



Dump it!



Drain it!



Scrub it clean!

Your Weekly Mosquito Prevention Routine



Coachella Valley Mosquito & Vector Control District
2017 Annual Report



Employee of the Year

2017

Richard Ortiz,
Mechanic II



Protect Coachella Valley. Fight the Bite. Together.



Coachella Valley Mosquito and Vector Control District Board of Trustees 2017

Top row (left to right): Franz De Klotz, County at Large; Doug Hassett, Board Vice President, La Quinta; Shelley Kaplan, Board Treasurer, Cathedral City; Dr. Douglas Kunz, Palm Springs; Bito Larson, County at Large; Michael Monroe, Rancho Mirage, Adam Sanchez, Desert Hot Springs; Betty Sanchez, Board Secretary, Coachella; John B. Stevens, Indio; Doug Walker, President, Palm Desert; Clive Weightman, Indian Wells



Coachella Valley Mosquito and Vector Control District Staff 2017

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Letter from the General Manager

Dear Stakeholders, Trustees, and Staff,

What an extraordinary and important year for mosquito and vector control in the Coachella Valley! In 2017, District staff demonstrated their professionalism, dedication, and adaptability by meeting the challenge of an invasive *Aedes* mosquito expansion, directing surveillance, control, and outreach efforts in response to arbovirus threats, and continuing control of red imported fire ants and other vectors found throughout the Coachella Valley.

Invasive *Aedes aegypti* mosquitoes continued to expand their range in California and the Coachella Valley. District staff increased the scope of its invasive *Aedes* surveillance program to better delineate the extent of the infestation within the District. By the end of 2017, District staff were successful in this effort by confirming the presence of *Ae. aegypti* in eight communities. The expanded surveillance enabled District staff to target an aggressive response which included educating the public, door-to-door inspections, and enhanced surveillance and control measures. Staff will continue to work diligently to eliminate the invasive mosquito from backyards in infested communities; however, the District will need the support and effort of all Valley residents to do their part in eliminating backyard mosquito sources.

In order to achieve a successful mosquito and vector control program it also takes adaptable and professional support staff. The Finance and IT Departments introduced new software to better track and streamline District finance processes. The District's Human Resources Manager initiated the first annual employee training academy aimed at increasing skills necessary for maintaining a highly professional and capable workforce. The Fleet Services and Facilities staff did an exceptional job in maintaining District grounds and fleet to ensure a responsive workforce.

The Board of Trustees and staff continued their commitment to transparency and financial stability in 2017. This was evident in the adoption of a balanced budget, receiving for the ninth consecutive year the Certificate for Achievement in Excellence in Financial Reporting, and being awarded an outstanding audit for the FY 2016-17.

It is with great pride and pleasure that I present to you this 2017 annual report, highlighting the outstanding contributions and accomplishments the District's dedicated staff achieved while fulfilling the District's mission to provide effective and environmentally sound vector control and prevention programs throughout the Coachella Valley.

The District will continue to plan for the future, improve on our programs, and be prepared for the next "imported" disease or vector that could threaten the health and welfare of the residents of the Coachella Valley.

Respectfully,

Jeremy Wittie, MS
General Manager

Measuring Mosquito Awareness and Prevention Practices

2 survey campaigns were conducted by practicum student David Jones (from the U.S. State Department) and District staff from April to September 2017, measuring Coachella Valley residents' mosquito knowledge and prevention habits.

56 door-to-door surveys and property inspections were carried out in Coachella prior to a Community Clean Up and Education event in a neighborhood infested with invasive *Aedes* mosquitoes.



52% of surveyed households in the neighborhood had standing water present on the property.



91% of respondents were aware that mosquitoes can lay eggs in birdbath water, but only **52%** knew mosquitoes can lay eggs in a bottle cap.



53 households took part in the **Community Clean Up** in May 2017, throwing out old tires, appliances, sinks, toilets, furniture, fountains, a canoe, and other potential mosquito breeders.

100% of those surveyed before the event said they were likely/very likely to inspect for and dump stagnant water. However, inspections post-event showed the same or more standing water than prior to the event.

100 residents took part in a **Fight the Bite! Block Party** in Cathedral City in June 2017.

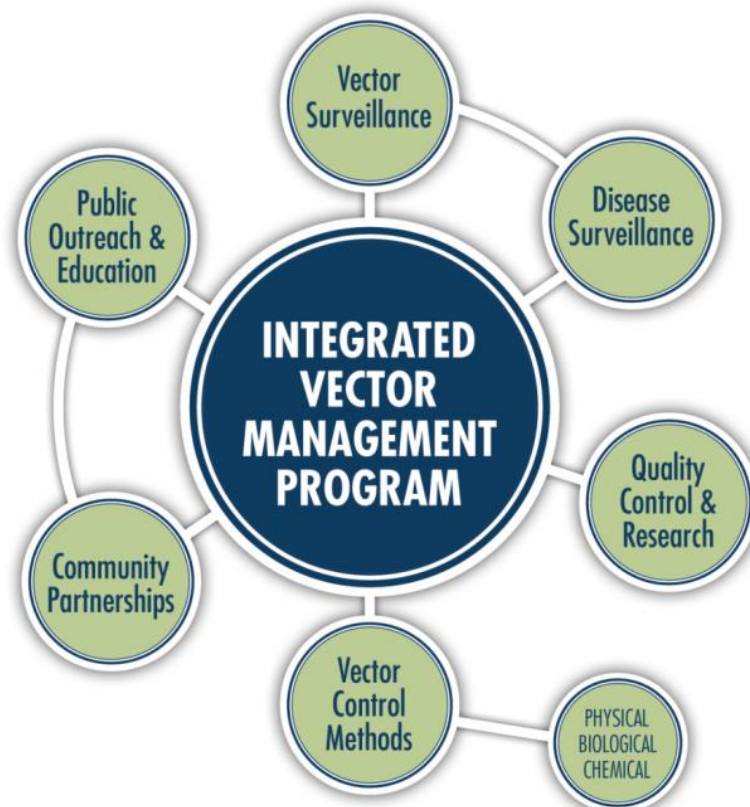


0 of 17 properties had breeding sites following the first survey and June block party.

Integrated Vector Management

This year the District set more mosquito traps, tested more mosquito samples in our onsite laboratory, and logged the highest number of virus-positive mosquitoes on record in the Coachella Valley. This heightened level of virus detection, combined with the detection of the invasive mosquito, *Ae. aegypti*, in four new areas of the Valley, made 2017 another challenging year in mosquito control. District staff developed and used an *Invasive Mosquito Species Response Plan* to address the initial invasion of *Ae. aegypti* in 2016 and spent the past year developing and augmenting strategies to reduce the invasive species population. This included refining surveillance protocols for *Ae. aegypti* populations and expanding control efforts. The Operations Department increased the number of teams conducting combined door-to-door inspections and treatments for larvae and adult mosquito control and carried out aerial larval mosquito control applications in the cities of Indio and Palm Springs. The applications were successful in showing that in the event of an invasive mosquito-borne virus outbreak, such as Zika or dengue, the District is ready to knock out adult mosquito populations effectively and efficiently to protect public health. The Public Outreach Department also developed additional educational information and customer service tools to help reach as many members of our community as possible, teaching residents how to rid their homes of standing water sources that attract mosquitoes and how to protect themselves from mosquito-borne diseases both at home and while traveling.

By following the District's Integrated Vector Management (IVM) program and the *Invasive Mosquito Species Response Plan*, District staff were able to effectively protect public health from a potential outbreak of viruses, such as West Nile virus (WNV) and Saint Louis encephalitis virus (SLEV), transmitted by our local *Culex* species, as well as arboviruses associated with invasive *Aedes* mosquitoes.

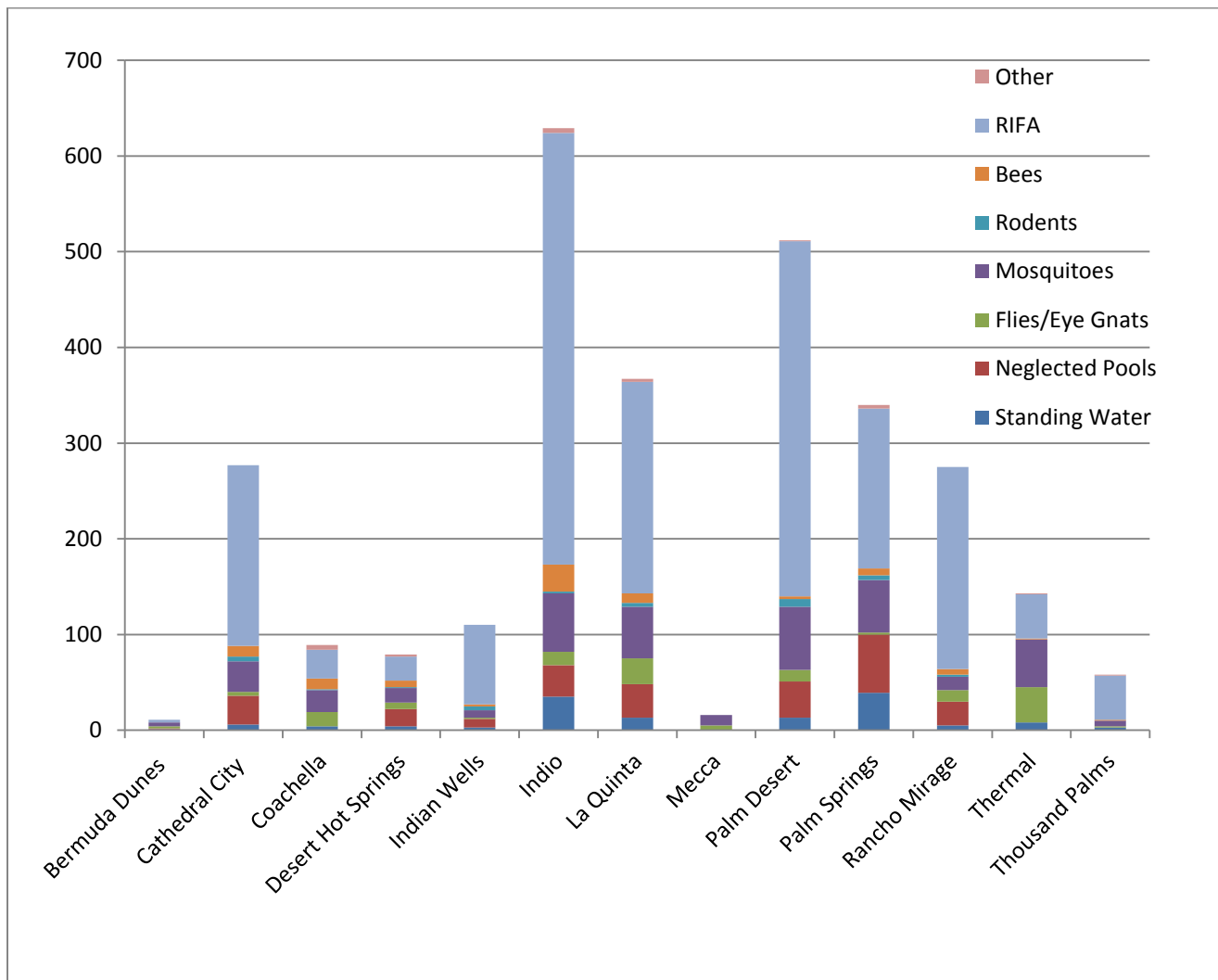


Service Requests

The District received more than 7,500 phone calls and emails in 2017 from Coachella Valley residents requesting service or information for red imported fire ants (RIFA), mosquitoes, and other nuisance species problems. Nearly 2,900 of those requests resulted in inspections by the District’s state-certified Vector Control Technicians, slightly fewer than in 2016. Indio, Palm Desert, La Quinta, and Palm Springs were the cities with most requests for service, together making up more than 60% of all service requests made to the District.

Twenty-four technicians are assigned to different zones throughout the District to respond to service requests and provide vector control services to the cities of Cathedral City, Coachella, Desert Hot Springs, Indian Wells, Indio, La Quinta, Palm Desert, Palm Springs, and Rancho Mirage, as well as unincorporated areas of Riverside County, including Bermuda Dunes, Mecca, Thermal, and Thousand Palms. **Figure 1** represents the number and types of service requests received from the cities within the District boundary for 2017.

Figure 1. Total Number of Service Requests by City or Area and by Type in 2017



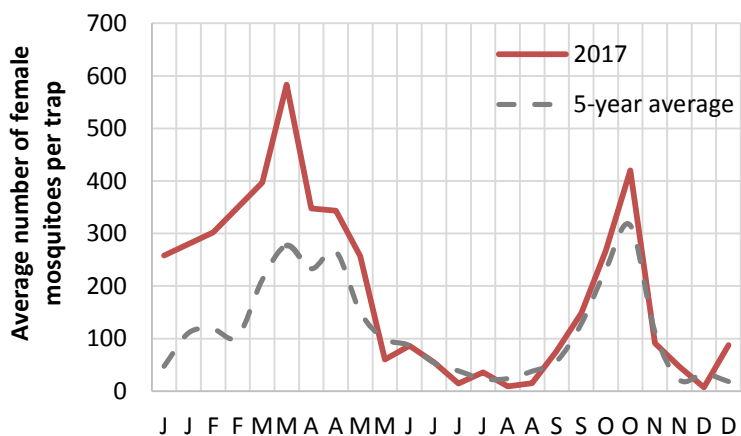
Mosquitoes

Two of the 13 mosquito species detected in the Coachella Valley are known to actively transmit arboviruses (viruses transmitted by mosquitoes and other insects) annually in the Valley. The *Culex tarsalis* (the western encephalitis mosquito) and *Culex quinquefasciatus* (the southern house mosquito) are capable of transmitting WNV and SLEV to people. The District detected more WNV-positive mosquito samples in 2017 than any other year since the virus was first detected in the Valley in 2003. The District detected higher numbers of adult mosquitoes for both vector species compared to the 5-year average (**Figures 2 and 3**). There was also an increase in trapping and testing over the past three years, which could account for a portion of the rise in detection numbers (**Table 1**).

Table 1. Summary of Arbovirus Surveillance in the Coachella Valley 2012-2017

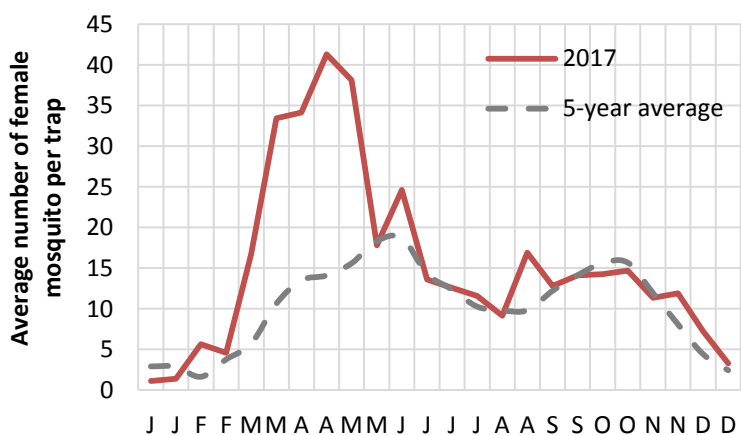
| | | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|--|----------------------|------------|-----------|-----------|-----------|-----------|------------|
| Female Mosquito Samples (<i>Culex quinquefasciatus</i> and <i>Culex tarsalis</i>) | Samples tested | 3,399 | 2,014 | 2,130 | 3,903 | 2,814 | 5,148 |
| | Number of mosquitoes | 127,699 | 69,407 | 70,884 | 112,248 | 66,893 | 155,906 |
| | WNV positive | 118 | 43 | 67 | 99 | 19 | 121 |
| | SLE positive | 0 | 0 | 0 | 37 | 92 | 23 |

Figure 2. Rural *Culex* Mosquito Abundance



In 2017, the District faced two main challenges. The first was the sustained presence of WNV and to a lesser extent SLEV in the eastern Valley. There were six reported cases of WNV in people in the Valley and no cases of SLEV. The District also detected the invasive mosquito *Ae. aegypti* in four additional communities in 2017. There were no reported cases of people in the Valley contracting viruses that can be vectored by *Aedes* (such as chikungunya, dengue, and Zika).

Figure 3. Urban *Culex* Mosquito Abundance



Mosquito Surveillance

The District uses different types of traps to capture adult mosquitoes. Carbon dioxide (CO₂) traps (attracting female mosquitoes looking to bite) and gravid traps (attracting egg-bearing mosquitoes) are used to detect *Culex* mosquitoes. To target *Ae. aegypti* mosquitoes, BG traps are used to attract biting mosquitoes while Autocidal Gravid Ovitrap (AGO) are used to attract egg-bearing mosquitoes. The mosquitoes collected in the traps are used to provide population abundance data and for

arbovirus surveillance. Mosquito counts from the traps are compared with the average abundance of the five preceding years to help determine the risk levels of arbovirus transmission.

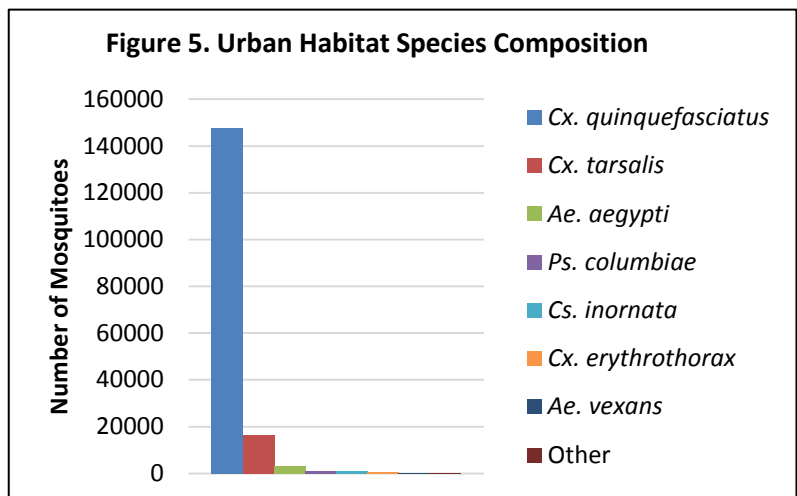
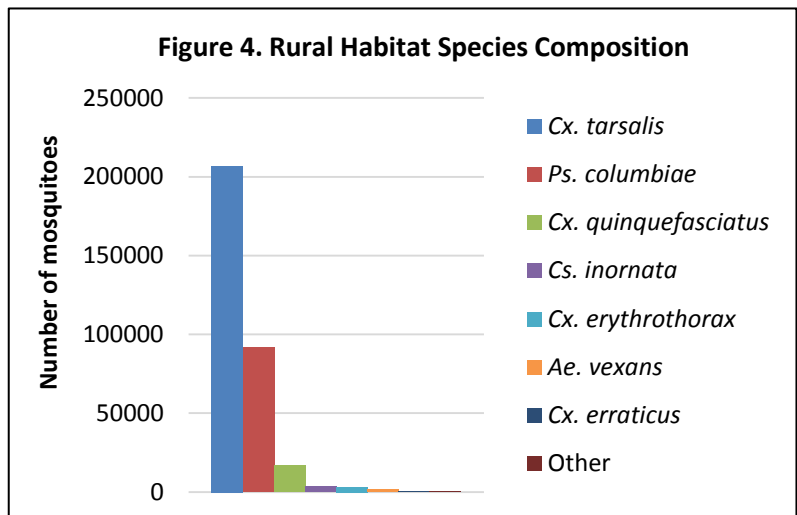
The District’s operational effort to control mosquitoes is in large part directed by the distribution of the mosquito population as determined by our surveillance program. In 2017, our District collected more than 500,000 adult mosquitoes as part of our surveillance efforts.

Rural Zones

The Coachella Valley’s rural habitats include areas south and east of the incorporated cities comprising a variety of land types such as farmlands, wetlands, small residential areas, desert, and the Salton Sea shoreline wetlands. In 2017, the District set carbon dioxide (CO₂) traps at 59 locations and gravid traps at three locations in rural habitats of the District. These traps collected a total of 324,420 mosquitoes. CO₂ traps are effective at capturing most mosquito species in the Coachella Valley including *Cx. tarsalis*, the most abundant and important vector of WNV in the rural areas. **Figure 2** displays how the population of the *Cx. tarsalis* and *Cx. quinquefasciatus* varied over 2017 in the rural areas compared to the previous 5-year average. **Figure 4** is the species composition of the mosquitoes collected from the rural zones.

Urban Zones

The urban zones in the District include the nine cities of the Coachella Valley spanning from Palm Springs and Desert Hot Springs to La Quinta and Coachella. In 2015, the District greatly increased the number of traps and trap sites in the urban areas from 29 traps at 22 locations to 100 traps at 48 locations. In 2017, these urban traps collected a total of 170,356 mosquitoes. Gravid traps are used more heavily in the urban areas than rural areas as they are effective and specific to collecting *Cx. quinquefasciatus* mosquitoes, the most abundant vector of WNV in the District’s urban areas. **Figure 3** displays how the population of the *Cx. tarsalis* and *Cx. quinquefasciatus* varied over 2017 in the urban areas compared to the previous 5-year average. **Figure 5** is the species composition of the mosquitoes collected from the urban zones.

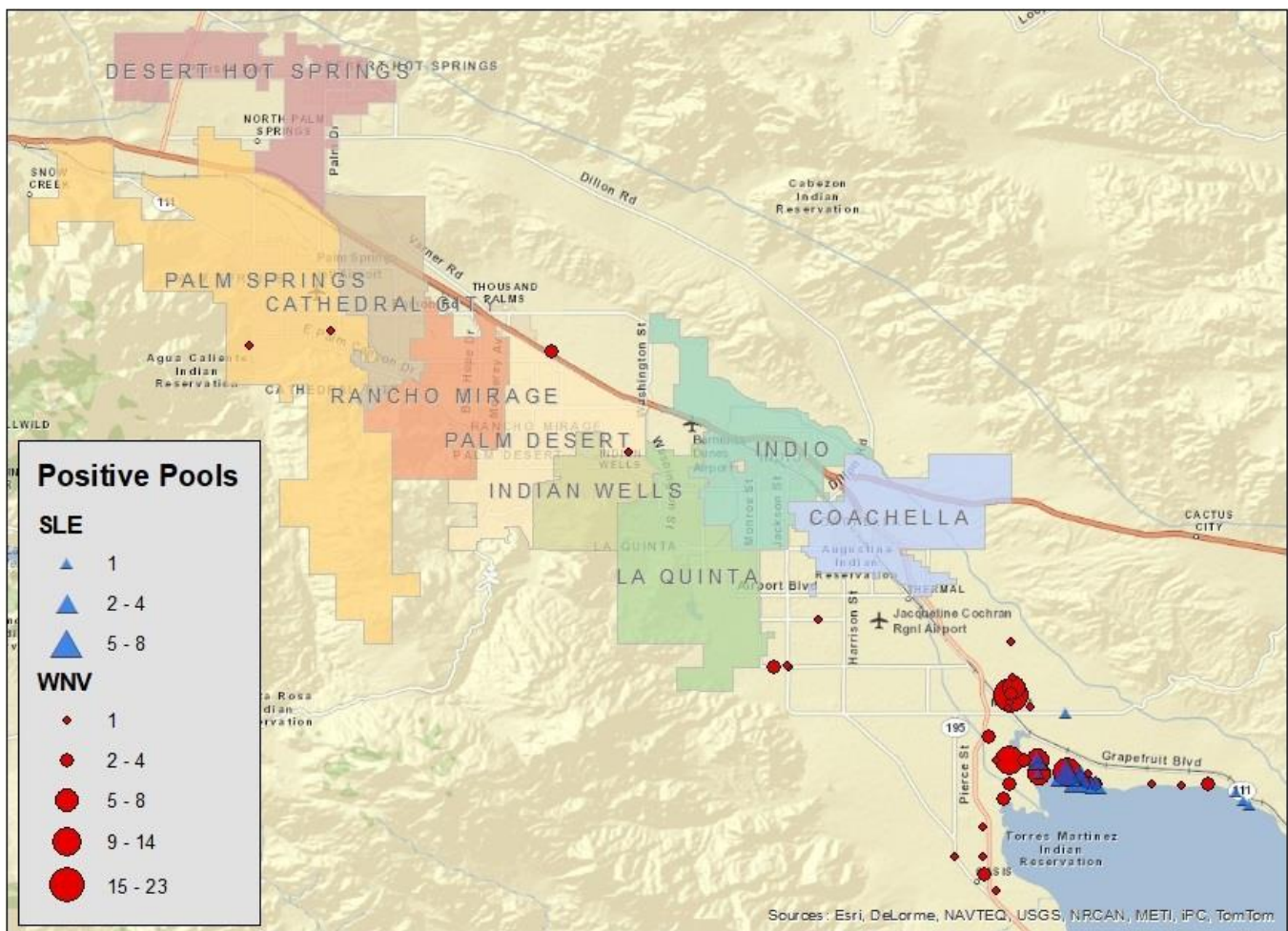


Arbovirus Distribution

In 2017, WNV was detected most abundantly at the eastern end of the District with a few samples in the urban areas. In April, a single sample was found to be positive in Thousand Palms. In June, several positive samples were detected in Mecca and Thermal. Then in July, samples from Palm Desert and Oasis were found to be positive with additional samples in Mecca and Thermal testing positive. Positive samples continued to be detected throughout the summer in Mecca. The final WNV positive sample was detected in October from Palm Springs. The detection of SLEV-infected mosquitoes was found later in 2017 than it had been in 2016. The first positive samples were detected at the end of July, nearly a month later than the previous year. Samples were then detected regularly in Mecca throughout September.

Riverside County Department of Public Health reported six human cases of WNV infection of residents within the Coachella Valley in 2017, three of whom had travel history around the time that they were infected. Overall, there were more human cases in Riverside County in 2017 (33) than in 2016 (10), but still fewer than in 2015 (138 cases and six deaths). During this period of increased virus activity, the risk level for the area was at the emergency planning stage. The District responded with elevated surveillance and control efforts with the objective to prevent further amplification of the virus and potential spreading to neighboring areas. There were no human cases of SLEV infections detected in Riverside County during the year.

Arbovirus Surveillance in the Coachella Valley in 2017

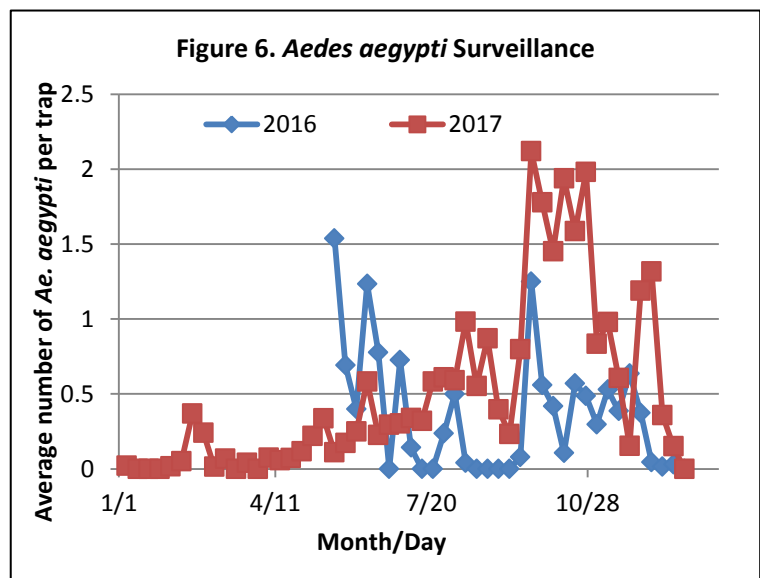


Invasive Aedes mosquito surveillance

In May 2016, invasive *Aedes* mosquitoes were detected for the first time in the Coachella Valley. Surveillance efforts for these mosquitoes continued in 2017. BG traps were deployed on a routine basis within cities of known *Aedes* activity. Ovicups, which collect eggs laid by *Aedes* mosquitoes, were placed throughout the Valley and examined weekly. AGO traps, designed to monitor the presence of *Aedes* in areas of prior activity, were also set this year. AGO traps have been advantageous in areas where *Aedes* activity was low and not detectable by BG traps.

Along with routine surveillance, laboratory staff began using BG traps to conduct enhanced trapping for adult *Ae. aegypti* mosquitoes this year. This was intended to examine the spread of currently known areas of *Aedes* infestation, as well as to discover new areas of *Aedes* establishment in a proactive fashion. Roughly 30-40 BG traps were set in different locations each week, resulting in a number of new areas of *Aedes* activity being found. An intern with the Laboratory Department examined modifications to BG traps and found that the placement of the trap within the yard had the biggest impact on captures. *Ae. aegypti* do not fly far from where they emerged as adults, so placing traps close to areas where the mosquitoes are likely to lay eggs is the most important component of trapping.

Ae. aegypti mosquitoes have now been detected in seven Valley cities and one unincorporated area of Riverside County including (in order of first detection) Coachella, Cathedral City, Indio, Palm Springs, La Quinta, Palm Desert, Mecca, and Indian Wells. More *Ae. aegypti* were caught per trap in 2017 compared to 2016 (Figure 6).



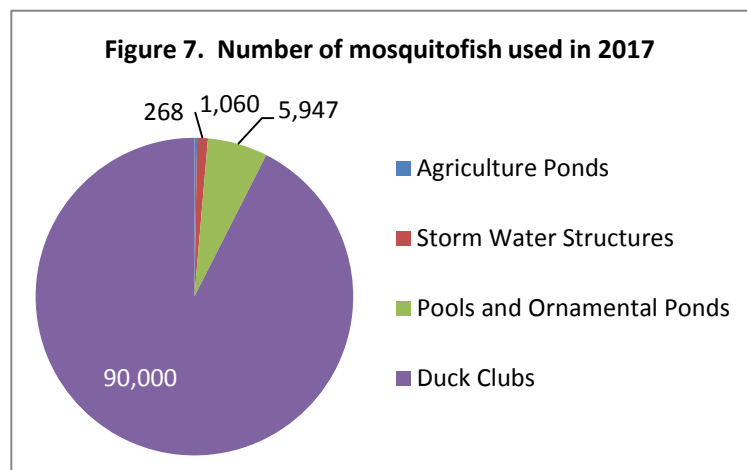
Mosquito Control

Physical Control

Limiting mosquitoes from breeding is an important component of IVM programs. The drought and watering restrictions in the Coachella Valley provided a good opportunity to talk with residents about how overwatering wastes water and contributes to creating ideal habitats for mosquito breeding. The District works with residents and local businesses to fix irrigation problems and report irrigation runoff to water agencies. We also worked with property owners to fix inoperable artesian wells, as part of an ongoing program with the Coachella Valley Water District, which funds some costs associated with rehabilitating inoperable wells in the Valley.

Biological Control

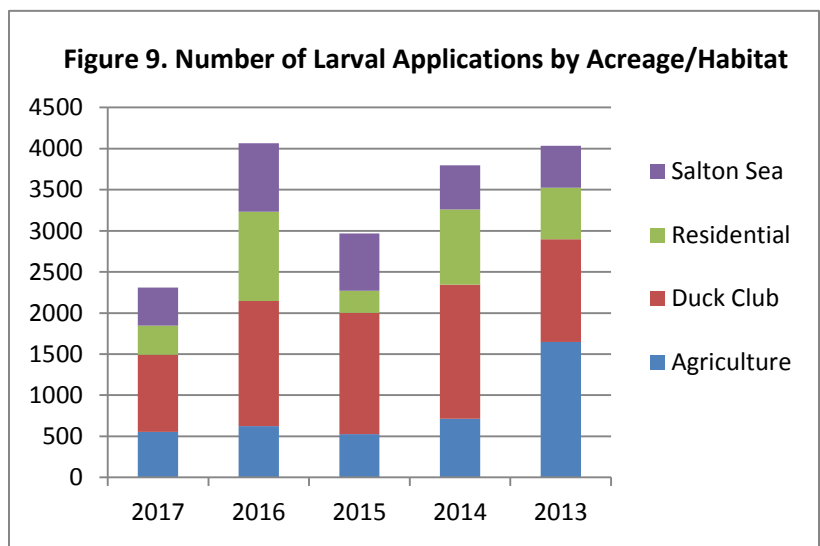
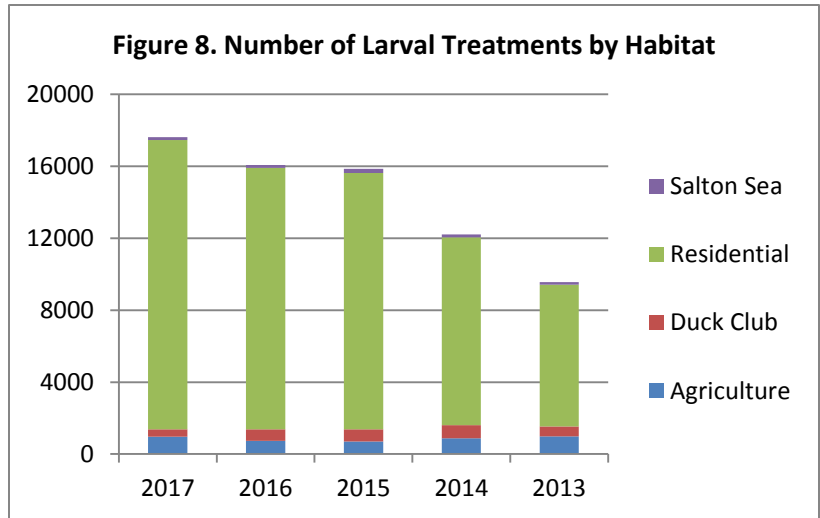
The District uses mosquitofish (*Gambusia affinis*) in permanent bodies of water to control mosquitoes. In 2017, the District produced



109,855 mosquitofish. More than 97,000 fish were stocked in 196 unique sites, including neglected swimming pools, duck clubs, storm water structures, and private ponds (Figure 7).

Microbial and Chemical Control

Larval Mosquito Control – Microbial and chemical control are used to reduce or maintain mosquito populations at acceptable levels in conjunction with physical and biological control strategies. Larval control is the most effective way of targeted control and achieves sustainable reduction of local mosquito populations using different formulations of microbial and chemical control products. The total number of *Culex* larval treatments increased in 2017 compared to 2016. (Figure 8). Several duck clubs closed operation in 2017 reducing the number of larval applications by acreage and habitat compared to the prior year (Figure 9).



Adult Mosquito Control – The District carries out chemical control targeted at adult mosquitoes typically when the District’s mosquito Risk Assessment Plan indicates a significant health threat from arboviruses. Adult control is currently performed either through ultra-low volume (ULV) or barrier applications using public health adulticides, registered with the U.S. Environmental Protection Agency (EPA). ULV applications involve delivering

a fine mist at specific times of the day to target flying adult mosquitoes using special spray equipment attached to a truck or helicopter. Barrier applications involve the misting of standing, tall vegetation in areas with elevated mosquito or virus activity to control mosquitoes as they rest in those protected areas.

Targeted Mosquito Control for Local Culex

In 2017, adulticide applications were made in both urban and rural areas in response to both WNV- and SLEV-positive mosquitoes collected in traps in the Coachella Valley. This included 17 aerial ULV applications, covering nearly 30,700 acres; 24 truck-mounted ULV applications, covering more than 4,100 acres, and two barrier spray applications, covering about two acres. The number of positive mosquito samples was greatly reduced following the District’s enhanced larval and adult mosquito control campaign.

Targeted Mosquito Control for Invasive *Aedes*

In 2017, the District focused much of its efforts and resources to battling the invasive *Aedes* mosquito in the Valley. The effort involved public education, trapping mosquitoes to find the extent of infestation, and door-to-door inspections to determine the presence of *Ae. aegypti* in any of its stages (eggs, larvae, pupae, or adult) on properties. *Aedes* Response Teams performed nearly 11,000 door-to-door inspections, nearly double the number of inspections from the previous year, providing information on eliminating water sources, how to recognize the mosquito, call for help, and how to avoid bites. Staff applied barrier and fogging treatments using backpack and handheld equipment on properties where invasive *Aedes* mosquitoes were identified. No truck-mounted ULV applications were performed in any neighborhoods in 2017 to target invasive *Aedes* (Figure 10).

The District conducted 12 larval treatments by helicopter in Indio and Palm Springs where large infestations of *Ae. aegypti* were detected. A total of 2,750 acres were treated in Indio and 5,702 acres in Palm Springs. The strategy was successful in Coachella last year and in Florida and the Caribbean in previous years. While these aerial applications target mosquito larvae, the final result is fewer adult mosquitoes. The District worked with local city officials, notified affected residents, and secured a *Congested Flight Operation Plan* approval from the Federal Aviation Administration before embarking on the weekly helicopter applications.

Product Quality Control and Efficacy

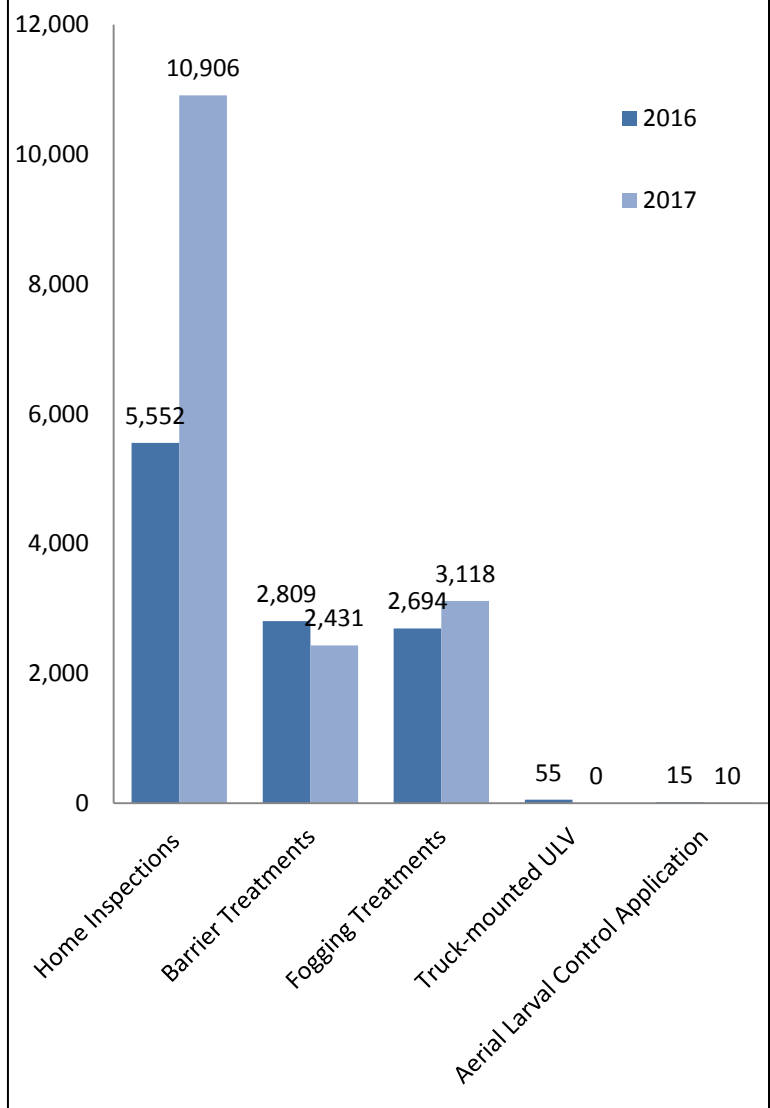
Culex Mosquitoes

Resistance Assays and Semi-field Applications – Pyrethroid-based insecticides are commonly used products in California for both urban and agricultural applications. Resistance to these products is an increasing concern as pyrethroid formulations are the main pesticides used to control adult mosquitoes. In order to identify any potential changes in the susceptibility of the local mosquitoes to pyrethroids, bottle bioassays are conducted annually to monitor adult mosquito populations for potential pesticide resistance to the products the District uses.



Resistance assay bottle.

Figure 10. Invasive *Aedes* Control Strategy Conducted by Type and Year



Adult control product monitoring was conducted using *Cx. quinquefasciatus* and *Cx. tarsalis* mosquitoes with three different products: Aqua-Reslin, Scourge 18+54, and Duet. *Cx. tarsalis* showed resistance towards Duet but not the other two products. *Cx. quinquefasciatus* showed strong signs of resistance to all three products. Although these assays indicated that resistance is developing, bottle bioassays are much more sensitive to detecting resistance than field rate treatments used to control mosquitoes. To ensure that the pyrethroid products used by the District are still effective under field conditions, the products were evaluated at regular label rate applications using truck-mounted ULV sprays. The results of these trials indicated that local mosquitoes are exhibiting signs of resistance to select formulations.

Truck ULV applications – The laboratory staff evaluated four of the truck-mounted ULV applications performed in Mecca in response to WNV activity in the area. Colony mosquitoes in sentinel cages were set at six locations within the spray area to determine treatment range and effectiveness. Glass slides were used to determine droplet size and density. A weather station was set up to examine how weather may affect results. Overall, the applications were effective at causing mortality in the sentinel lab-reared mosquitoes, with an average mortality rate of 88%. Droplet density showed a positive correlation with mosquito mortality, and droplet sizes were well within label mandated ranges. In one evaluation, field-caught mosquitoes were placed alongside lab-reared mosquitoes. The field-caught mosquitoes had reduced mortality compared to the lab-reared mosquitoes, demonstrating the need for further examination of resistance in local mosquitoes.

Natular DT Mosquito Larvicide Tablets – Natular DT (active ingredient: spinosad) mosquito larvicide tablets were examined in the District’s microcosm ponds. This product is sold to homeowners to control container-breeding mosquitoes like *Ae. aegypti* for up to 60 days. At the District, 150-gallons of water were treated with three tablets and successfully controlled mosquitoes.

Aerial larvicide at duck clubs – The Salton Sea marsh is vast and can be laborious for technicians to treat. Aerial spraying is conducted in areas that ground-based spraying cannot reach. The application rate of an aerial treatment was assessed using modified boxes to capture a swath of the application. Ten plastic boxes with lids (modified with a 1ft² opening to capture product) were floated in a duck club pond perpendicular to the flight path to capture a swath of the application. Pellets in the boxes were collected and weighed following the application, revealing that more pellets were applied than expected from the application rate. The results help the District to evaluate application accuracy and ensure appropriate product quantity is used.

Efficacy of fish at duck clubs – Mosquitofish were used as a mosquito larval control treatment at five duck club ponds October 2016 to February 2017. The District wanted to evaluate the effectiveness of the fish by comparing the number of treatments made to these ponds with ponds of comparable size that did not have fish. Mosquitofish were stocked at 3,000 fish per acre. The evaluation showed that ponds with mosquitofish needed fewer treatments to control mosquito breeding, which resulted in a reduction of 49% of chemical product used.



Flat cages containing sentinel mosquitoes.



Cages and impinger.

Aedes Mosquitoes

Aerial larvicide applications – The District conducted two aerial larval control campaigns in 2017 targeting *Ae. aegypti*. In February and March, five applications of VectoBac WDG (active ingredient: *Bacillus thuringiensis israelensis* (Bti)) were made to approximately 540 acres in Indio. A day prior to the application, plastic containers were placed at 20 residences within the application area to evaluate whether the product was deposited into areas where mosquito larvae would be. Four containers were placed per house with a different level of obstruction: 0% coverage, 25% coverage, 50% coverage, and 100% coverage from the open sky. Following the application, containers were collected and returned to the lab, where assays were conducted to test for efficacy. Larval mortality was examined 48 hours after larvae were added to the containers. Results showed that the product was deposited in the containers placed in residents’ yards (**Table 2**). The District used the same evaluation procedure during an aerial campaign in Palm Springs from July to September. The District used Altosid Liquid (active ingredient: methoprene) in the aerial treatments. Results showed the product made it into containers even when obstructed.

Testing Aedes for knockdown resistance (kdr) – In *Ae. aegypti*, some genetic markers of pesticide resistance are known. The District submitted a total of 851 adult *Ae. aegypti* samples to the California Department of Public Health to test for these markers. Results for the first 384 samples indicated a frequency of resistant mutations between 48% and 57%, which means *Ae. aegypti* in the Coachella Valley have genetic traits that could be resistant to pyrethrin and pyrethroid pesticides. The tested mosquitoes were taken from a small area and many were reared from larvae, which likely came from a limited number of females. Test results are still pending for the remaining 467 samples submitted.

Follow-up inspections for Aedes – Property inspections were done at homes where *Ae. aegypti* mosquitoes were detected and control treatments were made. Following up on properties where mosquitoes were found helps determine if the property owners/managers have reduced or eliminated the breeding source. Out of 25 yards inspected, three of those were breeding mosquitoes. Educating residents about maintaining a mosquito-free property plays a key role in preventing the spread of the mosquitoes.

Red Imported Fire Ants (RIFA)

Surveillance and Control

The role of Vector Control Technicians is to confirm the presence of RIFA on a property and determine the level of the infestation. Positive findings of RIFA always initiate treatment using bait granules, which contain a toxin, an insect growth regulator (IGR), or a combination of both. These granules are taken back to the colony by foraging ants and fed to larval and adult ants killing them, ultimately killing the colony. District technicians carried out more than 2,600 RIFA treatments at private homes, schools, parks, golf courses, and country clubs,



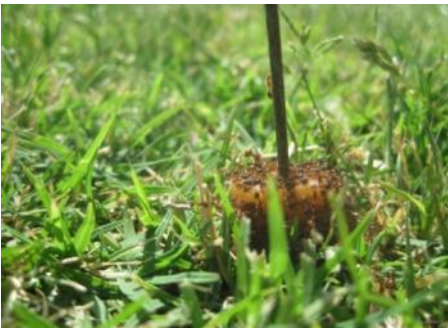
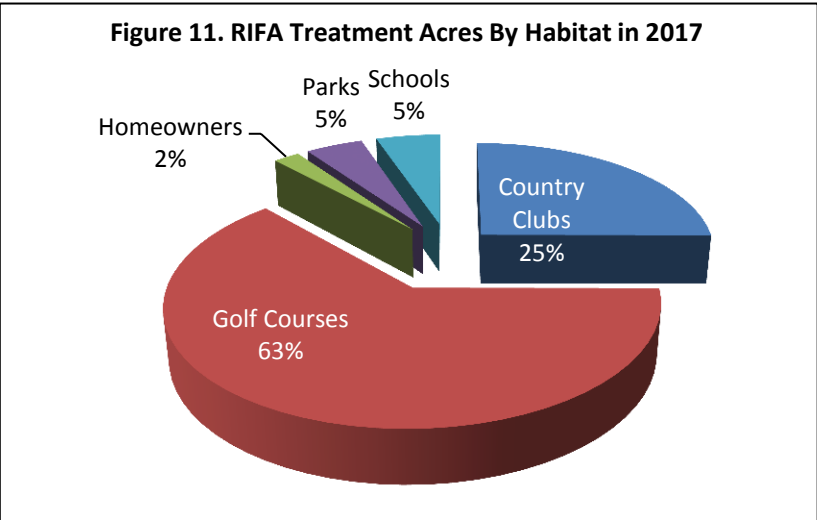
Cups were placed before and collected after the application.

| Table 2. Aerial Larval Control Evaluation | |
|---|--------------------------|
| Type of Coverage | Percent Larval Mortality |
| Aerial Application of Indio | |
| 0% | 98% |
| 25% | 97% |
| 50% | 95% |
| 100% | 88% |
| Aerial Application of Palm Springs | |
| 0% | 93% |
| 25% | 93% |
| 50% | 90% |
| 100% | 89% |

covering more than 21,000 acres in 2017. Although golf courses make up the most acreage treated, residential properties (homeowners) represent the most treatments compared to the rest of property types (Figure 11).

Evaluation of Treatments

Conducting follow-up inspections at golf courses where RIFA were treated allows the District to know if the treatment effectively controlled the fire ants. When more than 30% of the inspected suspect mounds at a golf course are positive for RIFA, the Operations Department makes a treatment with Extinguish Plus (active ingredients: hydramethylnon and methoprene). Inspections on 12 golf courses were conducted approximately four weeks and then four months after the treatment. Fewer ants were seen at the follow-up inspections.



RIFA feed on a hotdog slice placed at a property to measure level of infestation.

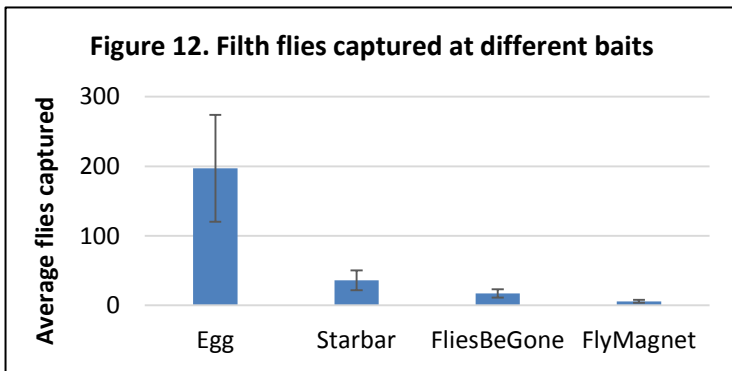
Nuisance Species

The District runs a limited program for the surveillance and suppression of nuisance species that have the potential to transmit disease or produce human discomfort or injury to the public. The primary focus of these programs includes surveillance, physical control, and public education. Many problems associated with a nuisance species can be minimized, or even eradicated, through proper sanitation and maintenance.

Flies and Eye Gnats

Filth fly surveillance is performed based on requests from the public and in chronic problem areas. Upon request, the District provides residents with bottle traps, food lure concentrate, and instructions on how to maintain the trap. The District’s eye gnat program consists of responding to service requests, limited golf course control, and rural area control. An egg bait solution is placed in plastic bottles as part of a “trap out” strategy to control eye gnats in problem areas. The District trapped 30,900 flies in 2017, most from the family Muscidae.

In 2017, the District received a lower number of complaints (139) about flies and eye gnats in the District than in 2016 (164). Thermal had the highest number of service requests (37) for filth flies and eye gnats in 2017, with La Quinta close behind with the second highest number of requests for service (27). Following a spike in resident complaints, District staff developed and provided best management practices training and literature to agricultural operations, country clubs, golf courses, and HOAs in southeast La Quinta to help reduce filth fly populations in that area.



Evaluation of Surveillance

The efficacy of the District’s aged egg bait was compared to three commercially available fly baits: Farnam Starbar fly trap attractant, Fly Magnet, and Flies Be Gone. Fly baits were placed at four locations in agricultural areas. The results of the study showed that the aged egg bait was more effective than the commercial baits in attracting and trapping flies (**Figure 12**).

Rodents

Upon request by residents or business owners, District staff conducts block surveys and rodent inspections of building exteriors and surrounding grounds to determine the level of rodent activity, access points for rodents to enter the building, food and harborage areas for rodents, and landscape management strategies to limit rodent activity. In 2017, certified Vector Control Technicians responded to 32 rodent inspection requests throughout the District, a decrease from the previous year (42).

Africanized Honey Bees

The District carries out honey bee removal in cases where hives or swarms are located in a non-structural and accessible location, such as trees and bushes, in a public place where bees pose an imminent threat to the public. District staff do not remove hives from private property. District staff can offer guidance on how to “bee proof” the property to reduce the likelihood that bees will establish a colony there. In 2017, District technicians responded to 87 service requests regarding honey bees, compared to 67 in 2016.

Scorpions

The bark scorpion, *Centruroides sculpturatus*, is a non-native scorpion that has been detected in Indio since 2014. This scorpion’s venom is more potent than native Californian scorpions’ venom, posing a concern for the residents. The invasive population likely came from their native habitat in Arizona. Surveys conducted in November 2017 found the bark scorpion to be established within a community and confined to that community. Levels of infestation varied from 1-20 scorpions per property. Efforts to educate the community about scorpions and scorpion management are proceeding.

Research

In an effort to ensure the District’s IVM program is effective, efficient, and environmentally sound, District staff conduct research focused on aspects of the IVM program. Projects are typically conducted in collaboration with university and government scientists who specialize in vector ecology.

Mosquito Surveillance and Control Applied Research

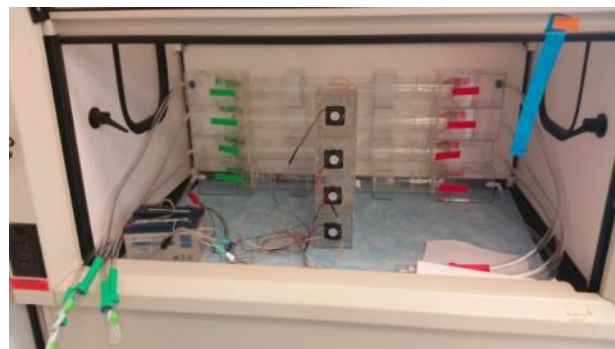
USDA Center for Medical, Agricultural and Veterinary Entomology (CMAVE) – The District worked in collaboration with the USDA-CMAVE during two weeks in August. The lab staff and USDA employees worked in the field at a test plot in Mecca and at the Naval Air Field in El Centro to examine the effectiveness of adulticide and larvicide products in military camps at hot arid climates. The study implemented different application methods, including 2 different hand-held sprayers, misters,



Simulated military camp at Naval Air Field.

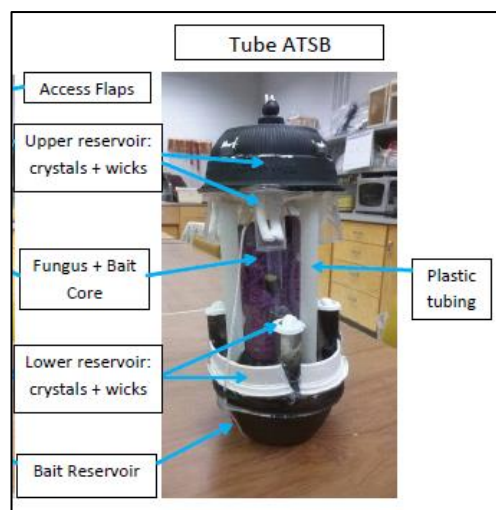
and a C-130 military airplane. About 25 sprays were conducted, assaying 28,000 adult mosquitoes and 700 larval cups. The data from this study can provide actionable guidance for our troops in the field and the public. 2017 was the eleventh consecutive year of collaboration between the agencies.

University of California, Davis – Previous research developed a simple sugar feeding bait station to detect West Nile virus from virus transferred by infected mosquitoes during sugar feeding. Sugar bait stations are simple to deploy in the field, offering both greater flexibility in placement and reduced maintenance cost over sentinel chicken flocks. In 2017, researchers examined which compounds of native plants might be attractive to mosquitoes to improve the attractiveness of sugar baits. Comparisons of natural compounds to some synthetic scents that were previously used successfully were also conducted.



Stacked choice chambers to determine attractiveness of floral compounds to mosquitoes.

University of California, Riverside – Researchers are examining the use of biopesticides with fungi as the active ingredients to control adult mosquitoes in underground storm water systems, such as catch basins. This research used commercially available products already approved to control insects in agriculture settings. The researchers have improved a device that allows for mosquitoes to encounter control products in different ways as they feed on an attractive sugar bait. They found that the product that was not purported to control adult mosquitoes did have mortality impacts. Further, the fungus that they are using is likely to work better when mosquitoes have fewer sugar resources, which is likely to work well within underground storm water systems.



Improved bait station was tested in 2017 and will be part of field trials in 2018.

RIFA Surveillance and Control Applied Research

USDA-CMAVE – Two biocontrol agents, the fire ant decapitating phorid fly *Pseudacteon* species and the fire ant virus SINV-3 were released in 2014 in the Valley to provide control of RIFA. These agents should be self-sustaining once established sufficiently, and spread through the Valley. In 2017, researchers monitored and evaluated the establishment and spread of the biocontrol agents at the release sites. The SINV-3 virus appeared to be spreading from its release site. The flies have been collected at one of two sites. The control agents should increase the sensitivity of fire ants to our chemical control methods. Researchers also examined the ability of water-resistant fire ant bait to control ants. This would allow the District to perform effective treatments in areas where irrigation or moisture are an issue. A water resistant bait formulation made in Taiwan (Erasant), and a standard fire ant bait (Esteem) were chosen for lab and semi-field trials conducted by USDA researchers in 2016. Field applications at three study sites were conducted in 2017. Each study site was divided into four plots: Erasant broadcast; Esteem broadcast; Esteem placed in discrete piles; and an untreated plot as a control. Plots were then sprayed until wet with a handheld sprayer. Significant reductions in the number of foraging fire ants were recorded 11 weeks after application when compared to the untreated control.

Environmental Compliance

Federal and State National Pollutant Discharge Elimination System (NPDES)

The District complies with the Clean Water Act by ensuring that applications of control products made to or near waters of the U.S. sites are made under a National Pollutant Discharge Elimination System (NPDES) Permit. On February 28, 2017, the District filed its 2016 annual report for the California NPDES permit. Technicians made 997 larvicide treatments to waters of the U.S. and 15 applications of adulticides near waters of the U.S. No adverse conditions due to applications of vector control products were seen or reported. Following the State Water Control Board's renewal of the Vector Control NPDES Permit, the District revised its *Pesticide Application Plan* and renewed its permit.

Mosquito habitats which are on lands owned by Native American tribes are not subject to California state law. In 2015, the District obtained a federal NPDES permit to make applications at these sites and to comply with the federal regulation. On February 14, 2017, the District provided the EPA with reports of treatments made in 2016 to sites that could be considered waters of the U.S. on property owned by the Agua Caliente Band of Cahuilla Indians, the Cabazon Band of Mission Indians, the Twenty-Nine Palms Band of Mission Indians, and the Torres Martinez Desert Cahuilla Indians.



California Environmental Quality Act (CEQA)

The California Environmental Quality Act (CEQA) requires public agencies to conduct an environmental review to determine the cumulative impact of their activities on the environment. In 2011, the District concluded that its IVM Program could have negative impacts on the environment if its activities were not mitigated, and therefore adopted a Mitigated Negative Declaration. The District filed its Annual Compliance Report regarding the monitoring performed on February 1, 2017. The District complied with the 18 mitigation measures and concluded that the operation of its IVM Program did not have a significant impact on the environment.

Pesticide Environmental Stewardship Program (PESP)

The District is a Bronze-level member of the Environmental Protection Agency's Pesticide Environmental Stewardship Program (PESP). The program encourages members to reduce the risk of pesticide use by educating their staff and public about proper use of pesticides and by examining alternative methods of controlling pests. The District submitted its five-year monitoring strategy in 2013 and filed its fourth annual report on January 30, 2017. For the strategy plan, staff track source reduction, visits where no pesticide is used, visits where reduced-risk pesticides were used, surveillance activities performed, trainings held for staff, and outreach activities conducted on the topic of integrated vector management.

Public Outreach

The Public Outreach Department worked throughout the year to educate community partners and residents about virus-transmitting mosquitoes and empower neighborhoods to routinely engage in mosquito source reduction to control both local *Culex* and invasive *Aedes* mosquitoes.

Community Events and Talks

The District took part in 62 outreach events over 2017, directly reaching about 6,000 people. That included information booths at 13 community fairs, such as the Riverside County Date Festival, the Mecca Resource Fair, the CSUSB Sustainability and Environmental Expo, and other fairs in Desert Hot Springs, Indio, and Indian Wells. The District took part in 16 school events including judging science fairs, information booths at science school nights, career days, tours and job shadows at the District, and presentations on the science behind vector control. District staff gave 19 community talks and distributed information to homeowners, mobile home parks, environmental task forces, agricultural growers, code enforcement officers, and rotary clubs. During Mosquito Awareness Week, we hosted the *Fight the Bite 5K and Community Resource Fair* in Palm Desert, where we engaged runners and other event participants with mosquito protection and prevention information.

Partnering with State, City, and Community Stakeholders

District management and staff presented to nine City and Community Councils in 2017, including Cathedral City, Indian Wells, La Quinta, Mecca, Palm Desert, Palm Springs, and Thermal, sharing updates of West Nile virus transmission in communities and community efforts to prevent and control invasive *Aedes* mosquitoes in their neighborhoods. The Public Outreach team helped to develop fun and interactive events to educate residents about invasive *Aedes* in neighborhoods where these mosquitoes were detected. The *Fight the Bite Block Party* is a mosquito breeding simulation where game participants walk around a backyard exhibit and learn how to get rid of common and potential mosquito habitats in their yards. We hosted these events in partnership with the cities of Cathedral City, Indio, La Quinta, and Palm Springs. The District also organized a *Community Clean Up* with the City of Coachella and Urban Conservation Corps to reduce breeding sources and educate residents on physical control of invasive *Aedes* mosquitoes. We collected old tires, appliances, buckets, and other containers.

Publications and Electronic Outreach

In 2017, nearly 22,000 educational materials and disease notification postcards were distributed to residents at events, city offices, community centers, or through the mail. The Coachella Valley Unified School District helped to inform thousands of people how to avoid mosquito bites and reduce mosquito breeding habitats by placing notification handouts in students' backpacks and sending a telephone notification alert to students' homes in areas where virus-positive mosquitoes were detected. We also created an electronic notification about aerial applications for Palm Springs property managers to inform residents about application route maps, dates and times.

Media and Advertising

The District's 2017 advertising campaign about virus-transmitting and invasive *Aedes* mosquitoes included 1,200 TV, radio, and newspaper spots with a total reach of nearly 800,000 impressions during one campaign. An online digital campaign resulted in 160,000 digital impressions. A movie theater campaign ran on 60 cinema screens with 442,000 projected impressions. The District published 15 news releases in 2017, resulting in 50 TV, radio, newspaper and electronic news stories. A new method to track website visitors logged 11,000 sessions on the District website.

Valley Residents Make Mosquito Prevention Part of Their Routine



Legislative Relations



It is important to maintain collaborative relationships with State and Federal Legislators to educate and ensure they understand and do not forget the critical role Integrated Vector Management Programs serve in protecting public health. Federal and State laws and regulations can impact the District's ability to effectively and efficiently protect the public from vectors and the pathogens they can transmit in the Coachella Valley.

2017 Mosquito and Vector Control Association of California (MVCAC) Legislative Day

The Mosquito and Vector Control Association of California (MVCAC) held its annual legislative day in Sacramento on February 6, 2017. Board Trustees Doug Hassett and Michael Monroe and the District's Laboratory Manager, Jennifer Henke, met with staff from Assemblyman Eduardo Garcia, Assemblyman Chad Mayes, and Senator Jeff Stone's offices. During these meetings, legislative staff were updated and educated on District activities, the impact of Invasive *Aedes* on public health in California, the need for statewide funding of mosquito control research, and MVCAC sponsored legislation AB 527 (Caballero) that would permit mosquito and vector control agencies to use drones for aerial pesticide applications to protect public health from vectors and the pathogens they transmit. As a result of these efforts, AB 527 (Caballero) was chaptered on October 2, 2017.



Coachella Valley Mosquito and Vector Control delegation to MVCAC Legislative Day in Sacramento. Top left to right: Trustee Doug Hassett, Laboratory Manager Jennifer Henke, and Trustee Michael Monroe. Bottom left to right: Trustee Michael Monroe and Trustee Doug Hassett.

Information Technology

The Information Technology (IT) Department continued to deliver workflow innovations and support services to assist the activities of all District departments, particularly for Public Outreach, Operations, and the Laboratory.

New Authorization Form

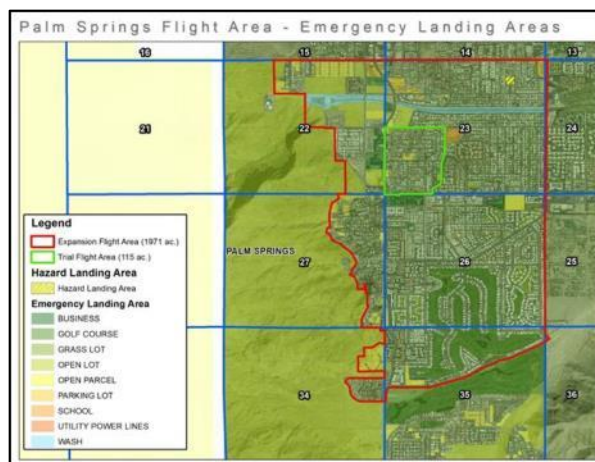
This year, the *Authorization to Treat Property for RIFA* form was redesigned to allow property managers to populate the required information online using the District website. This streamlined the authorization form collection process for the Call Center Clerks, who no longer need to type the contact information from scanned authorizations forms into the District database to schedule a property for RIFA treatments. The IT Department created the online form to capture the required information needed from property managers, saving time for the Call Center staff and providing a more user-friendly system for Homeowner Association (HOA) management staff.

Aerial Flight Maps

The IT Department created aerial maps, outlining emergency landing areas for the Operations Department's *Congested Flight Plan*, as part of the aerial larval control campaign against *Ae. aegypti* in Palm Springs. The flight plan was submitted to the Federal Aviation Administration (FAA) for approval. Utilizing ESRI ArcGIS Desktop and data collected from the District Mobile Inspection Application, large parcels were identified and labeled, for example, golf courses, schools, grass lots, and open parcels. The digital aerial imagery provided Operations staff a convenient way to search the area for potential helicopter landing zones.

New Mobile Form Fields

As *Ae. aegypti* mosquitoes were identified in multistory housing units, the District's Mobile Inspection Application required new fields to uniquely identify the properties being inspected. The IT Department created new database and form fields to capture each building number, apartment number, and floor for each new source site. Vector Control Technicians now have the ability to uniquely identify each property being inspected. Technicians are also able to record specific details for each source site as they inspect each housing unit. The Operations Department used the newly created fields to determine which housing units were not inspected due to the resident not being home or answering the door during the initial property inspection attempt. This new system ensures that each housing unit is inspected for the presence of invasive *Aedes*.

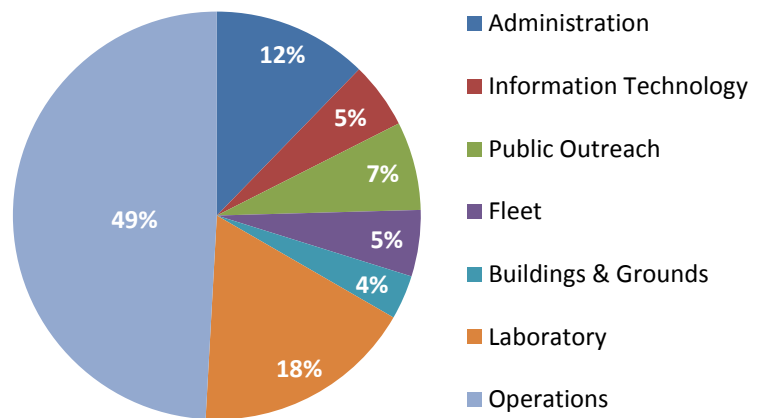


| | |
|-------------------------------------|--|
| Change Source Site (Spot Treatment) | |
| Site #: 78401 | |
| Habitat | |
| Invasive Aedes | |
| SubHabitat | |
| Apartment Complex | |
| Building Number | |
| Apartment Number | |
| Unit C | |
| Floor | |
| 2 | |
| Static Info | |
| [Text Area] | |
| Done Cancel | |

Human Resources

The Human Resources Department provides services and support to the staff in ways that embrace the District's core values by ensuring professional delivery of services, maintaining high ethical standards and open communications, and maintaining a professional, technical, and skilled staff. The Operations Department accounts for the majority of staff positions (49%), followed by the Laboratory and Administration Departments (**Figure 13**). A major focus in 2017 was the implementation of the District's first annual professional development training program, the *Beyond the Bite Academy*.

Figure 13. Employee Distribution by Department 2017



Recruitment

In 2017, Human Resources received and processed 94 applications and filled six regular positions and 22 seasonal positions (**Table 3**).

Years of Service

The District's 57 regular full-time employees represent:

- An average age of 43.25 with an average of 9.75 years of service
- 573 total years of service
- 25 employees with 10 or more years of service
- 7 employees with 20 or more years of service

Training

Human Resources identified and provided training (in-house, online, and external) aimed at satisfying state-mandated requirements and building employee knowledge and skill. Training is provided to increase the capacity of District employees to deliver services, meet strategic needs, and align with the District's overall Mission. Training included:

- Sexual Harassment
- Workplace Violence Prevention
- Active Shooter
- Supervisors Quarterly Training

In addition, the District implemented its first ever *Beyond the Bite Academy* training program. The Academy is designed to support District employees with learning opportunities to build valuable work skills and enhance performance. The program includes seven modules (Introduction, Customer Service, Organization, Technology, Leadership, and Job Shadowing). Six employees graduated from the program on December 13.



Beyond the Bite Academy 2017



Fleet and Facilities

Fleet Services provides District staff with reliable transportation and fleet maintenance services, enabling employees to carry out the District’s mission and business safely and efficiently.

Fleet

Fleet Services acquired 17 extended cab Chevrolet Silverado 4X4 pickup trucks this year as part of a multi-year vehicle rescheduling plan to rejuvenate the District’s aging fleet. The standard 4X4 pickup trucks replace the oversized utility bed pickup trucks, which were underutilized, heavy, and poor fuel economy. Fleet Services worked with the Operations Department to outline the required equipment for technicians and standardized the equipment placement to improve safety, efficiency, and usability. Fleet Services worked the Finance Department to take advantage of the California State Cooperative Purchasing Contract and saved the District \$8,500 on delivery costs by processing the payment of vehicles within 10 business days. Based on input from the Operations Department, Fleet Services acquired five Cushman Hauler 800x gas-powered carts for the RIFA program. These carts were selected based on their low-to-the-ground carriage, which allows the herd spreader to broadcast control product to a wider area behind the cart than the previous carts. This will assist in reducing the number runs performed by technicians when applying control products.



The District updated its fleet with 17 Chevrolet Silverado pickup trucks.

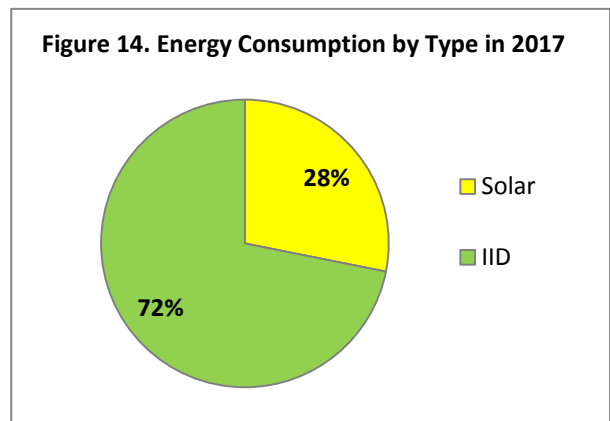
New Fleet Technology

Fleet Services began the implementation phase of Networkfleet, a Verizon Fleet Telematics software application. Fleet telematics is a way of monitoring the location, movement, status, and behavior of a vehicle within a fleet. The technology enables Fleet Services staff to better understand the needs and uses of the vehicles. Reports will assist in the evaluation of the current and future vehicle types for the District’s Services.

Building and Grounds

The District’s Buildings and Grounds Maintenance Department is charged with the maintaining, repairing, and upgrading of the District’s facilities, property, and special equipment.

Solar Panels – The District has two arrays of solar panels, a 35 kW system installed in 2005 on the Laboratory parking structure, and a 133 kW solar array installed in 2009 on the Fleet parking structure, providing a total system power of 168 kW. Initial capital outlay on the panels installed in 2005 was \$235,400 and in 2008 \$1,067,677. The District received two rebate checks for the panels, one for \$101,709 in 2006 and \$331,718 in 2008, resulting in a capital outlay of \$869,648 for both systems. Solar energy produced from the District’s solar panels provides approximately 28% of the District’s energy needs (**Figure 14**). In 2017, the District consumed over 800 MWh of electricity. The District’s solar energy production in 2017 was 225 MWh providing an energy cost saving of over \$20,941.



Finance

The Finance Department manages the budgeting, accounting, record keeping, and control of fixed assets and investments. The District strives to be ethical, fiscally responsible, and law abiding in the stewardship of public funds to achieve the District’s mission. The primary goal of the Finance Department is to provide financial administrative support to the District’s Board of Trustees and staff in their efforts to reduce the risk of disease transmission by mosquitoes and other vectors to Coachella Valley residents and visitors.

Statement of Financial Position: FY 2016-17 (June 30, 2017)

Assets

| | |
|---------------------|----------------------|
| Cash & investments | \$ 12,843,553 |
| Current Assets | \$ 1,630,669 |
| Net fixed assets | \$ 11,188,461 |
| Total Assets | \$ 25,355,727 |

Liabilities and Equity

| | |
|-------------------------------------|----------------------|
| Total Liabilities | \$ 5,480,043 |
| Equity | \$ 19,875,684 |
| Total liabilities and equity | \$ 25,355,727 |

Statement of Activities

The Statement of Activities is a summary of FY 2016/17 (June 30, 2017), showing revenue and expenditure/expenses.

Revenue FY 2016-17

| | |
|--|---------------------|
| Charges for Services - Benefit Assessments | \$ 1,452,379 |
| Property Taxes | \$ 3,733,700 |
| RDA Property Tax Increment | \$ 3,990,874 |
| Interest & Miscellaneous | \$ 240,227 |
| Total Revenue | \$ 9,417,180 |

Expenditures/Expenses FY 2016-17

| | |
|------------------------------------|---------------------|
| Salaries & Wages | \$ 4,555,260 |
| Employee Benefits | \$ 1,741,684 |
| Field Operations | \$ 1,442,426 |
| Materials, Services & Supplies | \$ 720,696 |
| Insurance | \$ 239,220 |
| Contract Agreements | \$ 140,754 |
| Depreciation | \$ 637,410 |
| Total Expenditures/Expenses | \$ 9,477,450 |

Figure 15. Revenue FY 2016-17

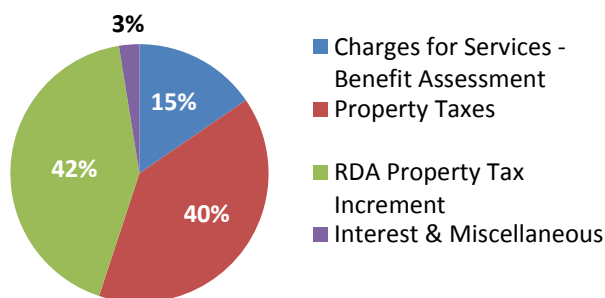
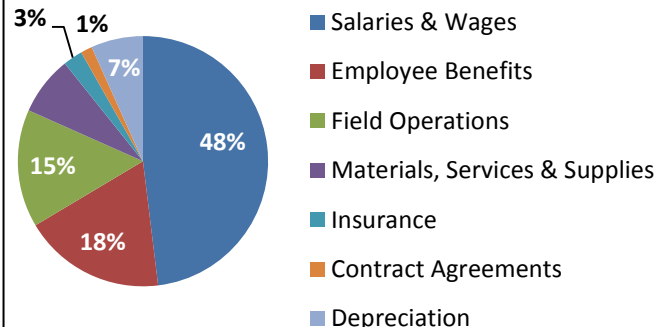


Figure 16. Expenditures/Expenses FY 2016-17



For more information on the District’s financial position, please see the Comprehensive Annual Financial Report FY 2016/2017 online at <http://www.cvmvcd.org/press/documents/ComAnnualFinancialRpt/2017cvmvcdCAFR.pdf>.

Awards and Committees

Employee of the Year

Congratulations to the 2017 Employee of the Year, Richard Ortiz, Mechanic II. Rick is a dependable, hard-working, innovative employee who is respected by his co-workers. On many occasions he has saved the District money by using his skills to modify and/or build items used for the Operations and Public Outreach Departments. Rick also assists in training employees on equipment and off-road vehicles. He projects a cheerful attitude and resolves conflicts and difficulties with patience. Rick is an employee with a high work ethic, is a go-to person when an innovative solution is required, and is a valued team member. Rick has been an employee of the District for 16 years and is an asset to his department and to the entire District.



Employee of the Year (left) Richard Ortiz, Mechanic II, with Jeremy Wittie, General Manager (right).

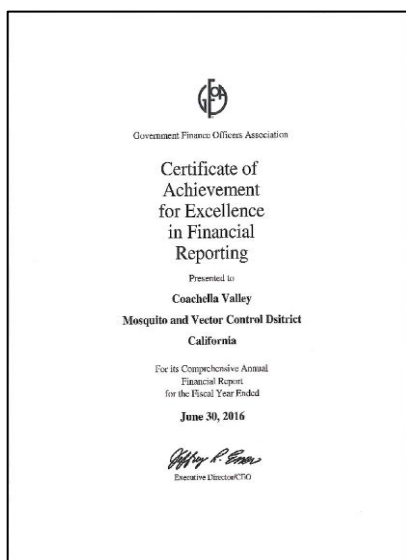
Boyd-Ariaz Grass Roots Award

Gregorio Alvarado, Lead Vector Control Technician, was selected to receive the American Mosquito Control Association (AMCA) **Boyd-Ariaz Grass Roots Award** recognizing excellent performance in field mosquito control. The award was presented at the AMCA 2017 annual conference. The Boyd-Ariaz Grass Roots Award is presented to non-supervisory field staff nominated by the manager or supervisor of a mosquito control agency. As a recipient of this prestigious award, Gregorio received a complimentary meeting registration, a plaque, a \$200 check, and up to \$500 to cover reimbursement of meeting expenses.



Gregorio Alvarado (left) receives the Boyd-Ariaz Grass Roots Award at conference in San Diego from AMCA president, Stan Cope.

Certificate of Achievement for Excellence in Financial Reporting



For the ninth year in a row, for the fiscal year that ended June 30, 2016, the District received the **Certificate of Achievement for Excellence in Financial Reporting** presented by the Government Finance Officers Association of the United States and Canada (GFOA) for its Comprehensive Annual Financial Report (CAFR). This award is the highest form of recognition in the area of governmental accounting and financial reporting and its attainment represents a significant accomplishment by a government agency and its management. Administrative Finance Manager, David l'Anson, received the Award of Financial Reporting Achievement (AFRA) again this year, presented to the individual(s) designated as instrumental in their government unit achieving a CAFR.

Committees

Board of Trustees

The following Trustees assumed additional responsibility as members of the Board and as part of their volunteer time with the District in 2017.

Executive Committee

Doug Walker – President
Doug Hassett – Vice President
Betty Sanchez – Secretary
Shelley Kaplan – Treasurer

Finance Committee

Shelley Kaplan – Treasurer
Adam Sanchez – Member
Betty Sanchez – Member
Clive Weightman – Member

Research Committee

Franz De Klotz – Member
Dr. Douglas Kunz – Member
Michael Monroe – Member
Doug Walker – Member

Mosquito and Vector Control Association of California – (MVCAC)

Doug Walker – Southern Regional Trustee Representative

District Staff

Throughout 2017, District employees worked on local, state, and national committees and councils to raise awareness about vectors and vector-borne disease, build partnerships that contribute to protecting the public from vectors, and exchange knowledge with industry leaders to improve overall practices.

Roberta Dieckmann

- National eXtension Fire Ants Community of Practice – State Leader and Expert Panelist

Jennifer Henke

- MVCAC Regulatory Affairs Committee – Chair
- MVCAC Research Committee – Member
- MVCAC Southern Region IVM Group – Coordinator
- AMCA Science and Technology Committee – Member
- Pacific Branch of the Entomological Society of America – President-Elect
- NPDES Desert Task Force Advisory Committee – CVMVCD Representative

David l’Anson

- MVCAC Executive Committee – Treasurer

Anita Jones

- CSDA Human Resources & Personnel Expert Feedback Team – Member
- College of the Desert HR Advisory Roundtable

Jill Oviatt

- MVCAC Training & Certification Committee – Chair
- MVCAC Southern California Region – Regional Training Coordinator
- MVCAC Public Relations Committee – Member
- AMCA Public Relations Committee – Member

Edward Prendez

- MVCAC Information Technology Committee – Member
- Municipal Information Systems Association of California – Member

Kim Hung

- MVCAC Vector and Vector-borne Disease Committee – Member
- MVCAC Vector Control Research Committee – Member
- MVCAC Laboratory Technologies Committee – Member

Wakoli Wekesa

- MVCAC Lab Technologies - Member
- MVCAC Vector and Vector-borne Disease Committee – Member
- MVCAC Vector Control Research Committee – Member

Jeremy Wittie

- MVCAC Executive Committee – Vice President
- MVCAC Legislative Committee – Board Liaison
- MVCAC Research Committee - Board Liaison
- MVCAC Southern Region Managers – Member

Looking Forward

Thank you for taking the time to review this annual report that highlights just a fraction of the many accomplishments that the District's staff achieved in 2017 to better protect residents and visitors from mosquito- and vector-borne diseases in the Coachella Valley.

District staff are preparing for the 2018 season by building on the knowledge that was gained in 2017. Important aims and projects that staff will be focused on in 2018 include:

- Continued development of science-based surveillance and control strategies aimed at the prevention of West Nile virus and Saint Louis encephalitis virus transmission to Valley residents and visitors.
- Expanded strategies to educate, collaborate, empower, and hold accountable Valley residents, organizations, and agencies to eliminate vector producing sources on their properties.
- Updates to the District's *Invasive Aedes Response Plan* with an emphasis on new strategies aimed and limiting the expansion of invasive *Aedes* and workflow optimization of surveillance, control, and public education.
- Development and implementation of the District's 2018 three-year Strategic Plan. The Strategic Plan will prepare, guide and ensure that the District is financially sound and capable to implement IVM programs that are responsive and robust in protecting Valley residents and visitors from current and emerging threats from vectors and vector-borne disease.

On behalf of the Board of Trustees and the entire Coachella Valley Mosquito and Vector Control District team, we look forward to another year of serving our residents to protect them from mosquito- and other vector-borne illnesses.

For information about the Coachella Valley Mosquito and Vector Control District, please contact us at
43420 Trader Place, Indio, CA 92201 | (760) 342-8287
cvmosquito@cvmvcd.org.
Visit us at our website at www.cvmvcd.org.