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Parks & Open Space Division • Division des parcs et des espaces ouverts
Insect Control Branch • Direction de la lutte contre les insectes



May 2, 2011

Manitoba Conservation
123 Main St., Suite 160,
Winnipeg, MB R3C 1A5

ATTN: Tracey Braun, Director, Environmental Assessment and Licensing Branch

Dear Ms. Braun,

**RE: 2011 Pesticide Use Permit Buffer Zone Amendment and
Literature Review for Technical Advisory Committee (TAC)**

On July 21, 2010, Winnipeg City Council approved the Mosquito Control Program report containing seven recommended changes to the current nuisance larval and adult mosquito control program four of which relate to the Province of Manitoba. The first recommendation of that report stated:

1. *That the City of Winnipeg Public Service request the Province of Manitoba to reduce the size of the buffer zone currently stipulated in the 2010 Pesticide Use Permit.*

As you advised us, the Environmental Assessment and Licensing Branch will require scientific evidence that the existing buffer zone could be reduced in size. Our letter on August 17, 2010 stated that the City of Winnipeg is willing to undertake field trials to determine the dispersion and distribution of Malathion 95 ULV in varying environmental conditions. Your letter of August 18, 2010 stated that the City of Winnipeg would require a special Pesticide Use Permit (PUP) to allow exemption from some of the normally required PUP conditions. In addition, your letter stipulated that the TAC will review the research methodology proposed by the City. More recently, a letter dated March 25, 2011 from the Honourable Bill Blaikie to Mayor Sam Katz advised the Province's Conservation staff will work with the Insect Control Branch with revisions to the 2011 PUP, but a formal application from the City of Winnipeg is required.

Please consider this letter and attachments as formal application for a special PUP amendment by the City of Winnipeg. As you know, the City of Winnipeg's current buffer zone size is 100 metres based on the practice established in 1983 by the Clean Environment Commission. This buffer zone size was based on previous research conducted by the City of Winnipeg on the drift of Malathion 95 ULV from an ultra low volume (ULV) cold fogger. Appendix A includes other relevant scientific and peer reviewed literature. This literature review includes studies of the distance droplets can drift from a properly calibrated ULV sprayer using Malathion 95 ULV.

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Appendix B provides the basis of a scientific study to determine droplet drift to attempt to substantiate a further reduction in the current buffer zone size. The City of Winnipeg will provide information and a 15 day public notification period and information to the residents in the research area if no adult nuisance control is occurring. On the other hand, if conditions and timing are appropriate for a nuisance fogging program, this trial would proceed without a special use permit as the City would have met the requirements to conduct an adult nuisance mosquito program based on the 2011 PUP. Appendix B also describes the proposed fogging trial protocol for the TAC's review and recommendations. The methodologies have been developed to best identify the potential drift curve of Malathion 95 ULV under varying conditions.

If you require any additional information or need any clarification on the PUP amendment request, please do not hesitate to contact me.

Regards,

A handwritten signature in black ink, appearing to read 'Taz Stuart'.

Taz Stuart
City Entomologist
204.986.3794

c: M. Ruta, Acting Chief Financial Officer
B. Sacher, Director of Public Works
D. Domke, Manager of Parks and Open Spaces

Appendix A - Summary of Relevant Malathion Dispersal Studies

Over the past three decades, there have been over a dozen studies conducted in North America examining the dispersal of Malathion droplets during an ULV fogging event. Study habitats have included residential areas, open fields, sod farms, deserts, forests, and orchards. The methodology of determining the dispersal of the droplets have included bee mortality, mosquito mortality, deposition on filter paper or cotton ribbons, and deposition on grass. The range of dispersal observed in these studies was at least 42.8 meters to at least 500 meters, with none of the studies determining a maximum dispersion distance under their test parameters.

The two studies that were most comparable to fogging residential areas of Winnipeg were Knepper et al. (1996) and Tietze et al. (1996). In Knepper et al. (1996), the experiment was conducted in a 30 year old, single family dwelling neighbourhood of Saginaw County, Michigan. This experiment yielded a droplet dispersal of at least 91.4 meters based on deposition on grass with the highest deposition being seen at 7.6 meters. In Tietze et al. (1996), the experiment was conducted in a single family dwelling neighbourhood of Panama City, Florida. This study examined droplet dispersal using filter papers set up at 2.4 meters from the house on three sides and one 2.4 meters from the rear property line. Dispersal of at least 42.8 meters was detected during the study and deposition tended to be highest in front of the house. The overall consensus for all the studies is that dispersal decreases with distance regardless of habitat type and that droplets travel further in open environments compared to non-open environments.

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Appendix B City of Winnipeg Fogging Deposition Study Proposal

Purpose:

To replicate studies completed in the peer reviewed literature that determine the appropriate drift buffer size to not directly treat and prevent deposition of Malathion 95 ULV droplets on an anti registrants' property during an adult nuisance mosquito fogging event in Winnipeg.

Rationale:

The City of Winnipeg's Insect Control Branch currently provides 100 metre exclusion buffer zones that are abutting to or adjacent to, the properties of anti pesticide residents who do not want to be directly treated with Malathion 95 ULV. This proposal will determine if the appropriate buffer zone size to prevent deposition of Malathion 95 ULV on the anti registrant's property.

Materials and Methods:

Study Site:

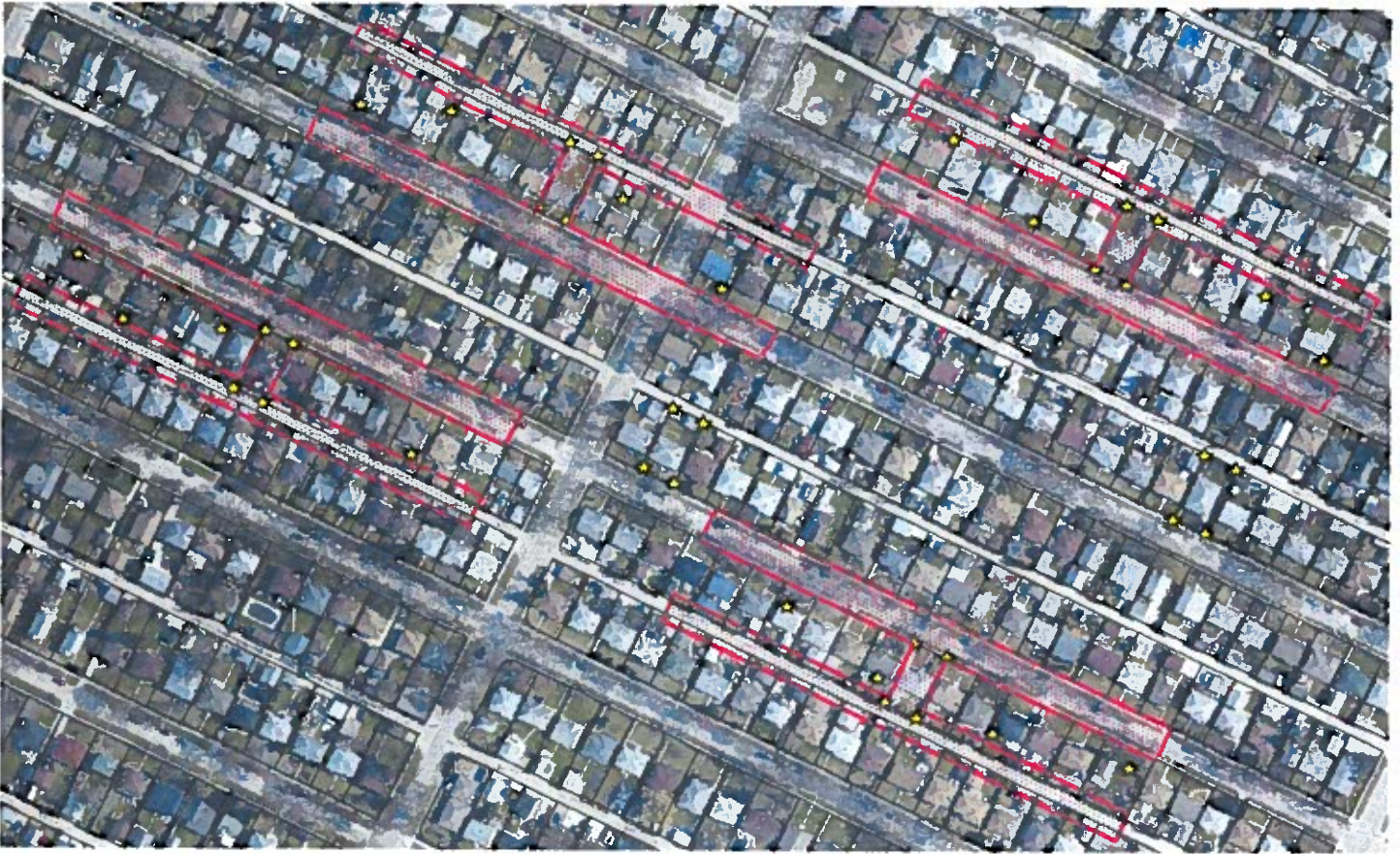
Streets in East Kildonan will be used for the study (see Figure 1). This neighbourhood is characterized by having linear, parallel streets that are lined with mature American elm trees and back lanes between streets. This is indicative of many of the normal neighbourhood sites that the Insect Control Branch treats in during an adult nuisance mosquito control program.

Experimental Design:

The following treatment scenarios will be done in replicates. This will occur over four nights or with Provincial approval, over one night. If it is completed in one evening there is less variability in weather conditions such as temperature, wind and relative humidity but there is an opportunity for droplet deposition occurring from a previous treatment test.

Scenario – Normal fogging protocols with 100m buffer

- Randomly select 4-6 properties within a 1 km² area of East Kildonan and apply a 100m buffer along the front street and back lane adjacent to those properties.
 - o East Kildonan neighbourhood chosen due to linear, parallel streets that are lined with mature trees as well as having back lanes (represents a typical older Winnipeg neighbourhood)
- Place one 20 cm filter paper on each corner of the buffered property
 - o Filter paper will be placed as close as possible to corners to avoid obstruction
- Randomly place filter papers within each buffer at varying distances from the buffered property
 - o Distances to be tested will be 10m, 25m, 50m, and 75m
- Randomly select 2-3 properties outside the buffers to be controls
 - o Each control property will have filter papers at each corner of property
- Conduct a normal City of Winnipeg adulticiding program
 - o Insecticide = Malathion 95 ULV
 - o Truck speed = 15 kph
 - o Droplet size = 12-20 microns
 - o Application rate = 160-180 mL/min
 - o Spray equipment = LECO or Clarke fogger
 - o GPS computer to track vehicle position, vehicle speed, and the location of buffers
 - o Travel along all streets and back lanes within the 1 km² area
- Leave samples in place for 10 minutes, then follow handling procedure in Tietze et al. (1994)
- Samples will be analyzed by ALS Laboratories or equivalent certified laboratory.



Methodology/Analysis

Collection and analysis of Malathion droplet deposition will be done using filter papers as done by Tietze et al., 1994, 1996. Filter papers will be placed randomly at corners of the randomly selected anti registrant's property. One property on either side of the anti pesticide registrant's property will also have an identical layout of filter papers and will be used as controls. The filter papers will be collected after 10 minutes of exposure and placed in pre-labeled bottles. The filter papers will be analyzed for Malathion droplets by either ALS Laboratories or by another approved analysis method for the presence or detection of Malathion 95 ULV.

Data to be collected includes wind speed, direction, ambient temperature and relative humidity averaged for the start and end ULV spray times. The filter papers will be analyzed to determine Malathion presence and graphed to determine the curve for deposition versus distance.

Assumption

The Insect Control Branch assumes from the literature review in Appendix A that spray drift can vary significantly in varying environmental conditions and minimal amounts of Malathion 95 ULV droplets may occur on the buffer zone registrant's property.