with applicable law, ADAPCO LLC., the Manufacturer, or the Seller shall not be liable for indirect, special, incidental or consequential damages. To the extent consistent with applicable law, the exclusive remedy of the User or Buyer shall not exceed the purchase price paid.

PermaSease™ 3-15

For use outdoors as an Ultra-Low Volume (ULV) application to control adult mosquitoes in residential and recreational areas.
 Also for use against biting and non-biting midges and black flies.

For use only by federal, state, tribal or local government officials responsible for public health or vector control, or by persons certified in the appropriate category or otherwise authorized by the state or tribal lead pesticide regulatory agency to perform adult mosquito control applications, or by persons under their direct supervision.

ACTIVE INGREDIENTS:

Permethrin (3-Phenoxyphenyl) methyl (+/-) cis, trans-3-(2,2-dichloroethenyl)-2,2-dimethyl cyclopropanecarboxylate: 3.0%

Piperonyl Butoxide*: 15.0%

OTHER INGREDIENTS:** 82.0%

TOTAL: 100.0%

Contains 0.222 pounds of Permethrin and 1.113 pounds of Piperonyl Butoxide per gallon
 * PBO (butyl carbonyl) (6-propylpiperonyl) ether and related compounds
 ** Contains petroleum distillate

KEEP OUT OF REACH OF CHILDREN CAUTION

See Inside Booklet for Additional Precautionary Statements.

FIRST AID

IF SWALLOWED:	Immediately call a poison control center or doctor. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give any liquid to the person. Do not give anything by mouth to an unconscious person.
IF ON SKIN OR CLOTHING:	Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.
IF INHALED:	Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth. Call a poison control center or doctor for further treatment advice.
IF IN EYES:	Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing the eye. Call a poison control center or doctor for treatment advice.

HOTLINE NUMBER

Have product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact SafetyCall® International (866) 897-8050 for emergency medical treatment information.

NOTE TO PHYSICIAN: Product contains a petroleum distillate. Vomiting may cause aspiration pneumonia.

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

CAUTION. Harmful if swallowed or absorbed through skin. Avoid contact with skin, eyes or clothing.

Personal Protective Equipment (PPE):

Some materials that are chemical-resistant to this product are: barrier laminate, nitrile rubber, neoprene rubber, or Viton.

Mixers, loaders, applicators, and other handlers must wear :

- Long-sleeved shirt and long pants,
- Shoes plus socks.

In addition, all handlers except for applicators using motorized ground equipment, pilots and flaggers, must wear chemical-resistant gloves. In addition, mixers/loaders, persons cleaning equipment, and other persons exposed to the concentrate must wear a chemical-resistant apron. See engineering controls for additional requirements.



User Safety Requirements

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry. Discard clothing and other absorbent material that have been drenched or heavily contaminated with the product's concentrate. Do not reuse them.

User Safety Recommendations

- Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Users should remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Users should remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

Engineering Controls

Pilots must use an enclosed cockpit that meet the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(6)]. Human flagging is prohibited. Flagging to support aerial application is limited to use of the Global Positioning System (GPS) or mechanical flaggers.

Environmental Hazards

This pesticide is extremely toxic to aquatic organisms, including fish and invertebrates. Runoff from treated areas or deposition of spray droplets into a body of water may be hazardous to fish and aquatic invertebrates. Before making the first application in a season, it is advisable to consult with the state or tribal agency with primary responsibility for pesticide regulation to determine if other regulatory requirements exist. Do not apply over bodies of water (lakes, rivers, permanent streams, natural ponds, commercial fish ponds, swamps, marshes or estuaries), except when necessary to target areas where adult mosquitoes are present, and weather conditions will facilitate movement of applied material away from the water in order to minimize incidental deposition into the water body. Do not contaminate bodies of water when disposing of equipment rinsate or wash waters.

This product is highly toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds while bees are foraging the treatment area, except when applications are made to prevent or control a threat to public and/or animal health determined by a state, tribal, or local health or vector control agency on the basis of documented evidence of disease causing agents in vector mosquitoes, or the occurrence of mosquito-borne disease in animal or human populations, or if specifically approved by the state or tribe during a natural disaster recovery effort.

Physical and Chemical Hazards

Do not use or store near heat or open flame.

DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

Not for use in metered release systems. Not for use in outdoor residential misting systems. Do not contaminate crop land (other than crops listed), or potable water supplies with spray drift. Do not make applications during rain.

USE INFORMATION

PermaSease™ 3-15 is approved for applications as an Ultra-Low Volume (ULV) nonthermal aerosol (cold fog) to control adult mosquitoes in residential and recreational areas and other areas these insects occur, such as but not limited to parks, campsites, woodlands, athletic fields, golf courses, residential areas and municipalities, gardens, playgrounds, and overgrown waste areas.

PermaSease™ 3-15 can be applied over specific growing crops and range grasses prior to harvest for the control of adult mosquitoes within or adjacent to these areas. Application can be made where the following crops are present:

Alfalfa	Garlic
Almond	Horseradish
Apple	Leafy greens subgroup 4A
Artichoke	Leaf petioles subgroup 4B
Asparagus	Lettuce, head
Avocado	Mushroom
Broccoli	Onion bulb
Brussels sprouts	Peach
Cabbage	Pepper, bell
Cauliflower	Pistachio
Celery	Potato
Cherry	Range grasses
Corn, sweet, kernel + cob with husks removed	Soybean, seed
Corn, forage	Spinach
Corn, grain	Tomato
Corn, stover	Vegetable cucurbit, group 9*
Eggplant	Walnut
Fruit, pome, group 11	Watercress

*40 CFR 180.41 Crop Group 9: Cucurbit Vegetables, includes Crop Subgroup 9A (melon) and Crop Subgroup 9B (squash/cucumber).

In the treatment of corrals, feedlots, swine lots, poultry ranges and zoos cover any exposed drinking water, drinking fountains, and animal feed before application.

For best results treat when mosquitoes are most active and weather conditions are conducive to keeping the spray cloud close to the ground. An inversion of air temperatures and a light breeze is preferable. Application in calm air conditions is to be avoided. Apply only when wind speed is greater than 1 mph. Air temperature should be greater than 50°F when conducting all types of applications.

Do not treat a site with more than 0.007 lb. permethrin and 0.035 lb. piperonyl butoxide per acre in a 3-day period. Retreatments within a 3-day period shall not exceed 0.007 total lbs. permethrin or 0.035 total lbs. piperonyl butoxide in any site. Do not exceed 25 applications at maximum labeled rate (0.005 lbs. permethrin/0.025 lbs. piperonyl butoxide per acre) at any site in one year. When targeting *Aedes taeniorhynchus* and other difficult species, applications may be made up to 0.007 lbs. permethrin and 0.035 lbs. piperonyl butoxide (4.0 fl. oz PCT 3-15 ULV) per acre. Do not exceed 0.18 lbs. of permethrin or 0.90 lbs. piperonyl butoxide per acre per site per year. When rotating this product with other insecticides containing piperonyl butoxide, do not exceed 2 lbs. piperonyl butoxide per acre per site per year. More frequent applications may be made to prevent or control a threat to public and/or animal health determined by a state, tribal, or local health or vector control agency on the basis of documented evidence of disease causing agents in vector mosquitoes or the occurrence of mosquito-borne disease in animal or human populations, or if specifically approved by the state or tribe during a natural disaster recovery effort.

SPRAY DROPLET SIZE DETERMINATION

Ground-based Application: Spray equipment must be adjusted so that the volume median diameter (VMD) is less than 30 microns ($D_v 0.5 < 30 \mu\text{m}$) and that 90% of the spray is contained in droplets smaller than 50 microns ($D_v 0.9 < 50 \mu\text{m}$). Directions from the equipment manufacturer or vendor, pesticide registrant or a test facility using a laser-based measurement instrument must be used to adjust equipment to produce acceptable droplet size spectra. Application equipment must be tested at least annually to confirm that pressure at the nozzle and nozzle flow rate(s) are properly calibrated.

Aerial Application made at or below 200 feet above ground elevation:

Spray equipment must be adjusted so that the volume median diameter produced is less than 60 microns ($Dv\ 0.5 < 60\ \mu m$) and that 90% of the spray is contained in droplets smaller than 100 microns ($Dv\ 0.9 < 100\ \mu m$). The effects of flight speed and, for non-rotary nozzles, nozzle angle on the droplet size spectrum must be considered. Directions from the equipment manufacturer or vendor, pesticide registrant, or a test facility using a wind tunnel and laser-based measurement instrument must be used to adjust equipment to produce acceptable droplet size spectra. Application equipment must be tested at least annually to confirm that pressure at the nozzle and nozzle flow rate(s) are properly calibrated.

Aerial Application made at greater than 200 feet above ground elevation:

Spray equipment must be adjusted so that the volume median diameter produced is less than 70 microns ($Dv\ 0.5 < 70\ \mu m$) and that 90% of the spray is contained in droplets smaller than 145 microns ($Dv\ 0.9 < 145\ \mu m$). The effects of flight speed and, for non-rotary nozzles, nozzle angle on the droplet size spectrum must be considered. Directions from the equipment manufacturer or vendor, pesticide registrant, or a test facility using a wind tunnel and laser-based measurement instrument must be used to adjust equipment to produce acceptable droplet size spectra. Application equipment must be tested at least annually to confirm that pressure at the nozzle and nozzle flow rate(s) are properly calibrated.

GROUND APPLICATION

Apply **PermaSease™ 3-15** through standard ULV cold aerosol or non-thermal aerosol (cold fog) generators undiluted at a flow rate of 3.1 to 17.4 fluid ounces per minute, and an average vehicle speed of 10 MPH. If a different vehicle speed is used, adjust rate accordingly. These rates are equivalent to 0.00088 to 0.005 pounds of Permethrin and 0.0044 to 0.0264 pounds of Piperonyl Butoxide per acre. An accurate flow meter must be used to ensure the proper flow rates.

Vary flow rate according to vegetation density and mosquito population. Use higher flow rate in heavy vegetation or when populations are high.

Permethrin/ PBO Pounds per Acre	Application Rates Fl. oz./Min.				Fl. oz. PermaSease™ 3-15 per Acre
	5MPH	10MPH	15MPH	20MPH	
0.005/0.025	8.7	17.4	26.1	34.9	2.88
0.0025/0.0125	4.4	8.7	13.1	17.4	1.44
0.00088/0.0044	1.5	3.1	4.6	6.1	0.51

Failure to follow the above directions may result in reduced effectiveness.

AERIAL APPLICATION

PermaSease™ 3-15 may be applied undiluted at rates of 0.0025 to 0.005 pounds Permethrin (1.44 to 2.88 fl. oz. **PermaSease™ 3-15**) per acre by fixed wing or rotary aircraft equipped with suitable ULV application equipment. Do not apply by fixed wing aircraft at a height less than 100 feet, or by helicopter at a height less than 75 feet unless specifically approved by the state or tribe based on public health needs. Aerial applications shall only be made when recommended by public health officials and trained personnel of mosquito abatement districts and other mosquito control programs.

IN FLORIDA: Aerial applications of this product require trained personnel to perform industry accepted assays to monitor resistance formation in targeted mosquitoes.

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

Pesticide Storage: Store upright at room temperature. Avoid exposure to extreme temperatures. In case of spill or leakage, soak up with an absorbent material such as sand, sawdust, earth, fuller's earth, etc. Dispose of with chemical waste.

Pesticide Disposal: Wastes resulting from the use of this product must be disposed of on site or at an approved waste disposal facility.

Container handling: Nonrefillable container. Do not reuse or refill this container. Triple rinse (or equivalent), then offer for recycling if available or reconditioning if appropriate, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

Refillable Containers: Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into rinsate collection system. Repeat this rinsing procedure two more times. Then offer for recycling if available or reconditioning if appropriate, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

WARRANTY STATEMENT

NOTICE: To the extent provided by law, seller makes no warranty, expressed or implied, concerning the use of this product other than as indicated on the label. Buyer assumes all risk of use/handling of this material when use and/or handling is contrary to label instructions.

Appendix C: Public Notice of Intent

PUBLIC NOTICE OF INTENT TO APPLY MOSQUITO ADULTICIDES

On or after May 1st, 20xx, the Otter Creek Watershed Insect Control District (OCW) may be making ground applications of adulticides along the public and private roads in the towns of Brandon, Goshen, Leicester, Pittsford, Proctor, and Salisbury to control adult mosquito populations. Applications of PermaSease 4-4 (a synthetic pyrethroid insecticide) and Fyfanon (in the malathion family) will be made with ultra-low volume truck-mounted sprayers. Zenivex E-4 RTU (a non-ester pyrethroid) may be substituted for PermaSease 4-4 or Fyfanon. Spray routes can be viewed at: <https://ocwicd.com/route-maps>. At least six hours in advance of spraying, specific route information will be posted to <https://ocwicd.com/public-notice>.

The OCW call center phone number is (802) 247-6779; the call center will take requests for treatment during the season.

If you wish to opt out of all adult mosquito treatment and not have the road(s) abutting your property sprayed, please send a written request to the OCW. If you submitted an opt out (No Spray Zone) request for your property last year AND there have been no changes in ownership, contact information, or property boundaries, an email to the OCW containing your 911 address and requesting No Spray Zone status again this year will suffice. If you did not submit an opt out request last year and/or there have been changes in ownership, contact information, or property boundaries, please send a letter listing the name(s) of the property owner(s), his/her/their contact telephone numbers, the 911 address of the property, and a property map which clearly shows the property boundaries along the public right of way. Property maps can be obtained from Town Clerks or online at <https://maps.vcgi.vermont.gov/ParcelViewer>. Upon receipt of your request an OCW employee will contact you and then will mark your property as a No Spray Zone. Opt out requests must be renewed annually.

In accordance with paragraph 6.07 (a) of the Vermont Rule for the Control of Pesticides, the OCW has obtained a permit to conduct truck-mounted mosquito adulticide applications from the Secretary, Vermont Agency of Agriculture, Food, and Markets.

Further information can be obtained from:

Doug Perkins, OCW Board of Trustees Chair or
Will Mathis, OCW Operations Coordinator
Otter Creek Watershed Insect Control District
P.O. Box 188
Brandon, VT 05733
(802) 247-6779
ocwicd@gmail.com
<https://ocwicd.com>

Comments or complaints about OCW adulticide operations should be addressed to:

Director, Public Health & Agricultural Resource Management Division
Vermont Agency of Agriculture, Food, and Markets
116 State Street
Montpelier, VT 05620-2901
(802) 522-6973
Steve.dwinell@vermont.gov

Otter Creek Watershed Insect Control District (OCW)

No Spray Zone Policy

Adopted: 17 March 2022

1. All No Spray Zone (aka Opt Out) requests must be submitted in writing. No Spray Zone requests must be renewed annually before April 15th. Requests received after April 15th will be honored, but there could be a delay between receipt of the request and marking the property, which could result in the property being sprayed.
2. If a No Spray Zone request was submitted for the preceding year AND there have been no changes in ownership, contact information, or property boundaries, an email to the OCW containing the 911 address and requesting No Spray Zone status again for the current year will suffice. The OCW email address is: OCWICD@gmail.com.
3. If a No Spray Zone request was NOT submitted for the preceding year and/or there have been changes in ownership, contact information, or property boundaries, a letter must be submitted listing the name(s) of the property owner(s), his/her/their contact telephone numbers, the 911 address of the property, and include a property map which clearly shows the property boundaries along the public or private road(s). The OCW mailing address is: P.O. Box 188
Brandon, VT 05733
4. Landowners who are members of the National Organic Farmers Association (NOFA) must submit full documentation each year. This is a NOFA requirement.
5. Upon receipt of a No Spray Zone request a District employee will contact the property owner(s) and then will mark the property with stakes to delineate the No Spray Zone.
6. No Spray Zone marker stakes will be placed at the property corners on the right of way unless the adjacent property owner(s) accedes to creating a buffer zone. Landowner(s) wanting a buffer zone for his/her/their property are responsible for obtaining permission, in writing, from their abutters. Such permission must clearly state where along the right of way the No Spray Zone marker stakes are to be placed.
7. No written request, no map, no stakes, then the property gets sprayed.
8. Reflective tape on the top of No Spray Zone marker stakes will indicate to the pesticide applicator:
 - Red = stop spraying as soon as the marker is seen
 - Green = start spraying after the marker is passed
 - Yellow and Black = bees ahead; stop spraying as soon as the marker is seen
 - Red and White = end of the spray route / town line; stop spraying as the marker is passed

REQUEST FOR PERMIT TO CONDUCT MOSQUITO ADULTICIDE APPLICATIONS

The Otter Creek Watershed Insect Control District (OCW) requests that the additional public notification protocols set forth herein be appended to paragraph C.3. of subject permit application, previously submitted on 24 March 2023, to further comply with Section 6.07(f) of the Vermont Rule for Control of Pesticides.

Notification #1 to be submitted the week of 15 May 2023 for two successive weeks' publication in the Addison Independent, Rutland Herald, and The [Brandon] Reporter.

Notification #1 to be sent at the same time to the Town Clerks for Leicester, Brandon, Pittsford, and Proctor with a request that this notification be posted to their Front Porch Forum accounts. [Note: Goshen and Salisbury are part of the same Front Porch Forum community as Leicester, so a posting by the Leicester Town Clerk will cover all three towns.]

Notification #1 to be submitted at the same time to VT-ALERT for dissemination via their notification system.

Notification #1 will be posted on the OCW website at <https://ocwicd.com/public-notice/>.

In the future, similar text will be included in the annual Public Notice of Intent to Apply Adulticides that is published in newspapers, via Front Porch Forum, and on the OCW website on or about 15 April. VT-Alert also will be requested to publish the annual Notice of Intent.

Those persons requesting email spraying notifications will be added to the contact group corresponding to the spray route where they are physically located or as otherwise requested. For instance, someone whose physical address is on Lake Dunmore Road in Leicester would be included on the Leicester East Lake contact list. On any day when spraying is expected to occur based on adult surveillance results, the route-specific contact list(s) will be used to email Notification #2 no later than six (6) hours before spraying will commence.

NOTIFICATION #1

Otter Creek Watershed Insect Control District Public Notice

The Otter Creek Watershed Insect Control District (OCW) provides email notifications of all planned spraying to control adult mosquitoes. Those notifications are sent no later than six (6) hours in advance and include the spray route(s) to be treated and the pesticide(s) to be used. In addition, notification will be provided at least monthly regarding the anticipated schedule of trapping and treatment for all towns in the district to alert residents to be aware of potential notification of spraying. The OCW's published spray routes can be viewed at: <https://ocwicd.com/route-maps/>. To subscribe to the spraying notification email list, please send a request to: ocwicd@gmail.com. Please include your name, E-

911 physical street address, and town in your request. Requests for inclusion on more than one email notification list will be accommodated.

Further information can be obtained from:

Doug Perkins, OCW Board of Trustees Chair or
Will Mathis, OCW Operations Coordinator
Otter Creek Watershed Insect Control District
P.O. Box 188
Brandon, VT 05733
(802) 247-6779
ocwicd@gmail.com
<https://ocwicd.com>

Comments or complaints about OCW spraying operations should be addressed to:

Director, Public Health & Agricultural Resource Management Division
Vermont Agency of Agriculture, Food, and Markets
116 State Street
Montpelier, VT 05620-2901
(802) 522-6973
Steve.Dwinell@vermont.gov

NOTIFICATION #2

Weather permitting, the Otter Creek Watershed Insect Control District will be conducting truck-mounted ultra-low volume adulticide spraying along the NAME OF ROUTE route this evening. PermaSease (a synthetic pyrethroid pesticide) will be applied to control adult mosquitoes. Spraying will commence at dusk and will be completed before dawn tomorrow. Spray routes can be viewed at <https://ocwicd.com/route-maps/>. All persons living along the intended spray route are requested to stay inside, keep dwelling windows closed, and are encouraged to move children's toys and pets indoors.

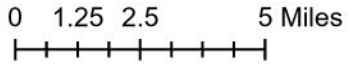
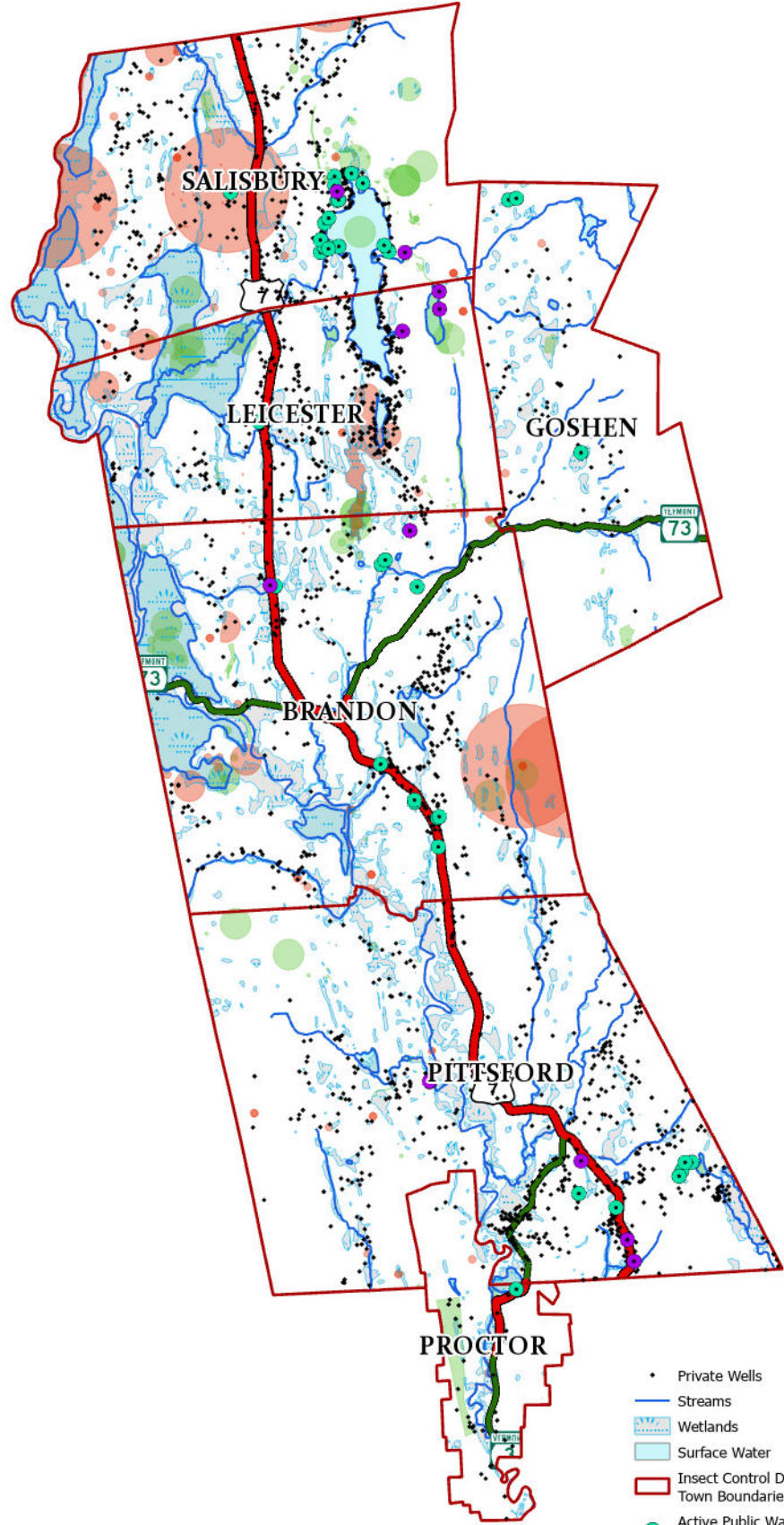
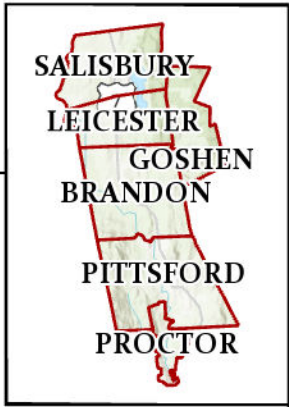
D. B. Perkins

16 May 2023

Douglas B. Perkins
Chair, OCW Board of Trustees

Date

Otter Creek Watershed Insect Control District

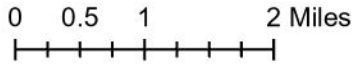
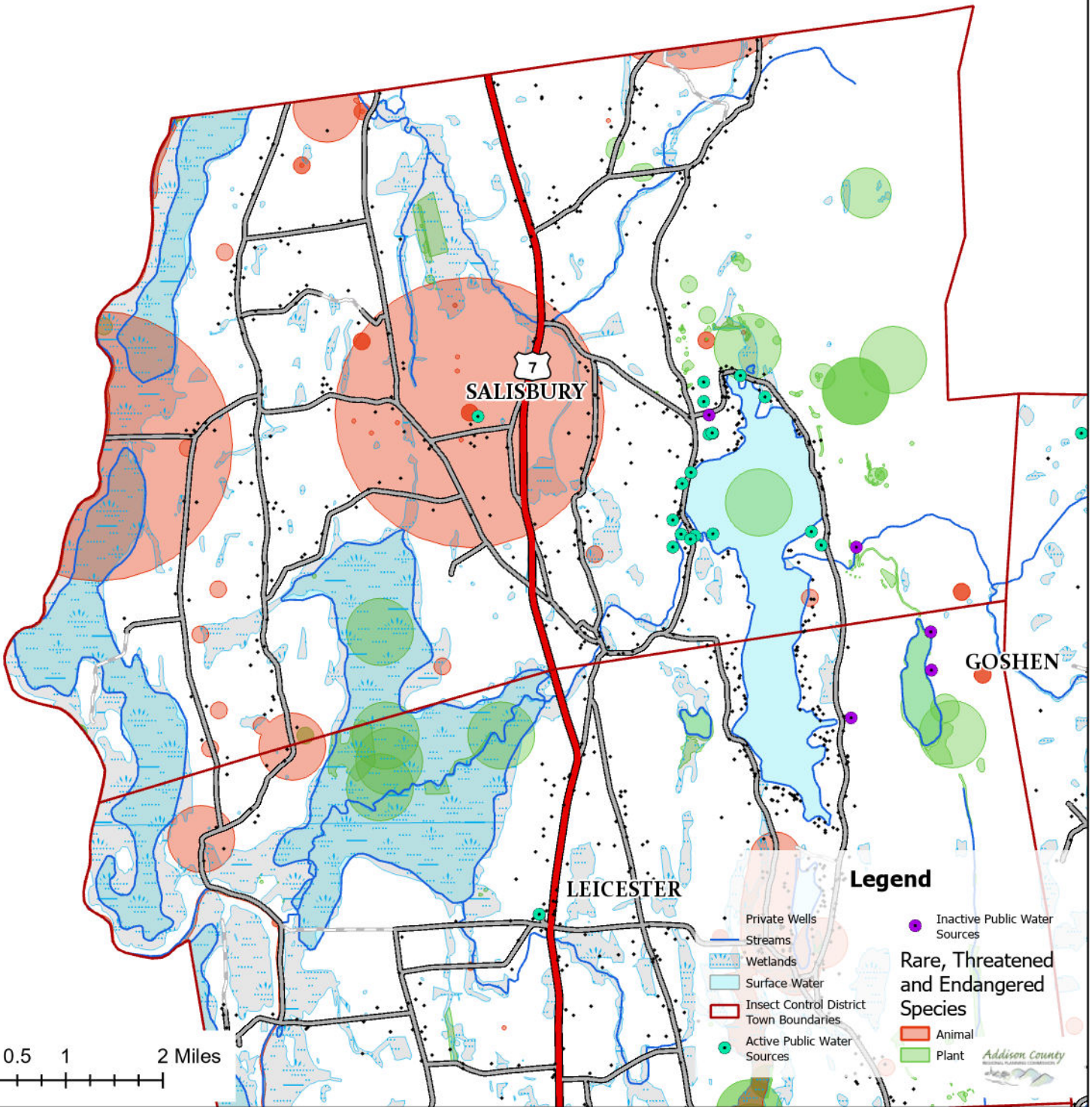
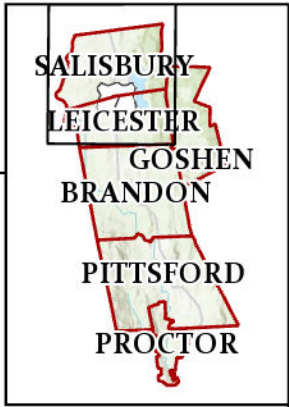


Legend

- Private Wells
- Streams
- Wetlands
- Surface Water
- Insect Control District
- Town Boundaries
- Active Public Water Sources
- Inactive Public Water Sources
- Rare, Threatened and Endangered Species
- Animal
- Plant

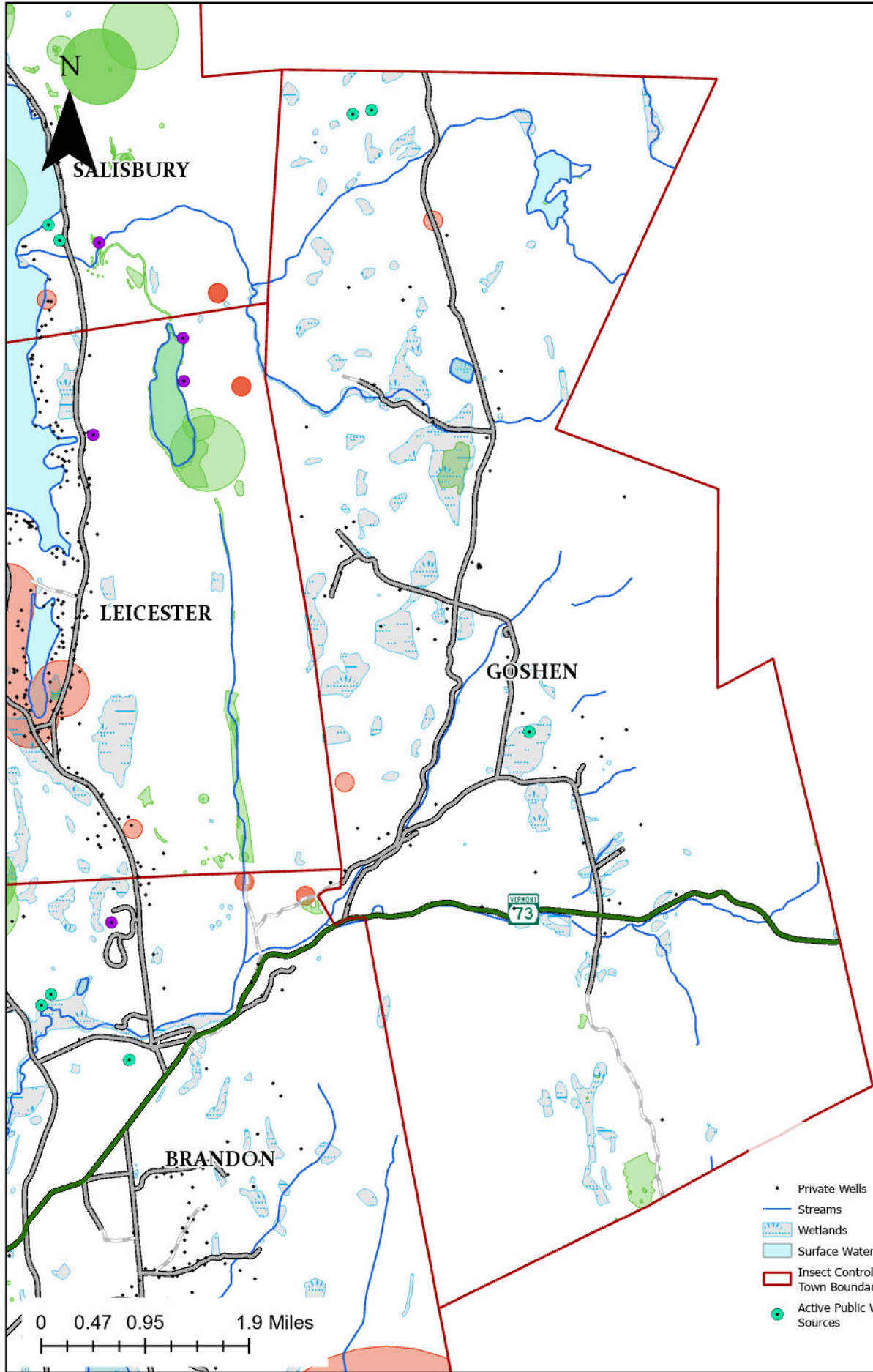
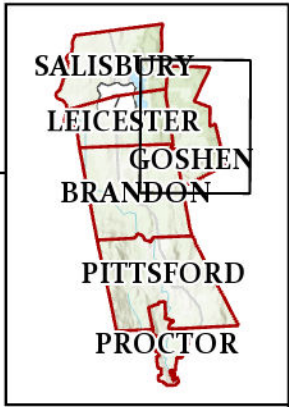


Salisbury



- Legend**
- Private Wells
 - Streams
 - Wetlands
 - Surface Water
 - Insect Control District
 - Town Boundaries
 - Active Public Water Sources
 - Inactive Public Water Sources
 - Rare, Threatened and Endangered Species
 - Animal
 - Plant
- Addison County*
NATURAL PLANNING COMMISSION

Goshen

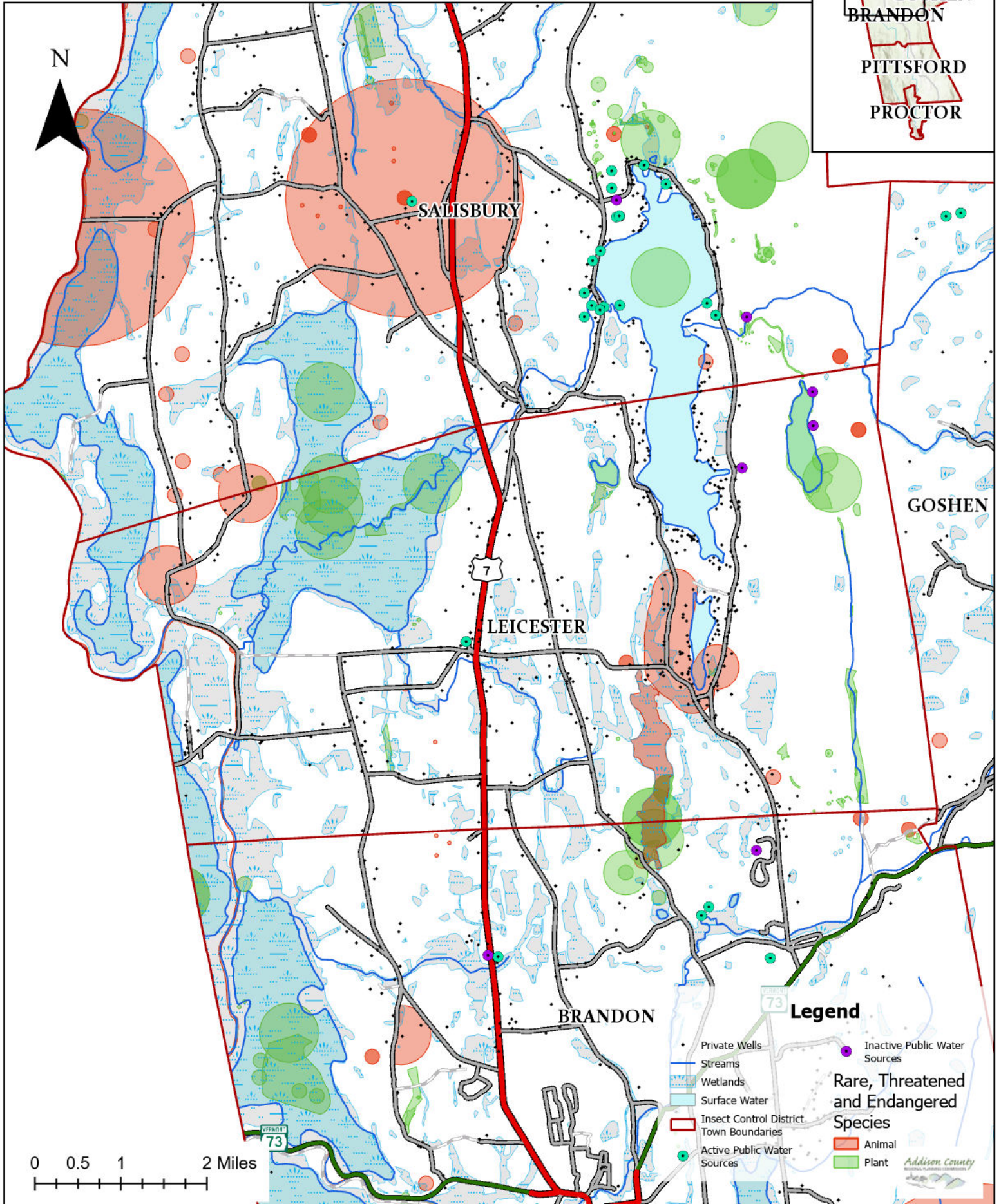


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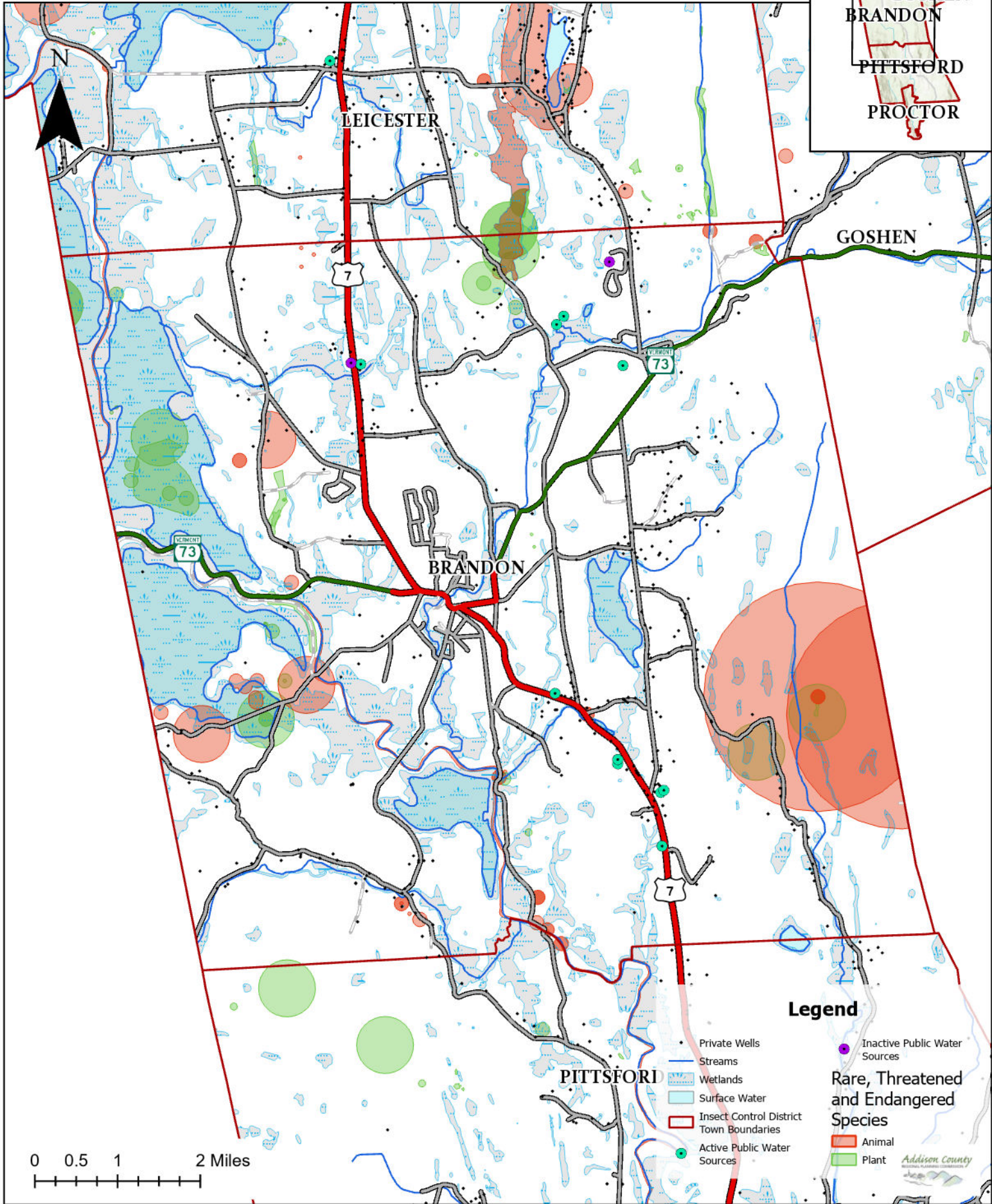
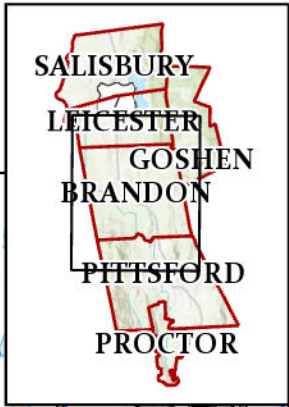
- Private Wells
- Streams
- Wetlands
- Surface Water
- Insect Control District
- Town Boundaries
- Active Public Water Sources
- Inactive Public Water Sources
- Rare, Threatened and Endangered Species
- Animal
- Plant



Leicester



Brandon

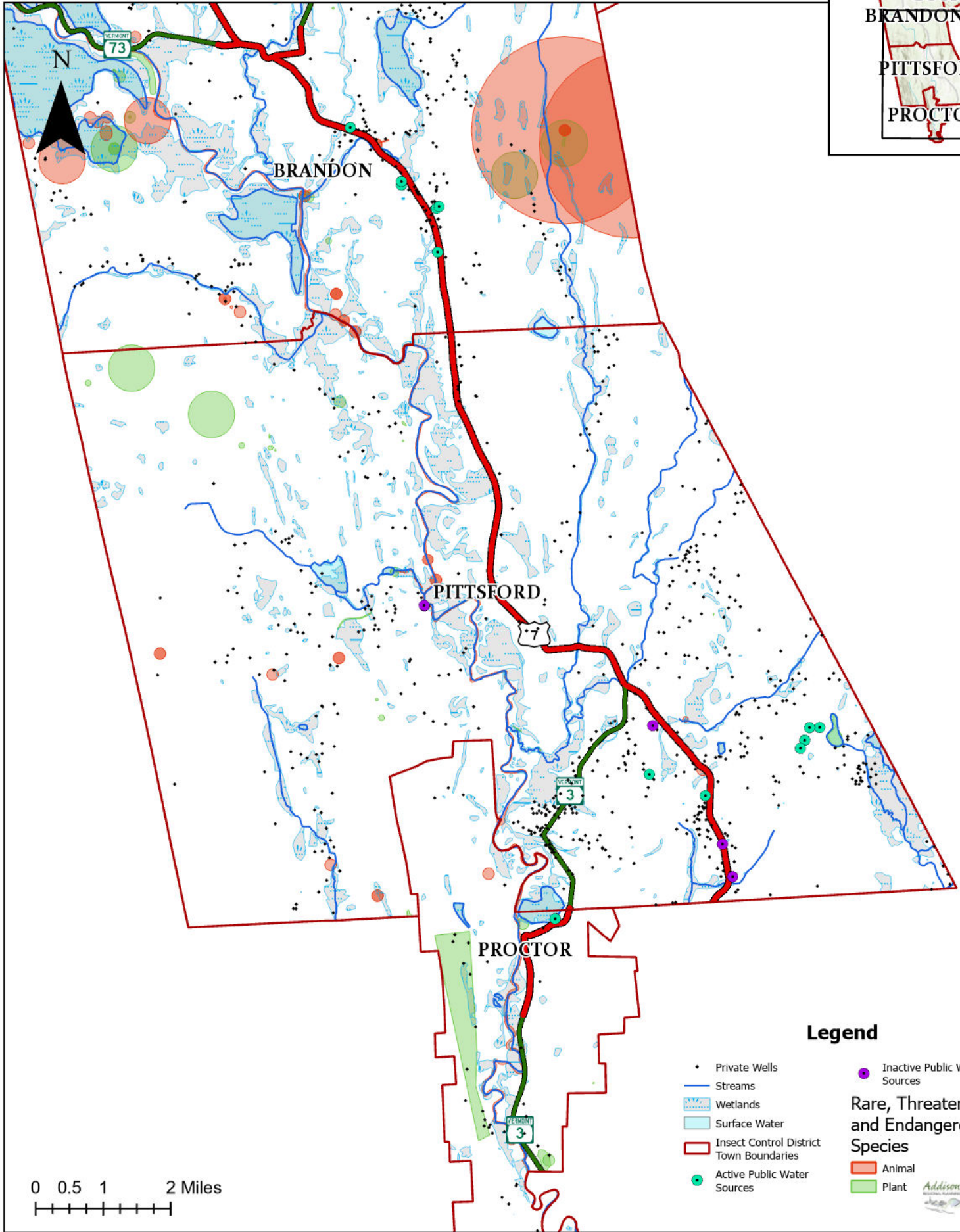
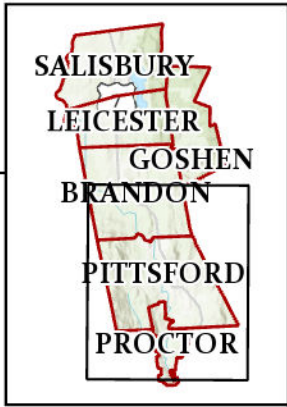


Legend

- Private Wells
 - Streams
 - Wetlands
 - Surface Water
 - Insect Control District
 - Town Boundaries
 - Active Public Water Sources
 - Inactive Public Water Sources
- ### Rare, Threatened and Endangered Species
- Animal
 - Plant

Addison County
VERMONT

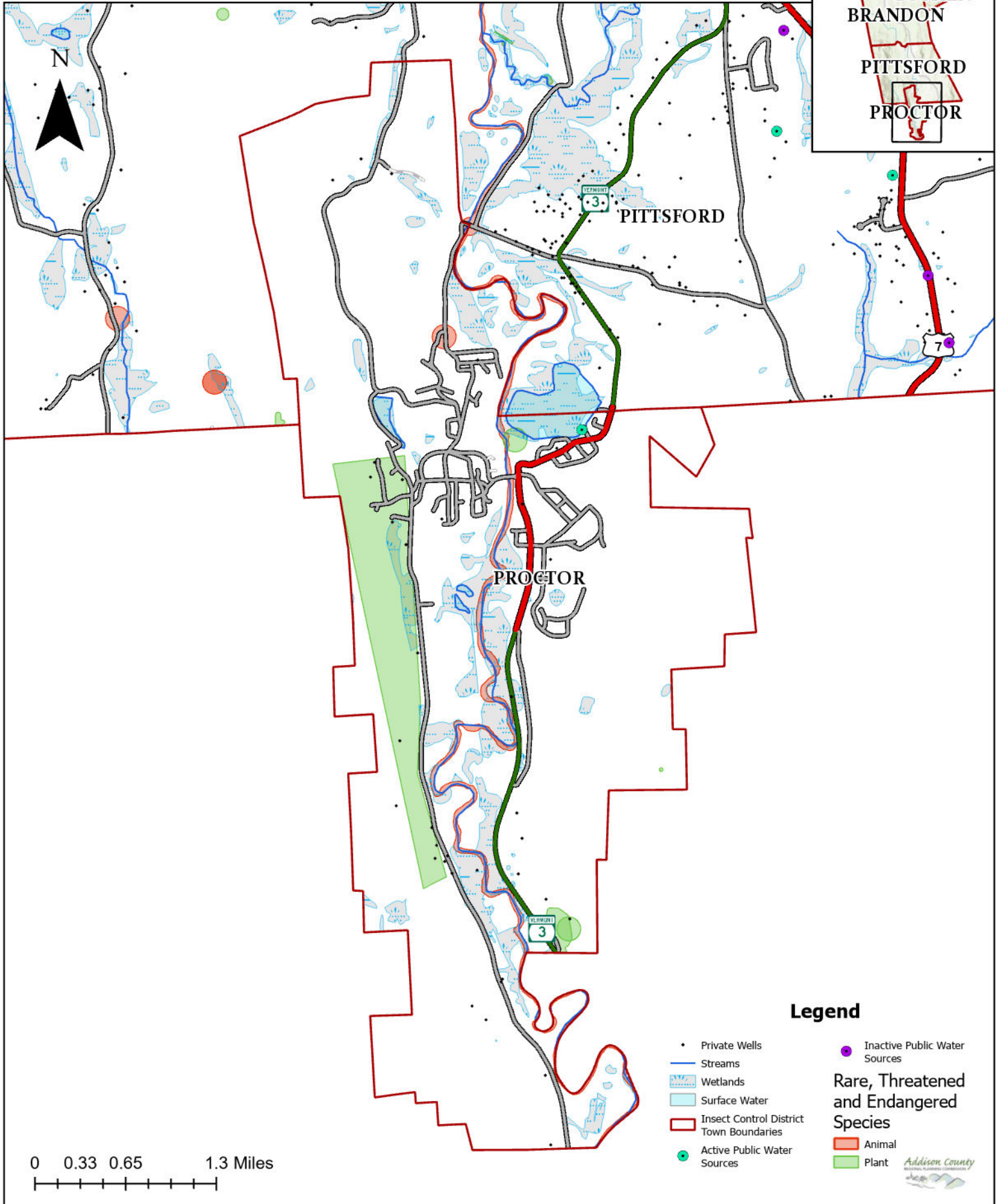
Pittsford



Legend

- Private Wells
- Streams
- Wetlands
- Surface Water
- Insect Control District
- Town Boundaries
- Active Public Water Sources
- Inactive Public Water Sources
- Rare, Threatened and Endangered Species
- Animal
- Plant

Proctor



**OTTER CREEK WATERSHED
INSECT CONTROL DISTRICT (OCW)**

P.O. Box 188, Brandon, VT 05733
(802) 247-6779
ocwicd@gmail.com
<https://ocwicd.com>

INTEGRATED PEST MANAGEMENT PLAN

Prepared by:
Will Mathis, OCW Operations Coordinator
Douglas Perkins, OCW Board of Trustees Chair

Approved by: OCW Board of Trustees
16 March 2023

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General Statement of Policy and Goals

The Otter Creek Watershed Insect Control District (OCW) provides mosquito and biting fly control services for the towns of Brandon, Goshen, Leicester, Pittsford, Proctor, and Salisbury in Vermont. The district was organized in 1978 as a union municipal district in accordance with Title 24 of the Vermont Statutes Annotated § 4861 - 4866 in response to a strongly supported local demand that more be done about the mosquito pest problem in the area.

The six towns that the OCW serves are in the Otter Creek watershed, which is in Rutland and Addison counties. The Otter Creek, at 112-miles, is the longest stream entirely within the borders of Vermont. From headwaters in the towns of Mount Tabor, Peru, and Dorset, the Otter Creek flows north to Lake Champlain.

Active summer resort areas around Lake Dunmore and Fern Lake, very important to the local economy, are in the Otter Creek watershed. Located on Lake Dunmore are Branbury State Park, a Vermont Fish and Wildlife boat launch, Kampersville and Waterhouse campgrounds, and the oldest continuously operated boys' (Camp Keewaydin) and girls' (Camp Songadeewin) summer camps in the United States. This is in addition to the numerous year-round and summer homes that surround both lakes. Obviously, mosquito populations can have a profound effect on enjoyment of the lakes... and outdoor summer activities elsewhere in the district.

The OCW's mission as a union municipal district is to control mosquito and biting fly populations in member towns. Ongoing, effective pest control is critical to maintaining the quality of life that people in this area expect. To accomplish our mission, the OCW uses a variety of methods (referred to as Integrated Pest Management or IPM) in a manner consistent with the highest level of safety and minimal adverse impacts on humans, wildlife, and the environment, including non-target organisms. A concept underlying mosquito control is to intervene when populations are concentrated, immobile, and accessible. Towards that end, IPM strategies incorporate several control measures, such as prevention / cultural methods, mechanical / physical methods, biological control methods, and use of larvicides and adulticides. Most of those control methods are used by the OCW to reduce both mosquito larvae and adults within the district. The OCW's goal is to manage mosquito populations to achieve tolerable levels by employing IPM methods.

The Vermont Agency of Natural Resources Department of Environmental Conservation (ANR DEC) issues a Pesticide General Permit (under the aegis of the U.S. Clean Water Act) that allows the OCW to use larvicides and adulticides in and around the State's waters. That permit, renewed every five years, is supplemented by detailed comprehensive regulations contained in the Vermont Rule for Control of Pesticides that are promulgated by the Vermont Agency of Agriculture, Food and Markets (VAAFAM).

The OCW is funded by the taxpayers of the towns in which mosquito and biting fly control operations are being done, by a larvicide program grant from the VAAFAM, and by an annual donation from the Lake Dunmore Fern Lake Association. The OCW is governed by a Board of Trustees comprised of two representatives and an alternate representative appointed by each member town's Select Board.

Definitions

Barrier Treatments: adulticide applications designed to remain active for an extended period on surfaces where mosquitoes rest and feed. They generally are applied as a mist or spray directly to plant leaves, turf, mulch, or other surfaces to create a “barrier” around a space.

Integrated Pest Management (IPM): a decision-making process that selects, integrates, and implements a combination of suitable and compatible strategies to prevent, deter, or manage pest populations within established thresholds. IPM uses a "whole systems approach," viewing the target species as it relates to the entire ecosystem. Management strategies are chosen that minimize impacts to human health, the environment, and non-target organisms, and protect overall biodiversity and ecosystem health.

Pest: broadly, a pest is an organism that interferes with or reduces the availability or quality of desirable plants and other resources; impacts human or animal health; damages structures; or harms some component of the ecosystem. Whether or not an organism is considered a pest can depend on the setting, rather than the particular species. A pest may be an insect, rodent, nematode, fungus, weed, or any other form of terrestrial or aquatic plant or animal life or virus, bacteria, or other microorganism (except viruses, bacteria, or other micro-organisms on or living in man or other living animals) which the Administrator of the EPA declares to be a pest under Chapter 7 U.S. Code Annotated § 136w (c) (1).

Pesticide: any substance or mixture of substances intended for use in destroying or repelling any pest. This includes, without limitation, fungicides, insecticides, nematicides, herbicides, and rodenticides. Insecticides include larvicides, used for killing pests when they are in their larval stage of development, and adulticides, used for killing adult pests.

Identification of Species to be Controlled

There are approximately 45 species of mosquitos found in Vermont, with many differences in the details of their life stages, such as their preferred source of blood meal, number of generations in a year, type of preferred breeding habitat, and water temperature requirements for larvae development. Some species emerge in the spring, some in summer, while others are present primarily in the fall. Time required for development from egg to adult also varies from a few days to a few months, depending on the species and environmental conditions. Successful control methods and timing differ according to the species present. While mosquitos may over-winter in the pupal stage or as adults, the egg stage is more usual in Vermont.

The table below lists the 22 species of mosquitoes which were captured in OCW light traps or net sweeps more than 400 times from 2016 to 2022 (listed in order from highest to lowest prevalence), with *Aedes vexans* captured more than 52,000 times and the other species in the top five captured more than 10,000 times. While many of the mosquito species in the table are known vectors for other diseases elsewhere, only arboviruses seen in Addison and Rutland Counties are shown.

Otter Creek Watershed Insect Control District Integrated Pest Management Plan
March 2023

Genus & species	Breeding Habitat	Flight Range	Bites Humans	Disease Vector for
<i>Aedes vexans</i>	Floodwater pools & wetlands	3 to 5 miles	Yes	Dog heartworm & EEE ¹ suspect
<i>Coquillettidia perturbans</i>	Cattail swamps	3 to 5 miles	Yes	Secondary EEE vector
<i>Ochlerotatus sticticus</i>	Temporary woodland pools & floodplains of rivers and large streams	Up to 5 miles	Yes	WNV ² & EEE
<i>Anopheles punctipennis</i>	Stream and floodwater pools	Less than 1 mile	Yes	Not in the OCW
<i>Ochlerotatus trivittatus</i>	Floodwater & woodland pools	Up to 5 miles	Yes	Secondary EEE vector
<i>Aedes cinereus</i>	Semi-permanent bogs and swamps & woodlands	Less than 1.5 miles	Yes	Not in the OCW
<i>Ochlerotatus stimulans</i>	Woodland pools	Less than 1/2 mile	Yes	Not in the OCW
<i>Anopheles quadrimaculatus</i>	Fresh water streams, ponds, and lakes	Less than 1 mile	Yes	Not in the OCW
<i>Ochlerotatus excrucians</i>	Woodland snowmelt pools	Up to 8 miles	Yes	Dog heartworm
<i>Anopheles walkeri</i>	Fresh water marshes containing emergent or floating vegetation	Up to 3 miles	Yes	Not in the OCW
<i>Ochlerotatus canadensis</i>	Woodland pools, swamp borders and grassy hummock areas	Less than 100 yards	Yes	Primary dog heartworm & EEE suspect
<i>Ochlerotatus intrudens</i>	Temporary and semi-permanent woodland pools, marshes, bogs, and grassy drainage ditches	Up to 8 miles	Yes	WNV
<i>Ochlerotatus punctor</i>	Temporary pools and sphagnum bogs in densely wooded forests	Up to 8 miles	Yes	Not in the OCW
<i>Culex pipiens</i>	Any type of water	Less than 1 mile	Yes	Primary WNV vector
<i>Uranotaenia sapphirina</i>	Permanent and semi-permanent swamps	Less than 5 miles	No	Not in the OCW

Genus & species	Breeding Habitat	Flight Range	Bites Humans	Disease Vector for
<i>Ochlerotatus japonicus</i>	Rock pools & containers such as tires	Up to 8 miles	Yes	Not in the OCW
<i>Culex restuans</i>	Temporary ground pools that remain flooded after they have produced broods of <i>Aedes</i>	Up to 2 miles	Yes	Secondary WNV vector
<i>Culex salinarius</i>	Grassy pools, ditches, and ponds	Less than 1 mile	Yes	Secondary WNV vector
<i>Anopheles barberi</i>	Tree holes; larvae are predators of other mosquito larvae	Up to 3 miles	Yes	Not in the OCW
<i>Ochlerotatus triseriatus</i>	Tree-holes, tires, and other artificial containers	Less than 1000 feet	Yes	Not in the OCW
<i>Culiseta melanura</i>	Acidic ground water habitats, including swamps, flood plains, and pools	Up to 2 miles	Yes	Primary EEE vector
<i>Psorophora ferox</i>	Woodlands	Up to 2 miles	Yes	None

¹ Eastern Equine Encephalitis

² West Nile Virus

Larval Control Threshold

The action threshold for controlling mosquito larvae is established by the VAAFM Public Health & Agricultural Resource Division (PHARM). The action threshold is: ten (10) or more mosquito larvae are collected, on average, in ten (10) sampling dips taken at least ten (10) feet apart using a standard dipper cup.

Adult Control Thresholds

The action thresholds for controlling adult mosquito and biting fly pests were established by the OCW Board of Trustees based on historical data and scientific studies seeking to define the level of mosquito activity that humans find to be a “nuisance”. The action thresholds are: fifteen (15) or more biting flies and/or adult mosquitoes which are known to bite humans captured in a net sweep or forty (40) or more captured in a United States Centers for Disease Control and Prevention (CDC) light trap for every 24 hours that the trap is set.

In addition, if the Vermont Department of Health (VTDOH) declares a public health emergency due to mosquito vector disease, control actions may be conducted in a particular area until the VTDOH determines that the disease threat has been abated.

CDC light traps are used to monitor adult mosquito populations. There is at least one trap site along each of the adulticide spray routes that the OCW services. Trap locations are selected based on their proximity to historic breeding areas and are placed out of direct sunlight, in areas with dense vegetation, and where birds are known to nest.

Traps are powered by 6-volt batteries which run a small light and a fan. A pheromone pellet is placed in the trap. The traps are connected to a small carbon dioxide (CO²) tank, since that gas is a primary attractant to female mosquitoes. The female mosquitoes are attracted to the top of the trap by the CO², the light, and the pheromones, where the fan draws them into the catch bag. Traps run throughout the night collecting adult mosquitos. The traps are retrieved the next day and taken to the OCW's facility for examination. That same day the trap contents are frozen and counted. Since 99.5 percent of mosquitoes being captured by the OCW are known to bite humans, the trap / net counts are used to make treatment decisions. Within the same week a sample of mosquitos are identified under a microscope by genus and species to identify population composition and trends. The collection record is annotated with count and identification results.

Larval Control Options

Control of mosquitoes is most effective when they are in the larval stage. At this stage of development, the insect is confined to water and lacks the winged mobility that offers the adult a means of escape. When larva control efforts are timed just right, large populations can be decimated, thus significantly reducing the number of adults that will become a human pest. Larviciding is a key component to any integrated mosquito management program.

While larviciding can be very effective, other control options are available and employed by the OCW as part of our IPM. The following tables summarize the water quality impacts, non-target organism impacts, feasibility, cost effectiveness, and previous management measures of all larvae control methods used by the OCW.

Larvae – Prevention / Cultural Methods

Water Quality Impact	None
Non-target Organism Impact	None

Larvae – Prevention / Cultural Methods (continued)

Feasibility	Feasible and encouraged via the OCW’s public relations efforts and direct interaction with property owners. Through newspaper / newsletter articles, brochures prepared and distributed by the OCW’s Board and volunteers, and the OCW website, the public is encouraged to minimize mosquito breeding habitat by, among many other things, emptying containers and other repositories that collect stagnant water. Landowners are encouraged to manage emergent vegetation and maintain ditches / natural drains to minimize flooded areas which are prime mosquito habitat.
Cost Effectiveness	Low to moderate. While the OCW’s public relations efforts have led to good, helpful actions by residents to reduce breeding habitats, ultimately these efforts are not very effective given the 16,000+ acres of Class 2 wetlands in the area the OCW services compared to the small breeding areas (e.g., old tires, bird baths, wading pools, gutters, boat covers) that can be emptied of stagnant water by the public. More effective are efforts by property owners to keep ditches and natural drains open and flowing, particularly in the spring when substantial field flooding occurs.
Previous Management Measures	Encouraging property owners to minimize stagnant water mosquito breeding habitat has been done for over a decade.

Larvae – Mechanical / Physical Methods

Water Quality Impact	None
Non-target Organism Impact	None known as the physical methods the OCW employs just return flooded areas to their pre-existing natural condition.
Feasibility	Feasible. Mosquitoes need stagnant water to complete their life cycle. Restoring drainage systems to historic conditions allows the free flow of water, drastically reducing mosquito larva development. OCW employees remove debris from roadside culverts when found during surveillance activities. They also report flooded ditches and plugged culverts to town road foremen, encouraging them to keep those ditches free of standing water and to unclog culverts, using heavy equipment where needed, to allow flooded areas to drain. When that encouragement is ineffective, the OCW Board of Trustees Chair contacts the Town Manager or Select Board Chair to spur appropriate action.
Cost Effectiveness	Very cost effective. Opening drainage helps to minimize flooded areas which are prime mosquito breeding habitat.
Previous Management Measures	OCW staff action and encouraging town efforts to keep drainage ditches and culverts open has been done for over a decade. Concerns about adverse impacts to wildlife habitat sometimes results in no action being taken.

Larvae – Biological Control Methods

Water Quality Impact	None
Non-target Organism Impact	None
Feasibility	The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) has been attempting to use this method in Wildlife Management Areas and Wetlands Reserve properties that they have created within the district. The OCW’s subjective experience is that several years elapse before natural predators (e.g., dragonfly larvae and fish) become established well enough to be effective as mosquito larvae controls.
Cost Effectiveness	This method is under the control of the USDA NRCS and private landowners who bear the costs, if any. Also, most of the district’s wetlands are located on privately-owned property and those NRCS management areas cover relatively little of that acreage. Possibly these biological control methods will become more well-established and, consequently, more effective in the future. That would result in reduced larvae counts and consequent need for larvicide treatments.
Previous Management Measures	The USDA NRCS Wildlife Management Area and Wetlands Reserve programs.

Larvae – Larvicides

Water Quality Impact	Low. When the methods discussed above are infeasible or ineffective, the OCW uses two biological larvicides: <i>Bacillus thuringiensis</i> var. <i>israelensis</i> (Bti) (brand name: VectoBac) and, in areas where there is significant organic pollution, <i>Bacillus sphaericus</i> (BS) (brand name: Spheratax). The OCW also uses Methoprene (brand name: Altosid) in storm drains, similar areas, and locations that need additional treatment, such as pools that remain wet for long periods of time. All larvicides used by the OCW are applied in accordance with label instructions, which have been registered by both the U.S. Environmental Protection Agency (EPA) and by the VAAF Public Health & Agricultural Resource Management Division (PHARM).
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Larvae – Larvicides (continued)

<p>Non-target Organism Impact</p>	<p>Low. All larvicides used by the OCW are applied in accordance with label instructions, which are created by manufacturers and then registered by both the EPA and the VAAFPM PHARM, with the intent to protect bystanders, application personnel, and the environment. The label also provides instructions about how to handle and use the product safely. The EPA and VAAFPM PHARM have determined that these larvicides are unlikely to cause adverse impacts to non-target organisms when used in accordance with approved product labels. Both Spheratax and Vectobac are approved for use by the Northeast Organic Farmers Association (NOFA) for use on organic farms since they are formulated with organically grown corn.</p>
<p>Feasibility</p>	<p>Feasible. Bti , BS, and Methoprene are very effective in killing mosquito larvae and application is relatively straight forward. Methoprene comes in both liquid and pellet forms; the pesticide applicator selects which form to use depending on the specific treatment situation. BTi and BS are granular products typically applied with a backpack sprayer either operated along shorelines or deployed on the OCW’s all-terrain amphibious vehicle (Argo). However, approximately 30% of the district’s wetlands are not accessible via Argo due to thick brush. Aerial application of BTi and BS from helicopters is available from a company located on Long Island, New York. That company charges a minimum of \$30,000 to provide service in Vermont. About 9% of the mosquitoes captured in OCW light traps are woodland breeders, i.e., not located in areas accessible to larvicide control.</p>
<p>Cost Effectiveness</p>	<p>Larvicides are extremely effective, especially to the extent that eliminating larvae reduces the need to control adult mosquitoes. However, aerial application costs \$40+ per acre (which includes the rental cost of the helicopter plus use of the lowest cost, i.e., least persistent, larvicide). At this cost, a one-time aerial larvicide treatment of the district’s 16,000 acres of wetlands would consume over 2½ times the entire OCW annual budget. Larvicide application via backpack sprayer, while less expensive than via helicopter, still costs \$25 or more per acre (labor plus product), is dependent on terrain accessibility, and is severely limited by labor constraints.</p>
<p>Previous Management Measures</p>	<p>The OCW’s larviciding program has been in effect since at least 2006. Over last four years, the average number of acres treated with larvicides using a backpack sprayer was 330 acres. The last aerial larvicide application was in 2018.</p>

Adult Mosquito Control Options

Even the best larvae control program will not prevent some adult mosquitoes from emerging. Mosquitoes’ long-term survival strategy is for enough adults to emerge all at once (referred to as a “hatch”) that they overwhelm any predators, which is when they then become a human pest. In the Otter Creek Watershed, larvae control is hampered by several factors: (1) the wetland areas potentially requiring treatment are vast compared to the staff, equipment, and fiscal resources available, (2) dense brush is present in about 30% of those wetland areas, making access from the surface virtually impossible, and (3) there are extensive mosquito breeding forested areas throughout the watershed in which larvae control simply is not feasible. While forest breeding areas contribute to the mosquito pest problem, they usually are not the primary source in most cases. Consequently, reducing the adult population to tolerable levels is a prime focus of the OCW’s mission.

Adults – Prevention / Cultural Methods

Water Quality Impact	None
Non-target Organism Impact	None
Feasibility	Feasible with respect to minimizing bites and nuisance. However, this method does not affect the actual number of adult biting insects. Through newspaper / newsletter articles, brochures prepared and distributed by the OCW, and the OCW’s website, the general public is encouraged, among other actions, to (1) wear long-sleeve light colored shirts and long pants during peak mosquito and biting fly season, (2) limit outdoor activities when mosquitoes are most active, (3) keep window / door screens in good repair, and (4) use repellants that have been registered with the EPA, indicating that they pose minimal risk to human health when used in accordance with product labels.
Cost Effectiveness	Cost effective in that public relations materials and presentations are relatively inexpensive. However, public outreach does not affect, manage, or control the actual number of biting insects, so the OCW still incurs potentially significant larva and adult treatment costs.
Previous Management Measures	Encouraging individuals to protect themselves from biting insects has been done annually via newsletters, news articles, brochures, and the OCW’s website.

Adults – Mechanical / Physical Methods

Water Quality Impact	None
Non-target Organism Impact	Minimal. There is some incidental by-catch of moths, flies, and gnats who venture into Centers for Disease Control and Prevention (CDC) light-traps deployed for surveillance of adult biting fly populations.
Feasibility	Very low. The OCW captures thousands of adult mosquitoes in CDC light traps and via net sweeps each season, which has an insignificant impact on the population.
Cost Effectiveness	Not cost effective due to minute impact.
Previous Management Measures	The OCW has been capturing adult mosquitoes in CDC light traps and via net sweeps for decades.

Adults – Biological Control Methods

Water Quality Impact	None
Non-target Organism Impact	None
Feasibility	Not feasible. The OCW has no control over, nor can it increase the numbers of, biting insect predators. According to the American Mosquito Control Association (AMCA) Best Practices for Integrated Mosquito Management (2021) bats, birds, and dragonfly nymphs are not effective components of a mosquito control program.
Cost Effectiveness	Not cost effective due to non-feasibility.
Previous Management Measures	None. See the Non-Target Organism Impact paragraph in the Adults – Adulticides section below for steps that the OCW takes to keep our operations from adversely affecting biting insect predators.

Adults – Adulthood

<p>Water Quality Impact</p>	<p>Low. When the methods discussed above are infeasible or ineffective, the OCW uses permethrin-family (brand name: PermaSease) and malathion-family (brand name: Fyfanon) adulticides that are dispensed from ultra-low volume (ULV) truck-mounted sprayers. ULV sprayers produce extremely small droplet aerosols designed to target adult mosquito wings. Degradation of these small droplets is rapid, leaving little or no residue at ground level in the area being sprayed. The OCW's ULV sprayers are calibrated before the start of each season to ensure that spray droplet sizes are within the approved ranges established by each adulticide's EPA-accepted label. All adulticides used by the OCW are applied in accordance with the product labels, which are created by manufacturers and then registered by both the EPA and the VAAFM PHARM, with the intent to protect bystanders, application personnel, and the environment. The label also provides instructions about how to handle and use the product safely.</p>
<p>Non-target Organism Impact</p>	<p>Low. To protect non-target organisms the OCW only sprays at dusk and after dark, i.e., when bees have stopped foraging and other beneficial insects are sequestered for the night. Based on insect trapping data and human population densities, the OCW has established sixteen (16) spray routes in the towns being serviced. The OCW also has established protocols and advertises that <u>any</u> owner can request a no spray zone for their property. Proper weather conditions are necessary for safe and effective treatment: wind speed cannot exceed ten (10) miles per hour and air temperature must be above fifty (50) degrees Fahrenheit. Also, because adulticide application is ineffective in the rain due to spray dilution, the likelihood of rain must be low at the scheduled time of treatment. Pesticide applicators remain aware of wind direction to minimize having sprayed adulticide drift into an established no spray zone. Based on the OCW's best evidence, no aquatic organisms ever have been adversely affected by the OCW's adulticide use. The OCW has no evidence that our operations are likely to result in a "take" of any species listed as threatened or endangered nor that our operations adversely impact designated endangered or threatened species critical habitat.</p>

Adults – Adulthoods (continued)

Feasibility	Feasible. Prior to authorizing the application of adulthood, the OCW District Coordinator considers the following, among other factors: (1) adulthood efficacy against the target biting insect species, (2) any known adulthood resistance, (3) label requirements, (4) availability of the adulthood and application equipment, (5) environmental conditions (current and forecast), (6) cost, and (7) toxicity to non-target species, including humans. Spraying of adulthoods only occurs when target insects are present in numbers greater than the established action threshold and only in proper weather conditions. Controlling weather parameters are temperature, wind direction, wind speed, and low likelihood of rain in the forecast.
Cost Effectiveness	Very cost effective. The OCW’s actual cost for adulthood application is less than \$1.00 per acre, which includes labor, product, and truck expenses, i.e., fuel, maintenance, and insurance. That is far less than the cost of larvicide treatment. The adulthoods applied by the OCW to control adult biting insects are used in rotation to maintain their effectiveness, i.e., to minimize developing mosquito resistance. Resistance testing is done annually by sending live samples to the Northeast Regional Center for Excellence in Vector-Borne Diseases Pesticide Resistance Monitoring Program laboratory at Cornell University (or to whichever laboratory is under contract to the CDC to provide that testing).
Previous Management Measures	Adulthoods to control adult biting insects have been used in the district since at least the 1970’s. The OCW uses adulthoods from two chemical families: permethrin and malathion. Permethrin, first registered for use by the EPA in 1979, is a pyrethroid-class synthetic chemical insecticide. Permethrin is used for everything from backyard insect control to termite eradication. Malathion is an organophosphate-class insecticide. Malathion is registered by the EPA and VAAFV for use as a mosquito adulthood.

Inventory of Mosquito Breeding Habitat

Springtime in Vermont usually coincides with large amounts of snowmelt run-off and rainfall which end up in Otter Creek. When the creek gets full, tributaries also fill with water, eventually flooding fields and other low-lying land. Flooded ditches and fields in the Otter Creek watershed provide ideal habitat for mosquito larvae. The water temperature is usually mild, there is plenty of food, and many of the areas prone to flooding are agricultural land, meaning that they remain relatively undisturbed until they dry out. In addition to seasonally flooded fields, spread

throughout the district are over 16,000 acres of Class 2 wetlands and extensive forested areas, all of which are mosquito breeding habitat.

Mechanisms to Reduce Breeding Habitat

The OCW has no control over the mosquito breeding habitat in the district as we own none of those lands. Through newspaper / newsletter articles, brochures prepared and distributed by the OCW, and the OCW's website, the public is encouraged to eliminate stagnant water on their property that collects in bird baths, old tires, etc. While the OCW encourages town public works departments and landowners to keep ditches and culverts open and remove beaver dams, even those efforts sometimes result in pushback that doing so might negatively affect wildlife habitat.

Public Notification Action Plan

Community engagement is a continual, ever-evolving process where a mosquito control program routinely interacts with the public to create trust, increase knowledge, build relationships, understand citizen perceptions and behaviors, and recruit citizen participation. OCW employees, on almost a daily basis during the "season" (May through September), engage with citizens in towns being served. Interactions include seeking landowner permission to place surveillance traps, working with organic farmers to define what control efforts they do, or do not, want on or around their crops, establishing No Spray Zones, responding to requests for service or, while out doing surveillance, just saying "hi" to folks out walking their dogs. The OCW Board of Trustees Chair or Operations Coordinator always promptly follows up on the rare complaints. When invited to do so, OCW employees attend "town days" festivals and the annual Lake Dunmore Fern Lake Association picnic to showcase our equipment and educate people and answer their questions about mosquitoes, their lifecycle, OCW operations, and what the public can do to help reduce the nuisance those pests create. In addition, the Board of Trustees Chair and town representatives regularly attend Select Board meetings to get feedback on satisfaction with OCW control efforts.

Educating the public through the OCW website and a widely distributed pamphlet which emphasizes reducing stagnant water that sits in old tires, boats, gutters, etc. helps with source reduction. Since hundreds of larvae can live in a cup of water, getting rid of a few gallons in old tires can potentially kill thousands of mosquito larva. The amount of breeding habitat that can be eliminated by such public actions is minute compared to the overall district total. However, every bit helps, particularly when the stagnant water is near where people live or work.

Annually, on or about March 15th, the OCW submits the Public Notice of Intent found on the next two pages for publishing in the Addison Independent, the Rutland Herard, and The [Brandon] Reporter, the three newspapers which cover events in Addison and Rutland counties where the OCW operates. A copy is sent to all Town Clerks for posting at each town office. This notice also is posted to the Front Porch Forum websites which residents in the district can access. There are individual Front Porch Forum "communities" (websites) for Salisbury / Leicester / Goshen, Brandon, Pittsford, and Proctor.

In addition, WVTM, a local radio station, includes this notice as part of their public service broadcasts. A summary of the past year's larviciding and adulticiding applications and the No Spray Zone (opt out) policy and procedures are included in the OCW's end of year report sent to each member town. That end of year report subsequently is published in each town's Annual Report, which is mailed to all taxpayers in February and posted on each town's website.

PUBLIC NOTICE OF INTENT TO APPLY MOSQUITO LARVICIDES

On or after April 15th, 20xx, the Otter Creek Watershed Insect Control District (OCW) will be applying ground and possibly aerial treatments of mosquito larvicides on surface waters in the towns of Brandon, Goshen, Leicester, Pittsford, Proctor, and Salisbury to control mosquito larvae populations. Those treatments will use *Bacillus thuringiensis israelensis* (Bti), *Bacillus sphaericus* (BS), and Spinosad, which are bacterially derived larvicides. Ground applications of Cocobear (mineral oil) and Methoprene may also be used in selected wet areas to target mosquito pupae and prevent adult emergence.

Exclusion requests need to be renewed annually. Please send a written request to the OCW mail or email address below.

In accordance with paragraph 6.06 (a) of the Vermont Rule for the Control of Pesticides, the OCW has obtained a permit to conduct larvicide applications from the Secretary, Vermont Agency of Agriculture, Food, and Markets.

Further information can be obtained from:

Doug Perkins, OCW Board of Trustees Chair or
Will Mathis, OCW Operations Coordinator
Otter Creek Watershed Insect Control District
P.O. Box 188
Brandon, VT 05733
(802) 247-6779
ocwicd@gmail.com
<https://ocwicd.com>

Comments or complaints about OCW larvicide operations should be addressed to:

Director, Public Health & Agricultural Resource Management Division
Vermont Agency of Agriculture, Food, and Markets
116 State Street
Montpelier, VT 05620-2901
(802) 522-6973
Steve.dwinell@vermont.gov

PUBLIC NOTICE OF INTENT TO APPLY MOSQUITO ADULTICIDES

On or after May 1st, 20xx, the Otter Creek Watershed Insect Control District (OCW) may be making ground applications of adulticides along the public and private roads in the towns of Brandon, Goshen, Leicester, Pittsford, Proctor, and Salisbury to control adult mosquito populations. Applications of PermaSease 4-4 (a synthetic pyrethroid insecticide) and Fyfanon (in the malathion family) will be made with ultra-low volume truck-mounted sprayers. Zenivex E-4 RTU (a non-ester pyrethroid) may be substituted for PermaSease 4-4 or Fyfanon. Spray routes can be viewed at: <https://ocwicd.com/route-maps>. At least six hours in advance of spraying, specific route information will be posted to <https://ocwicd.com/public-notice>.

The OCW call center phone number is (802) 247-6779; the call center will take requests for treatment during the season.

If you wish to opt out of all adult mosquito treatment and not have the road(s) abutting your property sprayed, please send a written request to the OCW. If you submitted an opt out (No Spray Zone) request for your property last year AND there have been no changes in ownership, contact information, or property boundaries, an email to the OCW containing your 911 address and requesting No Spray Zone status again this year will suffice. If you did not submit an opt out request last year and/or there have been changes in ownership, contact information, or property boundaries, please send a letter listing the name(s) of the property owner(s), his/her/their contact telephone numbers, the 911 address of the property, and a property map which clearly shows the property boundaries along the public right of way. Property maps can be obtained from Town Clerks or online at <https://maps.vcgi.vermont.gov/ParcelViewer>. Upon receipt of your request an OCW employee will contact you and then will mark your property as a No Spray Zone. Opt out requests must be renewed annually.

In accordance with paragraph 6.07 (a) of the Vermont Rule for the Control of Pesticides, the OCW has obtained a permit to conduct truck-mounted mosquito adulticide applications from the Secretary, Vermont Agency of Agriculture, Food, and Markets.

Further information can be obtained from:

Doug Perkins, OCW Board of Trustees Chair or
Will Mathis, OCW Operations Coordinator
Otter Creek Watershed Insect Control District
P.O. Box 188
Brandon, VT 05733
(802) 247-6779
ocwicd@gmail.com
<https://ocwicd.com>

Comments or complaints about OCW adulticide operations should be addressed to:

Director, Public Health & Agricultural Resource Management Division
Vermont Agency of Agriculture, Food, and Markets
116 State Street
Montpelier, VT 05620-2901
(802) 522-6973
Steve.dwinell@vermont.gov

Standards and Practices

Endangered Species Protection

There are 37 state-endangered and 16 state-threatened animals in Vermont. Pertinent to control of adult mosquitoes, those species include the Eastern Small-footed Bat (*Myotis leibii*), Little Brown Bat (*Myotis lucifugus*), Northern Long-eared Bat (*Myotis septentrionalis*), Indiana Bat (*Myotis sodalists*), and the Tri-colored Bat (*Perimyotis subflavus*). There is a well-known bat hibernaculum in an abandoned silver mine in Brandon. The area within 125 yards (less than 1/10th mile) of that hibernaculum has been designated as critical habitat, in which certain forestry activities are prohibited. Birch Hill Road is part of the Brandon SE adulticide spray route, but that road goes no closer than ½ mile to the hibernaculum. Except for Proctor, all towns in which the OCW conducts mosquito control operations are in the summer range of the Indiana Bat. Neither the EPA-registered label for PermaSease 4-4 (the adult mosquito control pyrethrin-family adulticide used by the OCW) nor for Fyfanon (the adult mosquito control malathion-family adulticide used by the OCW) have any restrictions on use of those products where bats are present. The OCW has never had any evidence that adult control of mosquitoes has had any adverse effects on the endangered / threatened species resident in the district. Map(s) of endangered species habitat within the district are in Appendix A.

Water Protection

Pesticide General Permit (PGP) 3807-PGP was issued to the OCW on 11 October 2022 by the Vermont Department of Environmental Conservation Lakes and Ponds Management and Protection Program, acting under the aegis of the U.S. Clean Waters Act National Pollution Discharge Elimination System. The PGP authorizes the OCW to discharge pesticides to the waters of the State.

Both PermaSease 4-4 and Fyfanon are toxic to aquatic organisms, including fish and aquatic invertebrates. Per the EPA-approved label for both products, runoff from treated areas or deposition of spray droplets into a body of water may be hazardous to fish and aquatic invertebrates. Application of those products over bodies of water (lakes, rivers, permanent streams, natural ponds, commercial fishponds, swamps, marshes, or estuaries), is prohibited **except** when necessary to target areas where adult mosquitoes are present, and weather conditions will facilitate movement of applied material away from the water in order to minimize incidental deposition into the water body.

Wildlife Protection, including Pollinators

Minimizing non-target species adulticide exposure is a high priority for the OCW. Pollinators, mainly insects such as bees, butterflies, wasps, and flies, are essential for the survival of most flowering plants and are necessary for growing more than 50 major crops. Biting insect control is important due to the nuisance they cause and their potential for being vectors for severe human disease.

To control flying adult mosquitos the OCW uses truck mounted Ultra Low Volume (ULV) sprayers. Annually those ULV sprayers are tested to ensure that they are properly calibrated and produce a fog that meets the (EPA-accepted) pesticide manufacturer's specifications for spray rate and a droplet size volume median diameter of < 30 microns with 90% of droplets < 50 microns. At this small size the droplet is designed to impact mosquito sized insects, not other wildlife, or much larger insects such as butterflies, bees, or beetles. Also, the chemical formulations the OCW uses are contact insecticides, selected because those chemicals, once released, break down rapidly, before bees and other wildlife begin to forage the next morning. The spray plume is narrow, typically 300 feet wide (150 feet either side of the truck) but depends on wind direction and speed.

There is a great deal of agriculture in the district, with twenty (20) known apiary operations. ULV aerosol sprays, as opposed to barrier treatments, do not leave residues that might affect pollinators. While the OCW does do barrier treatments upon request from landowners adjacent to No Spray Zones, care is taken to avoid spraying blossoming foliage attractive to pollinators. To further protect apiary interests, the OCW has established No Spray Zones around each operation. (See the Buffer Establishment and Maintenance section below.)

To protect honeybee colonies and other pollinators from possible pesticide exposure, there must be effective communication and cooperation between beekeepers and the insect control district. The OCW realizes that at times controlling adult mosquitoes in areas known to have bee colonies may be necessary. Because bees and other pollinators are most active between sunrise and sunset, the OCW adult mosquito treatment schedule does not begin until after sunset – well after when most bees have returned to their hives. Note also that a significant portion of OCW operations are for control of mosquito larva. Larvicide is applied directly to standing water and therefore does not affect pollinators at all.

OCW employees encourage beekeepers to:

- Locate hives 300 or more feet from roads that will be treated.
- Before April 15th annually, request No Spray Zone status due to the presence of bees.
- Report any colony movement (changes in location) by calling (802) 247-6779 or emailing ocwicd@gmail.com.
- Keep their colonies healthy; healthy hives are less susceptible to disease or damage from pesticides.

The OCW:

- After receiving a No Spray Zone request, marks the property with special stakes that alert pesticide applicators that they are approaching an apiary.
- Pesticide applicators turn off the truck sprayer before reaching the specially marked stake and leave the sprayer off until past the marker stake at the other end of the No Spray Zone.
- At least six hours in advance of spraying, posts on the OCW website Public Notice tab the route(s) to be sprayed and the adulticide(s) to be used.
- All truck mounted spraying is done when bees are not flying, i.e., sunset to sunrise.
- Pesticide applicators monitor wind direction to prevent unwanted spray drift towards colonies.

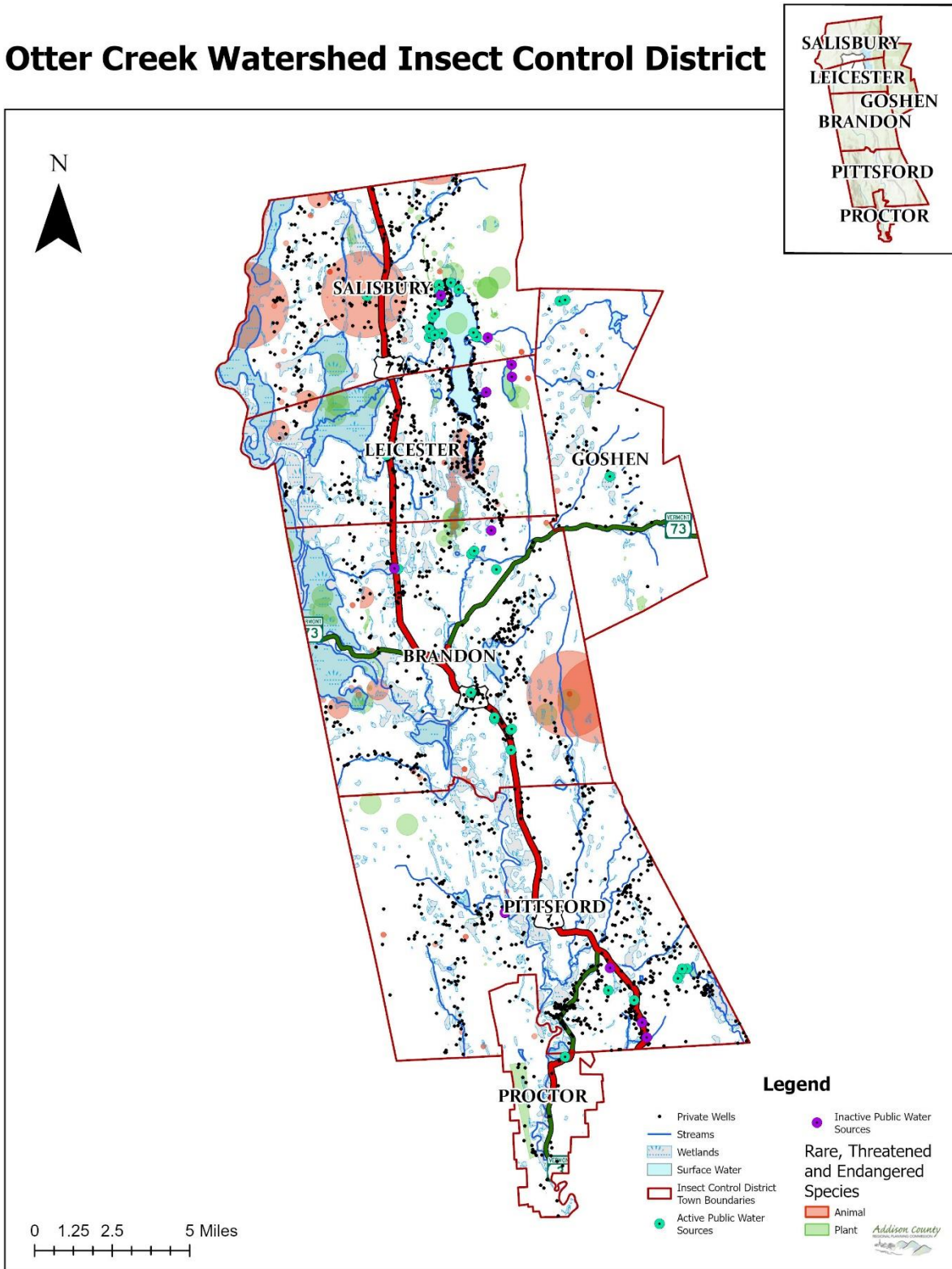
Buffer Establishment and Maintenance

As a service provider, the OCW must balance the desires of those who want adult mosquito pests controlled in the vicinity of their property with the desires of those people who do not want pesticides used on or near their property. To accommodate those conflicting desires, the OCW has established and widely publicized a No Spray Zone policy, to wit:

1. All No Spray Zone requests must be submitted in writing. No Spray Zone requests must be renewed annually before April 15th. Requests received after April 15th will be honored, but there could be a delay between receipt of the request and marking the property, which could result in the property being sprayed.
2. If a No Spray Zone request was submitted for the preceding year AND there have been no changes in ownership, contact information, or property boundaries, an email to the OCW containing the 911 address and requesting No Spray Zone status again for the current year will suffice. The OCW email address is: ocwicd@gmail.com.
3. If a No Spray Zone request was NOT submitted for the preceding year and/or there have been changes in ownership, contact information, or property boundaries, a letter must be submitted listing the name(s) of the property owner(s), his/her/their contact telephone numbers, the 911 address of the property, and include a property map which clearly shows the property boundaries along the public or private road(s). The OCW mailing address is:
P.O. Box 188
Brandon, VT 05733
4. Landowners who are members of the National Organic Farmers Association (NOFA) must submit full documentation each year. This is a NOFA requirement.
5. Upon receipt of a No Spray Zone request an OCW employee will contact the property owner(s) and then will mark the property with stakes to delineate the No Spray Zone.
6. No Spray Zone marker stakes will be placed at the property corners on the right of way unless the adjacent property owner(s) accedes to creating a buffer zone. Landowner(s) wanting a buffer zone for his/her/their property are responsible for obtaining permission, in writing, from their abutters. Such permission must clearly state where along the right of way the No Spray Zone marker stakes are to be placed.
7. No written request, no map, no stakes, then the property gets sprayed.
8. Reflective tape on the top of No Spray Zone marker stakes will indicate to the pesticide applicator:
Red = stop spraying as soon as the marker is seen
Green = start spraying after the marker is passed
Yellow and Black = bees ahead; stop spraying as soon as the marker is seen
Red and White = end of the spray route / town line; stop spraying as the marker is passed

Appendix A: Map of Threatened / Endangered Species Habitat

Otter Creek Watershed Insect Control District



OCW Insect Control District
PO Box 188 · Brandon VT 05733

Ground-based Adulticide and/or Larvicide Applications for Control of Mosquitoes

- ✓ Pesticide label(s) is/are in the vehicle or on person at time of application
- ✓ Spill clean-up kit present in vehicle, or at site of application
- If larvicide, larval survey data sheet attached (required for reimbursement)
- If aerial larvicide, VT Agency of Agriculture, Food, and Markets contacted

Date of application: _____ Time Application: Started _____ Stopped _____

General comments (route, address, treatment area, etc). Note any weather changes that occurred during the treatment.

Start Temp (F): _____ End Temp (F): _____ Wind Speed: _____ Wind Direction: _____

Weather (windy, sunny, overcast, etc.): _____

Product 1 Information	Product 2 Information	Product 3 Information
EPA Registration Number:		
Product Name:		
Application Rate:		
Total Amount Used:		

Application Information

If applied by vehicle, provide vehicle license plate number: _____

If applied by other, list method: _____

Applicator name (print): _____ Certificate number: _____

Location of application: _____

Attach map: If larvicide, circle treatment areas. If adulticide, include route map. If the entire route was not completed or there was any variation to the route, clearly mark & list the areas that were treated on the map.

Applicator Signature: _____

Date: _____

Applicator must keep a copy of this record for 2 years. Additional copies may be made for OCW use. Information recorded on this form will be summarized for the annual end of year pesticide usage report and for OCW grant reporting.



AGENCY OF AGRICULTURE, FOOD & MARKETS

Public Health and Agricultural Resource Management Division

Steven Dwinell, Director

www.vermontagriculture.com

116 State Street • Montpelier, Vermont 05620-2901 • (802) 828-2431 • (802) 828-1410 FAX

REQUEST FOR PERMIT TO CONDUCT MOSQUITO ADULTICIDE APPLICATIONS

Pursuant to 6 V.S.A. Chapter 87 and the Vermont Rule for Control of Pesticides, a request is made for a permit to conduct mosquito adulticide applications using truck-mounted Ultra Low Volume (ULV) sprayers within the State of Vermont.

A. Applicant Information:

1. Title of Organization: Otter Creek Watershed Insect Control District (OCW)
2. Address: P.O. Box 188, Brandon, VT 05733
3. Telephone number: (802) 247-6779
4. Contact person: Will Mathis, Operations Coordinator
Douglas B. Perkins, Board of Trustees Chair
5. Towns included in area of application: Brandon
Goshen
Leicester
Pittsford
Proctor
Salisbury
6. Counties included in area of application: Addison
Rutland

B. Adulthood Materials and Methods

1. Pesticide(s) to be applied (attach labels registered in Vermont):

Product Brand Name	Active Ingredient(s)	EPA Registration Number	Application Rate (active ingredient lbs / acre)	Application Rate (formulation fl oz/minute at 10 mph).
PermaSease 4-4 (Adapco)	Permethrin Piperonyl Butoxide	86291-3-96263	.005 .005	12.0
PermaSease 4-4 (Azelis)	Permethrin Piperonyl Butoxide	86291-3-96263	.005 .005	12.0
PermaSease 3-15	Permethrin Piperonyl Butoxide	86291-4-96263	.003 .017	12.0
Fyfanon-ULV	Malathion	279-3539	.045	3.5
Zenivex E-4 RTU	Etofenprox	2724-807	.005	12.0

See Appendices B.1. - 1 through B.1. - 5 for copies of the labels for the above listed adulticides.

2. Application equipment to be used, method of droplet production, and target droplet spectrum (reported as Volume Mean Diameter (VMD) for applications (per pesticide to be applied):

Guardian of the Galaxy 190ES, Clark Cougar, and Curtis Dyna-Fog Maxi-Pro 4 ULV sprayers

Droplets produced by being forced through orifices at the sprayer tip

PermaSease 4-4 and PermaSease 3-15 VMD less than 30 microns ($D_v 0.5 < 30\mu$) and 90% of the spray is contained in droplets smaller than 50 microns ($D_v 0.9 < 50\mu$)

Fyfanon VMD less than 30 microns ($D_v 0.5 < 30\mu$) and 90% of the spray is contained in droplets smaller than 50 microns ($D_v 0.9 < 50\mu$)

Zenivex E-4 RTU VMD between 10-30 microns ($10\mu \leq D_v 0.5 \leq 30\mu$) and 90% of the spray is contained in droplets smaller than 50 microns ($D_v 0.9 < 50\mu$)

3. Method and frequency of calibration:

Using a standard procedure, ULV sprayer calibration is verified by Azelis technicians (formerly Adapco) in the spring of each year before first use. Pump output is verified by the OCW Operations Coordinator monthly throughout the spray season or if there is a change in the adulticide being used in a particular sprayer.

Note: Attach Standard Operating Procedure (SOP) if available.

4. Identify and describe your process for deciding when and where to make treatments in accordance with the Integrated Pest Management Plan applicable to this Permit.

The action thresholds for controlling adult mosquito and biting fly pests were established by the OCW Board of Trustees based on historical data and scientific studies. In 1983 W. H. Robinson and R. L. Atkins at Virginia Polytechnic Institute and State University interviewed residents seeking to define the level of mosquito activity that humans find to be a “nuisance”. Then Marco Carrieri, et. al., in a 2008 article published in the Journal of the American Mosquito Control Association, related that “nuisance” sensitivity to 39 adult females being captured in a U.S. Centers for Disease Control and Prevention (CDC) light trap per night.

OCW action thresholds are: fifteen (15) or more biting flies and/or adult mosquitoes which are known to bite humans captured in a net sweep or forty (40) or more captured in a CDC light trap for every 24 hours that the trap is set.

5. Attach a copy of the current Vermont Company License issued per the Vermont Rule for Control of Pesticides (CVR 20-31-12).

See Appendix B.5. – 1 OCW Government License and Appendix B.5. – 2 OCW Commercial License

6. Are all applicators currently certified per Rule: Yes X No

C. Methods of Notification

1. Attach a copy of the Notice of Intent that includes:
 - a. the name and address of the permit applicant; a reasonable identification of the affected treatment areas; the towns where the application is to be done; the approximate starting date of the application; that a permit has been requested from the Secretary; the method that the adulticide is to be applied; the common name of the product or active ingredient to be used; the name, position, address, and telephone number of a person from the applicant to contact for further information, the address and phone number of the Agency identifying it as the appropriate place to contact with comments and/or complaints;

Note: The Notice of Intent must be published no earlier than 25 days nor more than 60 days before the commencement of application; this notice must be published for one day a week for two consecutive weeks in each of two newspapers, for every town to be affected by the adulticide application. If the notice is printed in a daily newspaper, then the notice shall be published on Thursdays. If the notice is printed in a weekly newspaper, then the notice shall be published on whatever day the paper is published.

See Appendix C.1. Public Notice of Intent

2. List the newspapers in which you will advertise this application to comply with Section 6.07(e) of the Vermont Rule for Control of Pesticides.
 - a) Addison Independent – published once weekly on Thursday
 - b) Rutland Herald – published five days per week
 - c) The Reporter – published weekly on Wednesday

3. Please indicate other notification option chosen to comply with Section 6.07(f) of the Vermont Rule for Control of Pesticides.

Annually, on or about March 15th, the OCW sends a copy of our Public Notice of Intent to all Town Clerks in the district for posting at each town office. This notice also is posted to the Front Porch Forum websites which residents in the district can access. There are individual Front Porch Forum “communities” (webpages) for Salisbury / Leicester / Goshen, Brandon, Pittsford, and Proctor. Over 80% of Vermont households have Front Porch Forum accounts.

A summary of the past year’s adulticide spray applications and the No Spray Zone (opt out) policy and procedures are included in the OCW’s end of year report sent to each member town. That end of year report subsequently is published in each town’s Annual Report, which is mailed to all taxpayers in February and posted on each town’s website.

4. Identification of means for individuals to request a no-treatment area on or abutting their property.

See Appendix C.4. No Spray Zone Policy

D. Maps of proposed treatment areas

1. Attach digital or electronic map of the area of proposed application that includes:
 - a. town boundaries
 - b. surface waters
 - c. public water sources and potable water sources
 - d. threatened or endangered species locations

See Appendix D.1. Maps of Proposed Treatment Areas

E. Integrated Pest Management Plan

1. Attach an Integrated Pest Management Plan to comply with Section 6.07(g) of the Vermont Rule for Control of Pesticides (plan submission required every five years) that shall include:
 1. a general statement of policy and goals;
 2. identification of the mosquito species to be controlled, the thresholds at which adult control will be conducted, larvicide control options prior to the use of an adulticide, and an evaluation of non-chemical options;
 3. an assessment or inventory of mosquito breeding habitat and proposed mechanisms to reduce this habitat in the proposed treatment area;
 4. a public notification action plan identifying steps the permittee will take to notify the public of how the permittee plans to reduce mosquito habitat; and
 5. establishment of standards and practices for:
 - a. endangered species protection
 - b. water protection
 - c. wildlife protection, including pollinators, and
 - d. buffer establishment and maintenance

See Appendix E.1. OCW Integrated Pest Management Plan

F. Recordkeeping and Reporting

1. Mosquito Surveillance

- a. Identify how you will create and maintain records of mosquito trap type, placement location, date of trap set and trap retrieval, species collected, and numbers of collected traps and trapping dates used to determine treatment locations and times.

The OCW uses net sweeps and Centers for Disease Control and Prevention (CDC) light traps to capture adult mosquitoes and biting flies. CDC light traps are set, collect pests throughout the night, then are retrieved the next day and taken to the OCW's facility for examination. The contents of the net or trap are frozen, then counted, and a random sample of mosquitos are identified under a microscope by genus and species. The OCW Operations Coordinator maintains an Excel spreadsheet in which data is recorded: date of collection, location (town, specific site, latitude, and longitude) where a net sweep was done or a light trap was placed, and whether a net or trap was used. Additional spreadsheet columns are used to record the total number of mosquitoes and biting flies collected and the number of each mosquito genus and species, deer fly, or black fly identified. Finally, air temperature, humidity, ultraviolet index, air quality index, barometric pressure, wind direction, wind speed, and general description of the prevailing weather are recorded in the spreadsheet for the time the net sweep was done or the trap was set.

- b. Identify how and at what frequency you will report mosquito surveillance records and records of treatment decisions to the Agency.

The Excel spreadsheet on which mosquito and biting fly surveillance records are kept is posted on the OCW website at <https://ocwicd.com> on the Pest Surveillance page. Thus that data always is available for review by the Agency or the public.

2. Pesticide Application

- a. Identify how you will create and maintain records of areas treated, pesticides applied, and pesticide amounts applied per acre or per road mile.

The OCW has established sixteen (16) adulticide spray routes which cover the public and private roads near mosquito breeding areas along which people reside in the district. Those route maps can be viewed at <https://ocwicd.com/route-maps/>. An OCW Application Report form is filled out for each route sprayed and for every service request received from citizens. See Appendix F.2. OCW Application Report. The pesticide name and amount used (in gallons) is recorded on the form. OCW standard operating procedure is that spraying is done at a constant ten (10) miles per hour, therefore the amount of active ingredient (AI) applied per acre and per road mile is:

Adulticide	Pounds of AI per acre	Pounds of AI per road mile
PermaSease 4-4	.010	.376
PermaSease 3-15	.020	.751
Fyfanon ULV	.045	1.624
Zenivex E-4 RTU	.005	.169

b. Identify how and at what frequency you will report pesticide application areas and amounts to the Agency.

At the end of each calendar year the OCW provides, via an Annual Pesticide Report sent to the Agency, the number of gallons of each adulticide used, broken down by county.

The Applicant certifies that, to the best of their knowledge, the provided information is true and accurate.

D. B. Perkins

24 March 2023

Douglas B. Perkins
Chair, OCW Board of Trustees

Date

(NOTE: Additional sheets may be attached to include further information.)

Appendix B.1. – 1 PermaSease 4-4 Label (Adapco)
Appendix B.1. – 2 PermaSease 4-4 Label (Azelis)
Appendix B.1. – 3 PermaSease 3-15 Label
Appendix B.1. – 4 Fyfanon ULV Label
Appendix B.1. – 5 Zenivex E-4 RTU Label
Appendix B.5. – 1 OCW Government License
Appendix B.5. – 2 OCW Commercial License
Appendix C.1. Public Notice of Intent
Appendix C.4. No Spray Zone Policy
Appendix D.1. Maps of Proposed Treatment Areas
Appendix E.1. OCW Integrated Pest Management Plan
Appendix F.2. OCW Application Report