



# **Invasive Mosquito Species Response Plan 2018**

## **Coachella Valley Mosquito and Vector Control District**

## Objective

The purpose of this document is to provide guidance to Coachella Valley Mosquito and Vector Control District staff on how to prepare for, conduct surveillance of, and respond to the detection of invasive *Aedes* mosquitoes in the Coachella Valley. Mosquito species of immediate concern are the container-breeding *Aedes aegypti* and *Aedes albopictus*, both of which have been detected in multiple areas of California, including Riverside County. This document was developed based on the California Department of Public Health (CDPH) “**Guidance for Surveillance of and Response to Invasive *Aedes* Mosquitoes and Locally Acquired Exotic Mosquito-borne Infections Transmitted by These Mosquitoes in California**” published in June 2014 and revised March and August 2016 and February 2017.

<https://www.cdph.ca.gov/HealthInfo/discond/Documents/2016InvasiveAedesSurveillanceandResponseinCA.pdf>

## Introduction

The discoveries of *Aedes albopictus* (Los Angeles area 2011), *Aedes aegypti* (Central Valley and Bay Area 2013), and *Aedes notoscriptus* (Los Angeles area 2014), demonstrated that California is vulnerable to colonization by these highly invasive mosquito species. In October of 2015, *Aedes aegypti* was discovered in Riverside and San Bernardino Counties. These discoveries alerted District staff that discovery of one of these invasive species may occur at any time within the Coachella Valley.

*Aedes aegypti* mosquitoes were detected in the Coachella Valley in May 2016 and in an effort to rid the Valley of the invasive mosquito species, the District plans to exercise its full abatement powers and exemptions for vector control as specified in the “**The Cooperative Agreement between the California Department of Public Health and Local Vector Control Agencies.**”

<https://www.cdph.ca.gov/programs/vbds/Documents/BenefitsCooperativeAgreement08.pdf>

## Annual Training

In March of each year, the Vector Ecologist will coordinate mosquito species training with all Surveillance and Quality Control department staff. The training will include information on all known invasive mosquito species currently established in California. Upon completion of training staff should be able to:

1. Identify all life stages of invasive mosquito species.
2. Have knowledge of the biology and ecology of the invasive mosquito species.
3. Be current on latest surveillance and control methods being used for invasive mosquitoes in California.

The Vector Ecologist will also work in collaboration with the Operations Manager and Public Information Manager to design and present training to all Operations Department and Clerical staff. The training should include:

1. Biology and ecology of invasive mosquito species in California.
2. Current surveillance and control methods used against relevant invasive mosquito species and the current distribution of invasive *Aedes* species in California.
3. Service Request procedures when responding to a potential report of an invasive mosquito species.

Service Request procedures should include:

- a. Questions to ask when Call Center receives mosquito complaint calls.
- b. Methods of surveillance to be performed.

- c. Recommended control methods.
- d. Key messaging to be delivered to resident requesting service.

## **I. Pre-Detection Invasive *Aedes* Species Response Plan**

Each January, the Vector Ecologist will review and update the invasive mosquito surveillance plan as needed, including identifying the types of traps to be used and trap locations, the frequency of deployment and inspection, and a reporting plan for surveillance information.

### **Pre-Detection Surveillance Plan**

1. **Weekly *Aedes* Surveillance** – Ovicups are set at all routine trap sites. Ovicups are checked each week by lab staff and germination paper is replaced on a weekly basis. Germination paper is returned to the District’s sorting lab and inspected for presence of *Aedes* eggs by Lab Assistants/Technicians. Results of ovicups are reported to the Vector Ecologist by 3 p.m. each Friday.
2. **Rotation *Aedes* Surveillance** – Select locations throughout the valley that have not had *Aedes* detection or an inspection will be targets for extra trapping as time permits. Up to 3 neighborhoods in a city will be visited at a time. Locations with older neighborhoods where homes may have suitable *Aedes* habitat (i.e. potted plants, yard debris, stagnant water) or near highways, major roads, and commercial areas that may carry plants will be preferred.
  - a. Use BG Sentinel trap at 15-45 sites on a weekly basis. Each neighborhood will have up to 15 traps and up to 3 neighborhoods will be visited weekly. AGO traps will be used at the same neighborhood with up to 4 placed per neighborhood.
  - b. All sites will be rotated over a 6-week period.
  - c. Results of weekly rotation *Aedes* surveillance will be reported to the District Vector Ecologist by 12 p.m. each Friday.
3. **Service Requests** – If a potential *Aedes* service request is received, the Field Supervisor responsible for that zone will contact both the Vector Control Technician responsible for the zone and the Vector Ecologist to coordinate trap placement at the suspected site. Traps to be set will be at least two of the following:
  - a. BG Sentinel trap
  - b. Ovitrap or AGO
4. **Confirmation of Invasive Mosquito Specimens** – The Vector Ecologist will be responsible for confirming the identification of an invasive mosquito species specimen(s). Once District confirmation is made, the Vector Ecologist will call for a special meeting immediately with the General Manager, Department Managers, and Field Supervisors. At this meeting an initial assessment will be made and a post detection response plan initiated. The Laboratory Manager will notify CDPH Vector-Borne Disease Section Biologists at the Ontario Field office.

### **Pre-Detection Public Outreach Plan**

The Public Information Manager will lead general awareness outreach initiatives regarding invasive *Aedes* mosquitoes, as follows:

1. Provide invasive *Aedes* outreach materials to cities for distribution in city offices, newsletters, websites, and social media.

2. Distribute invasive *Aedes* awareness materials at public events such as community, city, and school presentations, fairs, other community engagements, and one-on-one meetings with city, county, state, and federal officials.
3. Include invasive *Aedes* as a topic in standard presentations and other outreach effort.
4. Deliver the *Aedes* Detection programs designed for students in targeted elementary, middle, and high schools to teach students about invasive *Aedes*, provide them with collection kits, and have them check around their homes for water that might contain immature mosquitoes. Students would turn in their kits and field reports to the District after their study to be reviewed by Lab staff.
5. Provide Vector Control Technicians with informational materials to distribute during Service Requests with residents.
6. Post informational materials on District website page ([www.cvmvcd.org](http://www.cvmvcd.org)) promoting awareness of invasive *Aedes* risk.
7. Promote awareness of invasive *Aedes* risk and encourage reporting of day-biting mosquitoes through social media channels.
8. Provide media with interviews and informational materials on the threat of invasive *Aedes*.

## II. Post-Detection Invasive *Aedes* Species Response Plan

### **Response to Detection of Invasive *Aedes* Mosquitoes in the Absence of Arboviruses**

1. Vector Ecologist or Laboratory Manager confirms species identification.
2. If the detection is in a new city, the Laboratory Manager informs General Manager and calls a meeting to include IT, Laboratory, Operations, and Public Information Managers.
3. Surveillance Response:
  - a. Laboratory Manager informs the California Department of Public Health of the detection in a new city.
  - b. The Laboratory Manager will inform the District staff of the discovery of the invasive mosquito species.
  - c. Vector Ecologist directs trapping within a 1/8 mile radius around the positive location.
  - d. Adult female *Aedes* caught in the field will be tested for arboviruses. Additional mosquitoes (males, larvae, and eggs) may be collected for appropriate research projects.
  - e. A weekly surveillance report (trap counts, Service Request results, post-detection surveillance data) to the District by the end of business each Friday.
  - f. As the detection area is defined, Vector Ecologist will determine permanent monitoring locations within each area to monitor the population and the control efforts.
4. Operations Response:
  - a. Control staff will place Invasive *Aedes* Detection Signs at major intersections of the neighborhood, if deemed necessary.
  - b. Certified and trained personnel will conduct inspections on properties within a 450-foot radius of a confirmed location of *Aedes*. Inspections of confirmed *Aedes* location within “known *Aedes* infested zone” shall follow the rule of 9 instead of following the 450-foot radius. The rule of 9 shall involve inspecting the property where *Aedes* was detected, one property on each side, three properties behind and three properties across the street from the known property. Once at the target property the technician shall :

- i. Inspect the entire property for presence of adults or potential breeding (eggs or larvae) and mitigate suitable resting and breeding habitat. If adults are present, use aspirator or capture in hand if possible. If larvae or pupae are present, collect a Lab Sample. All mosquitoes should be entered as Lab Samples and returned to the District for identification.
- ii. Instruct the property owner to dump all container water and to wash the containers with soap or bleach to get rid of eggs. If possible, residents should remove containers from areas where rain and sprinkler water can collect.
- iii. When the property is infested or has the potential for infestation by invasive *Aedes*, fog all property areas using a backpack or handheld ULV sprayer containing an appropriate mix of a contact pesticide to kill active adults.
- iv. Spray all potential standing water areas with an appropriate larvicide using a backpack or hand can sprayer after containers and potential breeding sources have been removed.
- v. When necessary, perform barrier treatments on all structures and vegetation with a mixture of Demand CS and VectoBac WDG using a backpack sprayer or Maruyama equipped for liquid application. Thoroughly wet all surfaces below 6 feet thoroughly but not to point of run-off.
- vi. Document all treatments and findings in mobile application.
- vii. Provide resident with treatment information using Post Inspection Form, outreach materials, warrant, and answer any and all questions.
- viii. Maintain close communications with Field Team members and the Operations Manager.
- c. If a property is not inspected because the resident has not given permission, information will be left with the resident or posted on the door to educate the resident.

5. Public Outreach Response:

- a. The Public Information Manager will update the invasive species media release in collaboration with the Laboratory, Operations, and General Managers.
- b. Notification of discovery of an invasive mosquito species will occur once Surveillance and Operations staff have finalized the specifics of the response plan. The Public Information Manager will make all notifications on the same day and according to the following list:
  - i. Board Member from community where invasive species discovered by phone call and followed up by email.
  - ii. City Manager or County Board of Supervisors office from community where invasive mosquito species discovered by phone call and followed up by email.
  - iii. Entire Board of Trustees by email.
  - iv. Riverside County Health Department, CDPH, and MVCAC Southern California Region Public Information Officers and General Managers, and MVCAC administrative staff by email.
  - v. Media and community stakeholders via Constant Contact and email.
- c. Public Outreach team uploads media release to the District website.
- d. IT team updates location map of detections to the District website.
- e. Public Outreach Team posts notification to District Facebook page.

- f. The Public Information Manager will work with the General Manager to finalize messages to be delivered to District staff, Trustees, and key community stakeholders.
- g. Working with the General Manager, Laboratory Manager, and Operations Manager, the Public Outreach Team explores avenues to reach neighborhoods of affected city, such as:
  - i. Door hangers
  - ii. Direct mail to residents using USPS Every Door Direct Mail routes.
  - iii. Town hall, community, city, and school meetings
  - iv. Fairs and other community engagements
  - v. One-on-one meetings with city, county, state, and federal officials
  - vi. Media interviews
  - vii. Neighborhood listservs
  - viii. Homeowner Associations (HOA) outreach
  - ix. **Gated Community** – Notification of HOA/Property Management/Golf Course Management.
  - x. **Older Neighborhoods with walled courtyards** (e.g., Palm Springs area) – Notification of HOA if known and potentially postcard mail campaign and posting.
  - xi. **Non-gated neighborhoods** – Notification and communication with HOA if exists or is known.
- h. Explore the use of the following community groups (Community Emergency Response Team, Urban Conservation Corps) to help inform the public
- i. Work with local government officials to explore the value of holding a “Fight the Bite Block Party” in the detection zone to educate residents about backyard sources and the importance of keeping their yards free of any standing water through dumping, draining, scrubbing, and throwing out unused containers.

### III. **Response to a Human Case of an Arbovirus Vectored by *Aedes aegypti* or *Ae. albopictus***

Due to the distribution of *Aedes aegypti* within the Coachella Valley, the District considers that any case of an invasive *Aedes*-vectored disease case may lead to local transmission. All cases are treated as if *Aedes* mosquitoes may be in the vicinity.

1. Riverside County Department of Public Health or California Department of Public Health notifies Laboratory Manager of suspected, probable, or confirmed case of invasive *Aedes*-vectored disease case.
2. Laboratory Manager informs General Manager and calls a meeting to include IT, Operations, and Public Information Managers.
3. Surveillance Response:
  - a. Laboratory Manager or Vector Ecologist inspects the residence of the case to determine if *Aedes* mosquitoes are present
  - b. Laboratory staff initiates enhanced adult surveillance with a mix of surveillance traps distributed throughout a minimum 450-foot radius around the suspect-case residence and any suspected exposure sites, monitored weekly for 45 days.
  - c. Any adult invasive *Aedes* mosquitoes are sent to UC Davis for arboviral testing.

- d. Inspections conducted by Laboratory staff where *Aedes* mosquitoes are detected will be reported to Operations for treatment and follow-up inspections.
4. Operations Response:
- a. Control staff conducts larval surveillance and control of known sites within and around the 450-foot radius. Door-to-door inspections are not initiated until public confirmation by County by press release, website posting, or written confirmation to the District that the information is now public.
  - b. Samples of mosquitoes should be collected and submitted to Laboratory for identification.
  - c. After notification of residential and business properties within the buffered area, Operations staff initiates larval mosquito surveillance throughout 450-foot radius around the suspect-case residence, monitored for 45 days. Control strategies will be implemented when appropriate conditions for mosquito development or resting are detected.
  - d. If invasive *Aedes* are discovered, Operations staff will conduct mandatory door-to-door inspections of each property within 450-foot radius area following post-detection Invasive *Aedes* control protocol.
  - e. If Operations staff is not able to access a property under mandatory door-to-door inspections, staff will use the District warrant and abatement procedures.
5. Public Outreach Response:
- a. When County publicly confirms invasive *Aedes*-vectored disease human case in the area, the Public Information Manager contacts city manager or alternate contact and law enforcement in affected city or cities to inform them that a human case of an invasive *Aedes*-transmitted disease has been detected and a door-to-door inspection operation will begin. The Public Information Manager proceeds with “Post-Detection” stakeholder notification steps.
  - b. Public Information Manager will use the most appropriate channels below to reach affected neighborhood regarding door-to-door campaign:
    - i. Door Hangers
    - ii. Direct mail to residents using USPS Every Door Direct Mail routes.
    - iii. Town hall, community, city, and school meetings
    - iv. Fairs and other community engagements
    - v. One-on-one meetings with city, county, state, and federal officials
    - vi. Media interviews
    - vii. Neighborhood listservs
    - viii. Homeowner Associations (HOA) outreach both email and printed postings
    - ix. **Gated Community** – Notification of HOA/Property Management/Golf Course Management.
    - x. **Older Neighborhoods with walled courtyards** (e.g., Palm Springs area) – Notification of HOA if known and potentially postcard mail campaign and posting.
    - xi. **Non-gated neighborhoods** – Notification and communication with HOA if exists or is known.
  - c. Explore the use of the following community groups (Community Emergency Response Team, Urban Conservation Corps) to help inform the public

6. Using Area-wide Applications as a Response

- a. No later than the third day following notification of a human case, the Laboratory Manager calls a meeting to include General Manager, IT, Operations, and Public Information Managers and the Vector Ecologist. At the meeting, the results of trap collections and inspections will be discussed.
  - i. Aerial applications of larvicide will be made if traps in the affected neighborhood capture an average of more than 10 female *Aedes* mosquitoes per trap per night **or** if 40% of the properties inspected are found to have more than 10 larval *Aedes* mosquitoes. Applications will cover a 1-mile square surrounding the index case.
  - ii. Truck-mounted larvicide applications will be made if more than 5 female *Aedes* mosquitoes per trap per night are captured **or** if 20% of the properties inspected are found to have more than 10 larval *Aedes* mosquitoes.
  - iii. Truck-mounted larvicide applications will be made in neighborhoods outside of a 1-mile radius of the human case if more than 10 female *Aedes* mosquitoes per night are captured on a 2-week cycle.
- b. Once the determination that area-wide application is necessary:
  - i. The Laboratory Manager will direct staff to evaluate the efficacy of the application through trapping.
  - ii. The Operations Department will continue inspections and will treat the properties where immediate control of mosquitoes is needed.
  - iii. The Operations Manager will notify the Riverside County Agricultural Commissioner and, if needed, the Federal Aviation Administration of area-wide applications.
  - iv. The Public Outreach Department will update the District stakeholders using the steps outlined in the Post-Detection of Invasive *Aedes* section of this document.