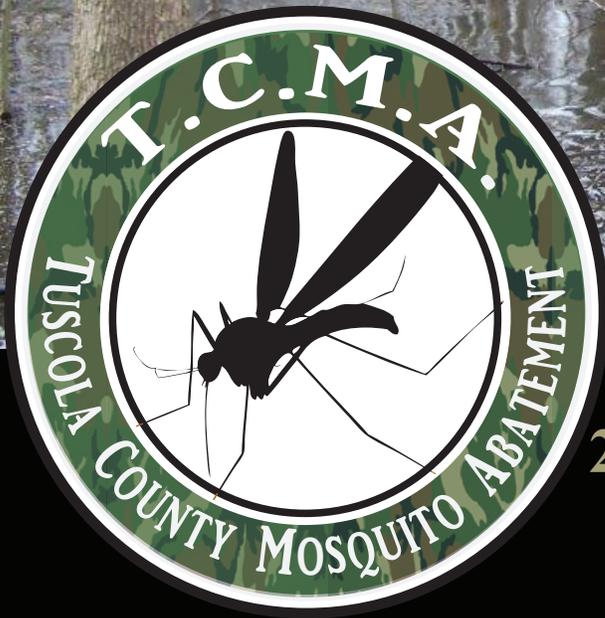


TUSCOLA COUNTY MOSQUITO ABATEMENT



2013 ANNUAL REPORT
2014 PROGRAM PLAN



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MOSQUITO ABATEMENT STAFF

Kimberly Green - Director

Rich Colopy - Biologist

COUNTY BOARD OF COMMISSIONERS

Roger Allen: District 1

Thomas Bardwell: District 2

Christine Trisch: District 3

Craig Kirkpatrick: District 4

Matt Bierlein: District 5

COUNTY ADMINISTRATION

Michael Hoagland - County Controller

CONSULTANTS

Edward Walker, Ph.D., Michigan State University

Richard Merritt, Ph.D., Michigan State University

Michael Kaufman, Ph.D., Michigan State University

TECHNICAL ADVISORY COMMITTEE

COMMITTEE MEMBERS

John D. Bacon.....Saginaw Valley Beekeepers Association

Mike Krecek.....Midland County Health Department

Cynthia Chilcote.....Midland County Resident

Barb MacGregor.....Bay County Health Department

Doug D. Enos.....Midland County Drain Commission

Erik S. Foster.....Michigan Department of Community Health

John Hebert.....Bay Regional Medical Center

Roger Allen.....Tuscola County Board of Commissioners

John Hill.....Michigan Department of Agriculture

Joseph Rivet.....Bay County Drain Commission

Richard Somalski.....Bay Landscaping

ORGANIZATION

The Tuscola County Mosquito Abatement (TCMA) district was originally formed in 1997, after a millage proposal was passed by the citizens of Tuscola County. The millage was renewed in 2008 for a period of six years. Funding for the 2013 mosquito control season was collected during the winter 2012 taxes, at a rate of 0.65 mils.

**MOSQUITO ABATEMENT WILL
BE REQUESTING A MILLAGE
RENEWAL IN AUGUST 2014**

Tuscola County is one of four counties in Michigan with a formal, comprehensive mosquito control program. TCMA is a county governmental agency which serves to control nuisance and disease vectoring mosquitoes.

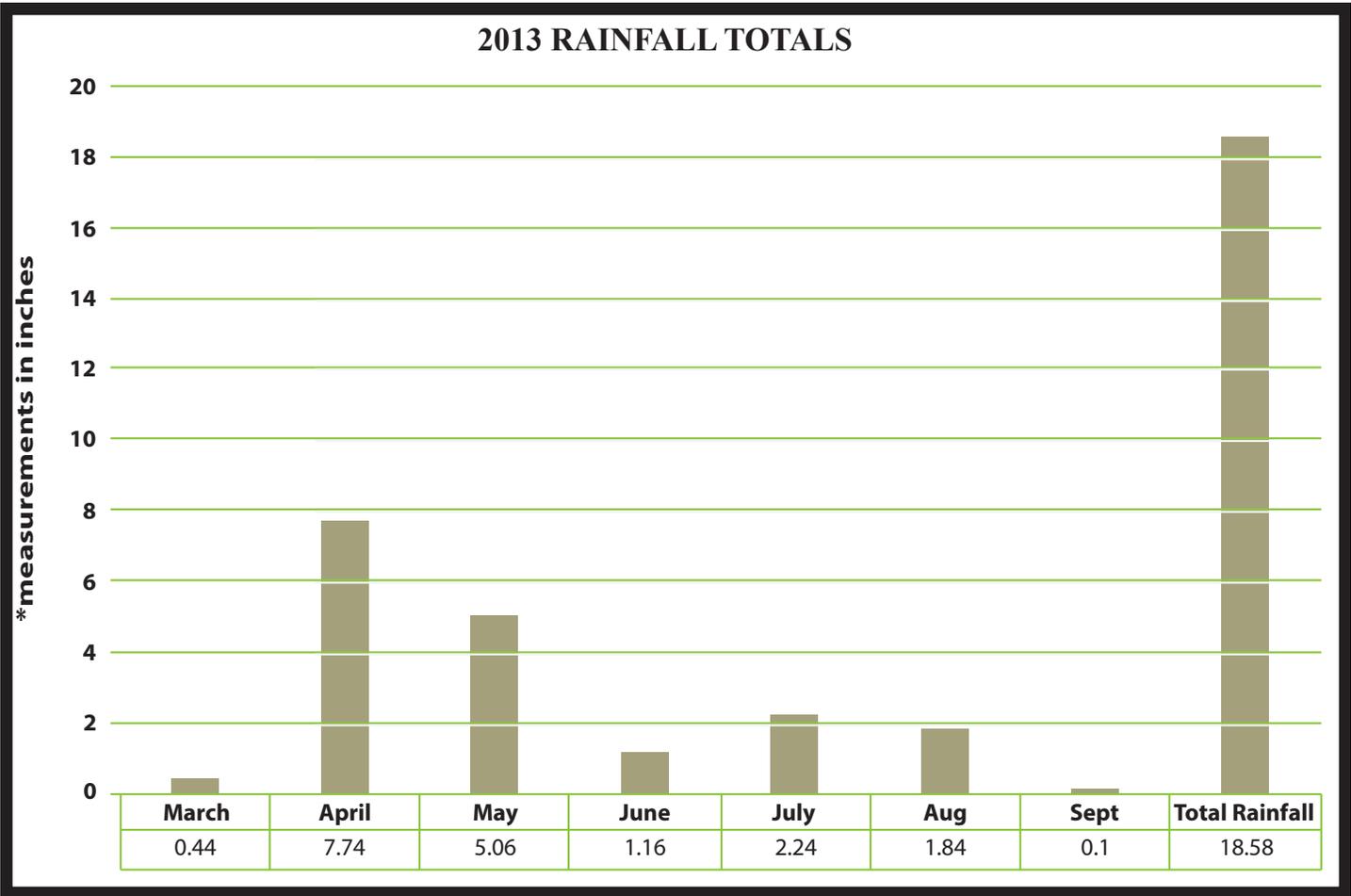
A Technical Advisory Committee (TAC) composed of some of Michigan's leading biologists, entomologists, conservationists and scientists, review TCMA's program every March.

Mosquito Abatement is based on Integrated Pest Management (IPM) practices. IPM is generally broken down into five categories or steps. These steps include: identification of the pest, understanding of the pest's biology, monitoring the pest, developing sound goals to manage the pest, and implementation of an IPM program.

Biological surveillance, disease surveillance, product evaluations, field operations, and public education are included in this program.



WEATHER



Weather plays a very important role in determining our mosquito population, in this case over seven inches of rainfall in April delivered the largest hatch of mosquitoes on record for Tuscola County.

The month of May continued our wet spring season with over five inches of additional rainfall, which added to our already record number of mosquitoes.

June while much drier still produced above average mosquito counts due to standing water in many areas.

July brought a return to more normal conditions. However the first week of August brought more rainfall that resulted in a hatch with higher than average mosquito counts.

BIOLOGY

The Biology department is responsible for observing and reporting mosquito population levels, species identification, disease testing, product analysis, and recording weather data.

During 2013, seven locations hosted New Jersey Light Traps (NJLT) from early May until late September. These sites were located throughout Tuscola County to assist in determining mosquito population densities and possible

disease transmission. We will utilize many of the same locations for the

2014 season. Gravid and CDC traps were also set out at selected locations throughout the summer months.

Trapping started on April 9th, and continued through October 1st. Trap collections are sorted, and identified to sex and species. Female mosquitoes that belong to species known to transmit disease are then packaged and sent to Michigan State University for testing. A total of 230 mosquito pools, were

submitted to the arboviral disease testing laboratory at MSU. *Coquillettidia perturbans* collected were tested for Eastern Equine Encephalitis (EEE).

Culex pipiens, *Culex restuans*, *Ochlerotatus japonicas*, and *Aedes triseriatus* samples were all tested for West Nile Virus (WNV), with selected samples also tested for St. Louis Encephalitis (SLE).



The biology department also selected 30 pools of *Culex pipiens* and *Culex restuans*, to be tested in-house, utilizing VecTest® kits. We also used this method to test two crows. All in house samples tested negative.

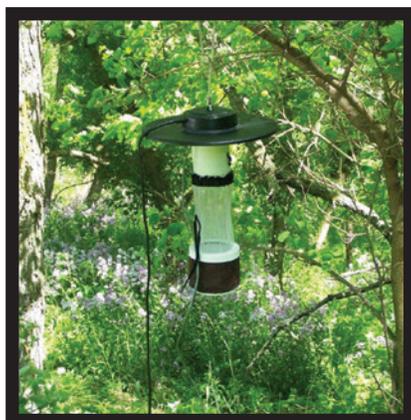
During the 2013 mosquito control season, there were six positive WNV samples reported in Tuscola County.

2013 CDC / GRAVID DATA

 CDC DATA

 GRAVID DATA

SPECIES	2013 CDC	2012 CDC	2013 GRAVID	2012 GRAVID
Canadensis	11,715	277		
Implicatus	207	45		
Stim/fitch	1,101	167		
Triseriatus	20	1		1
Trivittatus	12,227	382		2
Provocans	83	11		
Joponicus				11
Cinereus		63		
Vexans	747	263		4
Punctipennis	166	69		3
Quadrinac	14	8		2
Walkeri		4		
Inornata		20		
Minnesotae				
Morsitans				
Malanura				
Pipiens	140	39	1,965	2359
Restuans	20	13	716	594
Tarsalist				
Territans				
Perturbans		16.3		1
Ciliata				
Sappharina				
Damaged	70	19		
Total Female	26,440	1378.3	2,681	2,977
Males	36		81	



2013 NJ LIGHT TRAP

SPECIES	LOC.1 MAY	LOC.2 JUNE	LOC.3 JULY	LOC.4 AUG.	LOC.5 SEPT.	TOTALS
Canadensis	457	326	12	0	0	795
Implicatus	26	2	2	0	0	30
Stim/Fitch	213	269	93	14	1	590
Triseriatus	0	1	2	4	0	7
Trivittatis	892	223	108	14	6	1243
Provocans	0	0	0	0	0	0
Joponicus	0	3	1	3	1	8
Cinereus	0	29	39	19	4	91
Vexans	476	1442	3702	1017	224	6861
Punctipennis	26	122	148	116	20	432
Quadrinac	27	181	467	387	83	1145
Walkeri	8	4	26	13	6	57
Inornata	0	3	2	0	0	5
Minnesotae	0	0	0	0	0	0
Morsitans	0	1	1	0	0	2
Melanura	0	0	0	0	0	0
Pipiens	117	372	696	510	147	1842
restuans	40	201	107	62	30	440
tarsalis	0	0	0	0	0	0
territans	0	6	16	12	3	37
Perturbans	0	4	44	0	0	48
Cillata	0	0	2	0	0	2
Sappharina	0	0	0	0	0	0
Damaged	30	62	149	6	0	247
Total Females	2284	3189	5468	2171	525	13637
Total Males	3792	1305	1882	1025	451	8455

22339

CDC/GRAV 29400

TOTAL 51739

previous record **33595**



LARVICIDING

Flooded woodlot larviciding began two weeks later than expected on April 15th, due to ice and cold temperatures. Flooding made for difficult treatment in many locations.

Technicians applied granular BTI and BVA oil, in seasonally flooded woodlots where mosquito larvae were present.

Biology staff and larviciding crews conducted routine surveillance and quality control on 3,398 flooded woodlot sites that were completed during the 2013 control season.



LARVICIDING

Tuscola County is home to nine sewage lagoon sites. Many of these sites have historically been known breeding sites. Each of these sites was checked and treated if necessary throughout the 2013 season, using liquid BTI or Granular BS.

In addition to the sewage lagoon treatment summer larviciding entailed treatment of:

- Roadside ditches treated on average 5-9 times per township depending on the need, using liquid BTI.



- Cross Country ditches, were treated using granular BTI.

- Catch Basins were treated five times during the 2013 season using granular BS.

- Flooded Fields were treated during the summer using granular BTI.

- Artificial containers and tires were also treated using granular BTI.



For the 2014 control season, we will continue to educate the citizens about the numbers of mosquitoes that abandoned tires and other containers produce, many of which are known to be vectors of mosquito-borne disease.



We hope to encourage these citizens to remove the tires on their property, and to empty these containers.

ADULTICIDING

Each of the 23 townships as well as the villages and cities in Tuscola County, were routinely treated during the 2013 season with truck mounted ULV units. Evoluer 4-4 (Permethrin) was applied at a rate of five ounces per minute. Treatment included the public use areas (parks, golf courses, rail trails, gun and archery clubs) that were treated on a routine basis with our mule.

In March Foreman and Biology Technicians reported to begin mapping verification and

The treatment route maps were then routinely updated as needed.

In 2013, we had 15 technicians on the evening shift, with trucks maintaining a nightly presence in most townships.

Technicians were assigned specific townships, to familiarize themselves with any special conditions. For instance, Tuscola is home to many organic farms and beekeepers, making it imperative to know where these and other “no sprays” exist.



Technicians were able to test a new piece of equipment in 2013. The back pack gas powered ULV unit was a big hit among the crew. They really appreciated the ease of the backpack and operation.

assess long driveway requests, as well
“No spray” signs were placed where needed.

TIRE PAGE

In collaboration with the Tuscola County Recycling Center and various townships, we hosted 12 tire collection sites throughout the County.

TCMA hosted a tire trailer on July 13th with staff present to help load tires. We had a great turnout with many large oversize tires being collected from our area farmers.

We were also pleased to assist the Cass River Greenway organization in their annual Cass River clean-up. Volunteers used canoes to remove trash and tires from the river and its banks.

Many tires were collected and sent to be recycled with the trailer provided by TCMA.

We will continue the satellite tire collection sites in 2014, with plans for fifteen sites to be scheduled throughout the County.

Technicians will begin handing out flyers with the dates and times of these collection sites to residents during the spring, as well we post these dates in the paper and on our facebook page and website.



LONG DRIVEWAY PROGRAM

We realize that many homes in Tuscola County are set back from the country road, and subsequently, shielded somewhat from the effects of the road-side adulticiding operations. If requested by the owners, their property will be reviewed to see if it meets the criteria for the Long Drive program. Property with a house (primary residence) meeting the established requirements may be placed on the long driveway list. The driveway in question will be marked by a long drive stake that has a reflective band on top. These stakes will be placed by the agency; however homeowners are asked to remove them in the fall to avoid damage or loss from snow removal equipment, and then replaced in the spring. These stakes aid our technicians in finding the drive during the nighttime treatment. These drives are also marked on our spray maps.

The basic criteria for a home to be placed on the long drive list are:

- There must be a primary residence on the property and the front of the home must be 300 feet away or greater from the edge of the roadway
- There must be an adequate turnaround for our truck that does not include driving across any lawn areas.
- The driveway must be passable with two wheel drive vehicles.
- The drive area must have significant vegetation providing areas of mosquito harborage.

Other factors such as sensitive locations, for example No sprays or Organic Farms adjacent to the property, may exclude the property from treatment except under specific conditions.

In 2013 we held an open enrollment period for the long driveway program, from March – May adding 27 residents. Tuscola County currently has 252 residents on the Long Drive Program.



PUBLIC EDUCATION PROGRAM

The goal of TCMA's public education program is to make residents informed of mosquito habitat and life cycle. This will help citizens be aware of how to prevent and eliminate breeding sites for disease carrying mosquitoes. Informed residents can be integral in creating a safe and disease-free environment. When mosquito populations are high, residents can identify the source or reason for the increase. They will also be aware of the steps they can take to reduce mosquito related problems and prevent breeding sites on their property.

This task is completed in many different ways. Two of the most important ways TCMA distributes this information are through citizen phone calls to our office, and face-to-face contact with our technicians, as well as our Facebook page. The technicians also carry brochures with them and are encouraged to distribute them to homeowners.

In 2013 biology lab technicians were in the field to provide a lesson in mosquito biology to a group of homeschool students. Students were given dippers and were eager to help biology lab technicians check the water for larvae. It was very well received, with students and technicians having a great time.

MEMBERSHIP

TCMA staff are required to obtain and maintain licensing through the Michigan Department of Agriculture (MDA) as certified pesticide applicators in both the Core Category and 7f (Mosquito Control). To assist our technicians and ensure proper training, a two day training/seminar will be held March 10th and 11th, with MDA available onsite for testing the second day.

In order to stay abreast of current developments, the permanent staff of TCMA are also encouraged to attend conferences, classes, and seminars relating to mosquito biology and control. TCMA's Technical Advisory Committee (TAC) also provides new insight and important data in the areas of Biological Environmental Sciences. TCMA permanent staff also maintain memberships and are active in the Michigan Mosquito Control Association (MMCA) and the American Mosquito Control Association (AMCA).



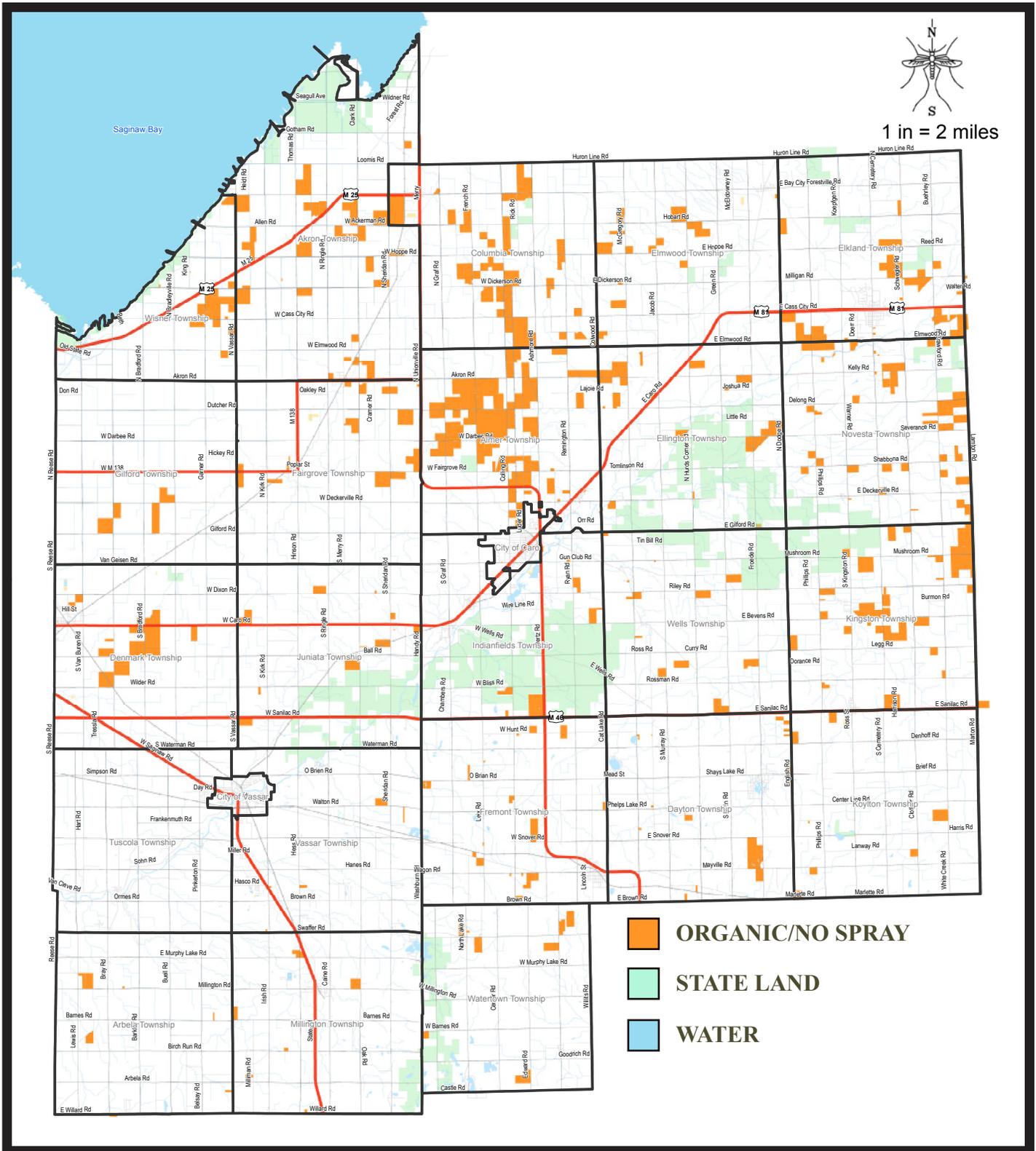
2013 COMPLETE PROJECTS

- Purchase four new trucks
- Purchase two new ULV units
- Purchase one Colt prototype
- Order new computer and printer for lab
- Purchase tables and chairs for meeting room
- Plan training and testing for employees
- Attend MMCA
- Begin expansion plans
- Trials of new products

2014 OBJECTIVES

- Purchase two new trucks completing the update to our fleet
- Purchase one 4 stroke model Colt
- Plan training and testing for employees
- Attend MMCA
- Arrange scheduled dates for tire trailers
- Improvements to Lab
- Install new database
- Purchase two new computers
- Attend meetings to bring GIS services to Tuscola County
- Begin building renovations at the conclusion of the season
- Millage renewal request

TUSCOLA COUNTY



2013 MOSQUITO ABATEMENT STAFF





**TUSCOLA
COUNTY
MOSQUITO
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