

# ATTACHMENT A

## **Elevation and Flood Insurance Information for Westwood Lakes and Winston Park**

**Westwood Lakes** consists of an area developed in the 1950's. The minimum fill requirement (CFC) for this area is 7.5 ft. NGVD, and the land elevations range from 8 to 9 ft. NGVD, with most of the area being around 8.5 ft. NGVD. Most of this area is in a Special Flood Hazard Area, or flood zone, with a base flood elevation of 8 ft. NGVD (Zone AE8).

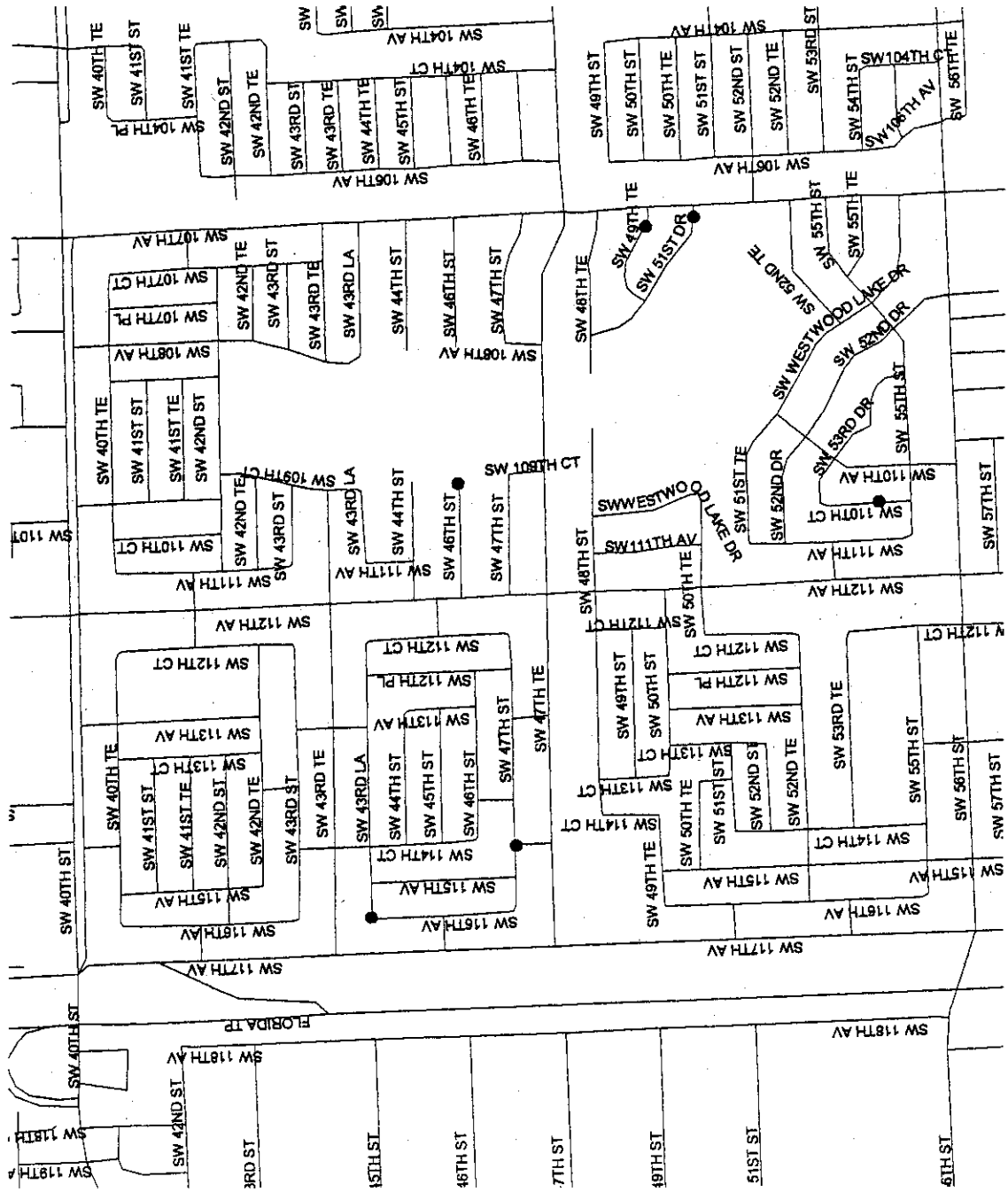
In addition, FEMA records indicate there are six (6) repetitive loss properties in the Westwood Lakes area. A repetitive loss property is a property where two (2) or more flood insurance claims of over \$1,000.00 have been paid out. The claims payouts for these losses total \$65,113.75 for damages from Hurricane Irene and the No-Name Storm of 2000. Payouts for the repetitive losses to residents in this area averaged from \$4,000.00 to over \$10,000.00.

The **Winston Park** area has a minimum fill requirement (CFC) of 8.1 ft. NGVD. The existing land elevation is from 8 to 9 ft. NGVD. Most of this area lies within a Special Flood Hazard Area, or flood zone, with a base flood elevation of 8 ft. NGVD (Zone AH8). Approximately ¼ of the area lies within an "X" flood zone.

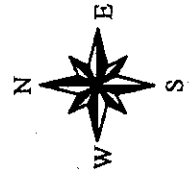
FEMA records indicate there are three (3) repetitive loss properties within Winston Park. Claims payouts for these losses total \$33,305.54 for damages from Hurricane Irene and the No-Name Storm of 2000. The average claims payouts for these repetitive losses range from over \$4,000.00 to over \$6,000.00.

Our approach for many years has been to provide drainage improvements in areas of repetitive losses, and this has been accepted and approved as mitigation by FEMA.

# Repetitive Loss Properties in the Vicinity of Westwood Lakes

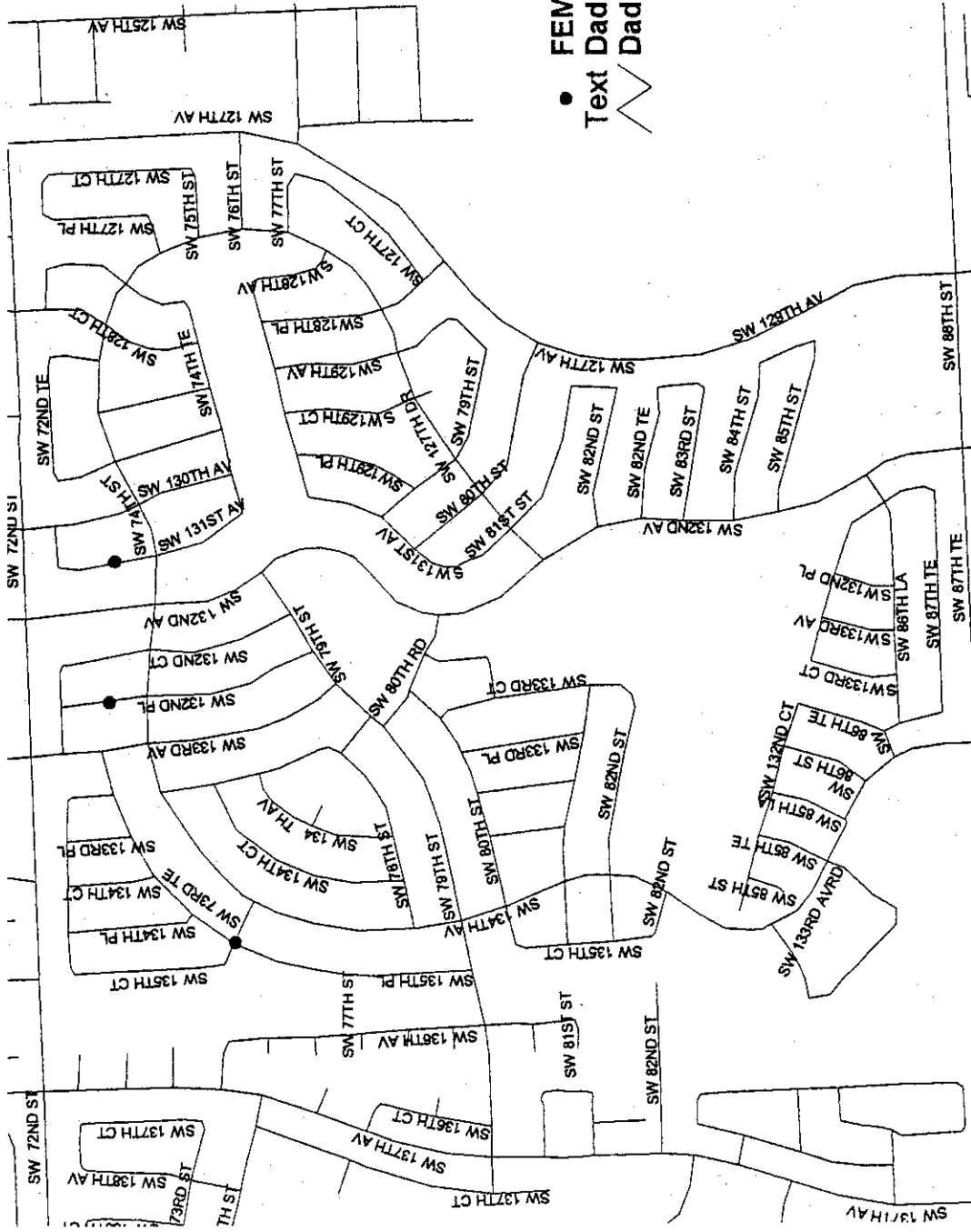


● FEMA Repetitive Loss Properties 2004 Westwood  
Text Dade Streets  
== Dade Streets

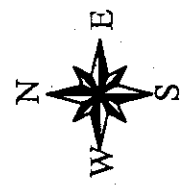


0.3 0 0.3 0.6 Miles

# Repetitive Loss Properties in the Vicinity of Winston Park



- FEMA Repetitive Losses 2004
- Text Dade Streets
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## **ATTACHMENT B**

# **Westwood Lakes and Winston Park FEMA Drainage Projects Report**

## **Background:**

- Hurricane Irene (1999) and the No Name Storm (2000) dropped up to 20 inches and 15 inches of rain respectively in Miami-Dade County causing major flooding and public infrastructure damage.
- Miami-Dade County filed a Declaration of Emergency, and an inspection team comprised of Federal, State, and County staff inspected and evaluated the damage caused by the storms. The evaluation resulted in the identification of approximately 3,000 impacted sites.
- The Federal Emergency Management Agency (FEMA) approved projects totaling \$804 million to repair the infrastructure damage and implement hazard mitigation projects to reduce future flooding and property damage.
- The County Manager's Office created (August 2001) the Division of Recovery and Mitigation (DORM) for the administration of the FEMA restoration program. Shortly after, the County selected 90 engineering consultants for the evaluation, design, coordination, and construction management of the 3,000 sites.
- The first phase of the project consisted of evaluations to verify that the sites were damaged by the storms and to determine if they required infrastructure repair and/or mitigation. The evaluations identified sites of No Proposed Improvement for a savings totaling \$41.2 million (9%) for roadway restoration and drainage construction.
- After the site evaluations, if it was determined that a site required repair and/or mitigation, the engineering consulting firms provided engineering calculations and design plans for construction. The County reviewed and approved the design plans, and issued permits for construction.
- The design criteria consisted of:
  - 1- Site Description
  - 2- Geotechnical Report
  - 3- Limited underground utilities investigation
  - 4- Survey
  - 5- Well Field, Flood Elevation, Brownfield and Dry Cleaner verification
  - 6- Average October Groundwater Level
  - 7- Drainage calculations based on South Florida Water Management District (SFWMD) formula
  - 8- Construction Cost Estimates
- The County assigned sites for construction to five (5) Master Consultants managed. Following are the specifics of Westwood Lakes and Winston Park.

**Westwood Lakes and Winston Park  
FEMA Drainage Projects Report  
Continued**

<b>Westwood Lakes Project Details</b>	
Master Consultant	Metcalf & Eddy, Inc.
Number of Sites	123
Total Number of Catch Basins	856
Structures Replaced (Percent)	136 (16%)
Linear Feet of Pipe	29,679
Project Construction Cost	\$5,219,772.70
Contractor	Stone Paving Inc.
Engineer of Record	Seven firms: CRJ & Associates, Inc. Alvarez Eng., Inc. Schwebke - Shiskin & Associates, Inc. Peer Consultants, Inc. E.N. Bechamps & Associates, Inc. Brown & Caldwell & Associates, Inc. Siddiq Kahn & Associates, Inc.
Surveyor	Four companies: E.N Bechamps & Associates, Inc. Ford Armenteros & Manucy, Inc. Schwebke-Shiskin & Associates, Inc. Tasnim Uddin & Associates, Inc.
Geotechnical Services	Two companies: GeoSol, Inc. Tasnim Uddin & Associates, Inc.
Inspectors	Five inspectors: Ed Feuerstein, A2 Group, Inc. Sam Rodriguez, PBSJ, Inc. Pietro Ciacolone, Corradino Group, Inc. Garvey Jean-Louis, Parsons-Brinckerhoff Jorge Goyanes, Parsons-Brinckerhoff, Inc.

**Westwood Lakes and Winston Park  
FEMA Drainage Projects Report  
Continued**

<b>Winston Park Project Details</b>	
Master Consultant	Serralta Rebull Serig Inc.
Number of Sites	114
Total Number of Catch Basins	375
Structures Replaced (Percent)	209 (56%)
Linear Feet of Pipe	20,370
Project Construction Cost	\$2,976,872.70
Contractor	Miri Construction, Inc.
Engineer of Record	Eleven firms: Edwards & Kelsey, Inc. Civil Works, Inc. Campanile, Inc. Wolfberg Alvarez, Inc. ES Consultants, Inc. Parsons, Inc. Superior Consultants, Inc. Camp Dresser & McKee, Inc. Avart, Inc. Nifah, Inc. Marlin Engineering, Inc.
Surveyor	CTE, Inc.
Geotechnical Services	Three companies: GeoSol, Inc. Professional Services, Inc. CTE, Inc.
Inspectors	Four inspectors: Luis Martinez, Civil Cadd, Inc. Manny Riera, Parsons-Brinckerhoff, Inc. Raul Viltres, Parsons-Brinckerhoff, Inc. Guillermo Vidal, Parsons-Brinckerhoff, Inc.



## **ATTACHMENT C**

# Larvicides for Mosquito Control

Updated: April 17, 2002

[Mosquito Life Cycle](#) / [Larvicide Definition](#) / [Microbial Larvicides](#)  
[Methoprene](#) / [Temephos](#) / [Monomolecular Films](#) / [Oils](#) / [Resources](#)

The Environmental Protection Agency (EPA) evaluates and registers (licenses) pesticides to ensure that they can be used safely. These pesticides include products used in the mosquito control programs that states and communities have established. To evaluate any pesticide, EPA assesses a wide variety of tests to determine whether a pesticide has the potential to cause adverse effects on humans, wildlife, fish and plants, including endangered species and non-target organisms.

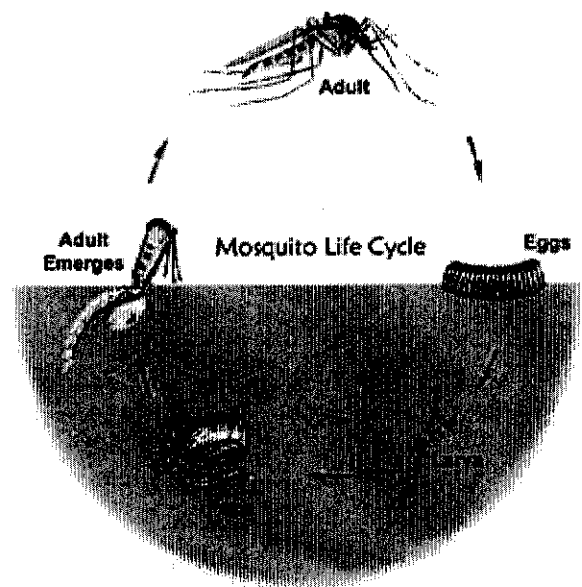
Officials responsible for mosquito control programs make decisions to use pesticides based on an evaluation of the risks to the general public from diseases transmitted by mosquitoes or on an evaluation of the nuisance level that communities can tolerate from a mosquito infestation. Based on surveillance and monitoring, mosquito control officials select specific pesticides and other control measures that best suit local conditions in order to achieve effective control of mosquitoes with the least impact on human health and the environment. It is especially important to conduct effective mosquito prevention programs by eliminating breeding habitats or applying pesticides to control the early life stages of the mosquito. Prevention programs, such as elimination of any standing water that could serve as a breeding site, help reduce the adult mosquito population and the need to apply other pesticides for adult mosquito control. Since no pesticide can be considered 100 percent safe, pesticide applicators and the general public should always exercise care and follow specified safety precautions during use to reduce risks. This fact sheet provides basic information on larvicides, a type of pesticide used in mosquito control programs.

## What is the Mosquito Life Cycle?

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The mosquito goes through four distinct stages during its life cycle:

- **egg** - hatches when exposed to water;
- **larva** - (plural - larvae) lives in the water; molts several times; most species surface to breathe air;
- **pupa** - (plural - pupae) does not feed; stage just prior to emerging as adult;
- **adult** - flies short time after emerging and after its body parts have hardened.



Leon County Mosquito Control, Tallahassee, FL

## What are Larvicides?

Larvicides kill mosquito larvae. Larvicides include biological insecticides, such as the microbial larvicides *Bacillus sphaericus* and *Bacillus thuringiensis israelensis*. Larvicides include other pesticides, such as temephos, methoprene, oils, and monomolecular films. Larvicide treatment of breeding habitats help reduce the adult mosquito population in nearby areas.

## How are Larvicides Used in Mosquito Control?

State and local agencies in charge of mosquito control typically employ a variety of techniques in an Integrated Pest Management (IPM) program. An IPM approach includes *surveillance*, *source reduction*, *larviciding* and *adulticiding* to control mosquito populations. Since mosquitoes must have water to breed, source reduction can be as simple as turning over trapped water in a container to undertaking large-scale engineering and management of marsh water levels. Larviciding involves applying pesticides to breeding habitats to kill mosquito

larvae. Larviciding can reduce overall pesticide usage in a control program. Killing mosquito larvae before they emerge as adults can reduce or eliminate the need for ground or aerial application of pesticides to kill adult mosquitoes.

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## What are Microbial Larvicides?

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Microbial larvicides are bacteria that are registered as pesticides for control of mosquito larvae in outdoor areas such as irrigation ditches, flood water, standing ponds, woodland pools, pastures, tidal water, fresh or saltwater marshes, and storm water retention areas. Duration of effectiveness depends primarily on the mosquito species, the environmental conditions, the formulation of the product, and water quality. Microbial larvicides may be used along with other mosquito control measures in an IPM program. The microbial larvicides used for mosquito control are *Bacillus thuringiensis israelensis* (*Bti*) and *Bacillus sphaericus* (*B. sphaericus*).

*Bacillus thuringiensis israelensis* is a naturally occurring soil bacterium registered for control of mosquito larvae. *Bti* was first registered by EPA as an insecticide in 1983. Mosquito larvae eat the *Bti* product that is made up of the dormant spore form of the bacterium and an associated pure toxin. The toxin disrupts the gut in the mosquito by binding to receptor cells present in insects, but not in mammals. There are 26 *Bti* products registered for use in the United States. Aquabac, Teknar, Vectobac, and LarvX are examples of common trade names for the mosquito control products.

*Bacillus sphaericus* is a naturally occurring bacterium that is found throughout the world. *B. sphaericus* was initially registered by EPA in 1991 for use against various kinds of mosquito larvae. Mosquito larvae ingest the bacteria, and as with *Bti*, the toxin disrupts the gut in the mosquito by binding to receptor cells present in insects but not in mammals. VectoLex CG and WDG are registered *B. sphaericus* products and are effective for approximately one to four weeks after application.

## Do Microbial Larvicides Pose Risks to Human Health?

The microbial pesticides have undergone extensive testing prior to registration. They are essentially nontoxic to humans, so there are no concerns for human health effects with *Bti* or *B. sphaericus* when they are used according to label directions.

## Do Microbial Larvicides Pose Risks to Wildlife or the Environment?

Extensive testing shows that microbial larvicides do not pose risks to wildlife, nontarget species, or the environment, when used according to label directions.

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## What is Methoprene?

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Methoprene is a compound first registered by EPA in 1975 that mimics the action of an insect growth-regulating hormone and prevents the normal maturation of insect larvae. It is applied to water to kill mosquito larvae, and it may be used along with other mosquito control measures in an IPM program. Altosid is the name of the methoprene product used in mosquito control and is applied as briquets (similar in form to charcoal briquets), pellets, sand granules, and liquids. The liquid and pelletized formulations can be applied by helicopter and fixed-wing aircraft.

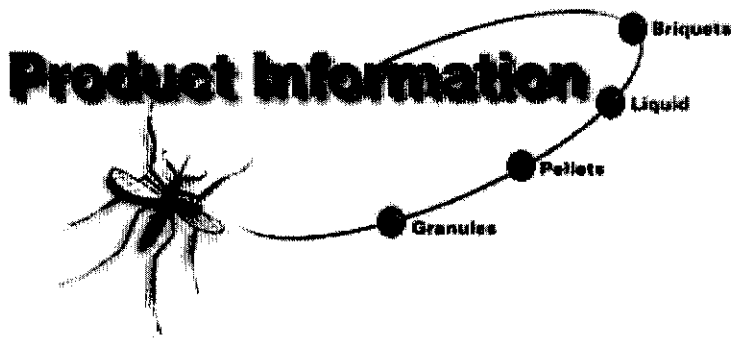
## Does Methoprene Pose Risks to Human Health?

Methoprene, used for mosquito control according to its label directions, does not pose unreasonable risks to human health. In addition to posing low toxicity to mammals, there is little opportunity for human exposure, since the material is applied directly to ditches, ponds, marshes, or flooded areas that are not drinking water sources.

## Does Methoprene Pose Risks to Wildlife or the Environment?

Methoprene used in mosquito control programs does not pose unreasonable risks to wildlife or the environment. Toxicity of methoprene to birds and fish is low, and it is nontoxic to bees. Methoprene breaks down quickly in water and soil and will not leach into ground water. Methoprene mosquito control products present minimal acute and chronic risk to freshwater fish, freshwater invertebrates, and estuarine species.

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No two mosquito habitats are alike - and neither are the ways you treat them. That's why there are a variety of ALTOSID formulations. Each provides the extended control you need in easy-to-access or difficult-to-treat areas. ALTOSID formulations are labeled for use in known fish habitats. That means they prevent the emergence of breeding, biting adults without upsetting the food chain or impacting non-target species. So you're ensured consistent control - and peace of mind.

### **Target-specific control.**

Unlike conventional pesticides, each ALTOSID formulation contains methoprene, an insect growth regulator (IGR) that stops mosquitos from becoming breeding, biting adults. Methoprene is target-specific, and will not affect fish, waterfowl, mammals or beneficial predatory insects. As a result, you can feel comfortable using ALTOSID in your district's most sensitive areas. And you'll feel even better about the effective, long-term control you'll get in return.

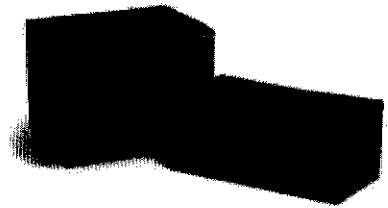
Best of all, the methoprene in ALTOSID products has the industry's lowest toxicity rating. So you get complete control, without additional worries. Furthermore, residual larvicidal activity reduces adult populations and the need for adulticides.

### **Finding the right formulation.**

#### **Briquets**

##### **Stop mosquitoes where they start.**

Catchbasins, ponds, lakes, roadside ditches and surface water receptacles are all locations where ongoing maintenance is necessary, but often impractical. A single application of ALTOSID 30-Day Briquets provides the solution, by ensuring consistent, slow-release control for up to 30 days.



Compared with B.t.i., ALTOSID 30-Day Briquets provide much more effective control. That's because methoprene, the IGR in ALTOSID products, is consumed or absorbed by mosquito larvae. ALTOSID 30-Day Briquets can be hand-applied by operators on foot or in moving vehicles, saving you time and money.

Habitats that need the most control are often the most undesirable and difficult to treat. So you'll be pleased to learn that a single application of ALTOSID XR-Briquets offers up to 150 days of control.

Like ALTOSID 30-Day Briquets, XR Briquets require no expensive application equipment, and can be used for pre-treatment before the wet season. That means you're better able to treat hard-to-access or out-lying areas, and can eliminate the additional costs associated with travel and

multiple retreatments.

Altosid XR Briquets are available in an "ingot" shape for easier application. This "ingot" shape (3 1/8" L x 1" H x 1 1/8" W) is narrower and longer than the existing "cork" shape, allowing the product to fit through virtually any storm drain or sewer without the need for lifting the grate. Now, Altosid XR Briquets make application easier and still deliver season-long control of mosquito larvae for up to 150 days.



Extended Control Comparison				
Product	Type of Active Ingredient	Application Intervals		Residual
		Continually Flooded Sites	Intermittently Flooded Sites	
ALTOSID 30-Day Briquets	IGR (methoprene)	30 Days	>30 Days	30 Days
Altosid XR Briquets	IGR (methoprene)	150 Days	>150 Days	150 Days
Altosid SBG	IGR (methoprene)	5-7 Days	5-7 Days	5-7 Days
Altosid SR-20	IGR (methoprene)	7-10 Days	7-10 Days	7-10 Days
Altosid SR-5	IGR (methoprene)	7-10 Days	7-10 Days	7-10 Days
Altosid Pellets	IGR (methoprene)	30 Days	>30 Days	30 Days
Altosid XR-G	IGR (methoprene)	21 Days	>21 Days	21 Days

One application of Altosid XR Briquets containing methoprene can control mosquito larve for an entire season.

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### Liquid

**Versatile enough for any program.**

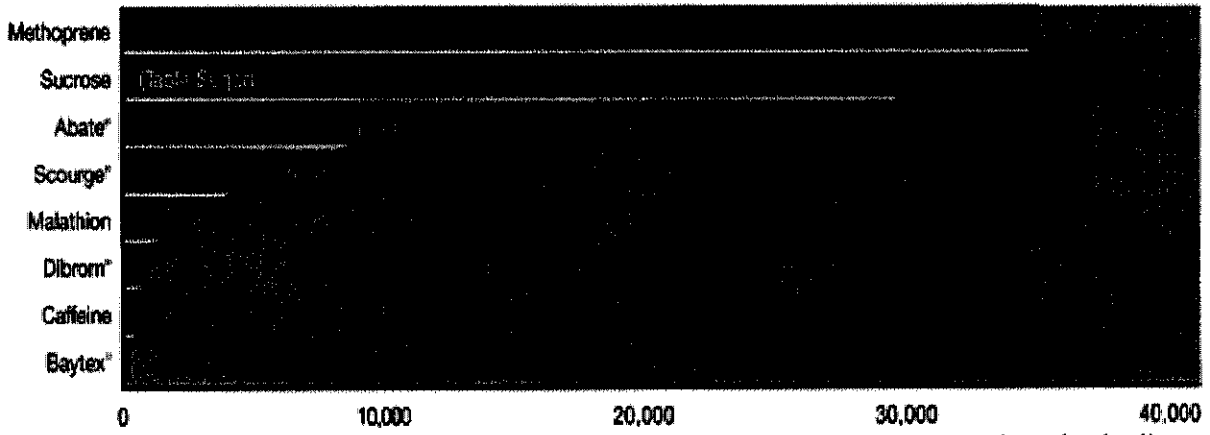
A liquid larvicide is an effective and flexible formulation that fits any mosquito control program. ALTOSID Liquid Larvicide (SR-5) and ALTOSID Liquid Larvicide Concentrate (SR-20) meet that description – and provide exceptional performance.



Both formulations offer superior control in a wide range of habitats and application areas, including temporary or floodwater breeding areas and irrigated cropland. ALTOSID Liquid Larvicide Concentrate contains four times the active ingredient of Liquid Larvicide.

In addition, liquid formulations can be used on-site to make Altosand® granular ALTOSID formulations. Altosand can be created by mixing dry sand and ALTOSID Liquid Larvicide or Liquid Larvicide Concentrate. Altosand provides excellent foliage penetration in floodwater mosquito breeding areas with dense vegetation or canopy. It ensures that all active ingredient reaches the water - and the mosquitos they're meant to target.

### Comparative Acute Oral Toxicities



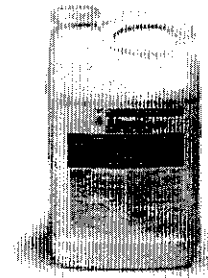
An LD-50 is a measure of toxicity. The longer the LD-50 bar, the lower the toxicity. Compared to other leading mosquito control products, methoprene, the active ingredient in Altosid products, is the least toxic.

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**Pellets**

**Results that last.**

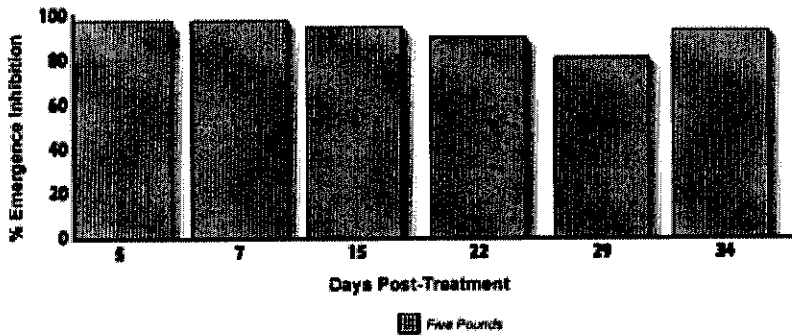
Where successive mosquito broods make other granular products ineffective or costly, a single application of ALTOSID Pellets provides slow-dissolving, extended control for up to 30 days in submerged conditions. Pellets can be used pre-flood or in intermittently flooded areas.



ALTOSID Pellets are ideal for tough-to-treat sites like rice fields, cattail marshes, stacks of abandoned tires and other man-made habitats, and can be applied up to 15 days before flooding or at any stage of larval development.

**O. taeniorhyncus**

**Percent inhibition of emergence**



*Once submerged, Altosid Pellets slowly dissolve and kill mosquito larvae – without harming fish, waterfowl, mammals or beneficial predatory insects.*

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**Granules**

**Cover more land with less cost.**

It's never been easier, thanks to Altosid XR-G and Altosid



SBG. Both are ideal for large aerial applications, and offer all the benefits you expect from Altosid. The difference? XR-G provides an extended residual of up to 21 days, while Altosid SBG targets single-brood applications requiring only a short-term residual.

**Two formulations. Two big improvements over the competition.**

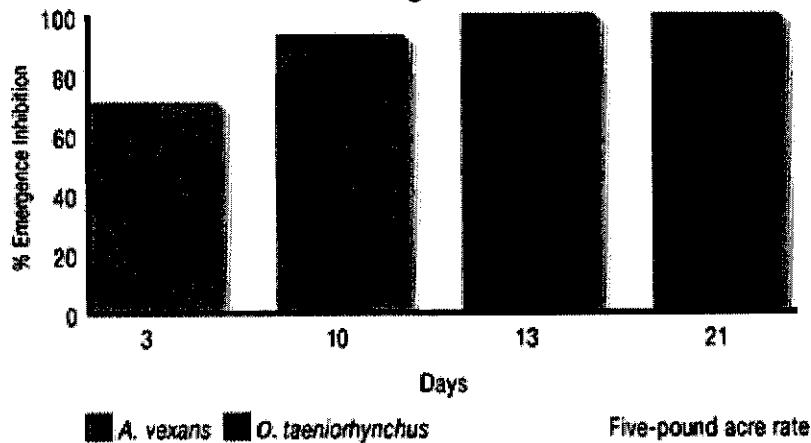
The small size of Altosid granules means more are dispersed over target areas. And since Altosid XR-G and SBG weigh more than competitive products, they reduce drift and penetrate vegetative canopy. Once there, Altosid XR-G and SBG prevent mosquito larvae from becoming breeding, biting adults - and put an end to costly, time-consuming re-applications

**Altosid XR-G**

- Extended mosquito control at a surprisingly low cost.
- One XR-G application controls for up to 21 days in standing water.

**Altosid XR-G Efficacy Plot Trials**

Percent inhibition of adult emergence



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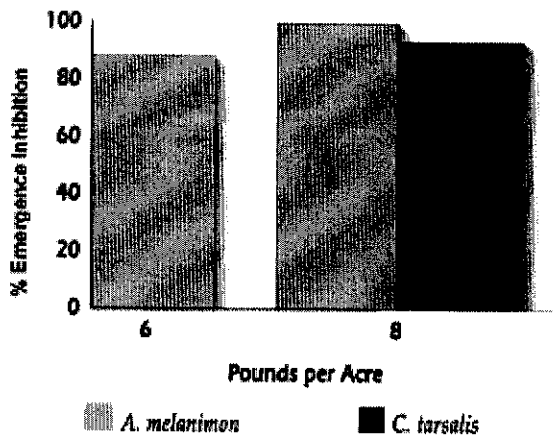
**Altosid SBG**

- Perfect for aerial applications over large tracts of land
- Cost-effective, single-brood control
- Five-to-seven-day residual for greater application flexibility

**Altosid SBG Efficacy Plot Trials**

Percent inhibition of adult emergence





**Start benefiting today.**

There's no need to wait for the effective, environmentally friendly control you need. To learn more about one or all Altosid formulations, [contact us](#).

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