COUNTYWIDE VISION

*We envision* a complete county that capitalizes on the diversity of its people, its geography, and its economy to create a broad range of choices for its residents in how they live, work, and play.

*We envision* a vibrant economy with a skilled workforce that attracts employers who seize the opportunities presented by the county’s unique advantages and provide the jobs that create countywide prosperity.

*We envision* a sustainable system of high-quality education, community health, public safety, housing, retail, recreation, arts and culture, and infrastructure, in which development complements our natural resources and environment.

*We envision* a model community which is governed in an open and ethical manner, where great ideas are replicated and brought to scale, and all sectors work collaboratively to reach shared goals.

From our valleys, across our mountains, and into our deserts, we envision a county that is a destination for visitors and a home for anyone seeking a sense of community and the best life has to offer.
Our mission is to protect health and enhance the quality of life for all County residents through the suppression of mosquito, rodent, and other vector transmitted diseases, and the reduction of annoyance levels caused by mosquitoes and other pests of public importance.

The information in this report highlights our efforts in 2017 to innovate and improve on surveillance and abatement practices in order to fulfill our mission to the residents of San Bernardino County.
The San Bernardino County Mosquito and Vector Control Program (SBCMVCP) operates in the largest county in the contiguous United States with over 19,000 square miles of land area; and the twelfth largest county by population in the United States; with mountains, valleys and expansive desert areas. The SBCMVCP is committed to ensuring public health and safety to County residents and visitors and developing new ways to improve services.

In 2017, the SBCMVCP made strategic improvements to surveillance and abatement through new and innovative practices. New surveillance methods have been implemented though the use of Global Information System (GIS) tracking and “cluster trapping” techniques. Hard work by our highly trained staff and assistance of an engaged public, have helped to make headway combating existing and emerging threats.

This year we also strengthened our existing partnerships with other agencies in order to better protect public health. We look forward to serving you for another successful—and safe—year ahead!

Respectfully,

Joshua Dugas
PERCENTAGE OF PRIMARY SERVICE REQUESTS BY PEST

- Mosquitoes: 42%
- Bedbugs: 8%
- Rats: 22%
- Others: 16%
- Bees: <1%
- Flies: <1%
- Green pool: <1%

SERVICE REQUESTS PER YEAR/MONTH

- 2013: 1,219
- 2014: 1,177
- 2015: 1,269
- 2016: 1,479
- 2017: 1,262

SERVICE REQUESTS BY CITY

San Bernardino: 450
Fontana: 160
Colton: 111
Rialto: 105
Highland: 55
Redlands: 46
Yucaipa: 23
Loma Linda: 23
Needles: 22
Unincorporated: 19
Grand Terrace: 5
Big Bear Lake: 4
Apple Valley: 2
Hesperia: 2
Yucca Valley: 1
Twentynine Palms: 1
Victorville: 1

SBCMVCP SERVICE HOURS: 7,102
SBCMVCP INSPECTION HOURS: 4,833
INSPECTED WATER SOURCE: 886

7,102 SBCMVCP SERVICE HOURS
4,833 SBCMVCP INSPECTION HOURS
886 INSPECTED WATER SOURCE
19,429 MOSQUITOES CAPTURED
19,429 MOSQUITOES SUBMITTED FOR TESTING
0 MOSQUITO POOLS FOR WEST NILE VIRUS
48 POSITIVE MOSQUITO POOLS FOR ZIKA VIRUS
0 TICKS TESTED POSITIVE FOR LYME DISEASE
0 RODENTS TESTED POSITIVE FOR PLAGUE or HANTAVIRUS
45 DEAD BIRDS TESTED POSITIVE FOR WEST NILE VIRUS
36 SENTINEL CHICKENS TESTED POSITIVE FOR WEST NILE VIRUS

OVER 5,000 RESIDENTIAL SURVEYS COMPLETED
446 NOTICE OF VIOLATIONS ISSUED
5,000 RESIDENTIAL SURVEYS COMPLETED
7,873 TOTAL NUMBER OF PEOPLE REACHED AT EVENTS:
34 EDUCATIONAL PRESENTATIONS
8 FAIRS
4 CAREER FAIRS
36 SENTINEL CHICKENS TESTED POSITIVE FOR WEST NILE VIRUS

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ZIKA SHORT-TERM GRANT

In April 2017 the Department of Public Health (DPH) SBCMVCP was awarded $150,000 from the Public Health Foundation Enterprises (PHFE) for the purpose of surveillance and abatement of the *Aedes* mosquito and educating the public about the threats they pose such as Zika and Dengue fever. The grant term is from April 2017 through July 2018.

With these grant funds, the SBCMVCP was able to hire staff, purchase traps and pesticides, and increase outreach efforts which focus on *Aedes* mosquitoes. New employees conducted surveillance and educated the public about the *Aedes* mosquito through residential surveys and community outreach.

The PHFE grant has made a significant impact in the fight against the *Aedes* mosquito. These funds, along with strategic planning and systematic changes have helped to increase the number of trapping sites from 100 in 2016 to 1,200 in 2017. Approximately 1,280 *Aedes* mosquitoes were captured as a result of additional traps and resources provided by the grant. Surveillance efforts led to the *Aedes* mosquito being identified in six new cities within San Bernardino County, including: Bloomington, Grand Terrace, Redlands, Rialto, San Bernardino and Yucaipa. The SBCMVCP was able to reach over 5,000 residences and educate families about the dangers of *Aedes* mosquitoes.

PHFE awarded the SBCMVCP an additional $40,000 in November of 2017 as a result of successful implementation of the grant and outcomes achieved. In total, the MVCP has received $190,000 from PHFE for the *Aedes* surveillance program.

Approximately 1,100 trapping sites were added in 2017.
STRONG PARTNERSHIPS

The SBCMVCP is engaged in several formal committees, partnerships and task forces where collaboration leads to innovation and action.

The SBCMVCP collaborates with San Bernardino County Department of Public Health’s Communicable Disease Section, Preparedness and Response Program (PRP), and the West Valley Mosquito and Vector Control District (WVMVCD) to efficiently and comprehensively address Zika. The task force has developed a Standard Operating Guide which outlines procedures for responding to locally transmitted Zika cases. They have also established a partnership with the Ontario International Airport to display educational material about the dangers of the West Nile Virus and Zika.

The SBCMVCP is an active member of the Mosquito and Vector Control Association of California and the American Mosquito Control Association which provides publications, training, develops best practices, and advocates to protect the public from vector-borne disease transmission.

SBCMVCP also works with the County Department of Public Works Flood Control District to inspect and treat mosquitoes and other vectors breeding at flood control channels and basins. Both the SBCMVCP and Flood Control District work together to identify basins and channels that require debris and vegetation removal to prevent breeding.

In addition to formal partnerships, the SBCMVCP has collaborated with local agencies by providing assistance with training and communication. In 2017, the SBCMVCP provided mosquito related trainings to city code enforcement and public works departments throughout the county and presentations to the cities of Colton and Fontana regarding the emergence of the *Aedes* mosquito and the threat of Zika in their communities. SBCMVCP also conducted vector training for Southern California Edison and CalTrans staff operating within the county.

### 2017 Partnerships

- American Mosquito Control Association
- CalTrans
- County Department of Public Works Flood Control District
- DPH Communicable Diseases Section
- DPH Preparedness and Response Program
- Mosquito and Vector Control Association of California
- Ontario International Airport
- Southern California Edison
- West Valley Mosquito and Vector Control District
IMPROVING DATA COLLECTION

In 2017, SBCMVCP integrated new technology into its monitoring practice that allows for real time updates of trap and site locations across all of San Bernardino County. In an effort to become more efficient, SBCMVCP adopted a new software tool developed by Esri. This produced more efficient routing, less time planning and faster response.

Collector by ArcGIS is a Geographic Information System (GIS) mapping tool that allows SBCMVCP inspectors to digitally locate and track breeding sites for quick navigation. This tool assists SBCMVCP staff to gauge assets and improve work performance and data retention. Using Collector software has improved efficiency by enabling a small number of SBCMVCP staff to monitor 886 water sources monthly, establish 1,200 trap site locations, and identify 184 water retention basins throughout the County of San Bernardino.

In order to continue to improve efficiency in the future, the SBCMVCP is looking to utilize additional technology solutions such as ArcGIS Workforce and Navigator. These improvements would allow real-time coordination and digital tracking between the SBCMVCP home office and technicians in the field to improve complaint response time and further improve efficiency.
ADVANCEMENT IN Aedes SURVEILLANCE

The Aedes mosquito is an invasive day-biting species that can carry dangerous diseases such as Yellow Fever and Zika. This discovery prompted the SBCMVCP to evaluate new and innovative ways to combat this emerging threat.

With support from the PHFE grant, the SBCMVCP created a new program in 2017 to monitor Aedes mosquito activity in San Bernardino County. The challenge with monitoring and controlling this species is how differently it travels and breeds when compared to mosquito species native to California. To more effectively trap and monitor Aedes mosquitoes, the SBCMVCP developed a new method of trapping not previously used in San Bernardino County’s mosquito surveillance program. Carbon dioxide traps were strategically grouped 150 meters apart in a “cluster” that allows for a higher concentration of mosquitoes to be captured. Arc GIS technology was then used to digitally map trap locations deployed across 1,200 sites throughout the year. This enabled program resources to be deployed more effectively to high risk areas.

As a result, 1,280 Aedes mosquitoes were captured in six cities in 2017. This increase in surveillance has allowed the SBCMVCP to more quickly identify concentrated populations of Aedes mosquitoes.

1,280 Aedes MOSQUITOES WERE CAPTURED IN 2017
OUTREACH

SBCMVCVP made significant community impacts in 2017 by attending and hosting 46 events throughout San Bernardino County. Health Education Specialists provided oral presentations and educational information to various colleges, schools, fairs, as well as other county departments. This includes: 34 oral presentations, eight health fairs and four career fairs. An estimated 7,873 county residents participated at these events.

The use of social media has greatly increased SBCMVCVP’s ability to connect with communities. The SBCMVCVP webpage has begun creating and hosting educational videos beginning with the topic of West Nile virus. SBCMVCVP’s Program Coordinator Morena Garcia was also a host on Fontana’s YouTube channel Local Matters. SBCMVCVP has started utilizing Facebook, Instagram, Pinterest and Twitter to better connect with the community. SBCMVCVP will continue to promote the services offered and the educational information available to the community in order to build and increase public awareness.
EVENT LOCATIONS in 2017

CITIES
- Colton
- Fontana
- Hesperia
- Loma Linda
- Lucerne Valley
- Redlands
- Rialto
- Running Springs
- San Bernardino
- Twentynine Palms
- Victorville
- Yucca Valley

COLLEGES
- California State University San Bernardino
- Loma Linda School of Public Health
- San Bernardino Valley Community College
- Western University Veterinary School

SCHOOLS
- Expanding Horizons Charter School
- Paul J Rogers Elementary School
- Pacific High School
- Twentynine Palms High School
- Victor Valley High School
The majority of San Bernardino County’s 20,105 square miles is rural and inaccessible but still requires mosquito surveillance and in some instances, abatement. SBCMVCP utilizes off road vehicles to identify, inspect, and treat areas that are inaccessible by truck. The Santa Ana River is a key example as it runs through huge population centers under the jurisdiction of the SBCMVCP.

Within the borders of San Bernardino County, the Santa Ana River winds approximately 15 miles from the Seven Oaks Dam in the City of Highland to the City of Grand Terrace. When the river bed is exposed, standing water accumulates and creates an environment for mosquitoes to thrive. To mitigate this issue, SBCMVCP staff have been trained and certified in the safety and operation of ATVs for mosquito surveillance and abatement in these remote locations.

In 2017, a hidden water source measuring approximately one hundred square feet was discovered in the Santa Ana Riverbed between Waterman Avenue and South E Street. The Culex mosquito, known for carrying West Nile Virus, was found breeding at this site. The SBCMVCP staff used ATVs to access the water source to apply a mix of oil and Vectomax granules to kill off any mosquito larvae.
ENHANCING COMMUNITY HEALTH

SBCMVCp works to support the county’s Vision2BActive campaign by reducing the risk of vector-borne diseases in County parks and trails. San Bernardino County’s Vision2BActive campaign is designed to improve wellness throughout the County by encouraging residents to increase their physical activity.

Ticks, rodents, and mosquitoes are hosts to many diseases and may be found in outdoor spaces including public parks, hiking trails and lands across the County. Ticks are known to carry Lyme disease and Relapsing Fever which can be transmitted to humans and cause severe health problems. Rodents can carry diseases such as plague and Hantavirus, leading to severe respiratory problems. Recreational water sources often become breeding sites for mosquitoes. To mitigate these issues, the SBCMVCp conducts tick, rodent, and mosquito surveillance and abatement in County recreational areas, parks, and hiking trails.

PARKS AND TRAILS ARE REGULARLY MONITORED FOR RODENTS, TICKS, AND MOSQUITOES
SBCMVCP provides services to richly diverse geographic and demographic areas all with unique needs. Threats such as West Nile Virus and Zika continue to evolve and, the SBCMVCP has found new and innovative ways to address these needs, continue protecting public health and protecting quality of life. The SBCMVCP team is committed to this continued pursuit for residents and visitors throughout San Bernardino County and look forward to serving you another year.
For information about the San Bernardino County Mosquito and Vector Control Program, please contact us at:

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