Invasive Mosquito Species Response Plan 2017
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 western 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.


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.”


Annual Training
In January and July of each year, the Vector Ecologist will coordinate invasive mosquito species training with all Surveillance and Quality Control department staff. The training should focus 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 12 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. 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 suspect 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 “Vector Inspector” program in targeted elementary and middle schools to teach students about invasive *Aedes*, provide them with a sample collection kit, and have them check around their homes for water that might contain immature mosquitoes. The collected samples would then be reviewed by District 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) 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*.

**Surveillance/Control/Public Outreach Plan for Human Case of Invasive Aedes-Vectored Virus in Pre-Detection Zone**

If the Public Health department notifies the District of a suspected or confirmed human case of an *Aedes*-transmitted disease, travel-related or locally acquired, invasive *Aedes* traps should be placed in the general vicinity of the human-case residence. If invasive *Aedes* adults or larvae are detected, the post-*Aedes* detection plan will be carried out. Enhanced door-to-door mosquito surveillance and control may be carried out in areas where invasive *Aedes* mosquitoes have not been detected if District leadership deems the strategy necessary to protect the public’s health.

**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 Operations, Laboratory, IT, 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. Any adult invasive *Aedes* mosquitoes are sent to UC Davis for arboviral testing.
   e. Vector Ecologist or assigned Biologist will send out weekly surveillance results (trap counts, Service Request results, post-detection surveillance data) to the District by the end of business each Friday.
f. If invasive Aedes are discovered, Laboratory staff will conduct follow-up inspections on residences where Aedes were detected. Inspections will be between 1 and 2 weeks following the initial treatment, and then quarterly for up to 2 years. Inspections that detect Aedes mosquitoes will be reported to Operations for treatment.

g. 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 place door hangers on front door at least 24-hours prior to inspection. If the residence is unoccupied and the door hanger is still present on the day of inspection, the inspection team will remove the door hanger.
   b. Control staff will place Invasive Aedes Detection Signs at major intersections of the neighborhood, if deemed necessary.
   c. Certified and trained personnel will conduct inspections on properties within a 450-foot radius of a confirmed location of Aedes. A technician will:
      i. Inspect the entire property for presence of adults or potential breeding (eggs or larvae) and mitigate suitable resting and breeding habitat.
      ii. Instruct the property owner to dump all container water and to wash the containers with soap or bleach to get rid of eggs.
      iii. When appropriate, fog all property areas using Longray electric backpack sprayer containing an appropriate mix of a contact pesticide to kill active adults.
      iv. Spray all potential standing water areas with VectoBac WDG using a backpack or hand can sprayer.
      v. Perform barrier treatments on all structural and vegetation with Demand CS. Using a backpack sprayer or Maruyama equipped for liquid application, wet all surfaces 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.
   d. Operations Manager will email to Managers a report of control activities (inspections made, treatments made, warrant entries made).

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. When distributing the release, media will be provided a list of local, state, and national invasive species experts, which will include Riverside County Public Health, CDPH, and the CDC.
   c. The Public Information Manager will work with the General Manager to finalize messages to be delivered to District staff, Trustees, and key community stakeholders.
   d. 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 Outreach Team will make all notifications on the same day and according to the following list:
      i. District Staff will be informed by the Laboratory Manager by email.
ii. Board Member from community where invasive species discovered by phone call and followed up by email.

iii. City Manager or County Board of Supervisors office from community where invasive mosquito species discovered by phone call and followed up by email.

iv. Entire Board of Trustees by email.

v. Riverside County Health Department, CDPH, and MVCAC Southern California Region Public Information Officers and General Managers, and MVCAC administrative staff by email,

vi. Media and community stakeholders via Constant Contact and email.

vii. Public Outreach team uploads media release to the District website.

viii. IT team updates location map of detections to the District website.

ix. Public Outreach Team posts notification to District Facebook page.

e. Working with the General Manager, Operations Manager, and Laboratory Manager, the Public Outreach Team explores avenues to reach neighborhoods of affected city, such as:

i. Direct mail to residents using USPS Every Door Direct Mail routes.

ii. Town hall, community, city, and school meetings

iii. Fairs and other community engagements

iv. One-on-one meetings with city, county, state, and federal officials

v. Media interviews

vi. Staff inspections

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.

c. Explore the use of the following community groups (Community Emergency Response Team, Urban Conservation Corps) to help inform the public

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

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 Operations, Laboratory, IT, 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 4 weeks.
c. Any adult mosquitoes (invasive *Aedes* or endemic *Culex*) are sent to UC Davis for arboviral testing.

d. If invasive *Aedes* are discovered, Laboratory staff will conduct follow-up inspections on residences where *Aedes* were detected. Inspections will be between 1 and 2 weeks following the initial treatment, and then quarterly for up to 2 years. Inspections that detect *Aedes* mosquitoes will be reported to Operations for treatment.

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 4 weeks. 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. One-on-one meetings with city, county, state, and federal officials
   ii. Media Release/media interviews
   iii. Town hall, community, city, and school meetings
   iv. Fairs and other community engagements
   v. Vector Control Technicians during Service Requests with residents
   vi. Neighborhood listservs/Nextdoor.com
   vii. Homeowner Associations listservs
   viii. Postcard mail campaign
   ix. Door Hangers