

A. Applicant Information

Please complete the fields below; place an 'X' in check boxes.

1. Jurisdiction Type City/Town County Other

2. Jurisdiction Name Harrison County Mosquito Control

3. County

4. Applicant Name Gene Fayard

5. Applicant Title Director, Harrison County Mosquito Control

6. Applicant Email hefayard@co.harrison.ms.us

7. Applicant Phone 228-896-0409

8. Please enter a brief overview of jurisdiction's current mosquito control efforts. If no current efforts are being undertaken, please say "No current mosquito control efforts."

The Harrison County Mosquito Control Department administers mosquito control for the entire county including the cities of Pass Christian, Long Beach, Gulfport, Biloxi, and D' Iberville. We currently have eight full-time and two part-time employees, Gene Fayard, Regina Scarborough, Ricky Williams, Jesse Drake, Ray Holliman, David Dobson, Joe Newman, and Joe Dobson. Are certified pesticide applicators through the Mississippi Department of Agriculture, Bureau of Plant Industry. We Have seven trucks mounted ULV mosquito spraying machines. We have one ULV machine mounted on an ATV that we use on Ball Fields, parks and hard to get to areas. We larvicide year round and we have our county divided in to quadrant and spray five days a week, We mostly at night and during morning hours from April through October. The weather, number of complaints, and amount we trap, are factors that help determine the lenght of our spray season. We have seventeen New Jersey light traps for mosquito surveillance two nights a week. We have eight gravid traps and three CDC traps. We have a larvaciding program that includes checking ditches for breeding applying BTI in the ditches that show breeding and briquettes in strom drains. We have six truck mounted larviciding units and one mounted on an ATV that we use for hard to get to areas.

9. Mosquito Control Program Year-round Seasonal

B. Problem Statement

Review the Problem Statement below. In a short paragraph, articulate the Problem Statement's applicability and special considerations to your jurisdiction.

West Nile virus is the leading cause of domestically-acquired mosquito-borne disease in the United States. Several other domestic mosquito-borne viruses also cause seasonal outbreaks and sporadic disease, such as eastern equine encephalitis and La Crosse. Other exotic arboviruses are threats for introduction into the U.S. (for example, chikungunya, yellow fever, Japanese encephalitis, and Zika viruses). Different mosquito vectors, viruses, animal hosts, and environmental factors contribute to variations in geographic distribution, disease incidence, clinical manifestations, and outcomes.

The public health infrastructure for addressing mosquito-borne diseases in some Mississippi jurisdictions is inadequate for a variety of reasons, including insufficient funding, equipment, supplies, and staffing of trained personnel.

Harrison County is located on the Mississippi Gulf Coast and is the 2nd largest County in the state. Harrison County is approximately 976 square miles and approximately 581 square miles of land. It is 77% urban and 23% rural area. With our vast amount of marsh and wet lands, and low lying areas, Harrison County is conducive to mosquito breeding. Our high percentage of low income households is also conducive to the breeding of the culex quinquefasciatus and the Aedes mosquitoes which are vectors of several domestically acquired diseases. Harrison County contains the port of Gulfport that is a major destination for the import of goods from areas with mosquito borne diseases that could introduce vector mosquitoes into the state.

Mississippi Local Mosquito Control Support Grant

C. Current Budget

Enter the average dollar amount under Annual Budget that is allotted for your jurisdiction's mosquito control program. Enter the Personnel Budget as a separate line item from your Overall Budget. In the white space under the item, provide any comments you might have (optional).

Category	Annual Budget
Overall Budget (Excluding Personnel)	\$ 178,482
Personnel	\$ 391,044
Total	\$ 569,526

D. Current Capacity

Please indicate under **Quantity** the number or amount of items currently owned. In the white space under the item, please provide a brief description.

Category	Qty
Equipment	
Hand-carry ULV sprayer	0
Hand-carry thermal fogger	0
Backpack ULV sprayer	2
Backpack thermal fogger	0
Truck-mounted or trailer-mounted ULV sprayer	7
Other-type vehicle mounted ULV sprayer	1
GPS Navigation for Mosquito Control	0
Residual Sprayer or granular/liquid larvicide applicator	2
Powered backpack (sprayer/duster for liquid and granular applications)	2
Pump-type	0
Hose-end	0
Vehicle-mounted or trailer-mounted (e.g., liquid power gun)	7
Mosquito traps	30
BG Sentinel trap	0
Gravid trap	8
CDC light trap	3
EVS trap	0
Fay-Prince trap	0
Wilton trap	0
Autocidal gravid ovitrap	0
Little Black Jar (LBJ) trap	2
Other	17
Other	0
Adulticide	
truck mounted ULV mosquito spraying units	7
ATV mounted ULV mosquito spraying units	1
Back pack sprayer	2
We adulticide 3 to 5 days per week, mostly at night & during early morning hours. From April through October. The weather & number of mosquitoes and complaints are factors that determine the length of our spray season, and location to be sprayed.	

D. Current Capacity

Please indicate under Quantity the number or amount of items currently owned. In the white space under the item, please provide a brief description.

Category	Qty
Larvicide	
Larvicide units (truck mounted)	6
Larvicide units (ATV mounted)	1
Hand held pump sprayers	5
<p>We have a year round larvicide program that includes checking ditches for breeding, applying BTI or agnique in ditches that show breeding & briquets in storm drains.</p>	
Equipment calibration and maintenance	
<p>Our larviciding and adulticing equipment are stored in enclose building. We calibrate droplet size annully (or as needed) and flowrate daily.</p>	
Educational Outreach	
<p>we Attend health fairs at local schools and hand out literature such as "FIGHT THE BITE" & "TIP N TOSS". We also attend sportinf events & community organizations, where we pass out literature.</p>	
Source Reduction	
<p>We do property inspections during service request to for mosquito breeding we work with Harrison County Code Enforcement & Harrison County Beautification to elimiate breeding area on public & abandoned property.</p>	
Surveillance	
<p>We Have 17 New Jersey light traps for mosquito sureveillance 2 nights a week, we have 6 gravid traps & 2 CDC light traps we use to collect, idenitfy & test for vector mosquitos.</p>	
Contracts (Aerial, Ground, Etc.)	
<p>We do not currently have any contracts. But we have a resource to get a contract if needed.</p>	

Mississippi Local Mosquito Control Support Grant

E. Current Staff

Please list all staff associated with mosquito control, with their titles, brief description of their role with mosquitoes, whether they personally perform mosquito control, whether they have their Category 8 Pesticide Applicator's License, and whether they are Full or Part Time.

#	Name	Title	Role with Mosquitoes	MMVCA Member	Performs Mosquito Control	Cat 8 License	FT/PT
1	Gene Fayard	Director	Coordinates daily activities, maintains budget	Y	Y	Y	FT
2	Regina Scarborough	Secretary	Service request, maintains inventory and office	Y	Y	Y	FT
3	Ricky Williams	Chemical formulator/education	Mix chemicals, educate schools,	Y	Y	Y	FT
4	Ray Holliman	Mechanic	Maintains vehicle & equipment, service request	Y	Y	Y	FT
5	Joe Newman	Truck driver/inspector	Ground adulticide & Larvicide & insepction	Y	Y	Y	FT
6	Joe Dobson	Truck driver/sprayer	Ground adulticide & Larvicide	Y	Y	Y	FT
7	Jesse Drake Jr.	Fog foreman	Ground adulticide & Larvicide	Y	Y	Y	FT
8	David Dobson	Surveillance	Trapping & identification	Y	Y	Y	FT
9	Bryan Young	Truck driver/sprayer	Ground Larvicide	N	Y	N	PT
10	Roger Robison	Truck driver/sprayer	Ground Larvicide	N	Y	N	PT
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Mississippi Local Mosquito Control Support Grant

F. Work Plan

For each activity, provide detailed descriptions and timelines for each grant strategy. Discuss your jurisdiction's ability to conduct the work (capacity) and include performance measures. A performance measure is a *quantifiable* indicator used to assess how well an organization is achieving its desired objectives. Place an 'X' in the Check Box if the activity will be performed.

Subactivity	Check Box	Work Plan Narrative
Strategy 1: Develop and implement vector control capacity		
Activity 1. Mosquito Control Staffing		
1		Ensure that all staff are appropriately trained and certified or licensed. Seek a Category 8 Public Health Pest Control certification and keep current every three years.
Activity 2. Public Education		
1		Institute a public education program emphasizing personal responsibility, ways in which people can prevent mosquito breeding, and how they can reduce the risk of being bitten by observing personal protection measures.
2		Institute community cleanup programs to eliminate larval habitats from backyards, commercial sites and abandoned premises.
Activity 3. Participate in DHEC Mosquito-Borne Disease Surveillance and Aedes aegypti and Aedes albopictus mapping program		
1		Submit mosquitoes for virus testing to MSDH PHL. (Mandatory)
2		Conduct mosquito surveillance activities to assess presence/absence of <i>Aedes aegypti</i> and <i>Aedes albopictus</i> mosquitoes. Report weekly written trapping data to the MSDH PHL. (Mandatory)

Mississippi Local Mosquito Control Support Grant

Subactivity		Check Box	Work Plan Narrative
Activity 4. Mosquito Control			
<p>Clearly define a statement of services or deliverables for the following three actions. Each of these needs to be discussed in terms of: (1) <i>Actions</i> to be performed; (2) <i>Area</i> to be covered; and (3) <i>Resources</i> [equipment, vehicles, staff, insecticides, etc.] that will be provided. Explain your jurisdiction's ability to obtain financial support for mosquito control activities OR demonstrate sustainability of a mosquito control program without continued financial support, whether operated for nuisance control or to protect the public's health. Local taxes and fees are common sources for funding programs.</p>			<p>The Harrison County Mosquito Control employees attend the health fairs at schools located with in Harrison county, or deliver information Pamphlets to be sent home with each student. The information we provide contains educational material that deals with, reducing the source that allow mosquito breeding, as well as information on what type of repellent to use to reduce the risk of being bitten. We also regularly attend public gatherings and neighborhood watch meetings to disseminate education materials. We use BTI, Agneque and Atoisid to larvicide and pupicide 5 days a week year round. We spray 31/66, Zenexex, or Deltagard, 3 to 5 days a week, mostly at night and during the morning hours from April thur October. Harrison County organizes a Hazardous waste disposal campaign once a month and takes in tires and other Hazardous waste 5 days a week. Mosquito control employees periodically goes out and pick-up tire that could house mosquitoes. This is done throughout the year and more frequently between the months of November and March. We have 17 New Jersey light traps for surveillance 2 nights a week. We use these, as well as gravidtraps and CDC traps before and after adulticiding an area to determine the effectiveness of our control efforts. our larviciding, adulticiding, equipment and chemicals are stored in a enclosedsecure building. We calibrate droplet size annually (or as needed) and flowrate daily. We do not currently have a written mutual aid agreement with neighboring counties. With a request from the Mississippi Emergency Management Agency or a local Emergency Management Agency, we can receive Board Of supervisor approval to assist with mosquito control by providing man power, equipment, and chemicals.</p>
1	<p>Source Reduction (Environmental Sanitation) and Education. Remove and dispose of water-holding containers that may allow mosquito larvae and pupae to develop. Disseminate educational materials as appropriate for the type of housing and areas where containers may be found. Explain timing and repetitiveness of inspections.</p> <p>Door-to-Door Home Visits.</p> <p>Larvicides or Pupicides. Use chemicals or biological agents to kill or prevent development of mosquito immature stages.</p> <p>Adulticides. Use chemicals or biological agents to kill or prevent development of mosquito adult stages.</p>		
2	Institute basic mosquito population monitoring to define the problem and determine the effectiveness of mosquito control. Report weekly written trapping data to the MSDH PHL. (Mandatory)		
3	Properly store, maintain, and calibrate mosquito control equipment.		
4	Adhere to Mosquito Control Best Practices as defined by the AMCA: American Mosquito Control Association. Best Management Practices for Integrated Mosquito Management 2009. Available at goo.gl/78TPPX		
5	Ensure the willingness of your jurisdiction to enter into a mutual aid agreement with a neighboring jurisdiction to share resources for mosquito control and how that sharing might occur.		

Mississippi Local Mosquito Control Support Grant

Subactivity	Check Box	Work Plan Narrative
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Strategy 2: Develop a mosquito-borne disease response plan.

Activity 1: Preparedness - vector present or possible in the jurisdiction

<p>1 Appoint a representative to coordinate mosquito-borne disease response efforts for your jurisdiction and serve as your designated Point of Contact (POC) to DHEC.</p>		
<p>2 Review and assess your local mosquito control capacity and capability. If you do not currently have a vector control program, consider establishing a mutual aid agreement for mosquito control services with a neighboring jurisdiction.</p>		
<p>3 Review (or develop as needed) a vector-borne disease preparedness and response plan, and tailor as appropriate for Zlka.</p>		<p>Gene Fayard, Harrison County Mosquito control director is the designated contact to DHEC. We have seventeen New Jersey light traps for mosquito surveillance 2 nights a week. We have 8 gravid traps & 3 CDC traps that we set 3 days a week. We identify the trapped mosquitoes & look for known vectors such as, Aedes Aegypti, Aedes Albopictus, Culex Quinquofasciatus. We coordinate with state public health officials & are notified when there is a positive vector, borne disease in our area. When notified, we concentrate our control efforts in that area by larvaciding & Adulticiding as frequently as commanded. We also concentrate our public awarness campaign in the area by talking to residents about personal protection too residential source reduction. we also increase our surveillance in the area to identify the presence of known vectors.</p>
<p>4 Ensure coordination with state public health officials so vector control and human surveillance activities can be linked.</p>		
<p>5 Initiate a public awareness campaign, with primary messaging focusing on personal protection against mosquitoes (e.g., "fight the bite") and residential source reduction (e.g., "tip 'n toss").</p>		
<p>6 Plan preparedness and mitigation activities to reduce the likelihood of transmission from mosquitoes, including: reduce habitat/potential breeding sites, initiate community clean-up efforts, initiate public information campaigns encouraging yard clean up, use of insecticides, encourage placement of window screens etc.</p>		
<p>7 Review and, as necessary, conduct mosquito surveillance activities to assess presence of <i>Aedes aegypti</i> and <i>Aedes albopictus</i> mosquitoes.</p>		

Mississippi Local Mosquito Control Support Grant

Subactivity	Check Box	Work Plan Narrative
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Activity 2: Suspected/Confirmed Travel-Associated Case - Mosquito Season - travel-related or sexually transmitted cases

1	Enact the county's established notification process for a confirmed case of mosquito-borne virus and formulate a plan of action/response. Upon notification from MSDH, activate response activities to be performed once a travel case has been identified.		Properly inspections & educational campaigns through the use of door hangers, & source reduction will be conducted. Work with sanitation & code enforcement to identify & remove any debris & trash that may hold water near the target area. Outreach messaging will focus on personal protection against mosquitoes (e.g., clothing, repellent, breeding source reduction). Biological control, Larviciding will be conducted in & around the target area as weather permits.
2	To perform public health education within a defined radius surrounding a case.		
3	To perform adulticiding within a defined radius surrounding a case.		
4	To perform larval control activities within a defined radius surrounding a case.		

Activity 3. Confirmed Local Transmission: single, locally acquired case, or cases clustered in a single household occurring <2 weeks apart; OR Confirmed Multiperson Local Transmission: virus illnesses with onsets occurring 22 weeks apart but within an approximately 1 mile (1.5 km) diameter

1	In conjunction with MSDH, perform the same basic elements of response as in Activity 2 with travel-related cases, but increase the intensity of intervention and scale of resources that are committed.		Aggressively implement all mosquito control methods available in the immediate area for a sustain period of time. The area of implementation will be determined by the number & location of human cases & mosquito populations. Outreach messages will include mosquito control & prevention, personal protection, & information on the desense.
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Mississippi Local Mosquito Control Support Grant

Subactivity

Check
Box

Work Plan Narrative

Strategy 3. Develop a program for insecticide resistance monitoring and management. Insecticide resistance has been demonstrated in almost every class of insecticide. Insecticide resistance, which is an inheritable trait, usually leads to significant reduction in the susceptibility of insect populations which renders insecticide treatments ineffective.

Activity 1: Include basic insecticide resistance-management techniques:

1	Utilize physical control/source reduction and biological control methodologies to the maximum extent practicable.		We utilize physical methods by providing source reduction material to home owners during service request & at community organizations. We encourage residents to introduce or maintain fish in ponds & live stock waiting containers. We use BTI for mosquito larvae & agnate for the reduction if pupa. We apply with larvacide & adulticide chemicals within the recommended lable rate. We utilize different chemical classes at the beginning , middle, & end of the treatment season we assess susceptibility frequently during the season by trapping & conducting landing rate counts, before & after an area is treated.
2	Avoid the use of the same class of chemical against both immature and adult mosquitoes.		
3	Apply pesticide at the rate recommended on the label. Do not underdose.		
4	Utilize a different chemical class at the beginning and end of treatment season.		
5	Assess susceptibility at the beginning and sometime during the mosquito season.		

Activity 2: Participate in insecticide resistance studies

1	Either alone or in conjunction with MSDH, participate in insecticide resistance studies. Bioassays are used to monitor insecticide resistance in mosquitoes. The CDC bottle bioassay determines if a particular formulation (combination of the active ingredient in the insecticide and inactive ingredients) is able to kill a mosquito, at a specific location at a given time. Insecticide selection must be based on resistance testing results. https://goo.gl/EdfDZs		We would like to participate in insecticide resistance studies. It would help us determine if our current pesticides are able to kill mosquitoes at a specific location at a given time. It will also help dect resistance to insecticides in mosquitoes & other insects.
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Mississippi Local Mosquito Control Support Grant

G. Budget Request

Use the budget spreadsheet to request items for which you would like to receive funds. If you are requesting items that are different from the suggested listed values, list your requested items under 'Other'. All items have to be approved by MSDH prior to purchase.

Item	Budget Justification	Qty	\$/Unit	Total \$
SURVEILLANCE				
BG Sentinel 2 mosquito trap	The BG-Sentinel 2 traps is use to attract Aedes Aegypti mosquitoes, Aedes Albopictus, and Culex Quinquenfasciatus.	2	\$234	\$469
DC Battery pack, with chargers (12v14 ampr)	Battery pack for BG-Sentinel Trap	2	\$290	\$580
#1012 New Standard Minture Light Trap, 6 VDC	Portable sampling device for mosquitoes.	1	\$239	\$239
#230 Sealed Gelled-ElectrolyBattery, 6V, 100Amp HRS	Battery used in Light traps.	1	\$81	\$81
#2.88.6 Automic Charger for Two 6V Batteries	Used to recharge batteries.	1	\$321	\$321
input of 110 AC 50/60HZ				
#2.90 6 Automic charger for one 6V battery, input of 110AC,50-60HZ	Used to recharge batteries.	1	\$176	\$176
Human Skin non-toxic, chemical lure	Used in combination with the BG-sentinel trap, A dispenser Which releases a combination of mosquito attractants that are also found on human skin.	2	\$30	\$30
Octen lure, 2 grams	Used in combination with the BG-sentinel trap To attract mosquitoes	2	\$30	\$30
#1712 CDC Gravid Trap, 6 VDC	Used for trapping Moquitoes with vector borne diseases.	1	\$139	\$139
MOSQUITO CONTROL				
Truck Mounted UVL fogger Guardian 190G	A truck mounted UVL fogger is needed for the application of mosquito adulticides for up to 150 feet and can be used when the area to be treated is too large to treat by hand or permission has not be given to enter private land.	2	\$8,400	\$16,800
Monitor 4s for use with Guardian 190G4 (GPS Navigation)	The monitor 4s system includes GPS, tracking, monitoring and recording features for adulticide applications	1	\$5,295	\$5,295
Maruyama MM181 mist blower Hand carry ULV fogger	A hand held Adulticide unit used to fog when area is to small for mounted unit.	1	\$770	\$770
Maruyama MM300 mist blower Hand carry ULV fogger	A hand held Adulticide unit used to fog when area is to small for mounted unit.	1	\$670	\$670
Maruyama Back Pack Duster MD300	Use to carry on back to fog Adulticides in hard to reach areas.	3	\$700	\$2,100
INSECTICIDES				
Delegard type II pyrethroids (deltamethrin 2.0%) 2x2.5 gallons	Mosquito Adulticide	5	\$953	\$4,764
Altosid liquid (S)-methoprene 5% (4x1 gallon)	Mosquito larvicide	5	\$1,012	\$5,060
Altosid briquets (S)-methoprene 5% 150 per case	Mosquito larvicide	7	\$711	\$4,977

Mississippi Local Mosquito Control Support Grant

Item	Budget Justification	Qty	\$/Unit	Total \$
Permanone 30/30 synthetic pyrethroid 30% 2x2.5 gallons	Mosquito Adulticide	5	\$2,776	\$13,880
Permethrin 31/66 synthetic pyrethroid 31% 2x2.5 gallons	Mosquito Adulticide	5	\$450	\$2,250
Wisdom TC barrier (7.9% bifenthrin), 4x1 gallon	Mosquito Adulticide	5	\$144	\$720
Zenivex (entofenprox20%) 30 gallon drum	Mosquito Adulticide	1	\$8,994	\$8,994
Sustain (bacillus Thuringiensis 5.71%) 40# bag	Mosquito Larvicide Granules	4	\$262	\$1,048

Mississippi Local Mosquito Control Support Grant

Item	Budget Justification	Qty	\$/Unit	Total \$
TRAINING				
MM&VCA annual workshop	mosquito work shop	8	\$30	\$240
Supplemental Training Manual - Public Health Pest Control	mosquito work shop	2	\$30	\$60
Pesticide Applicatore Core Training Manual-applying pesticides correctly	Study manual for license	2	\$30	\$60
CONTRACT WORK				
Item	Budget Justification	Qty	\$/Unit	Total \$
Omano CX3-OM99T-V7-65X Trinocular zoom stereo microscope Hdmi 1080p microscope camera inte grated 11.6" monitor-SD card.	For identification and educational presentations.	1	\$1,920	\$ 1,920
Dell inspiron -17500 series -17.3" inch H D touch screen laptop intel core 17-6500u, ITB 32GB Memory R5 radeon, 4GB	For identification and educational presentations.	1	\$1,599	\$ 1,599
Visual Apex Projector Scree 144" 4K Portable Projector 1080p LED Home Theater	For identification and educational presentations.	1	\$249	\$ 249
Backpack Aspirator Use to collect adult mosquitoes	For identification and educational presentations.	1	\$180	\$ 180
Backpack Aspirator Use to collect adult mosquitoes	collect sample mosquitoes for resistant testing.	1	\$1,054	\$ 1,054
8oz Wheaton clear glass bottles with black phenolic poly sead lined caps	bottle bioassary to determine resisant in moquitos.	4	\$24	\$ 96
Plastic Disposable Petri Dishes (bag of 20)	Useful for a variety of laboratory & Field Procedures.	5	\$5	\$ 25
Uprinting.com (1000 in unit)	Use for educational presentation.	50	\$23	\$ 1,160
Total				\$ 76,034