

# DELTA MOSQUITO & VECTOR CONTROL DISTRICT

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## REPORT OF THE MANAGER November 2022

### I. Water and Weather

The temperature cooled significantly in November. The Delta Mosquito and Vector Control District (DMVCD) Weather Station reported an average high temperature of 64.3°F with an average low of 38.4°F and 0.95 inches of rainfall. The National Oceanic and Atmospheric Administration 1981-2010 seasonal averages for high and low temperatures in November were 64.4°F and 43.3°F respectively, with average rainfall of 0.99 inches.

Water storage at Pine Flat Reservoir increased to 174,119 acre-feet by the end of November. Pine Flat Reservoir's water inflow increased slightly to 318 cubic feet per second (CFS) while its release decreased to 100 CFS. The Lake Kaweah Reservoir also increased compared to the previous month, storing 15,457 acre-feet by the end of November. Lake Kaweah's inflow increased to 51 CFS and its release dropped to 23 CFS.

### II. Narrative

Field operations received 33 service requests in November which consisted of a vector control technician inspecting the reported property for any standing water that mosquito larvae can breed in. During this time, the technician uses an integrated vector management strategy to reduce any mosquito breeding found. In addition, technicians use this opportunity to educate residents on mosquito breeding prevention, and how to protect themselves from mosquito bites. Field staff completed a total of 41 mosquito inspections throughout the District including rural and urban locations. Staff conducted 22 mosquito larval applications, and are currently working on updating storm drain locations in our local database.

Larviciding aerial treatment for the Kaweah River Rock Plant in Woodlake was canceled due to the inactivity of mosquito activity. No additional applications were needed for the remainder of the 2022 mosquito season.

Operations began fleet vehicle winter maintenance. All vehicles receive a multi-point inspection which include engine, transmission, cabin filter, air conditioning, heater system, front and rear brake pads, rotors, parking brake, fluids (brake fluid, engine oil, etc.), lights, and more. Staff have completed 3 fleet vehicle inspections. In addition, the maintenance and modifications for specialized equipment is currently on-going for the A1 Super Duty spay unit. All chemical lines are being replaced with oil resistant material, gas throttle has been upgraded to prevent equipment failure, and chemical valves are currently being modified to prevent any pesticide spills.

Staff completed the laboratory building bird exclusion project which consisted of installation of an electric wire along the roof perimeter to prevent bird landings (Figure 1). To prevent bird harborage, the staff installed exclusion material around all solar panels that will prevent birds and other pests (Figure 2). In addition, the lighting project replacing all incandescent lighting in the mechanic shop with energy efficient light emitting diode (LED) light bulbs has been completed.



Figure 1. Bird electric wire installed to prevent bird activity.



Figure 2. Bird exclusion material installed around laboratory roof solar panels.

Routine mosquito surveillance has ended for the season. Laboratory staff have begun reviewing and analyzing 2022 surveillance data for the District Annual Report. Preliminary results for 2022 show that a total of 232,127 mosquitoes were trapped in 9,293 trap nights for an average of 25.0 mosquitoes per trap night for the entire mosquito season. The top three mosquito species caught in 2022 were *Culex quinquefasciatus* at 77.8% of total abundance, *Aedes aegypti* at 16.3%, and *Cx. tarsalis* at 3.6%.

Compared to 2021, a total of 154,124 mosquitoes were trapped in 6,927 trap nights for an average of 22.2 mosquitoes per trap night for the entire mosquito season. The top three mosquito species caught in 2021 were *Cx. quinquefasciatus* at 75.9% of total abundance, *Ae. aegypti* at 10.7%, and *Cx. tarsalis* at 5.2%.

For 2022, a total of 977 mosquito samples tested positive for West Nile virus (WNV), 6 for St. Louis encephalitis virus (SLEV), and 3 for both WNV and SLEV out of 4,753 mosquito samples tested. In 2021, 278 mosquito samples tested positive for WNV and 4 for SLEV out of 3,052 samples tested.

There was 1 homeowner mosquitofish request in November and distributed a total of 48 mosquitofish. In November of 2021, there was also 1 homeowner mosquitofish requested and distributed a total of 48 mosquitofish. Approximately 7,031 mosquitofish fry were produced in November 2022 and 77 mosquitofish in November 2021.



This year, no mosquito larvae samples were brought to the laboratory for species identification or resistance testing in November. Last year also, no mosquito larval samples were collected in November. Susceptible *Cx. quinquefasciatus*, *Cx. tarsalis*, and *Ae. aegypti* colonies were maintained for insecticide resistance testing. Laboratory staff tested mosquito populations from rural Exeter for resistance to technical grade and formulated etofenprox and pyrethrum products.

A Senior Public Health Biologist, from the California Department of Public Health (CDPH) trained District operations and laboratory staff on ticks and tick surveillance for Tulare County on November 17, 2022. Laboratory staff underwent further training on field collection techniques at a sentinel location. Ticks collected during this event will be identified to species and shipped to the state for tick-borne disease testing.

The CDPH Vector Control Technician Exam 87 for the South San Joaquin Valley Region took place at DMVCD on November 17, 2022. The exam was taken by over 40 technicians from across the region, and two of DMVCD staff passed the exam.

The DMVCD attended 3 student job fair events at local junior high schools, DMVCD represented 1 of the many public health agencies at these events. DeltaMVCD helps kids learn about the different career paths and importance in vector control agencies.

On November 2, DMVCD opened its doors to other members of the Mosquito and Vector Control Association of California (MVCAC) for District tours. The tour hours were from 3pm-5pm. General managers and employees from other mosquito and vector control districts across the state visited and viewed our District headquarters. During the tour, they also viewed a short video highlighting the services done at DMVCD. The District also highlighted the Laboratory and Operations procedures and equipment (Figure 3).



Figure 3. The District's Mosquito and Vector Control Association of California open house displaying DMVCD Operational equipment.

A short history of the District was published in the quarterly newsletter of the Tulare Historical Society in their December issue (Figure 4).

## *History and 100-Year Anniversary Celebration of Delta Mosquito and Vector Control District*

By Erick Arriaga and Mustapha Debboun

Delta Mosquito Abatement District (DMAD) was formed on September 19, 1922. The Visalia Women’s Civic Club was highly influential in its formation. The interest was stimulated by numerous cases of the mosquito-borne disease, Malaria as well as a severe pest mosquito problem. The Delta MAD included 16 square miles in 1922 and was the seventh mosquito abatement district to be formed in California when the California State Legislature incorporated the formation of mosquito abatement districts in 1915.

The Delta MAD began with one full-time employee, Director E.I. Feemster and two seasonal employees during each summer to cover the original 16 square miles that made up the District during the first 25 years. After the end of World War II, and from 1946 to 1948, Delta MAD annexed the northern part of Tulare County to include 10 additional cities bringing the size of the District to over 712 square miles. During the expansion, staff was increased to 14 full-time employees. The growth of the Delta MAD was due to increased public interest and demand on incorporating mosquito control in their new communities.

Throughout the years, Delta Mosquito and Vector Control District (DMVCD) as it is known now, has taken on additional responsibilities and integrated mosquito management methods of control. Originally, the main mission to control mosquitoes was to control the spread of their mosquito-borne disease, Malaria. However, in the 1940s and 1950s, Delta MAD began conducting missions to control also filth flies using physical, mechanical, and source reduction, as there was a large issue with flies among the local agricultural growers within the District. In 1960, Delta MAD purchased its first plane to apply treatments on larger breeding sources

As efforts on source reduction were showing success, the amount and size of sources were reduced, and aerial treatment was contracted out to aerial-application piloting services for the few areas where aerial pesticide application was still needed. In the 1970s, Delta MAD intensified its work to control the spread of the mosquito-borne disease, Western Equine Encephalitis.

After 51 years of being known as Delta Mosquito Abatement District, its name was changed to Delta Vector Control District in 1973. In 2021, the District’s name was changed to Delta Mosquito and Vector Control District with an updated logo to reflect its priorities. In 2022, Delta MVCD began a collaborative effort with Oxitec Ltd on a new and innovative mosquito control method approved by the Environmental Protection Agency to control the invasive yellow fever mosquito, *Aedes aegypti*. Today, Delta Mosquito and Vector Control District serves over 712 square miles in Northern Tulare County and employs a team of 20 full time employees who are supplemented by an additional 26 seasonal employees during the peak summer months of the mosquito season. Every season, our team at Delta MVCD works diligently on incorporating better, improved, innovative, and more efficient ways of combatting the mosquitoes that transmit serious mosquito-borne diseases.

This year, we celebrated our 100-year Anniversary Milestone. Everyone was invited to an Open House to celebrate our monumental anniversary and showcased the District’s headquarters, cutting edge laboratory, fish hatchery, new surveillance and pesticide application equipment, with food, music, and giveaways. The successful event was held at our District headquarters location on Saturday, October 8, 2022.

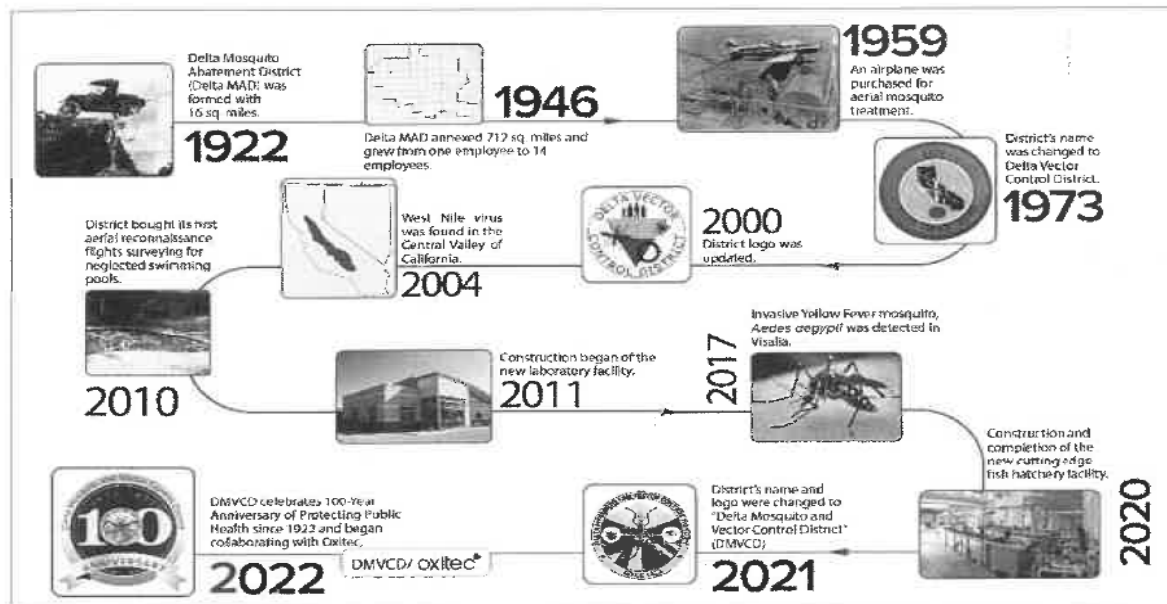


Figure 4. Tulare Historical Society quarterly newsletter outlining the history of DMVCD.

There were 34 service requests in November:

**2022 Service Request Summary**

<b>2022</b>	<b>Mosquito-Fish</b>	<b>Inspection</b>	<b>Mosquito</b>	<b>Source</b>	<b>Other</b>	<b>Total</b>
<b>January</b>	0	0	0	5	0	<b>5</b>
<b>February</b>	2	0	7	7	0	<b>16</b>
<b>March</b>	4	0	7	14	0	<b>25</b>
<b>April</b>	12	0	10	17	0	<b>39</b>
<b>May</b>	15	6	9	23	0	<b>53</b>
<b>June</b>	15	43	28	36	0	<b>122</b>
<b>July</b>	9	29	86	24	1	<b>149</b>
<b>August</b>	9	17	153	48	0	<b>227</b>
<b>September</b>	5	21	63	22	2	<b>113</b>
<b>October</b>	5	8	47	15	0	<b>75</b>
<b>November</b>	1	0	25	8	0	<b>34</b>
<b>Total</b>	<b>68</b>	<b>107</b>	<b>282</b>	<b>171</b>	<b>3</b>	<b>631</b>

**III. Vector and Disease Surveillance**

**Delta MVCD Summaries**

Humans: One potential human case of WNV is being investigated by the Tulare Public Health Department and awaiting final results.

Birds: Three dead birds were reported in November. However, only one was suitable for collection. In 2022, 2 dead birds have tested positive for WNV out of the 8 dead birds tested so far.

Mosquitoes: Routine mosquito surveillance has ended for the year. So far in 2022, a total of 977 mosquito samples tested positive for WNV, 6 for SLEV, and 3 for both WNV and SLEV out of 4,753 mosquito samples tested.

**State Surveillance:**

Humans: 148 human cases of WNV from 24 counties and 11 SLEV human cases from 6 counties have been reported.

Birds: 186 dead birds from 23 counties have tested positive for WNV. So far, 1,262 dead birds have been tested in 2022.

Mosquitoes: 3,165 mosquito samples have tested positive for WNV out of 40,278 samples tested in 2022. Additionally, 153 mosquito samples have tested positive for SLEV out of 36,514 mosquito samples tested in 2022.

**IV. Expenditures & Revenues – 2022/23**

TOTAL BUDGET \$4,958,310.00

EXPENDITURES – July 1, 2022 – November 30, 2022

Salaries	\$1,439,666.56
Services & Supplies	\$569,472.38
Tax Admin Fee	\$0.00
Capital	\$58,872.52
Long Term Debt	\$0.00
<b>TOTAL EXPENDITURES</b>	<b>\$2,068,011.46</b>

REVENUE RECEIVED – July 1, 2022 – November 30, 2022

July	\$1,120.28
August	\$0.00
September	\$19,435.29
October	\$3,534.31
November	\$6,595.69
<b>TOTAL REVENUE TO DATE</b>	<b>\$30,685.57</b>

**V. Time Sheet Summary**

Month	Available Work Hrs.	Sick Hrs. Used	Total Hrs. Available for Work	Pct. Of Hrs. Avail for Work
July	5,880	20.5	5,859.5	99.65
August	6,440	39.5	6,400.5	99.38
September	5,456	48.25	5,407.75	99.12
October	5,040	32	5,008	99.37
November	3,168	88	3,080	97.22

The District has a vacation policy that requires 24-hour notice in order to ensure the operational integrity of the workforce. Sick leave for doctor, dentist and/ or family medical necessity also requires advance notice- in so much as it is possible. Illness is unplanned and therefore unscheduled. Attendance records for the current year are shown in the table.

\* December expenditures and revenue not available as of 12/09/2022