Coachella Valley Mosquito and Vector Control District

43420 Trader Place, Indio, CA 92201 | (760) 342-8287 | cvmosquito.org

Board of Trustees Meeting

Tuesday, July 14, 2026

6:00 p.m.

AGENDA

Materials related to an agenda item that are submitted to the Board of Trustees after distribution of the agenda packets are available for public inspection in the Clerk of the Board's office during normal business hours and on the District's website.

This meeting will be conducted by video and/or teleconference as well as in person at the District office located at the address listed above. To view/listen/participate in the meeting live, please join by calling 1-888-475-4499 (toll-free), meeting ID: 847 1941 0493, or click this link to join: https://us02web.zoom.us/j/84719410493.

Assistance for those with disabilities: If you have a disability and need an accommodation to participate in the meeting, please contact the Clerk of the Board at (760) 342-8287 at least 48 hours prior to the meeting to inform us of your needs and to determine if accommodation is feasible. The District will attempt to accommodate you in every reasonable manner.

Our Mission, Vision, and Values

Mission Statement We protect public health with our communities through proven scientific, educational, and sustainable vector control programs.

Vision We envision our communities free of mosquito and vector-borne disease.

Values Integrity and Trust|Collaboration|Dedication and Service|Respect

1. **Call to Order** – Benjamin Guitron, IV, President
   A. **Roll Call**

2. **Pledge of Allegiance**

3. **Confirmation of Agenda**

4. **Public Comments**
   Members of the public may provide comments in person or remotely at the time of the meeting as set forth in the agenda. Public comments may also be sent by E-mail to the Clerk of the Board by 2:00 p.m. on July 14, 2026, at mscarborougheckel@cvmosquito.org. E-mails received prior to 2:00 p.m. on the day of the Board meeting will be made part of the record and distributed to the Board. This method is encouraged as it gives the Board of Trustees the opportunity to reflect upon your input. E-mails will not be read at the meeting.

   A. **PUBLIC Comments — NON-AGENDA ITEMS:** This time is for members of the public to address the Board of Trustees on items of general interest (a non-agenda item) within the subject matter jurisdiction of the District. The District values your comments; however, pursuant to the Brown Act, the Board cannot take action on items not listed on the posted Agenda. **Comments are limited to a total of three (3) minutes per speaker for non-agenda items.**

   B. **PUBLIC Comments — AGENDA ITEMS:** This time is for members of the public to address the Board of Trustees on agenda items (Open and Closed Sessions). **Comments are limited to three (3) minutes per speaker per agenda item.**

   All comments are to be directed to the Board of Trustees and shall be devoid of any personal attacks. Members of the public are expected to maintain a professional, courteous decorum during public comments.

5. **Public Hearing Regarding Resolution 2026-09 Approving Engineer's Report, Confirming Diagram and Assessment, and Ordering the Levy of Assessments for the Fiscal Year 2026-2027 for the Coachella Valley Mosquito and Vector Control District Mosquito, Fire Ant, and Disease Control Assessment — David I'Anson, Administrative Finance Manager (Pg. 8)**

   A. Staff Report **— David I'Anson, Administrative Finance Manager**

   B. Open Public Hearing **— Benjamin Guitron, IV, Board President**

C. Public Comment – Resolution 2026-09 Approving Engineer's Report, Confirming Diagram and Assessment, and Ordering the Levy of Assessments for the Fiscal Year 2026-2027 for the Coachella Valley Mosquito and Vector Control District Mosquito, Fire Ant, and Disease Control Assessment

D. Close Public Comment

E. Close Public Hearing **— Benjamin Guitron, IV, Board President**

F. Deliberation and Consideration of the Approval of Resolution 2026-09 Approving the Engineer's Report, Confirming Diagram and Assessment, and Ordering the Levy of Assessments for the Fiscal Year 2026-2027 for the Coachella Valley Mosquito and Vector Control District Mosquito, Fire Ant and Disease Control Assessment

Staff recommends that the Board of Trustees adopt Resolution No. 2026-09 Approving the Engineer's Report, Confirming the Diagram and Assessment, and Ordering the Levy of Assessments for Fiscal Year 2026–2027 for the Coachella Valley Mosquito and Vector Control District Mosquito, Fire Ant, and Disease Control Assessment in accordance with applicable legal requirements and supports continued funding for mosquito and vector surveillance, disease prevention, invasive species control, public outreach, and related public health protection services throughout the District's service area.

6. Announcements, Presentation, and Written Communications

A. Vector Control Joint Powers Agency (VCJPA) Insurance Overview **— Yahaira Velasquez**, **Executive Director/Administrator**

7. Items of General Consent

The following items are routine in nature and may be approved by one blanket motion upon unanimous consent. The President or any member of the Board of Trustees may request an item be pulled from Items of General Consent for a separate discussion.

A. Minutes for June 9, 2026, Board Meeting **(Pg. 41)**

B. Approval of expenditures for June 5, 2026, to July 9, 2026 **(Pg. 47)**

C. Approval of Resolution 2026-10 Adopting Employee Pay Schedule, in conformance with California Code of Regulations, Title 2, Sections 570.5 and 571 **—Crystal Garcia Moreno, MSIOP, Human Resources Risk Manager (Pg. 48)**

Staff recommends that the Board of Trustees adopt Resolution No. 2026-10 Adopting the Employee Pay Schedule in Conformance with California Code of Regulations, Title 2, Sections 570.5 and 571, thereby ensuring the District maintains compliance with CalPERS reporting requirements and applicable state regulations governing publicly available pay schedules.

D. Approval of Resolution 2026-11 Authorizing Attendance at Professional Development Conferences and Meetings by members of the Board of Trustees and Employees of the District for Fiscal Years 2026-2027 **— Jeremy Wittie, MS, CSDM, General Manager (Pg. 54)**

Staff recommends that the Board of Trustees adopt Resolution No. 2026-11 Authorizing Attendance at Professional Development Conferences and Meetings by Members of the Board of Trustees and Employees of the District for Fiscal Year 2026–2027 to support continuing education, professional development, and compliance with applicable laws, regulations, and industry best practices while ensuring the prudent use of District resources.

E. Informational Items:

- Financials **— David I'Anson, Administrative Finance Manager (Pg. 63)**
- Government Finance Officers Association (GFOA) Certificate of Achievement for Excellence in Financial Reporting **— David I'Anson, Administrative Finance Manager (Pg. 78)**
- Approval of Resolution 2026-12 Biennial Adoption of a Conflict-of-Interest Code **— Megan Scarborough-Eckel, Clerk of the Board (Pg. 79)**
- District Travel for the Board of Trustees **— Megan Scarborough-Eckel, Clerk of the Board (Pg. 87)**
- Semi-annual research reports from the Mount Sinai School of Medicine; University of California, Irvine; University of California, Riverside; and the USDA for 2026 **— Jennifer A Henke, MS, BCE, Laboratory Manager (Pg. 89)**

8. Action Items

A. Accept the resignation of Trustee Steve Downs **— Jeremy Wittie, MS, CSDM, General Manager (Pg. 129)**

Staff recommends that the Board of Trustees accept the resignation of Trustee Steve Downs, effective June 18, 2026, and recognize his dedicated service and contributions to the Coachella Valley Mosquito and Vector Control District during his tenure on the Board of Trustees.

B. Approval after the fact for immediate cleanup of pigeon feces on the long carport in the amount of **$30,092.63**, performed by Clean Harbors **— Jeremy Wittie, MS, CSDM, General Manager, Executive Committee, and David I'Anson, Administrative Finance Manager (Pg. 131)**

Staff recommends that the Board of Trustees approve, after the fact, the emergency cleanup of pigeon feces on the District's long carport in the amount of $30,092.63, performed by Clean Harbors, to address an immediate health and safety concern, mitigate potential environmental and regulatory risks, and protect District facilities and personnel.

9. Committee and Trustee Reports

A. Executive Committee **— Benjamin Guitron, IV, Board President**

Executive Committee oral report

B. Finance Committee **— Frank Figueroa, EdD, Board Treasurer**

Finance Committee oral report and minutes from June 9, 2026, Finance Committee Meeting **(Pg. 133)**

C. Trustee Comments, Requests for Future Agendas Items, Travel, and/ or Staff Actions

The Board may not legally take action on any item presented at this time other than to direct staff to investigate a complaint or place an item on a future agenda unless (1) by a majority vote, the Board determines that an emergency exists, as defined by Government Code Section 54956.5, or (2) by a two-thirds vote, the board determines that the need for action arose subsequent to the agenda being posted as required by Government Code Section 54954.2(a). Each presentation is limited to no more than three minutes.

10. Reports

A. General Manager

i. General Manager's Report **— Jeremy Wittie, MS, CSDM, General Manager**

B. Staff

i. Arbovirus Risk and Response update (as necessary) **— Jennifer A Henke, MS, BCE, Laboratory Manager, Greg Alvarado, Operations Manager, and Robert C Gaona, MPA, Public Information Manager**

C. General Counsel

Questions and/or comments from Trustees regarding the reports

11. Closed Session

Closed Session (s):

A. **Public Employee Performance Evaluation pursuant to Government Code Section 54957**
Title: General Manager

12. Adjournment

At the discretion of the Board, all items appearing on this agenda, whether or not expressly listed for action, may be deliberated and may be subject to action by the Board.

Certification of Posting

I certify that on July 10, 2026, I posted a copy of the foregoing agenda near the regular meeting place of the Board of Trustees of the Coachella Valley Mosquito & Vector Control District and on the District's website, said time being at least 72 hours in advance of the meeting of the Board of Trustees (Government Code Section 54954.2)

Executed at Indio, California, on July 10, 2026

Megan Scarborough-Eckel

Megan Scarborough-Eckel, Clerk of the Board

PUBLIC HEARING

NOTICE OF PUBLIC HEARING
FOR THE COACHELLA VALLEY MOSQUITO AND VECTOR CONTROL DISTRICT
MOSQUITO, FIRE ANT AND DISEASE CONTROL ASSESSMENT
FOR FISCAL YEAR 2026-27

NOTICE IS HEREBY GIVEN that the Board of Trustees of the Coachella Valley Mosquito and Vector Control District intends to conduct a public hearing for the CONTINUATION of a benefit assessment in fiscal year 2026-27 that funds the District's mosquito, fire ant, vector control and disease prevention services and projects in the Coachella Valley.

The public hearing to consider the ordering of services and projects, and the levy of the continued assessments for fiscal year 2026-27 for the MOSQUITO, FIRE ANT AND DISEASE CONTROL ASSESSMENT shall be held on Tuesday, July 14, 2026, at 6:00 p.m. at the meeting chambers of the Coachella Valley Mosquito and Vector Control District headquarters located at 43-420 Trader Place, Indio, California, 92201. The proposed assessment rate for fiscal year 2026-27 is FOURTEEN DOLLARS AND THIRTY-NINE CENTS ($14.39) per single-family equivalent benefit unit in Zone A and SEVEN DOLLARS AND NINETEEN CENTS ($7.19) per single-family equivalent benefit unit in Zone B.

Members of the public are invited to provide comment at the public hearing, or in writing, which shall be received by the District by Tuesday, July 14, 2026, at 6:00 p.m. If you desire additional information concerning the above, please contact the Coachella Valley Mosquito and Vector Control District at (760) 342-8287.

Dated July 1, 2026
/s/ Megan Scarborough-Eckel, Clerk of the Board

	Coachella Valley Mosquito and Vector Control District **Staff Report**	**July 14, 2026**

Agenda Item: Public Hearing

Approval of Resolution 2026-09 Approving Engineer's Report, Confirming Diagram and Assessment, and Ordering the Levy of Assessments for the Fiscal Year 2026-27 for the Coachella Valley Mosquito and Vector Control District Mosquito, Fire Ant and Disease Control Assessment **— David I'Anson, Administrative Finance Manager**

Background:

Resolution No. 2026-08 approved by the Board of Trustees on June 9, 2026, approved the intention to levy assessments for fiscal year 2026-2027, preliminarily approving the engineer's report, and providing for notice of hearing for the CVMVCD Mosquito, Fire Ant, and Disease Control Assessment.

Resolution No. 2026-09 approves the Engineer's Report and orders the levy of the assessment at the rate of $14.39

In 2005, Coachella Valley property owners approved a yearly fee of $16.00 per residential unit for the Mosquito, Fire Ant, and Disease Control Assessment by 74.19%, the highest approval rating for a similar measure in the State of California that year. Included in the voter approval was an inflation escalator allowing for a 3% per year inflationary increase to the assessment. State law requires the District to renew the base assessment and any inflationary increase each year through a public hearing process.

The District's Board is now conducting a public hearing to consider the assessments for the 2026-2027 fiscal year to fund its programs and services. The District provides services and programs for disease and vector surveillance, disease prevention, control of vectors using integrated vector control management (IVM) methods, and quality assessment. The mosquito abatement, vector control, and disease prevention projects and programs include, but are not limited to, source reduction, ground and aerial surveillance and control applications, disease monitoring, public education, quality control and applied research as well as maintenance of buildings, grounds and equipment, and operating expenses. The District's services encompass approximately 2,400 square miles and are provided to properties accommodating over 400,000 permanent residents with a seasonal influx of over 100,000 people.

The majority of the District's funding is generated by a percentage of the 1% property tax collected from Coachella Valley property owners. Any property owner who feels that the assessment levied on the subject property is in error may file a written appeal with the General Manager of the Coachella Valley Mosquito and Vector Control District or his or her designee.

In each subsequent year for which an assessment will be levied, the Board must;

- Preliminarily approve at a public meeting a budget for the upcoming fiscal year's costs and services;

- Preliminarily approve at a public meeting an updated annual Engineer's Report, and;

- Provide an updated assessment roll listing all parcels and their proposed assessments for the upcoming fiscal year and;

- Call for the publication in a local newspaper of a legal notice of the intent to continue the assessments for the next fiscal year and set the date for the noticed public hearing. At the annual public hearing, members of the public can provide input to the Board prior to the Board's decision on continuing the services and assessments for the next fiscal year.

The yearly assessment is subject to an annual adjustment tied to the Consumer Price Index-U for the Los Angeles-Riverside-Orange County Area as of December of each succeeding year (the "CPI"), with a maximum annual adjustment not to exceed 3%. The yearly assessment rate per single-family equivalent benefit unit for the Mosquito, Fire Ant, and Disease Control Assessment may increase in future years by an amount equal to the annual change in the CPI, not to exceed 3% per year. In the event that the annual change in the CPI exceeds 3%, any percentage change in excess of 3% can be cumulatively reserved and can be added to the annual change in the CPI for years in which the CPI change is less than 3%.

The fiscal year 2026-2027 assessment budget includes:

- Outlays for West Nile Virus
- Surveillance and mosquito control
- RIFA control
- Capital equipment
- Supplies
- Disease testing programs
- Other vector programs

The annual CPI change for the Riverside-San Bernardino - Ontario Area from January 2025 to January 2026 is 3.244%, which exceeds 3%, so 3% will be used as the inflator for fiscal year 2026-2027. The maximum authorized assessment rate for fiscal year 2026-2027 is $27.94 per single-family equivalent benefit unit. The proposed fiscal year 2026-2027 assessment rate per single-family equivalent benefit unit for the Mosquito, Fire Ant, and Disease Control Assessment is $14.39 which is less than the maximum allowable rate.

Since property owners in the assessment ballot proceeding conducted in 2005 approved the initial assessment including the CPI adjustment schedule, the assessment may be levied annually and may be adjusted by up to the maximum annual CPI adjustment without any additional assessment ballot proceeding.

OPTIONS TO CONSIDER:

1. To accept and adopt Resolution 2026-09, setting the annual benefit assessment amount to $14.39 per single-family equivalent family unit, to properly finalize and adopt the assessment proceedings accordingly defined in Proposition 218.

Recommendation:

Proceed with the approval of Resolution 2026-09 approving the Engineer's report

Attachments

- Resolution 2026-09
- Published public notice
- Engineer's Report: Fiscal Year 2026-27

RESOLUTION NO. 2026-09

A RESOLUTION OF THE BOARD OF TRUSTEES OF THE COACHELLA VALLEY MOSQUITO AND VECTOR CONTROL DISTRICT

A RESOLUTION APPROVING ENGINEER'S REPORT, CONFIRMING DIAGRAM AND ASSESSMENT, AND ORDERING THE LEVY OF ASSESSMENTS FOR FISCAL YEAR 2026-27 FOR THE COACHELLA VALLEY MOSQUITO AND VECTOR CONTROL DISTRICT MOSQUITO, FIRE ANT AND DISEASE CONTROL ASSESSMENT

WHEREAS, the Coachella Valley Mosquito and Vector Control District ("District") was established in 1928 as an independent special district by the Riverside County Board of Supervisors; and

WHEREAS, the mission of the District is to reduce the risk of disease transmission by mosquitoes and other vectors for the residents and visitors of the Coachella Valley; and

WHEREAS, the Coachella Valley Mosquito and Vector Control District is authorized, pursuant to the authority provided in Health and Safety Code Section 2082 and Article XIIID of the California Constitution, to levy assessments for mosquito, vector and disease control services; and

WHEREAS, the District provides vector control services which includes a system of public improvements and services intended to provide for the surveillance, prevention, abatement and control of vectors as provided under Proposition 218 ("Services"); and such vector surveillance and control services provide tangible public health benefits, reduced nuisance benefits and other special benefits to the public and properties with the areas of service; and

WHEREAS, an assessment for mosquito, fire ant, vector and disease control projects and services has been given the distinctive designation of the "Mosquito, Fire Ant, and Disease Control Assessment" ("Assessment"), and is primarily described as encompassing the District jurisdictional boundaries, which covers nine incorporated cities along the I-10 Freeway (Cathedral City, Coachella, Desert

Hot Springs, Indian Wells, Indio, La Quinta, Palm Desert, Palm Springs, and Rancho Mirage), and the unincorporated areas in the greater Coachella Valley from the San Bernardino County line to the north to the Imperial and San Diego County lines to the south; and

WHEREAS, the Assessment was authorized by an assessment ballot proceeding conducted in 2005 and approved by 74.19% of the weighted ballots returned by property owners, and such assessments were levied by the Board of Trustees of the Coachella Valley Mosquito and Vector Control District by Resolution No. 2005-04 passed on July 26, 2005;

NOW, THEREFORE, BE IT RESOLVED by the Board of Trustees of the Coachella Valley Mosquito and Vector Control District that:

SECTION 1. Willdan Financial Services, the Engineer of Work, prepared an engineer's report (the "Report") in accordance with Article XIIID of the California Constitution and Section 2082, et seq., of the Health and Safety Code for the Assessment. The Report have been made, filed with the secretary of the board and duly considered by the Board and are hereby deemed sufficient and preliminarily approved. The Report shall stand as the Engineer's Report for all subsequent proceedings under and pursuant to the foregoing resolution.

SECTION 2. On June 9, 2026, this Board adopted Resolution No. 2026-08 to continue to levy and collect Assessments for fiscal year 2026-27, preliminarily approving the Engineer's Report, and providing for notice of hearing on July 14, 2026, at the hour of six o'clock (6:00) p.m. at the meeting chamber of the Coachella Valley Mosquito and Vector Control District headquarters located at 43-420 Trader Place, Indio, California, 92201.

SECTION 3. At the appointed time and place the hearing was duly and regularly held, and all persons interested and desiring to be heard were given an opportunity to be heard, and all matters and things pertaining to the levy of Assessment were fully heard and considered by this Board, and all oral statements and all written protests or communications were duly heard, considered and overruled, and this Board thereby acquired jurisdiction to order the levy of assessment prepared by and made a part of the Engineer's Report to pay the costs and expenses thereof.

SECTION 4. The above recitals are true and correct

SECTION 5. The public interest, convenience and necessity require that the levy be made.

SECTION 6. The Engineer's Report for the Assessment together with the proposed assessment roll for fiscal year 2026-27 is hereby confirmed and approved.

SECTION 7. That based on the oral and documentary evidence, including the Engineer's Report offered and received at the public hearing, the Board expressly finds and determines that: (a) each of the several lots and parcels of land subject to the Assessment will be specially benefited by the services to be financed by the assessment proceeds in at least the amount of the assessment apportioned against such lots and parcels of land, respectively; (b) that the Assessment is levied without regard to property valuation; and (c) that there is substantial evidence to support , and the weight of the evidence preponderates in favor of, said finding and determination as to special benefit to property from the mosquito, fire ant, vector and disease control services to be financed with assessment proceeds.

SECTION 8. That assessments for fiscal year 2027 shall be levied at the rate of fourteen dollars and thirty-nine cents ($14.39) per single-family equivalent benefit unit in Zone A and seven dollars and nineteen cents ($7.19) per single-family equivalent benefit unit in Zone B per single-family equivalent benefit unit as specified in the Engineer's Report for fiscal year 2026-27 with estimated total annual assessment revenues as set forth in the Engineer's Report; and

SECTION 9. That the mosquito, fire ant and disease control services to be financed with assessment proceeds described in the Engineer's Report are hereby ordered.

SECTION 10. No later than August 10th following such adoption, assessments and a copy of this resolution will be uploaded to the Auditor Controller's of the County of Riverside ("County Auditor"). Upon such upload, the County Auditor shall enter on the County assessment roll opposite each lot or parcel of land the amount of assessment thereupon as shown in the assessment. The assessments shall be collected at the same time and in the same manner as County taxes are collected and all the laws providing for collection and

enforcement shall apply to the collection and enforcement of the assessments. After collection by the County, the net amount of the assessments, after deduction of any compensation due the County for collection, shall be paid to the Mosquito, Fire Ant and Disease Control Assessment.

SECTION 11. All revenues from Assessments shall be deposited in a separate fund established under the distinctive designation of the Coachella Valley Mosquito and Vector Control District, Mosquito, Fire Ant and Disease Control Assessment.

SECTION 12. The Assessment, as it applies to any parcel, may be corrected, cancelled or a refund granted as appropriate, by order of the Board of Trustees of the District. Any such corrections, cancellations or refunds shall be limited to the current fiscal year.

PASSED, ADOPTED, AND APPROVED by the Board of Trustees of the Coachella Valley Mosquito and Vector Control District this 14th day of July 2026.

_____
Benjamin Guitron, IV, President
Board of Trustees

ATTEST:

_____
Megan Scarborough-Eckel, Clerk of the Board

APPROVED AS TO FORM:

_____
Lena D. Wade, General Counsel

REVIEWED:

_____
Jeremy Wittie, M.S., CSDM, General Manager

Coachella Valley Mosquito and Vector Control District

Mosquito, Fire Ant and Disease Control Assessment

2026/2027 Engineer's Report

Intent Meeting: June 9, 2026
Public Hearing: July 14, 2026

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ENGINEER'S REPORT AFFIDAVIT

Mosquito, Fire Ant and Disease Control Assessment

Coachella Valley Mosquito and Vector Control District
Riverside County, State of California

This Report describes the District and relevant zones therein including the improvements, budgets, parcels and assessments to be levied for fiscal year 2026/2027, as they existed at the time of the passage of the Resolution of Intention. Reference is hereby made to the Riverside County Assessor's maps for a detailed description of the lines and dimensions of parcels within the District. The undersigned respectfully submits the enclosed Report as directed by the Board of Trustees.

Dated this 10 day of June 2026.

Willdan Financial Services
Assessment Engineer
On Behalf of the Coachella Valley Mosquito and Vector Control District

By: Chonney Gano
Chonney Gano, Project Manager
District Administrative Services

By: Tyrone
Tyrone Peter
PE # C 81888

TABLE OF CONTENTS

I. INTRODUCTION

The Coachella Valley Mosquito and Vector Control District ("District") is a public health agency located in Riverside County which is dedicated to providing vector control and disease surveillance services to the residents and visitors of the Coachella Valley. The District operates under California Health and Safety Code 2000-2093. Its boundaries encompass 2,400 square miles which include the cities of Cathedral City, Coachella, Desert Hot Springs, Indian Wells, Indio, La Quinta, Palm Desert, Palm Springs, Rancho Mirage and unincorporated sections of Riverside County.

The District is comprised of a unique and diverse geography. The eastern half of the Coachella Valley is home to the Salton Sea, a saltwater lake located approximately 240.40 feet below sea level. The highest elevation of 8,516 feet is recorded at the upper terminal of the Palm Springs Aerial Tramway. The area's average elevation is 68 feet below sea level. Within these elevations, the District surveys and/or treats residential properties, golf courses, public areas, duck clubs, agricultural areas, as well as the salt marshes surrounding the Salton Sea.

The Riverside County Board of Supervisors established the District in 1928 primarily for controlling eye gnats, which were creating an epidemic of conjunctivitis ("pink eye"). In 1951, the Board of Trustees ("Board") of the District added a program for mosquito control, and in 1995, expanded the District to a full, vector control agency. In 2005, the District added the Red Imported Fire Ant program.

The District is governed by an eleven-member Board, nine from incorporated cities and two from the County-at-large The Board meets on the second Tuesday of each month at its Indio headquarters. Its services are available to all residents of the Coachella Valley.

As used within this Report, the following terms are defined:

"Vector" means any animal capable of transmitting the causative agent of human disease or capable of producing human discomfort or injury, including, but not limited to, mosquitoes, flies, mites, ticks, other arthropods, and small mammals and other vertebrates (Health and Safety Code Section 2002(k)).

"Vector Control" shall mean any system of public improvements or services that is intended to provide for the surveillance, prevention, abatement, and control of vectors as defined in subdivision (k) of Section 2002 of the Health and Safety Code and a pest as defined in Section 5006 of the Food and Agricultural Code (Government Code Section 53750(m)).

This Engineer's Report ("Report") incorporates and is intended to be consistent with the benefit determinations, assessment apportionment methodology and other provisions established by Resolution 2005-03 and the other documents and reports that established the Mosquito, Fire Ant and Disease Control Assessment (the "Assessment"). Reference is hereby made to Resolution 2005-03 and other supporting reports.

II. GENERAL DESCRIPTION OF THE PROGRAMS AND SERVICES

The District's purpose and mission is to enhance the quality of life for its community by providing effective and environmentally sound vector control and disease prevention programs through research, development, and public awareness. The services (the "Services") to be funded by the Assessment are:

- To fund vector control operations to monitor and control mosquitoes, eye gnats, flies, and other vectors as needed; to suppress the infestation of Red Imported Fire Ants;
- To fund vector surveillance and disease control programs, such as collecting and testing of mosquito pools for viruses, and maintaining sentinel chicken flocks to obtain and test chicken sera samples for arboviruses;
- To protect the community from known vectors and vector-borne diseases by conducting routine control of immature mosquitoes and of adult mosquitoes when needed;
- To support applied research in collaboration with research institutions throughout the country in the application of biological control agents for vectors, such as mosquitofish and tadpole shrimps, to ensure continued improvement of application of IVMP (Integrated Vector Management Program) methods and bio-control measures,
- To protect health using environmentally sound and safe biocontrol programs;
- To fund community outreach programs to educate Valley residents on vector avoidance and on reduction of mosquito breeding sites through elementary school programs, community events, and presentations before civic and community groups;
- To fund related capital improvements and operational services; and
- To fund administrative costs related to the Services or the assessments.

III. ESTIMATE OF COSTS

COACHELLA VALLEY MOSQUITO AND VECTOR CONTROL DISTRICT
Mosquito, Fire Ant and Disease Control Assessment
Estimate of Cost
Fiscal Year 2026/2027

	Total Budget
Vector Control Services and Related Expenditures	
Vector Control and Disease Prevention Operations	$15,947,403.00
Materials, Utilities and Supplies	1,471,507.00
Capital Equipment and Fixed Assets	91,530.00
Total Vector Control Services and Related Expenditures	**$17,510,440.00**
Less:	
Contributions from other Sources	(16,514,816.00)
Net Cost of Vector Control, Fixed Asset Equipment, Operation	**$995,624.00**
Reserve/Contingency Funds [1]	1,381,722.60
Incidental Costs	
County Collection, Levy Administration, and Other Incidentals	107,390.66
Total Mosquito, Vector & Disease Control Services, and Incidentals	**$2,484,737.26**
(Net Amount to be Assessed)	

[1] Reserve/Contingency Funds is a replenishment of the Reserve and/or contingent expenses.

Budget Allocation to Property

Zone	Total SFE Units	Assessment Per SFE	Total Calculated Assessment	Actual Assessment FY 2026/27 [1]
Zone A	172,777.54	$14.39	$2,486,268.84	$2,484,439.54
Zone B	42.24	$7.19	$303.73	$297.72
Total	**172,819.79**		**$2,486,572.57**	**$2,484,737.26**

[1] Variance from Total Calculated Assessment due to County even penny requirement and rounding.

IV. METHOD OF ASSESSMENT

This section of the Report includes an explanation of the benefits to be *derived* from the Services provided by the District, and the methodology used to apportion the total Assessment to properties within the Mosquito, Red Imported Fire Ant, and Disease Control Assessment area.

The Mosquito, Red Imported Fire Ant, and Disease Control Assessment area consists of all Assessor Parcels within the District as defined by the State Board of Equalization tax rate areas.

The method used for apportioning the Assessment is based upon the proportional special benefits to be derived by the properties in the Assessment area *over* and *above* general benefits conferred on real property or to the public at large. The apportionment of special benefit is a multi-step process: the first step is to identify the types of special benefit arising from the Services, the second step is to estimate the general and special benefits, and the third step is to allocate the assessments to property based on the estimated *relative* special benefit for each type of property.

A. DISCUSSION OF BENEFIT

In summary, the Assessments can only be levied based on the special benefit to property. This special benefit is *received* by property *over* and *above* any general benefits from the proposed Services. With reference to the engineering requirements for property related assessments, under Proposition 218 an engineer must determine and prepare a report evaluating the amount of special benefit *received* by property within the District as a result of the improvements or services provided by a local agency. That special benefit is to be determined in relation to the total cost to that local entity of providing the service and/or improvements.

Proposition 218 as described in Article XIIID of the California Constitution has confirmed that assessments must be based on the special benefit to property:

"No assessment shall be imposed on any parcel which exceeds the reasonable cost of the proportional special benefit conferred on that parcel."

B. BENEFIT FACTORS

In order to allocate the proposed Assessments, the Engineer begins by identifying the types of special benefit arising from the aforementioned mosquito and vector control services and that would be provided to property within the Assessment area. These types of special benefit are as follows:

- Increased public safety, welfare and protection of health

The proposed Assessments will result in expanded and more proactive services to control and abate mosquitoes and other disease carrying or health harming insects. In addition, the proposed Assessments will fund additional public health education and disease prevention services. Further, the proposed Assessments will fund additional testing and monitoring services for new pathogens that may cause new diseases.

Such expanded services have been proven to decrease the likelihood of the transmission of infectious diseases by mosquitoes, such as Encephalitis viruses and other infectious diseases.

This finding was confirmed in 2003 by the State Legislature:

"Mosquitoes and other vectors, including but not limited to ticks, Africanized honey bees, rats, fleas, and flies, continue to be a *source of human suffering, illness, death and* a *public nuisance in California and around the world. Adequately funded mosquito and vector control, monitoring and public awareness programs are the best way to prevent outbreaks of West Nile Virus and other diseases borne by mosquitoes and other vectors."*[1]

Also, the Legislature, in Health and Safety Code Section 2001, finds that:

"The protection of Californians and their communities against the discomforts and economic effects of vector-borne diseases is an essential public service that is *vital to public health, safety, and welfare. "*[2]

Moreover, the Health and Safety Code Sections 2082 et seq. establish that special benefit assessments on real property are a valid method of funding the cost of such vector control programs and services. This constitutes a legislative finding that real property receives special benefit from vector *control* programs and services.

The most important way of introduction of new arboviruses into the Coachella Valley is by the route taken by migratory birds, such as the Pacific Flyway, traveling through the Salton Sea, Sacramento Valley, and tidal marshes near San Francisco all the way to Alaska.

Property in areas with higher disease risk and/or lower public health and safety factors is less desirable and has lower utility and value. Therefore, the proposed Services improve the public health, welfare and safety of residents, employees, customers, tourists, guests, pets, animals and livestock in the Coachella Valley, which is a special or specific benefit ultimately to property in the District.

• Reductions of Potential for New Diseases and Infections in Humans

Mosquitoes have proven to be a major contributor to the spread of new diseases such as West Nile Virus ("WNV"), among others. Mosquitoes can be easily transported and their wide distribution coupled with migratory birds can cause the fast spread of disease transmissions.

"Vector-borne diseases (including a *number that are mosquito-borne) are* a *major public health problem internationally. In the United States, dengue and malaria are frequently brought back from tropical and subtropical countries by travelers or migrant laborers, and autochthonous transmission of malaria and dengue occasionally occurs. In* 1998, 90 *confirmed cases of dengue and* 1,611 *cases of malaria were reported in the USA and dengue transmission has occurred in Texas."*[3]

According to the CDC.gov website the last reported continental dengue outbreak was in south Texas in 2005 and about 1,500 cases of malaria are diagnosed in the United States each year based on information gather through 2015.

From the time of introduction to United States in 1999, Center for Diseases Control (CDC) has reported 30,702 human cases of West Nile virus, and 1,220 fatalities. In California from the time of introduction 2003 - 2,989 human cases were recorded, with 198 fatalities

"During 2004, 40 *states and the District of Columbia (DC) have reported 2,313 cases of human WNV illness to CDC through ArboNET. Of these,* 737 (32%) *cases were reported in California, 390* (17%) *in Arizona, and* 276 (12%) *in Colorado.* A *total of* 1,339 (59%) *of the* 2,282 *cases for which such data were available occurred in males; the median age of patients was* 52 *years (range:* 1 *month--99 years). Date of illness onset ranged from April* 23 *to November* 4; a *total of* 79 *cases were fatal."*[4]

(According to the Centers for Disease Control and Prevention on January 19, 2004, a *total of 2,470 human cases and* 88 *human fatalities from WNV have been confirmed)*

The Services funded by the Assessments will help prevent, on a year-round basis, new diseases and the vectors that transmit diseases. This is an important public health service that ultimately benefits property in the District.

• Enhanced quality of life, desirability of the area and utility of property

The proposed assessments will enhance the control and abatement of mosquitoes, vector populations and other harmful and nuisance insects. This will serve to increase the quality of life and "livability" of property in the Coachella Valley. This enhanced livability and quality of the area will make the area more desirable for residents, customers, guests, tourists and employees. This is a special benefit to residential, commercial, agricultural and industrial properties in the District.

In addition to health related factors, uncontrolled mosquito and vector populations create a nuisance for residents, employees, customers, tourists, farm workers and guests. Properties benefit from the improved environment that is created by the services provided by the Assessment. Agricultural and rangeland properties in the District benefit from the reduced nuisance value and harm to livestock and employees from lower mosquito and vector populations.

Excessive mosquitoes and other vectors in the area can materially diminish the utility and usability of property. For example, prior to the commencement of mosquito control and abatement services, many areas in the State and around the San Francisco Bay were considered to be nearly uninhabitable during the times of year when the mosquito populations were high.[5] The prevention or reduction of such diminished utility of property caused by mosquitoes is clearly a special benefit to property in the District.

The State Legislature made the following finding on this issue:

"Excess numbers of *mosquitoes and other vectors spread diseases* of *humans, livestock, and wildlife, reduce enjoyment* of *outdoor living spaces, both public and private, reduce property values, hinder outdoor work, reduce livestock productivity; and mosquitoes and other vectors can disperse or be transported long distances from their sources and are, therefore,* a *health risk and public nuisance; and professional mosquito and vector control based on scientific research has made great advances in reducing mosquito and vector populations and the diseases they transmit."*[6]

• Increased public awareness and understanding of how to protect themselves, their property and pets and livestock from diseases carried by insects and small mammals.

The proposed Assessments will fund public education and awareness programs designed to better protect residents, employees, customers, tourists, guests and their pets and livestock from the risk, harm and nuisance created by vectors and other harmful insects and small mammals. This is a special benefit ultimately to property in the District.

The State Legislature has also made a finding in this regard:

"Public awareness can result in reduced production of mosquitoes and other vectors on private, commercial, and public lands by responsible parties, avoidance of the bites of mosquitoes and other vectors when the risk of West Nile Virus and other disease transmission is high, detection of human cases *of mosquito and vector-borne diseases that may otherwise be misdiagnosed for lack of appropriate laboratory testing".*[7]

• Protection of economic activity

Outbreaks and other public health threats can have a drastic negative effect on tourism, business and residential activities. The proposed assessments will help to prevent the likelihood of such outbreaks. This is a benefit to business, agriculture and residential properties in the District.

Prior to the commencement of the mosquito and vector control services provided by the District in its current service areas, mosquitoes hindered, annoyed and harmed residents, guests, visitors, farm workers, and business employees to a much greater degree. A vector-borne disease outbreak and other related public health threats would have a drastic negative effect on tourism, business and residential activities in the District.

The economic impact of diseases is well documented. According to a study prepared for the Centers for Disease Control and Prevention, the transmission of West Nile Virus in Louisiana was estimated to cost over $20 million over approximately one year:

"The estimated cost of the Louisiana epidemic was *$20.1 million from June 2002 to February 2003, including* a *$10.9 million cost of illness ($4.4 million medical and* $6.5 *million nonmedical costs) and* a $9.2 *million cost of public health response. These data indicate a substantial short-term cost of the WNV disease epidemic in Louisiana."*[8]

Moreover, a study conducted in 1996-97 of La Crosse Encephalitis (LACE), a human illness caused by a mosquito-transmitted virus, found a lifetime cost per human case at $48,000 to $3,000,000 and found that the disease significantly impacted life spans of those who were infected. Following is a quote from the study which references the importance and value of active vector control services of the type that are funded by the assessments:

The socioeconomic burden resulting from LACE is *substantial, which highlights the importance of the illness in western North Carolina,* as *well as the need for active surveillance, reporting, and prevention programs for the infection.*[9]

The services to be funded by the proposed assessments will help to prevent the likelihood of such outbreaks in the District and will reduce the nuisance and harm caused by existing

mosquito populations. This is a benefit to the economic activity for business, agriculture and residential properties in the District.

• Protection of the Coachella Valley's tourism, agriculture and business industries

Tourism is a significant component of the economic and business base in the District. The tourism and business industries in the Coachella Valley would benefit from reduced levels of harmful or nuisance mosquitoes and other vectors. Conversely, any outbreaks of emerging vector-borne pathogens such as West Nile Virus could also materially affect these industries.

Diseases transmitted by mosquitoes and other vectors can adversely impact business and recreational functions.

Cases of West Nile Virus disease in horses have been documented, either by virus isolation or by detection of WNV virus-neutralizing antibodies in 1999, 2000, and 2001. Approximately 40% of equine WNV virus cases results in the death of the horse. Horses become infected with WNV virus in the same way humans become infected, by the bite of infectious mosquitoes. In November 2002, a vaccine intended to aid in the prevention of WNV in horses was licensed by the Veterinary Services division of the U.S. Department of Agriculture's Animal and Plant Health Inspection Service.

Pesticides for mosquito control impart economic benefits to agriculture in general. Anecdotal reports from farmers and ranchers indicate that cattle, if left unprotected, can be exsanguinated by mosquitoes, especially in Florida and other southeast coastal areas. Dairy cattle produce less milk when bitten frequently by mosquitoes. Per the EPA Public Health Benefits Assessment 1, *the Centers for Disease Control (CDC) states that fenthion is needed to counter malathion-resistant mosquitoes in Florida and played a role in the rotation* of *adulticides for resistance management, and otherwise for control* of *the very important Aedes spp. salt marsh mosquitoes and Culex nigripalpus.*[11]

The proposed assessments will serve to protect the tourists, employees and other businesses and residents that benefit from these industries. This is ultimately a special benefit to property in the District.

• Wildlife Protection

In addition to domesticated animals, uncontrolled mosquitoes and vectors are a significant risk to wildlife and local ecosystems. Bird populations are especially vulnerable to mosquito-borne diseases, as are wild mammals such as bats, chipmunks and raccoons.

"The spread of *the virus by birds and mosquitoes has significant implications for animal health* as *well. Animal health officials are concerned about the potential effects on wildlife and other animals, particularly those birds that are susceptible to fatal illness from the virus. The evidence currently points to* a *mosquito-bird cycle being primarily responsible for the spread* of *WNV. The WNV vector is the same mosquito vector* as *St. Louis Encephalitis, Culex tarsalis and Culex quinquefascitaus. Because* of *this bird-mosquito cycle, numerous species* of *birds are at risk and have died from WNV."*[12]

Properties in areas with reduced wildlife inherently become somewhat less desirable. Although this may be a somewhat less significant factor, the cumulative benefit from all

benefit factors must be evaluated in context of the small proposed Assessment. It is reasonable to conclude that the cumulative benefit exceeds the proposed Assessment.

• Reduced risk of nuisance and liability

Agricultural, range, golf course, cemetery, open space, marsh lands, and other such lands contain large areas of mosquito and vector habitat and are therefore a significant source of mosquito and vector populations in the District's area of service. In addition, residential and business properties can also contain significant sources. It is conceivable that known sources of mosquitoes could be held liable for the transmission of diseases or other harm. For example, in August 2004, the City of Los Angeles approved new fines of up to $1,000 per day for homeowners who don't remove standing water sources of mosquitoes on their property.

The proposed Services to be provided by the District will reduce the mosquito and vector related nuisance and health liability to properties in the District. Moreover, emerging vector-borne pathogens such as the West Nile Virus are a significant threat to horses. The reduction of that risk of liability constitutes a special benefit to property in the District, in addition to the benefits conferred due to the reduced impact of mosquito and vector populations on residents, employees, customers, tourists, guests and livestock, pets, and wildlife.

The above benefit factors, when applied to property in the District, confer special benefits to property and create specific enhancement of property values because properties are more desirable, usable and valuable in areas with improved public health, welfare, safety, quality of life and environment and reduced nuisance factors. These are special benefits to each parcel of property in much the same way that storm drainage, sewer service, water service, sidewalks and paved streets enhance the utility and attractiveness of each parcel of property providing them with more utility of use and making them safer, easier to market, and, ultimately, more valuable.

It should also be noted that Proposition 218 contained a specific exemption for existing vector assessments and other "traditional" assessments for sidewalks, streets, sewers, water, flood control and drainage systems from the new balloting approval procedures it established. In the Statement of Drafter's Intent, the Howard Jarvis Taxpayers Association (HJTA), the authors of Proposition 218, further confirmed that vector Assessments were an acknowledged and "traditional" use of assessments. Therefore they granted existing vector assessments an exemption from the new balloting requirements. Furthermore, the HJTA acknowledged that new vector assessments would be subject to the Proposition 218 balloting requirements. This acknowledgement indicates that the HJTA recognized vector control services as a 'traditional" use of assessments, that they acknowledged that new vector assessments may be formed after Proposition 218 and inherently, therefore, that vector control services confer special benefit to properties.[13]

In summary, the direct special benefits described in this Report ultimately enhance the economic values of all benefiting real properties in excess of the proposed Assessments for these properties. In other words, the assessment engineer finds that the cumulative benefits to property from the Services are reasonably equal to or greater than the annual proposed assessment amount per home and benefit unit.

C. GENERAL VERSUS SPECIAL BENEFIT

As previously discussed, the proposed Assessments will fund comprehensive, year-round mosquito, other vector control and disease surveillance and control Services that will clearly confer special benefits to the underlying properties in the Coachella Valley. These benefits are expressed to the underlying property by the property owners, guests, employees and tenants who will enjoy a more habitable, safer and more desirable place to live, work or visit.

While the District is the principal vector control agency in the Coachella Valley that controls the spread of mosquito-borne disease as well as mosquito populations, the District does provide a degree of general benefit to the public at large. A measure of this benefit is the proportion of its Services that affect those who are not residents, employees, customers, or property owners in the Coachella Valley. Each year, the District provides some of its services in areas near the boundaries of Riverside County, specifically in areas bordering Imperial County, as well as areas bordering the District's westerly boundaries, west of Palm Springs. By abating mosquito populations near the borders of Riverside County and near the borders of the District on the West and East sides, the Services could provide benefits in the form of reduced mosquito and vector populations and reduced risk of disease transmission to properties outside the District. The District conservatively estimates that less than 5% of its operating budget is allocated towards providing Services that may, in part, benefit surrounding areas not within the Coachella Valley. Although it can be argued that Services near the County and District boundaries are offset by similar offsetting benefits to property in the District from services received in most of the other adjoining Counties, we use the full percentage because it is a more conservative measure.

Another component of general benefit is to those people who visit the Coachella Valley but do not live, shop or work within the proposed assessment area. It has been conservatively estimated that fewer than 5% of the people who visit the Coachella Valley do not live, shop or work within the District. Therefore, 5% of potential benefits to the greater public that visit the District but do not live, work or shop there is another measure of the general benefits from the Mosquito, Red Imported Fire Ant, and Disease Control Assessment.

Using an average of these two measures of general benefit, we find that a maximum of 5% of the benefits conferred by the proposed Mosquito, Fire Ant and Disease Control Assessment are determined to be general in nature. Therefore, 5% of the benefits conferred by the proposed Services and improvements are general in nature and must be funded by sources other than the assessment.

The proposed mosquito, fire ant and disease control assessment total budget for mosquito and vector abatement, disease control, and capital improvement is $17,510,440. Of this total budget amount, the District will contribute about $16,514,816 or approximately 99% of the total budget from sources other than the Mosquito, Red Imported Fire Ant, and Disease Control Assessment. This contribution offsets any general benefits from the Mosquito, Red Imported Fire Ant, and Disease Control Assessment Services.

D. METHOD OF ASSESSMENT

The third step in apportioning Assessments is to determine the relative special benefit for each property. This process involves determining the relative benefit received by each

property in relation to a single family home, or, in other words, on the basis of Single Family Equivalents (“SFE”). This SFE methodology is commonly used to distribute assessments in proportion to estimated special benefit and is generally recognized as providing the basis for a fair and appropriate distribution of assessments. For the purposes of this Report, all properties are designated a SFE value, which is each property's relative benefit in relation to a single family home on an average sized residential parcel. The "benchmark" property is the single family detached dwelling which is one (1) Single Family Equivalent or one (1) SFE.

In the process of determining the appropriate method of assessment, the Engineer considered various alternatives. For example, a fixed assessment amount per parcel for all residential improved property was considered but was determined to be inappropriate because agricultural lands, commercial property and other property also receive benefits from the assessments. Likewise, an assessment exclusively for agricultural land was considered but deemed inappropriate because other types of property, such as residential and commercial, also receive the special benefit factors described previously. An assessment primarily for the properties with sources of mosquitoes was considered but deemed inappropriate because these properties often have limited economic value and usage by people and because mosquitoes typically fly from their source breeding locations to places occupied by people and animals. Furthermore, even urban residential properties can and do generate their own, often significant, populations of mosquito and vector organisms.

A fixed or flat assessment was deemed to be inappropriate because larger residential, commercial and industrial properties receive a higher degree of benefit than other similarly used properties that are significantly smaller. (For two properties used for commercial purposes, there is clearly a higher benefit provided to a property that covers several acres in comparison to a smaller commercial property that is on a 0.25 acre site. The larger property generally has a larger coverage area and higher usage by employees, customers, tourists and guests that would benefit from reduced mosquito and vector populations, as well as the reduced threat from diseases carried by mosquitoes and other vectors. This benefit ultimately flows to the property). Larger commercial, industrial and apartment parcels, therefore, receive an increased benefit from the assessments.

Therefore, the Engineer determined that the appropriate method of assessment should be based on the type and potential use of property, the relative size of the property and its location. This method is further described below.

E. ZONES OF BENEFIT

The District's mosquito, fire ant, and disease control programs, projects and services that will be funded by the proposed Mosquito, Fire Ant and Disease Control Assessment will be provided in all areas within the District boundaries. However, areas north of the Colorado River Aqueduct, which are areas occupied by the Joshua Tree National Park, the Pinto Mountains and the southern ridge of the Twenty-nine Palms Mountains, are more remotely located and receive a reduced level of Services and corresponding benefits relative to other parcels in the District. These areas are hereinafter referred to as Zone of Benefit B or Zone B and are depicted on the Assessment Diagram included with this Report. All other parcels within the District boundaries are within Zone A.

Using District estimates for the amount of Services provided to parcels north of the Colorado River Aqueduct (Zone B) relative to the level of Services in Zone A, we find that parcels in Zone B receive approximately one-half of the average level of Services and benefits provided to other parcels in the District (Zone A). Therefore, parcels in Zone B receive 50% of the assessment rate per benefit unit.

F. ASSESSMENT APPORTIONMENT

The special benefits derived from the Mosquito, Fire Ant and Disease Control Assessment are conferred on property and are not based on a specific property owner's occupancy of property or the property owner's demographic status, such as age or number of dependents. However, it is ultimately people who do or could use the property and who enjoy the special benefits described above. Therefore, the opportunity to use and enjoy the region within the District without the excessive nuisance, diminished "livability" or the potential health hazards brought by mosquitoes, vectors, and the diseases they carry is a special benefit to properties in the District. This benefit is related to the number of people who potentially live on, work at, visit or otherwise use the property, because people ultimately determine the value of the benefits by choosing to live, work and/or recreate in the area, and by choosing to purchase property in the area.

RESIDENTIAL PROPERTIES

All improved residential properties that represent a single residential dwelling unit are assigned one Single Family Equivalent (“SFE”) or 1.0 SFE. Traditional houses, zero-lot line houses, and town homes are included in this category.

Single family residential properties in excess of one acre receive additional benefit relative to a single family home on less than one acre, because the larger parcels provide more area for mosquito sources and District vector services. Therefore, such larger parcels receive additional benefits relative to a single family home on less than one acre and are assigned 1.0 SFE for the residential unit and an additional rate of 0.002 SFE per one-fifth acre of land area in excess of one acre. Mobile home parcels on a separate parcel and in excess of one acre also receive this additional acreage rate.

Other types of properties with residential units, such as agricultural properties, are assigned the residential SFE rates for the dwelling units on the property and are assigned additional SFE benefit units for the agricultural-use land area.

Properties with more than one residential unit are designated as multi-family residential properties. These properties, along with condominiums, benefit from the services and improvements in proportion to the number of dwelling units that occupy each property, the average number of people who reside in each property, and the average size of each property in relation to a single family home in Riverside County. This Report analyzed Riverside County population density factors from the 2000 US Census as well as average dwelling unit size for each property type. After determining the Population Density Factor and Square Footage Factor for each property type, an SFE rate is generated for each residential property structure, as indicated in Figure 3 below.

The SFE factor of 0.36 per dwelling unit for multifamily residential properties applies to such properties with two to four units (duplex, triplex, fourplex). Properties in excess of 5

units typically offer on-site management, monitoring and other control services that tend to offset some of the benefits provided by the Mosquito and Vector Control District. Therefore, the benefit for properties in excess of 5 units is determined to be 0.25 SFE per unit for the first 20 units and 0.10 SFE per each additional unit in excess of 20 dwelling units.

Figure 3 - Riverside County Residential Assessment Factors

Land Use	Total Population	Occupied Households	Persons per Household	Population Density Equivalent	Sq. ft. Factor	SFE Rate
Single Family Residential	1,068,257	327,073	3.27	1.00	1.00	1.00
Condominium	73,926	28,805	2.57	0.79	0.70	0.55
Duplex, Triplex, Fourplex	74,640	25,789	2.89	0.89	0.40	0.36
Multi-Family Residential, 5+ Units	146,765	62,396	2.35	0.72	0.34	0.25
Mobile Home on Separate Lot	144,064	60,164	2.39	0.73	0.36	0.26

Source: 2000 Census, Riverside County and property dwelling size information from the Riverside County Assessor data.

COMMERCIAL/INDUSTRIAL PROPERTIES

Commercial and industrial properties are generally open and operated for more limited times, relative to residential properties. Therefore, the relative hours of operation can be used as a measure of benefits, since employee density also provides a measure of the relative benefit to property. Since commercial and industrial properties are typically open and occupied by employees approximately one-half the time of residential properties, it is reasonable to assume that commercial land uses receive one-half of the special benefit on a land area basis relative to single family residential property.

The average size of a single family home with 1.0 SFE factor in Riverside County is 0.20 acres. Therefore, a commercial property with 0.20 acres receives one-half the relative benefit, or a 0.50 SFE factor.

The SFE values for various commercial and industrial land uses are further defined by using average employee densities because the special benefit factors described previously are also related to the average number of people who work at commercial/industrial properties.

To determine employee density factors, this Report utilizes the findings from the San Diego County Association of Governments Traffic Generators Study (the "SANDAG Study") because these findings were approved by the State Legislature which determined the SANDAG Study to be a good representation of the average number of employees per acre of land area for commercial and industrial properties. As determined by the SANDAG Study, the average number of employees per acre for commercial and industrial property is 24. As presented in Figure 4, the SFE factors for other types of businesses are determined relative to their typical employee density in relation to the average of 24 employees per acre of commercial property.

Commercial and industrial properties in excess of 5 acres generally involve uses that are more land intensive relative to building areas and number of employees (lower coverage

ratios). As a result, the benefit factors for commercial and industrial property land area in excess of 5 acres is determined to be the SFE rate per fifth acre for the first 5 acres and the relevant SFE rate per each additional acre over 5 acres. Institutional properties that are used for residential, commercial or industrial purposes are also assessed at the appropriate residential, commercial or industrial rate.

Self-storage, winery and golf course property benefit factors are similarly based on average usage densities. Figure 4 below lists the benefit assessment factors for such business properties.

AGRICULTURAL, RANGELAND AND CEMETERY PROPERTIES

Utilizing research and agricultural employment reports from UC Davis and the California Employment Development Department and other sources, this Report calculated an average usage density of 0.05 people per acre for agriculture property, 0.01 for rangelands and timber and 1.2 for cemeteries. Since these properties typically are a source of mosquitoes and/or are typically closest to other sources of mosquitoes and other vectors, it is reasonable to determine that the benefit to these properties is twice the usage density ratio of commercial properties. The SFE factors per 0.20 acres of land area are shown in the following Figure 4.

Figure 4 - Commercial/Industrial Benefit Assessment Factors

Type of Commercial/Industrial Land Use	Average Usage Per Acre[1]	SFE Units per Fraction Acre[2]
Commercial	24	0.500
Office	68	1.420
Shopping Center	24	0.500
Industrial	24	0.500
Self-Storage or Parking Lot	1	0.021
Wineries	12	0.250
Golf Course	3	0.063
Cemeteries	1.200	0.050
Agricultural/Vineyard	0.050	0.0021
Timber/Dry Rangelands	0.010	0.00042

1. Source: San Diego Association of Governments Traffic Generators Study, University of California, Davis and other studies and sources
2. The SFE factors for commercial and industrial parcels indicated above are applied to each fifth acre of land area or portion thereof, (Therefore, the minimum assessment for any assessable parcel in these categories is the SFE Units listed herein.)

VACANT PROPERTIES

The benefit to vacant properties is determined to be proportional to the corresponding benefits for similar type developed properties, However, vacant properties are assessed at a lower rate due to the lack of active benefits, as measured by use by residents, employees, customers and guests, A measure of the benefits accruing to the underlying land is the average value of land in relation to improvements for developed property. An analysis of the assessed valuation data from the County of Riverside found that 25% of the assessed value of improved properties is classified as land value. Since vacant properties have very low to zero population/use densities until they are developed, a 50% benefit discount is applied to the valuation factor of 0.25 to account for the current low use density and potential for harm or nuisance to the property owner or his residents, employees, customers and guests. The combination of these measures results in a 0.125 factor. It is reasonable to assume, therefore, that approximately 12.5% of the benefits are related to the underlying land and 87.5% are related to the day-to-day use of the property. Using this ratio, the SFE factor for vacant parcels is 0.125 per parcel.

OTHER PROPERTIES

Article XIIID stipulates that publicly owned properties must be assessed unless those properties are reasonably determined to receive no special benefit from the assessment. All properties that are specially benefited are assessed. Publicly owned property that is used for purposes similar to private residential, commercial, industrial or institutional uses is benefited and assessed at the same rate as such privately owned property. Other public properties such as watershed parcels, parks, open space parcels are determined to, on average, receive similar benefits as a single family home. Therefore such parcels are assessed an SFE benefit factor of 1. Miscellaneous, small and other parcels such as roads, right-of-way parcels, and common areas typically do not generate significant numbers of employees, residents, customers or guests and have limited economic value. These miscellaneous parcels receive minimal benefit from the Services and are assessed an SFE benefit factor of 0.

Church parcels, institutional properties, and property used for educational purposes typically generate employees on a less consistent basis than other non-residential parcels. Therefore, these parcels are determined to, on average, receive similar benefits as a single family home. Therefore such parcels are assessed an SFE benefit factor of 1.

APPEALS

Any property owner who feels that the assessment levied on the subject property is in error as a result of incorrect information being used to apply the foregoing method of assessment, may file a written appeal with the General Manager of the Coachella Valley Mosquito and Vector Control District or his or her designee. Any such appeal is limited to correction of an assessment during the then current fiscal year or, if before July 1, the upcoming fiscal year.

G. ASSESSMENT RANGE FORMULA

The assessment is subject to an annual adjustment tied to the Consumer Price Index for the Riverside-San Bernardino-Ontario Area as of January of each succeeding year (the

"CPI"), with a maximum annual adjustment not to exceed 3%. The assessment rate per single family equivalent benefit unit for the Mosquito, Fire Ant and Disease Control Assessment may increase in future years by an amount equal to the annual change in the CPI, not to exceed 3% per year. In the event that the annual change in the CPI exceeds 3%, any percentage change in excess of 3% can be cumulatively reserved and can be added to the annual change in the CPI for years in which the CPI change is less than 3%.

The annual CPI change for the Riverside-San Bernardino-Ontario Area from January 2025 to January 2026 is 3.244% which exceeds 3%, so 3% will be used as the inflator for fiscal year 2026/2027. The maximum authorized assessment rate for Zone A for fiscal year 2026/2027 is $27.94 per single family equivalent benefit unit. The proposed fiscal year 2026/2027 assessment rate per single family equivalent benefit unit for the Mosquito, Fire Ant and Disease Control Assessment is $14.39 which is less than the maximum allowable rate. The maximum assessment rate for Zone B for fiscal year 2026/2027 is $13.97 and the proposed rate for this zone is $7.19.

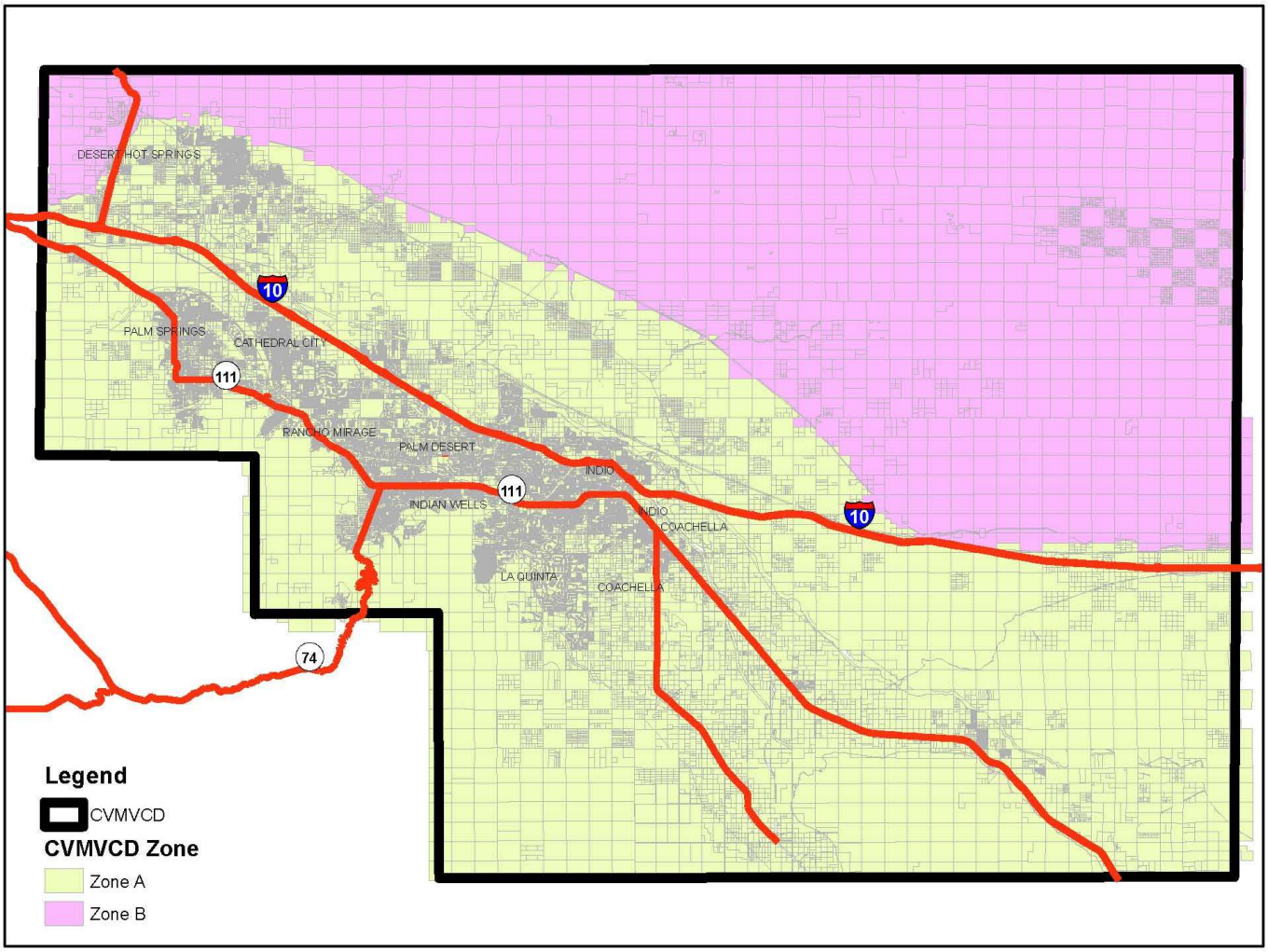
Since property owners, in the assessment ballot proceeding conducted in 2005, approved the initial assessment including the CPI adjustment schedule, the assessment may be levied annually and may be adjusted by up to the maximum annual CPI adjustment without any additional assessment ballot proceeding.

V. ASSESSMENT DIAGRAM

The proposed Mosquito, Fire Ant and Disease Control Assessment area includes all properties within the boundaries of the Coachella Valley Mosquito and Vector Control District.

The boundaries of the Mosquito, Fire Ant and Disease Control Assessment area are displayed on the following diagram.

CVMVCD



VI. END NOTES

1. Assembly Concurrent Resolution 52, chaptered April 1, 2003

2. As an example of how travel can introduce new vectors and diseases, health officials think that the first human case of West Nile Virus in California (in 2002) was from a mosquito that was transported by car or plane from another state with proven West Nile Virus activity.

3. Rose, Robert. (2001). Pesticides and Public Health: Integrated Methods of Mosquito Management. Emerging Infectious Diseases. Vol. 7(1); 17-23.

4. Center for Disease Control. (2004). West Nile Virus Activity --- United States, November 9--16, 2004. Morbidity and Mortality Weekly Report. 53(45); 1071-1072.

5. Prior to the commencement of modern mosquito control services, areas in the State of California such as the San Mateo Peninsula, Napa County and areas in Marin and Sonoma Counties had such high mosquito populations that they were considered to be nearly unlivable during certain times of the year and were largely used for part-time vacation cottages that were occupied primarily during the months when the natural mosquito populations were lower.

6. Assembly Concurrent Resolution 52, chaptered April 1, 2003

7. Ibid

8. Zohrabian A, Meltzer MI, Ratard R, Billah K, Molinari NA, Roy K, et al. West Nile Virus economic impact, Louisiana, 2002. Emerging Infectious Disease, 2004 Oct. Available from http://www.cdc.gov/ncidod/EID/voll0nol0/03-0925.htm

9. Utz, J. Todd, Apperson, Charles S., Maccormack, J. Newton, Salyers, Martha, Dietz, E. Jacquelin, Mcpherson, J. Todd, Economic And Social Impacts Of La Crosse Encephalitis In Western North Carolina, Am J Trop Med Hyg 2003 69: 509-518

10. S. Geiser, A. Seitzinger, P. Salazar, J. Traub-Dargatz, P. Morley, M. Salman, D. Wilmot, D. Steffen, W. Cunningham, Economic Impact of West Nile Virus on the Colorado and Nebraska Equine Industries: 2002, April 2003, Available from http://www.aphis.usda.gov/vs/ceah/cnahs/nahms/equine/wnv2002_CO_NB.pdf

11. Jennings, Allen. (2001). USDA Letter to EPA on Fenthion IRED. United States Department of Agriculture, Office of Pest Management Policy. March 8, 2001.

12. U.S. Government Accounting Office (GAO), "West Nile Virus Outbreak: Lessons for Public Health Preparedness." GAO Report Number GAO/HEHS-00-180, September, 2000. Page 17.

13. "This is the "traditional purposes" exception. These existing assessments do not need property owner approval to continue. However, future assessments for these traditional purposes are covered." Howard Jarvis Taxpayers Association, "Statement of Drafter's Intent", January 1997.

VII. ASSESSMENT ROLL

Reference is hereby made to the fiscal year 2026/2027 Assessment Roll in and for said assessment proceedings on file in the office of the General Manager of the District, as said Assessment Roll is too voluminous to be bound with this Report.

ITEMS OF GENERAL CONSENT

COACHELLA VALLEY MOSQUITO AND VECTOR CONTROL DISTRICT

Board of Trustees Meeting
Minutes

MEETING TIME: 6:00 p.m., June 9, 2026

LOCATION: 43420 Trader Place, Indio, CA 92201

TRUSTEES PRESENT

PRESIDENT Benjamin Guitron, IV	Indio
SECRETARY Dr. Doug Kunz	Palm Springs
TREASURER Dr. Frank Figueroa	Coachella
Gary Gardner	Desert Hot Springs
Bito Larson	County at Large
Felipe Ortiz	County at Large
Nancy Ross	Cathedral City
John Vallat	Indian Wells
Doug Walker	Palm Desert

TRUSTEES ABSENT

VICE PRESIDENT John Peña	La Quinta
TREASURER Dr. Frank Figueroa	Coachella
Steve Downs	Rancho Mirage
Gary Gardner	Desert Hot Springs
Felipe Ortiz	County at Large

STAFF AND GENERAL COUNSEL PRESENT

Jeremy Wittie, General Manager
Lena D Wade, Legal Counsel, SBEMP
Greg Alvarado, Operations Manager
Robert C Gaona, Public Information Manager
Jennifer A Henke, Laboratory Manager
David l'Anson, Administrative Finance Manager
Edward Prendez, Information Technology Manager
Megan Scarborough-Eckel, Clerk of the Board

MEMBERS OF THE PUBLIC PRESENT

Yes

1. **Call to Order**
   President Guitron called the meeting to order at 6:02 pm.

A. **Roll Call**
At roll call, seven (7) of the eleven (11) Trustees were present.

2. Pledge of Allegiance
Everyone in attendance recited the Pledge of Allegiance.

3. Confirmation of Agenda
President Guitron inquired if there was a need to make adjustments to the agenda. The Clerk of the Board noted that Item D under the Consent Calendar should state Resolution 2026-06 in the title and in the staff recommendation. Upon no more corrections or objections from the Board or staff, the agenda was confirmed as stands.

4. Public Comments
A. **PUBLIC Comments — NON-AGENDA Items:**
None

B. **PUBLIC Comments — AGENDA Items:**
None

5. Public Hearing for AB 2561 Review of Vacancies, Recruitment, and Retention Efforts

A. Staff Report **— Graciela Morales, Human Resources Specialist**

B. Open Public Hearing **— Benjamin Guitron, IV, Board President**

C. Public Comments - AB 2561 Review of Vacancies, Recruitment, and Retention Efforts for the Coachella Valley Mosquito and Vector Control District

D. Close Public Comment

E. Close Public Hearing **— Benjamin Guitron, IV, Board President**

6. Announcements, Presentations, and Written Communications
A. None

7. Items of General Consent
The following items are routine in nature and may be approved by one blanket motion upon unanimous consent. The President or any member of the Board of Trustees may request an item be pulled from Items of General Consent for a separate discussion.

A. Minutes for May 12, 2026, Budget Workshop and May 12, 2026, Board Meeting
B. Approval of expenditures for May 8, 2026, to June 4, 2026
C. Informational Items:

- Financials **— David l'Anson, Administrative Finance Manager**
- C.J. Brown & Company CPAs Auditor Engagement Letter

- #GSMCON2026 (Government Social Media Conference), May 5-7, 2026, New Orleans, LA **— Robert C Gaona, MPA, Public Information Manager, Alejandro Camacho, MS, Community Engagement Specialist, and Fernando Gutierrez, Community Engagement Specialist**
- International Institute of Municipal Clerks (IIMC) Annual Conference, May 17-22, 2026, Reno, NV **— Megan Scarborough-Eckel, Clerk of the Board**
- District Travel for the Board of Trustees **— Megan Scarborough-Eckel, Clerk of the Board**

D. Approval of Resolution 2026-06 Delegating of Authority to Request Disbursements of the California Employers' Retiree Benefit Trust (CERBT) **— David I'Anson, Administrative Finance Manager**

Staff recommends the Board approve Resolution No. 2026-06 Delegating of Authority to Request Disbursements of the California Employers' Retiree Benefit Trust (CERBT). The CERBT trust fund is utilized to prefund the District's Other Post-Employment Benefits (OPEB) obligations. Adoption of this resolution authorizes the designated District representatives to submit disbursement requests and execute necessary documentation related to withdrawals from the CERBT account, ensuring efficient administration of OPEB-related expenditures. This authorization is administrative in nature and does not alter the Board's oversight of District finances or budgetary appropriations.

On a motion from Trustee Gardner, seconded by Trustee Ross, the Board of Trustees approved all Items of General Consent.

Ayes: President Guitron, Trustees Gardner, Kunz, Larson, Ross, Vallat, Walker

Noes: None

Abstained: None

Absent: Trustee Downs, Figueroa, Ortiz, Peña

8. Actions Items

A. Approval of Resolution 2026-07 Adopting the Fiscal Year 2026-2027 Budget **— Jeremy Wittie, MS, CSDM, General Manager and David I'Anson, Administrative Finance Manager**

Staff recommends that the Board of Trustees approve Resolution No. 2026-07 adopting the Fiscal Year 2026–2027 Budget. The proposed budget provides the financial framework necessary to support District operations, mosquito and vector control programs, public outreach, capital improvement projects, scientific research initiatives, and administrative services while maintaining fiscal responsibility and organizational stability. Adoption of the budget ensures the District is appropriately positioned to continue protecting public health and serving the residents of the Coachella Valley during Fiscal Year 2026–2027.

On a motion from Trustee Walker, seconded by Trustee Gardner, the Board of Trustees approved Item A of Action Items.

Ayes: President Guitron, Trustees Gardner, Kunz, Larson, Ross, Vallat, Walker

Noes: None

Abstained: None

Absent: Trustee Downs, Figueroa, Ortiz, Peña

The Board directed staff to come back in 90 days with financials and a plan forward.

B. Approval of Resolution 2026-08 Intention to Levy Assessments for Fiscal Year 2026-2027, Preliminary Approval of the Engineer's Report, and Providing for Notice of Hearing for the CVMVCD Mosquito, Fire Ant, and Disease Surveillance and Vector Control Assessment **— David I'Anson, Administrative Finance Manager and Jeremy Wittie, MS, CSDM, General Manager**

Staff recommends that the Board of Trustees approve Resolution No. 2026-08 Intention to Levy Assessments for Fiscal Year 2026–2027, preliminarily approving the Engineer's Report, and providing for notice of a public hearing for the Coachella Valley Mosquito and Vector Control District Mosquito, Fire Ant, and Disease Surveillance and Vector Control Assessment. Approval of this resolution initiates the annual assessment process in accordance with applicable legal requirements and supports continued funding for mosquito and vector surveillance, disease prevention, invasive species control, public outreach, and related public health protection services throughout the District's service area.

On a motion from Trustee Walker, seconded by Trustee Gardner, the Board of Trustees approved Item B of Action Items.

Ayes: President Guitron, Trustees Gardner, Kunz, Larson, Ross, Vallat, Walker

Noes: None

Abstained: None

Absent: Trustee Downs, Figueroa, Ortiz, Peña

C. Approval to purchase chemical control products in an amount not to exceed $773,000.00 from funds 7800.01.500.000, Field Chemical Control **- *Budgeted, Funds Available* — Greg Alvarado, Operations Manager**

Staff recommends that the Board of Trustees, upon approval of the Fiscal Year 2026–2027 Budget, authorize the purchase of chemical control products in an amount not to exceed $773,000.00. Approval of this item will ensure the District maintains an adequate supply of mosquito and vector control products necessary to support ongoing surveillance, prevention, and treatment activities throughout the Coachella Valley during the 2026–2027 mosquito season and fiscal year.

On a motion from Trustee Gardner, seconded by Trustee Vallat, the Board of Trustees approved Item C of Action Items.

Ayes: President Guitron, Trustees Gardner, Kunz, Larson, Ross, Vallat, Walker

Noes: None

Abstained: None

Absent: Trustee Downs, Figueroa, Ortiz, Peña

D. Approval of authorization for the General Manager to execute an agreement between the District and Farm Aviation, Inc. for aerial ultra-low volume (ULV) adult mosquito control and larviciding services through December 31, 2029 **— Greg Alvarado, Operations Manager**

Staff recommends the Board approve the agreement as funding for aerial mosquito control services is included within the District's adopted operational budget and will be utilized as necessary to support mosquito control and public health activities.

On a motion from Trustee Kunz, seconded by Trustee Gardner, the Board of Trustees approved Item D of Action Items.

Ayes: President Guitron, Trustees Gardner, Kunz, Larson, Ross, Vallat, Walker

Noes: None

Abstained: None

Absent: Trustee Downs, Figueroa, Ortiz, Peña

9. Committee and Trustee Reports

A. Executive Committee **— Benjamin Guitron, IV, Board President**
Executive Committee oral report and minutes from May 29, 2026, Executive Committee meeting

B. Finance Committee **— Doug Walker, Committee Member**
Finance Committee oral report and minutes from May 12, 2026, Finance Committee Meeting

C. ad hoc Building Committee **— Gary Gardner, Committee Member**
ad hoc Building Committee oral report

D. Trustee Comments, Requests for Future Agendas Items, Travel, and/ or Staff Actions

The Board may not legally take action on any item presented at this time other than to direct staff to investigate a complaint or place an item on a future agenda unless (1) by a majority vote, the Board determines that an emergency exists, as defined by Government Code Section 54956.5, or (2) by a two-thirds vote, the board determines that the need for action arose subsequent to the agenda being posted as required by Government Code Section 54954.2(a). Each presentation is limited to no more than three minutes.

General Counsel requested that the Clerk of the Board send the California SB 707 PowerPoint to the Board for reference.

10. Reports

A. General Manager

i. General Manager's Report **— Jeremy Wittie, MS, CSDM**

B. Staff

i. Arbovirus Risk and Response Update **—Jennifer A Henke, MS, BCE, Laboratory Manager, Gregorio Alvarado, Operations Manager, and Robert C Gaona, MPA, Public Information Manager**

C. General Counsel

Questions and/or comments from Trustees regarding the reports

11. Closed Session

Closed Session (s):

A. **None**

12. Adjournment

There being no further business to discuss, President Peña adjourned the meeting at 7:25 p.m.

_____

Benjamin Guitron, IV
President

_____

Dr. Doug Kunz
Secretary

Coachella Valley Mosquito and Vector Control District

Checks Issued for the Period of:

June 5-July 9, 2026

Check No	Payable To	Description	Check Amount	Total Amount
	Payroll Disbursement	June 5, 2026	295,533.20	
	Payroll Disbursement	June 19, 2026	288,468.51	
	Payroll Disbursement	July 2, 2026	285,136.74	
				869,138.45
Pre-Approved Expenditures Utilities/Benefits:				
46495	CalPERS - Retirement Acct	Retirement Contributions: 5/8, 5/22, 6/5/26PP	139,831.80	
46502	CalPERS Healthcare Acct	Cafeteria Plan	125,614.42	
46503	CalPERS - Retirement Acct	Retirement Contributions: 6/18, 7/2/26PPPP	93,344.84	
46504	Principal Life Insurance Co.	Cafeteria Plan	14,380.55	
46523	iSolved, Inc.	Cafeteria Plan	70.00	
				373,241.61
Pre-Approved Expenditures less than $10,000.00:				
46496	KYA Services	Capital Outlay	5,343.47	
46497	David Aaker	Professional Development Districtwide	1,500.00	
46505	Advance Imaging Systems	Contract Services	620.21	
46506	Airgas USA, LLC	Lab Supplies & Expenses	3,610.52	
46507	Hugo Arcos	Wellness Program Reimbursement	150.00	
46508	Gonzalo Arriaga	Wellness Program Reimbursement	150.00	
46509	Gary Black	Wellness Program Reimbursement	150.00	
46510	Burrtec Waste Recycling Service	Contingency Expense	5,624.48	
46511	Carbon Health Medical Goup of California, PC	Physician Fees	207.00	
46512	CDW Government, Inc	Computer & Network Systems	2,026.67	
46513	Carlos Cervantes	Wellness Program Reimbursement	150.00	
46514	Clairemont Equipment	Repair & Maintenance	475.50	
46515	CleanExcel	Janitorial Services	4,192.00	
46516	Daniel's Tire Service	Tire Services	2,580.82	
46517	Desert Alarm, Inc.	Contract Services	1,094.70	
46518	Desert Arc	Computer & Network Systems	1,038.00	
46519	Excel Landscape South	Contract Services	1,620.00	
46520	Angel Frias	Wellness Program Reimbursement	150.00	
46521	Ryan Gonzalez	Wellness Program Reimbursement	150.00	
46524	Jernigan's Sporting Goods, Inc.	Safety Expense	228.06	
46525	Johnson Controls, Inc.	Repair & Maintenance	3,394.00	
46526	Anita Jones	Professional Development	750.00	
46527	Marisa Kelling	Tuition Reimbursement	323.50	
46528	Kiley & Associates, LLC	Professional Fees	2,600.00	
46530	Izzy Motors Inc. dba La Quinta Chevrolet	Vehicle Parts & Supplies	48.88	
46531	Liebert Cassidy Whitmore	HR Risk Management	5,745.00	
46532	Linde Gas & Equipment Inc.	Offsite Vehicle Maintenance & Repair	81.00	
46533	Marlin Leasing Corporation	Contract Services	885.93	
46534	Veronica Montoya	Wellness Program Reimbursement	150.00	
46535	Roberto Mora	Wellness Program Reimbursement	150.00	
46537	nfpAccounting Technologies, Inc.	Cloud Computing Services	3,995.00	
46538	O'Reilly Auto Parts	Specialty Parts & Supplies	3,973.18	
46539	Pitney Bowes Purchase Power	Postage	502.25	
46540	Sarah Prendez	Tuition Reimbursement	150.00	
46541	Proper Solutions, Inc.	Temporary Services	3,384.43	
46543	Prudential Overall Supply	Contract Services	6,558.23	
46544	Refrigeration Supplies Distributor	Repair & Maintenance	2,144.47	
46545	Riverside LAFCO	Local Agency Formation Comm.	3,882.08	
46546	Jaime Salazar	Wellness Program Reimbursement	150.00	
46547	Slovak Baron Empey Murphey & Pinkney LLP	Attorney Fees	4,000.00	
46549	Southern Computer Warehouse Inc	Equipment Parts & Supplies	762.45	
46550	Veolia ES Technical Solutions, LLC	Lab Supplies & Expenses	466.64	
46551	Miguel Vargas	Wellness Program Reimbursement	83.18	
46552	Edmundo Vasquez	Wellness Program Reimbursement	80.00	
46553	Vector-Borne Disease Account	Dues & Memberships	5.00	
46555	Wellness Mode LLC	Wellness	224.00	
46556	DMG SC, LLC DBA Zaretsky Building Solutions	Repair and Maintenance	2,050.00	
46557	Zingle, Inc.	Cloud Computing Services	2,100.00	
Cash - California Bank & Trust Checking				**79,700.65**
Cash - California Bank & Trust Checking				
46501	UMPQUA Bank Commercial Card OPS	District Credit Card June 2026 Statement	130,587.87	
46522	Hypertec USA Inc	Cloud Computing Services	28,024.93	
46529	KYA Services	Capital Outlay	17,152.95	
46536	MosquitoMate, Inc.	Research Projects	17,286.05	
46548	SC Commercial LLC dba SC Fuels	Motor,Fuel,Oil	10,889.63	
46554	Vector Control Joint Powers Agency	Property & Liability Premium	694,629.55	
Cash - California Bank & Trust Check Run Total to be Approved				**898,570.98**
Total Expenditures: June 5-July 9, 2026				**2,220,651.69**

	Coachella Valley Mosquito and Vector Control District **Staff Report**	**July 14, 2026**

Agenda Item: Items of General Consent

Approval of Resolution 2026-10 Adopting Employee Pay Schedule, in conformance with California Code of Regulations, Title 2, Sections 570.5 and 571 **— Crystal Garcia Moreno, MSIOP, Human Resources Risk Manager**

Background:

On August 10, 2011, CalPERS adopted the *California Code of Regulations (CCR) Title 2, Sections 570.5 and 571(b),* which set specific requirements for making pay schedules publicly available. The stated purpose was to ensure consistency and enhance disclosure and transparency of public employee compensation.

To fully meet the requirements of these regulations, the pay schedule must list a position title for every employee position, show a pay rate for each position, and indicate the time base for the pay rate (hourly, monthly, annually, etc.). The pay schedule shown in *Exhibit A* reflects the following change:

- Three percent Cost of Living Adjustment

Strategic Business Plan Alignment
Goal 6: FINANCE-Sustained and Transparent Finances that meet District revenue needs

Staff Recommendation:
Staff recommends that the Board of Trustees approve Resolution 2026-10.

Exhibit:

- Resolution 2026-10
- Pay Schedule (Exhibit A)

RESOLUTION NO. 2026-10

A RESOLUTION OF THE BOARD OF TRUSTEES OF THE COACHELLA VALLEY MOSQUITO AND VECTOR CONTROL DISTRICT APPROVING THE DISTRICT'S PAY SCHEDULE TO CONFORM WITH THE CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 2, SECTION 570.5 AND AMENDMENTS TO CCR SECTION 571, SUBDIVISION (b)

WHEREAS, the Coachella Valley Mosquito and Vector Control District ("District") is a political subdivision and a "local agency" of the State of California, created and operating under the authority and provisions of California Health and Safety Code Section 2000 et. seq., and is also a "local agency" within the meaning of Section 53600 of the California Government Code; and

WHEREAS, California Code of Regulations, Title 2, Section 570.5 requires governing bodies of local agencies contracting with CalPERS to approve and adopt a publicly available pay schedule in accordance with public meeting laws; and

WHEREAS, the Board of Trustees wishes to meet the requirements of these regulations by adopting a Pay Schedule which sets forth the pay ranges for all District employee classifications, including seasonal employees, in one single document;

NOW, THEREFORE, BE IT RESOLVED by the Board of Trustees of the Coachella Valley Mosquito and Vector Control District that:

Section 1. Recitals.

The true and correct recitals above are incorporated by this reference herein as the basis and foundation for the District's adoption of this Resolution.

Section 2. Approval of Pay Schedule

That the Board of Trustees hereby approves the pay schedule shown on Exhibit "A," which is incorporated herein by this reference, for classifications as designated on said schedule, a copy of which is attached hereto and incorporated herein by this reference.

Section 3. Effective Date.

This Resolution shall take effect upon its adoption.

Section 4. Certification.

The Clerk of the Board shall certify as to the adoption of this Resolution and shall cause the same to be processed in the manner required by law.

PASSED, ADOPTED, AND APPROVED by the Board of Trustees of the Coachella Valley Mosquito and Vector Control District this 14th day of July 2026.

_____
Benjamin Guitron, IV, President
Board of Trustees

ATTEST:

_____
Megan Scarborough-Eckel, Clerk of the Board

APPROVED AS TO FORM:

_____
Lena D. Wade, General Counsel

REVIEWED:

_____
Jeremy Wittie, M.S., General Manager

Exhibit “A”

Coachella Valley Mosquito and Vector Control District
Pay Schedule

Coachella Valley Mosquito and Vector Control District

Pay Schedule FY2026-27 Monthly Rates - Effective 7/1/2026 to 6/30/2027

	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6
Vector Control Technician I, 9-Month Vector Control Technician I, Laboratory Technician	5,118.46	5,374.39	5,643.10	5,925.26	6,221.52	6,532.59
Vector Control Technician II, Laboratory Assistant I	6,221.52	6,532.59	6,859.23	7,202.20	7,562.32	7,940.43
Mechanic I, Facilities Maintenance Technician I	6,532.59	6,859.23	7,202.20	7,562.32	7,940.43	8,337.46
Lead Vector Control Technician, Laboratory Assistant II, Mechanic II, Facilties Maintenance Technician II, Unmanned Aircraft Systems (UAS) Operator	6,859.23	7,202.20	7,562.32	7,940.43	8,337.46	8,754.33
Administrative Assistant, Events and Outreach Assistant	5,773.83	6,062.52	6,365.65	6,683.94	7,018.13	7,369.04
Accounting Technician I	6,062.52	6,365.65	6,683.93	7,018.13	7,369.04	7,737.49
Procurement Specialist	6,365.65	6,683.94	7,018.13	7,369.04	7,737.49	8,124.36
Accounting Technician II	6,614.09	6,944.79	7,292.03	7,656.63	8,039.46	8,441.43
Community Engagement Specialist	6,812.51	7,153.14	7,510.79	7,886.33	8,280.65	8,694.68
Education Specialist	7,510.79	7,886.33	8,280.65	8,694.68	9,129.42	9,585.89
Public Outreach Coordinator, Network Support Specialist	7,683.26	8,067.43	8,470.81	8,894.34	9,339.06	9,806.01
Biologist	8,077.38	8,481.25	8,905.31	9,350.58	9,818.11	10,309.01
Field Supervisor, Public Information Officer, Unmanned Aircraft Systems (UAS) Coordinator	9,366.38	9,834.70	10,326.44	10,842.76	11,384.90	11,954.14
IT/GIS Analyst, Lead Supervisor, Operations Program Coordinator, Vector Ecologist	9,834.63	10,326.37	10,842.68	11,384.82	11,954.06	12,551.76
Human Resources Assistant	5,118.45	5,374.38	5,643.10	5,925.25	6,221.52	6,532.59
Executive Assistant/Clerk of Board, Human Resources Specialist, Payroll Administrator	7,881.08	7,793.08	8,688.89	9,123.33	9,579.49	10,058.48
Administrative Finance Manager, Human Resources Risk Manager, Information Technology Manager, Public Information Manager, Operations Manager, Laboratory Manager	10,944.48	11,491.69	12,066.28	12,669.59	13,303.07	13,968.23
Assistant General Manager	12,300.50	12,915.53	13,561.30	14,239.37	14,951.33	15,698.90
General Manager	17,105.39					

Educational Incentive Pay

Certificate	*1%*	*Master's Degree*	*4%*
Associates Degree	*2%*	*Doctorate Degree*	*5%*
Bachelor's Degree	*3%*		
Temporary: Out-of-Class	*5%*	*Additional Duties*	*5%*

Effective: 7/1/2026

	Coachella Valley Mosquito and Vector Control District **Staff Report**	**July 14, 2026**

Agenda Item: Items of General Consent

Approval of Resolution 2026-11 Authorizing Attendance at Professional Development Conferences and Meetings by Members of the Board of Trustees and Employees of the District for Fiscal Year 2026-2027 **— Jeremy Wittie, MS, CSDM, General Manager**

Background:

In 2009, an ad hoc travel committee comprised of the Board of Trustees directed staff to develop a travel resolution for Board adoption of the types of travel by Board members and employees to be authorized on an as-needed basis. Resolution 2009-05, Authorizing Attendance of Professional Development Conferences and Meetings by Members of the Board of Trustees and Employees of the District for Fiscal Year 2009-2010 was approved at the May 2009 Board Meeting and accomplished this purpose.

Resolution 2026-11 would authorize attendance at conferences and meetings for Fiscal Year 2026-2027. Schedule "A" of Resolution 2026-09 contains a list of professional conferences and meetings that staff and/or Board members would be authorized to attend, based on need, between July 1, 2026, and June 30, 2027, and also designates which staff and Board members would be authorized to attend each conference or meeting.

Resolution 2026-11 would also limit Board members to a maximum of two (2) conferences or meetings that involve overnight travel and would limit staff to a maximum of two (2) conferences or meetings per function performed by the employee. An exception to this limitation would be made for meetings and conferences where it is necessary to carry out a committee assignment for the Mosquito and Vector Control Association of California.

Staff Recommendation:

- Staff recommends that the Board approve Resolution 2026-11

Exhibits:

- Resolution 2026-11
- 2026-2027 Professional Development Conferences and Meetings

RESOLUTION NO. 2026-11

A RESOLUTION OF THE BOARD OF TRUSTEES OF THE COACHELLA VALLEY MOSQUITO AND VECTOR CONTROL DISTRICT AUTHORIZING ATTENDANCE AT PROFESSIONAL DEVELOPMENT CONFERENCES AND MEETINGS BY MEMBERS OF THE BOARD OF TRUSTEES AND EMPLOYEES OF THE DISTRICT FOR FISCAL YEAR 2026-2027

WHEREAS, the Coachella Valley Mosquito and Vector Control District ("District") is a political subdivision of the State of California, created and operating under the authority and provisions of California Health and Safety Code Section 2000 *et. seq*., and is also a "local agency" within the meaning of Section 53600 of the California Government Code; and

WHEREAS, pursuant to Health and Safety Code Section 2051 and the District's adopted Travel and Expense Policy, the Board of Trustees ("Board") of the District may authorize members of the Board and District employees to attend professional, educational, or vocational meetings, and cause the District to pay their actual and necessary traveling expenses while on official business.

NOW, THEREFORE, THE BOARD OF TRUSTEES OF THE COACHELLA VALLEY MOSQUITO AND VECTOR CONTROL DISTRICT DOES HEREBY RESOLVE AS FOLLOWS:

Section 1. Recitals.

The recitals set forth above are true and correct.

Section 2. Authorization and Approval for Attendance.

Subject to Section 3 hereof, the Board hereby authorizes and approves the conference and meeting list attached hereto and incorporated herein by this reference as Exhibit "A," for the fiscal year 2026-2027, for attendance by Board members and/or employees of the District as designated therein. The Board finds that the list of conferences and meetings satisfies the criteria set forth in Health and Safety Code Section 2051 and the District's Travel and Expense Policy and that the proposed attendance at the conferences and meetings on the list will result in a benefit to the District.

Section 3. Limitations.

In order to preserve the District's finances, Board members shall attend no more than two conferences or meetings per fiscal year which involve overnight travel. Employees shall attend no more than two conferences or meetings per function performed by the employee. These limitations shall not apply where attendance at a meeting or conference is necessary to carry out a committee assignment, such as in the case of the Mosquito and Vector Control Association of California.

Section 4. Severability.

The Board declares that should any provision, section, paragraph, sentence, or word of this Resolution be rendered or declared invalid by any final court action in a court of competent jurisdiction or by reason of any preemptive legislation, the remaining provisions, sections, paragraphs, sentences or words of this Resolution as hereby adopted shall remain in full force and effect.

Section 5. Repeal of Conflicting Provisions.

All the provisions of any resolution or policy as heretofore adopted by the District or the Board that are in conflict with the provisions of this Resolution are hereby repealed.

Section 6. Effective Date.

This Resolution shall take effect upon its adoption.

Section 7. Certification.

The Clerk of the Board shall certify as to the adoption of this Resolution and shall cause the same to be processed in the manner required by law.

PASSED, ADOPTED, AND APPROVED by the Board of Trustees of the Coachella Valley Mosquito and Vector Control District this 14th day of July 2026.

_____
Benjamin Guitron, IV, President
Board of Trustees

ATTEST:

_____
Megan Scarborough-Eckel, Clerk of the Board

APPROVED AS TO FORM:

_____
Lena D. Wade, General Counsel

REVIEWED:

_____
Jeremy Wittie, MS, CSDM, General Manager

EXHIBIT "A"
TO
RESOLUTION NO. 2026-11

A RESOLUTION OF THE BOARD OF TRUSTEES OF THE COACHELLA VALLEY MOSQUITO AND VECTOR CONTROL DISTRICT AUTHORIZING ATTENDANCE AT PROFESSIONAL DEVELOPMENT CONFERENCES AND MEETINGS BY MEMBERS OF THE BOARD OF TRUSTEES AND EMPLOYEES OF THE DISTRICT FOR FISCAL YEAR 2026-2027

CONFERENCE AND MEETING LIST FOR FISCAL YEAR 2026-2027

Conference	Dates	Location	Attendees
AMCA Annual Conference (American Mosquito Control Association)	March 01-05, 2027	St Louis, MO	Trustees: Admin: General Manager, Assistant General Manager HR: HR Risk Manager PI: PI Manager Lab: Lab Manager, Vector Ecologist (2), Lab Staff (1) Ops: Ops Manager, Ops Program Coordinator, Field Supervisor (1) UAS: UAS Coordinator
California Science Education Conference	November 06-08, 2026	Sacramento, CA	PI: PI Manager, Education Specialist (1)
CALPELRA Annual Conference (California Public Employers Labor Relations Association)	November 17-20, 2026	Monterey, CA	HR: HR Specialist
CalPERS Annual Educational Forum (California Public Employees' Retirement System)	November 02-04, 2026	Anaheim, CA	HR: HR Risk Manager, HR Specialist, Payroll Administrator, HR Assistant Finance: Admin Finance Manager
CalPERS Pathways Annual Conference (California Public Employees' Retirement System)	August 17-18, 2026	Anaheim, CA	Finance: Procurement Specialist, Accounting Technician (1)
CAPIO Annual Conference (California Association of Public Information Officials)	May of 2027	TBD	PI: PI Manager, Community Engagement Specialist (1)
CAPPO Annual Conference (California Association of Public Procurement Officials)	January 25-27, 2027	Palm Springs, CA	Finance: Admin Finance Manager, Procurement Specialist
CMCA Annual Conference (California Municipal Clerks Association)	April 14-16, 2027	Sacramento, CA	Admin: Clerk of the Board
Commercial Annual UAV Expo (Integration and Operation of UAS)	September 01-03, 2026	Las Vegas, NV	Ops: Ops Manager UAS: UAS Coordinator, UAS Operator (1)
CSDA Annual Conference (California Special District Association)	August 24-27, 2026	Palm Desert, CA	Trustees: Admin: General Manager, Assistant General Manager, Clerk of the Board HR: HR Risk Manager, HR Specialist, Payroll Administrator, HR Assistant PI: PI Manager Lab: Lab Manager Ops: Ops Manager
CSDA Board Secretary/Clerk Conference (California Special District Association)	November 03-05, 2026	Santa Barbara, CA	Admin: Clerk of the Board
CSDA General Manager Leadership Summit (California Special District Association)	June of 2027	TBD	Admin: General Manager
CSDA Legislative Days (California Special District Association)	March 31-April 01, 2027	Sacramento, CA	Admin: General Manager PI: PI Manager
CSMFO Annual Conference (California Society of Municipal Finance Officers)	February 01-04, 2027	Sacramento, CA	Finance: Admin Finance Manager, Procurement Specialist, Accounting Technician (2) IT: IT Manager
ERMA Annual Workshop	March of 2027	TBD	Admin: General Manager

ESA Annual Conference (Entomological Society of America)	November 08-11, 2026	Columbus, OH	Lab: Lab Manager, Vector Ecologist (1), Lab Staff (2)
ESA Pacific Branch Annual Meeting (Entomological Society of America)	March 14-17, 2027	Portland, OR	Lab: Lab Manager
ESRI Annual Conference (Environmental Systems Research Institute)	July 13-17, 2026	San Diego, CA	IT: IT Manager
Facilities Expo (Southern California)	April of 2027	Anaheim, CA	Building & Grounds: Facilities Maintenance Technician II
GFOA Annual Conference (Government Finance Officers Association)	June 06-09, 2027	New Orleans, LO	Finance: Admin Finance Manager
GFX Government Fleet	June of 2027	TBD	Fleet: IT Manager, Mechanic II, Mechanic I
GSMCON Annual Conference (Government in Social Media Conference)	May of 2027	TBD	PI: PI Manager, Community Engagement Specialist (1)
ICMA Annual Conference (International City/County Management Association)	October 17-21, 2026	Long Beach, CA	Admin: General Manager
IIMC Annual Conference (International Institute of Municipal Clerks)	May 09-12, 2027	Fort Worth, TX	Admin: Clerk of the Board
iSolved Connect Conference	June of 2027	TBD	HR: HR Risk Manager, HR Specialist, Payroll Administrator
Kaseya Connect Annual Conference (IT Management and Cybersecurity)	April 26-29, 2027	Las Vegas, NV	IT: IT Manager, IT/GIS Analyst, Network Support Specialist
KB4-Con (Security Awareness, Simulated Phishing, Security Strategies)	May of 2027	TBD	IT: IT Manager, Network Support Specialist
LAIF Annual Conference (Local Agency Investment Fund)	February of 2027	TBD	Finance: Admin Finance Manager
LCW Annual Conference (Liebert Cassidy Whitmore)	May of 2027	TBD	HR: HR Risk Manager, HR Specialist
ManageEngine (IT Management and Cybersecurity)	October 08-09, 2026	Orlando, FL	IT: IT Manager, IT/GIS Analyst, Network Support Specialist
MISAC Annual Conference (Municipal Information Systems Association of California)	September 27-30, 2026	TBD	IT: IT Manager, IT/GIS Analyst, Network Support Specialist
MS-ISAC (Cybersecurity)	June of 2027	TBD	IT: IT Manager, IT/GIS Analyst, Network Support Specialist
MVCAC Annual Conference (Mosquito and Vector Control Association of California)	January 24-27, 2027	Universal City, CA	Trustees: Admin: General Manager, Assistant General Manager Finance: Admin Finance Manager HR: HR Risk Manager, Administrative Assistant IT: IT Manager PI: PI Manager, Community Engagement Specialist (2), Education Specialist (1) Lab: Lab Manager, Vector Ecologist (2), Lab Staff (2) *Presentations Required Ops: Ops Manager, Ops Program Coordinator, Field Supervisor (1), Lead Tech (1), VC Tech (1), Administrative Assistant UAS: UAS Coordinator, UAS Operator (1)

MVCAC Legislative Day (Mosquito and Vector Control Association of California)	March of 2027	Sacramento, CA	Trustees: Admin: General Manager PI: PI Manager Lab: Lab Manager, Vector Ecologist (2) Ops: Ops Manager
MVCAC Planning and Committee Meeting (Mosquito and Vector Control Association of California)	December of 2026	TBD	Trustees: Admin: General Manager PI: PI Manager Lab: Lab Manager, Vector Ecologist (1) Ops: Ops Manager
NCUE/IAC Annual Conference (National Conference on Urban Entomology & Invasive Ant Conference)	May of 2027	TBD	Ops: Ops Manager, Field Supervisor (1)
PacVec Annual Conference (Pacific Southwest Center of Excellence in Vector-Borne Diseases)	April of 2027	TBD	Lab: Lab Manager, Vector Ecologist (2)
SOVE (Society for Vector Ecology)	September 20-24, 2026	Yosemite, CA	Lab: Lab Manager, Vector Ecologist (2)
SHRM Annual Conference (Society for Human Resource Management)	June of 2027	TBD	HR: HR Risk Manager, HR Specialist
VCJPA Annual Workshop (Vector Control Joint Powers Agency)	February of 2027	TBD	Admin: General Manager Finance: Admin Finance Manager HR: HR Risk Manager
Various Seminars & Webinars (Districtwide)	TBD	TBD	Trustees: All Trustees Admin: General Manager, Clerk of the Board Misc: All Staff

FINANCE REPORTS

FINANCE

The financial reports show the balance sheet, receipts, and revenue and expenditure reports for the month ending May 31, 2026. The revenue and expenditure report shows that the operating budget expenditure for July 1, 2025 to May 31, 2026, is $15,987,124 total revenue is $13,323,386 resulting in excess revenue over (under) expenditure for the year to May 31, 2026, of ($2,663,738).

THREE YEAR FINANCIALS

	5/31/2026	Budget	5/31/2025	5/31/2024
	Actual	**Budget**	**Actual**	**Actual**
Revenue	**13,323,386**	**13,086,149**	**12,658,678**	**11,986,543**
Expenses				
Payroll	10,063,157	**10,582,478**	9,718,034	8,290,559
Administrative Expe	1,246,112	**1,286,266**	1,018,382	1,020,229
Utility	136,003	**131,362**	138,860	129,359
Operating Expense	2,325,280	**2,810,923**	2,034,967	2,258,652
Contribution to Capital	2,216,572	**2,216,572**	1,735,853	2,212,978
Total Expenses	**15,987,124**	**17,027,601**	**14,646,096**	**13,911,777**
Profit (Loss)	**(2,663,738)**	**(3,941,452)**	**(1,987,418)**	**(1,925,234)**

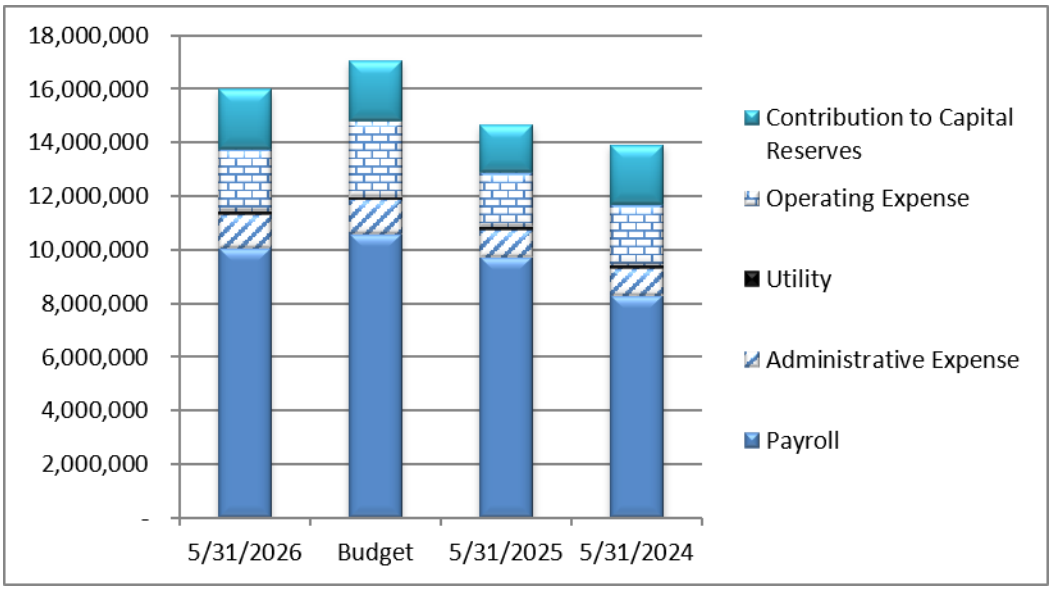


Figure 1 - Three Year Expenditure

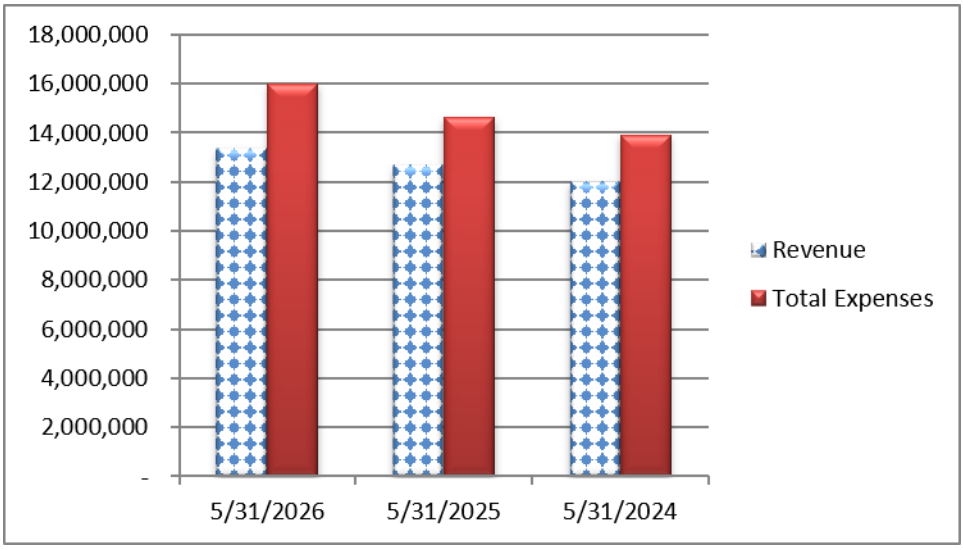


Figure 2 - Three-Year Revenue & Expenditure

THREE-YEAR CASH BALANCE

Cash Balances	5/31/2026	5/31/2025	5/31/2024
Investment Balance	20,822,277	18,804,877	17,566,325
Checking Account	30,329	44,348	57,873
Payroll Account	186,154	298,975	275,168
Petty Cash	2,000	2,000	2,000
Total Cash Balances	**21,040,761**	**19,150,200**	**17,901,366**

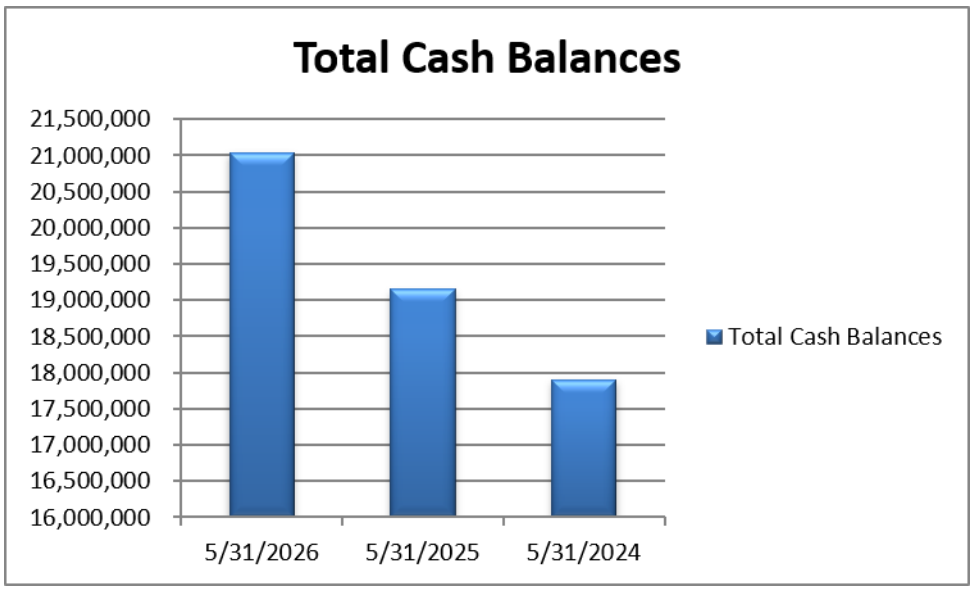


Figure 3 - Cash Balances

DISTRICT INVESTMENT PORTFOLIO 5/31/2026

The District's investment fund balance for the period ending May 31, 2026, is $20,822,277. The portfolio composition is shown in the pie chart. Local Agency Investment Fund (LAIF) accounts for 15.7% of the District's investments; the Riverside County Pooled Investment Fund is 58.7% of the total. The LAIF yield for the end of April was 3.81% and the Riverside County Pooled Investment Fund was 3.82%. This gives an overall weighted yield for District investments of 3.58%.

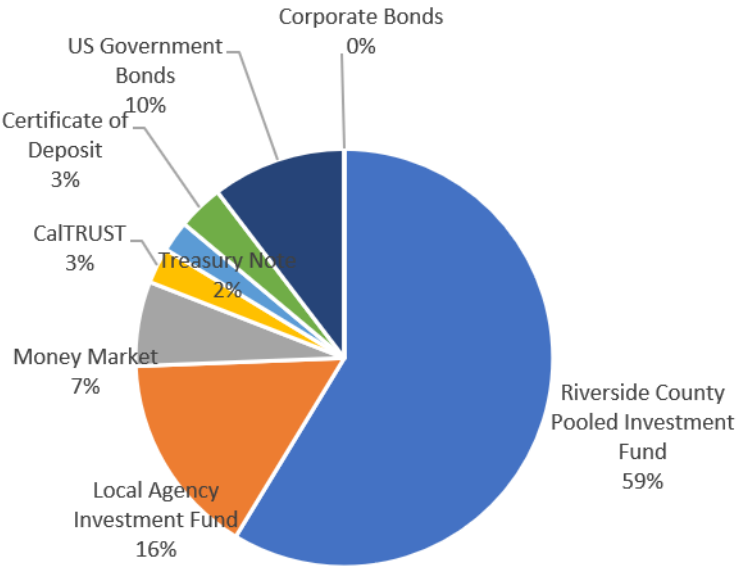


Figure 4 - Investment Portfolio 5/31/26

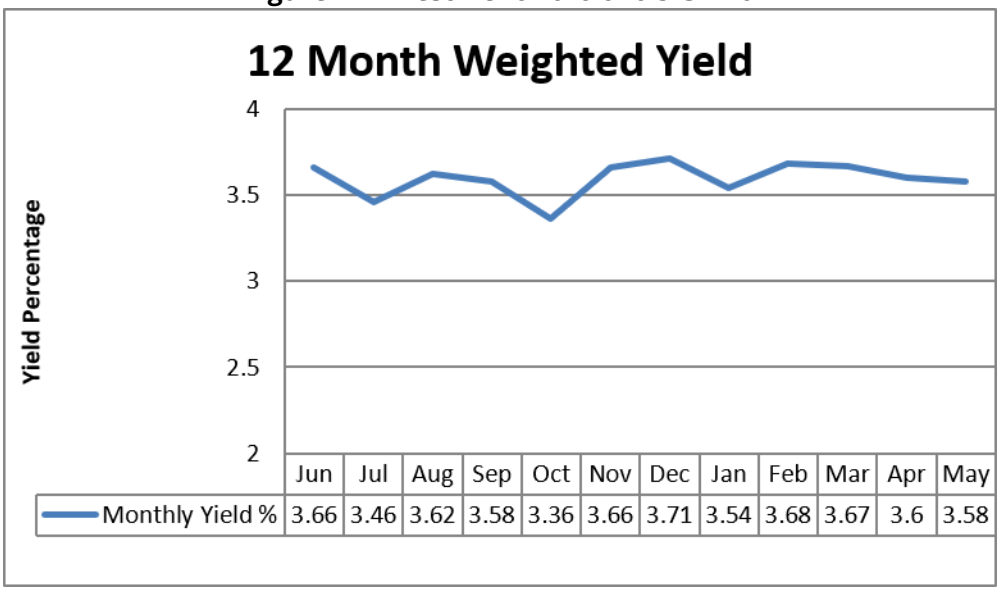


Figure 5 - District Investments Weighted Yield

Coachella Valley Mosquito and Vector Control District
FINANCES AT A GLANCE
ALL FUNDS COMBINED
For the Month Ended May 31, 2026

	Beginning of the Month	Change During the Month	End of the Month
INVESTMENTS	20,181,020	641,258	20,822,277
CASH	234,406	(15,922)	218,483
INVESTMENTS & CASH	20,415,425	625,335	21,040,761
RESTRICTED ASSETS	426,380	-	426,380
CURRENT ASSETS	2,152,774	950,236	3,103,010
FIXED ASSETS	8,744,009	-	8,744,009
OTHER ASSETS	6,078,429	-	6,078,429
TOTAL ASSETS	37,817,017	1,575,571	39,392,588
TOTAL LIABILITIES	5,726,206	142,866	5,869,072
TOTAL DISTRICT EQUITY	32,090,811	1,432,705	33,523,516
TOTAL LIABILITIES & EQUITY	37,817,017	1,575,571	39,392,588

RECEIPTS		$ 1,883,953
CASH DISBURSEMENTS		
Payroll	$ 622,314	
General Admin	$ 636,304	
Total Cash Disbursements		$ (1,258,618)
NON-CASH ENTRIES:		$ 950,236
Accrual Modifications - Changes in A/P, A/R & Pre-paid insurance		
Change during Month - Excess of Cash over Receipts & Non-Cash Adjustments		$ 1,575,571

CVMVCD

Cash Journal - deposits

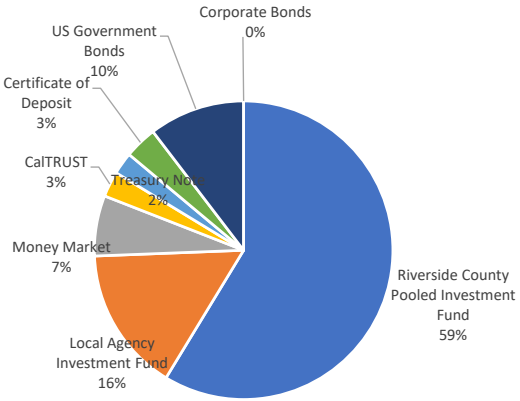
From 5/1/2026 Through 5/31/2026

Effective ...	Transaction Description	Deposits	Payee/Recipient Name
5/31/2026	May Receipts	158,739.12	Riverside County
5/31/2026	May Receipts - AMCA Refund	500.00	AMCA
5/31/2026	May Receipts - Bank Interest	571.97	California Bank & Trust
5/31/2026	May Receipts - Current Secured	1,724,141.47	Riverside County
Report Total		1,883,952.56	

COACHELLA VALLEY MOSQUITO AND VECTOR CONTROL DISTRICT
INVESTMENT FUND BALANCES AS OF MAY 31, 2026

INSTITUTION	IDENTIFICATION	Issue Date	Maturity Date	YIELD	General Fund	Thermal Capital Fund	Capital Equipment Replacement Fund	Capital Facility Replacement Fund	Capital Project Insectory Fund		BALANCE
LAIF	Common Investments			3.81%	1,865,699	53,292	99,312	908,306	338,718	$	3,265,326
Riverside County	Funds 51105 & 51115			3.82%	6,983,725	199,483	371,746	3,399,989	1,267,895	$	12,222,838
CalTRUST	Medium Term Fund			3.89%	329,652	9,416	17,547	160,489	59,848	$	576,953
CA Bank & Trust	Market Rate			0.70%	774,977	22,136	41,252	377,293	140,697	$	1,356,356
Pershing	Market Rate			0.80%	3,309	95	176	1,611	601	$	5,792
US Treasury Securities	Treasury Bill	11/24/2025	6/23/2026	3.31%		82,376	153,511	1,404,017	523,574	$	2,163,478
US Treasury Securities	Treasury Note	4/23/2026	10/22/2026	3.45%		18,936	35,289	322,754	120,359	$	497,338
ALL IN American Cred	Certificate of Deposit	1/18/2023	1/19/2027	4.55%		9,561	17,817	162,956	60,768	$	251,102
Austin Telco	Certificate of Deposit	1/27/2023	1/27/2028	4.75%		8,805	16,409	150,072	55,964	$	231,249
Alaska USA Fed Cr	Certificate of Deposit	3/8/2023	3/8/2028	4.60%		9,589	17,870	163,439	60,948	$	251,846
	Total Investments				9,957,362	413,689	770,930	7,050,925	2,629,371	**$**	**20,822,277**

PORTFOLIO COMPOSITION AS OF MAY 31, 2026
WEIGHTED YIELD 3.58%



In compliance with the California Code Section 53646; the Finance Administrator of the Coachella Valley Mosquito and Vector Control District hereby certifies that sufficient liquidity and anticpated revenue are available to meet the District's budgeted expenditure requirements for the next six months.

Investments in the report meet the requirements of the Coachella Valley Mosquito and Vector Control District's adopted investment policy

Respectfully submitted

NOTED AND APPROVED

CVMVCD
Statement of Revenue and Expenditures
May 31, 2026

		Annual Budget	YTD Budget	YTD Actual	YTD Budget Variance	Current Period Budget	Current Period Actual	Current Period Variance	Annual Budget Variance	Percent Annual Budget
Revenues										
4000	Property Tax - Current Secured	5,659,455	5,410,627	**5,472,987**	62,359	1,831,914	**1,836,783**	4,869	(186,468)	(3)%
4010	Property Tax - Curr. Supplmntl	67,646	0	**71,744**	71,744	0	**33,250**	33,250	4,098	6 %
4020	Property Tax - Curr. Unsecured	270,201	262,230	**305,279**	43,049	0	**0**	0	35,078	13 %
4030	Homeowners Tax Relief	37,846	37,846	**31,202**	(6,644)	5,736	**12,848**	7,112	(6,644)	(18)%
4070	Property Tax - Prior Supp.	53,097	0	**53,980**	53,980	0	**0**	0	883	2 %
4080	Property Tax - Prior Unsecured	12,532	0	**0**	0	0	**0**	0	(12,532)	(100)%
4090	Redevelopment Pass-Thru	9,566,505	4,783,253	**4,481,958**	(301,295)	0	**0**	0	(5,084,547)	(53)%
4520	Interest Income - LAIF/CDs	275,000	206,250	**491,535**	285,285	0	**572**	572	216,535	79 %
4530	Other Miscellaneous Receipts	63,000	57,750	**40,167**	(17,583)	5,250	**500**	(4,750)	(22,833)	(36)%
4551	Benefit Assessment Income	2,437,709	2,328,193	**2,374,534**	46,341	1,025,536	**1,023,029**	(2,507)	(63,175)	(3)%
	Total Revenues	18,442,991	13,086,149	**13,323,386**	237,237	2,868,437	**2,906,982**	38,545	(5,119,605)	(28)%
Expenditures										
Payroll Expenses										
5101	Payroll - FT	7,358,139	6,744,961	**6,491,437**	253,524	613,178	**581,933**	31,245	866,703	12 %
5102	Payroll Seasonal	97,186	90,496	**0**	90,496	6,690	**0**	6,690	97,186	100 %
5103	Temporary Services	14,900	13,658	**2,327**	11,331	1,242	**0**	1,242	12,573	84 %
5105	Payroll - Overtime Expense	38,080	34,907	**54,880**	(19,974)	3,173	**6,659**	(3,486)	(16,800)	(44)%
5150	CalPERS State Retirement	1,419,867	1,340,476	**1,321,988**	18,488	79,391	**152,524**	(73,133)	97,879	7 %
5155	Social Security Expense	443,686	406,800	**403,188**	3,611	36,886	**36,719**	168	40,498	9 %
5165	Medicare Expense	103,332	94,742	**95,966**	(1,225)	8,591	**8,587**	3	7,366	7 %
5170	Cafeteria Plan	1,601,674	1,468,202	**1,338,207**	129,995	133,473	**136,397**	(2,924)	263,468	16 %
5172	Retiree Healthcare	240,000	220,000	**187,383**	32,617	20,000	**18,725**	1,275	52,617	22 %
5180	Deferred Compensation	149,689	137,215	**139,487**	(2,272)	12,474	**11,904**	570	10,202	7 %
5195	Unemployment Insurance	33,802	31,022	**28,294**	2,728	2,781	**292**	2,489	5,508	16 %
	Total Payroll Expenses	11,500,357	10,582,478	**10,063,157**	519,321	917,879	**953,740**	(35,861)	1,437,200	12 %

CVMVCD
Statement of Revenue and Expenditures
May 31, 2026

		Annual Budget	YTD Budget	YTD Actual	YTD Budget Variance	Current Period Budget	Current Period Actual	Current Period Variance	Annual Budget Variance	Percent Annual Budget
Administrative Expenses										
5250	Tuition Reimbursement	20,000	18,333	**15,705**	2,628	1,667	**631**	1,036	4,295	21 %
5300	Employee Incentive	15,000	13,750	**12,134**	1,616	1,250	**195**	1,055	2,866	19 %
5302	Wellness	10,600	9,717	**2,827**	6,889	883	**22**	862	7,773	73 %
5305	Employee Assistance Program	2,500	2,292	**1,880**	412	208	**637**	(429)	620	25 %
6000	Property & Liability Insurance	334,375	305,260	**409,085**	(103,825)	29,115	**37,538**	(8,423)	(74,710)	(22)%
6001	Workers' Compensation Insurance	239,126	215,032	**188,225**	26,807	24,094	**23,037**	1,057	50,901	21 %
6050	Dues & Memberships	68,283	60,911	**48,977**	11,934	4,772	**712**	4,059	19,306	28 %
6060	Reproduction & Printing	54,400	49,867	**30,858**	19,009	4,533	**10,106**	(5,572)	23,542	43 %
6065	Recruitment/Advertising	4,000	3,667	**3,007**	660	333	**124**	209	993	25 %
6070	Office Supplies	24,255	22,334	**14,393**	7,941	1,921	**416**	1,505	9,862	41 %
6075	Postage	8,200	7,517	**5,233**	2,284	683	**48**	635	2,967	36 %
6080	Computer & Network Systems	13,399	12,282	**0**	12,282	1,117	**0**	1,117	13,399	100 %
6085	Bank Service Charges	500	458	**812**	(353)	42	**55**	(13)	(312)	(62)%
6090	Local Agency Formation Comm.	3,000	3,000	**3,720**	(720)	0	**0**	0	(720)	(24)%
6095	Professional Fees	128,400	119,033	**67,572**	51,462	9,367	**(198)**	9,565	60,828	47 %
6100	Attorney Fees	83,000	76,083	**48,268**	27,816	6,917	**4,708**	2,209	34,732	42 %
6106	HR Risk Management	8,000	7,333	**5,470**	1,863	667	**0**	667	2,530	32 %
6110	Conference Expense	62,050	59,775	**52,234**	7,541	2,275	**0**	2,275	9,816	16 %
6115	In-Lieu	13,200	12,100	**1,100**	11,000	1,100	**0**	1,100	12,100	92 %
6120	Trustee Support	7,600	6,967	**6,550**	416	633	**940**	(307)	1,050	14 %
6200	Meetings Expense	14,760	13,530	**7,362**	6,168	1,230	**36**	1,194	7,398	50 %
6210	Promotion & Education	56,300	51,608	**46,623**	4,985	4,692	**6,207**	(1,515)	9,677	17 %
6220	Public Outreach Advertising	151,000	138,417	**124,283**	14,133	12,583	**5,306**	7,277	26,717	18 %
6500	Benefit Assessment Expenses	84,000	77,000	**149,793**	(72,793)	7,000	**0**	7,000	(65,793)	(78)%
Total Administrative Expenses		1,405,948	1,286,266	**1,246,112**	40,155	117,081	**90,521**	26,561	159,836	11 %
Utilities										
6400	Utilities	140,544	128,832	**133,402**	(4,570)	11,712	**6,833**	4,879	7,142	5 %
6410	Telecommunications	2,760	2,530	**2,601**	(71)	230	**237**	(7)	159	6 %
Total Utilities		143,304	131,362	**136,003**	(4,641)	11,942	**7,070**	4,872	7,301	5 %

CVMVCD
Statement of Revenue and Expenditures
May 31, 2026

		Annual Budget	YTD Budget	**YTD Actual**	YTD Budget Variance	Current Period Budget	**Current Period Actual**	Current Period Variance	Annual Budget Variance	Percent Annual Budget
Operating										
7000	Uniform Expense	63,294	58,259	**48,092**	10,168	5,035	**7,392**	(2,358)	15,202	24 %
7050	Safety Expense	51,826	47,507	**47,092**	415	4,319	**2,262**	2,057	4,734	9 %
7100	Physican Fees	6,000	5,500	**6,957**	(1,457)	500	**627**	(127)	(957)	(16)%
7150	IT Communications	94,500	86,625	**76,173**	10,452	7,875	**8,816**	(941)	18,327	19 %
7200	Household Supplies	3,000	2,750	**3,114**	(364)	250	**0**	250	(114)	(4)%
7300	Repair & Maintenance	47,000	43,083	**56,279**	(13,196)	3,917	**12,024**	(8,107)	(9,279)	(20)%
7310	Maintenance & Calibration	7,900	7,900	**13,237**	(5,337)	0	**0**	0	(5,337)	(68)%
7350	Permits, Licenses & Fees	9,792	8,976	**8,919**	57	816	**640**	176	873	9 %
7360	Software Licensing	43,355	43,355	**46,419**	(3,064)	3,335	**2,855**	480	(3,064)	(7)%
7400	Vehicle Parts & Supplies	72,800	66,733	**57,279**	9,455	6,067	**9,080**	(3,014)	15,521	21 %
7420	Offsite Vehicle Maint & Repair	20,378	18,680	**16,287**	2,393	1,698	**6,098**	(4,400)	4,091	20 %
7450	Equipment Parts & Supplies	34,920	32,077	**19,150**	12,927	2,843	**2,858**	(15)	15,770	45 %
7500	Small Tools Furniture & Equip	6,500	5,958	**4,514**	1,444	542	**1,655**	(1,113)	1,986	31 %
7550	Lab Supplies & Expense	66,625	60,858	**42,077**	18,781	6,942	**4,382**	2,560	24,548	37 %
7570	Aerial Pool Surveillance	25,000	22,917	**20,877**	2,040	2,083	**20,877**	(18,794)	4,123	16 %
7575	Surveillance	122,810	119,101	**106,179**	12,922	3,709	**682**	3,027	16,631	14 %
7600	Staff Training	165,369	155,314	**144,788**	10,526	10,055	**7,397**	2,658	20,581	12 %
7650	Equipment Rental	13,500	12,375	**3,703**	8,672	1,125	**0**	1,125	9,797	73 %
7675	Contract Services	222,507	210,526	**184,677**	25,848	16,231	**13,517**	2,714	37,830	17 %
7680	Cloud Computing Services	159,859	152,638	**130,826**	21,812	8,181	**8,755**	(574)	29,033	18 %
7700	Motor Fuel & Oils	159,800	146,483	**103,789**	42,694	13,317	**13,652**	(335)	56,011	35 %
7750	Field Supplies	21,000	19,250	**14,081**	5,169	1,750	**507**	1,243	6,919	33 %
7800	Control Products	851,039	836,404	**734,266**	102,138	7,083	**5,766**	1,318	116,773	14 %
7850	Aerial Applications	80,000	73,333	**63,943**	9,390	6,667	**0**	6,667	16,057	20 %
8415	Capital Outlay	101,530	93,069	**30,338**	62,731	8,461	**0**	8,461	71,192	70 %
8510	Research Projects	250,000	229,167	**224,407**	4,760	20,833	**12,218**	8,615	25,593	10 %
9000	Contingency Expense	275,000	252,083	**117,817**	134,266	22,917	**208**	22,709	157,183	57 %
Total Operating		2,975,304	2,810,923	**2,325,280**	485,642	166,550	**142,267**	24,283	650,024	22 %

UNAUDITED

CVMVCD
Statement of Revenue and Expenditures
May 31, 2026

		Annual Budget	YTD Budget	**YTD Actual**	YTD Budget Variance	Current Period Budget	**Current Period Actual**	Current Period Variance	Annual Budget Variance	Percent Annual Budget
Contribution to Capital Reserves										
8900	Transfer to other funds	2,418,078	2,216,572	**2,216,572**	0	201,507	**201,507**	0	201,507	8 %
Total Contribution to Capital Reserves		2,418,078	2,216,572	**2,216,572**	0	201,507	**201,507**	0	201,507	8 %
Total Expenditures		18,442,991	17,027,600	**15,987,124**	1,040,476	1,414,958	**1,395,104**	19,854	2,455,867	13 %
Net revenue over/(under) expenditures		0	(3,941,451)	**(2,663,738)**	1,277,713	1,453,478	**1,511,877**	58,399		

CVMVCD

Balance Sheet - Unposted Transactions Included In Report

As of 5/31/2026

		Current Year
	Assets	
	Cash and Investments	
1000	Cash - Investments	20,822,277.29
1012	Cash - Clearing Account	300.00
1016	Petty Cash	500.00
1017	Petty Cash Checking	1,500.00
1035	CB&T General Checking	30,028.77
1036	CB&T Payroll Checking	186,154.49
	Total Cash and Investments	21,040,760.55
	Restricted Cash Assets	
1040	Restricted Assets - Pension Stabilization CEPPT	426,380.05
	Total Restricted Cash Assets	426,380.05
	Current Assets	
1050	Accounts Receivable	1,038,035.58
1051	Lease Payments Receivable	31,250.22
1080	Interest Receivable	116,263.77
1085	Inventory	641,544.59
1166	Prepaid IT Service	0.05
1167	Prepaid Research Proposals	85,525.58
1168	Prepaid Expenses	60,574.77
1169	Deposits	1,129,815.33
	Total Current Assets	3,103,009.89
	Fixed Assets	
1170	Construction in Progress	349,239.02
1201	Leased Copier Asset #1 Ops Copier	45,754.67
1300	Equipment/Vehicles	2,336,533.48
1310	Computer Equipment	838,443.06
1311	GIS Computer Systems	301,597.91
1320	Office Furniture & Equipment	1,389,749.63
1330	Land	417,873.30
1335	Oleander Building	5,665,861.83

CVMVCD

Balance Sheet - Unposted Transactions Included In Report

As of 5/31/2026

		Current Year
1336	Signage	23,651.39
1340	Structures & Improvements	3,751,399.28
1341	Bio Control Building	6,923,882.74
1342	Bio Control Equip/Furn	43,986.77
1398	Amortization Leased Equipment	(9,150.93)
1399	Accumulated Depreciation	(13,334,812.78)
	Total Fixed Assets	8,744,009.37
	Other Assets	
1520	Resources to Be Provided	3,624,327.41
1525	Deferred Outflows of Resources	1,650,537.00
1530	Deferred Outflows of Resources - OPEB	803,564.00
1900	Due to/from	0.12
	Total Other Assets	6,078,428.53
	Total Assets	39,392,588.39
	Liabilities	
	Short-term Liabilities	
	Accounts Payable	
2015	Credit Card Payable	70,932.08
2020	Accounts Payable	507,644.91
2185	Employee Dues	(374.54)
2401	Leased Copier Asset # 1	37,078.13
	Total Accounts Payable	615,280.58
	Total Short-term Liabilities	615,280.58
	Long-term Liabilities	
2100	Pollution Remediation Obligation	2,100,000.00
2200	Net Pension Liability	1,304,728.00
2210	Deferred Inflows of Resources	228,562.00
2230	Deferred Inflows - OPEB	928,198.00
2235	Deferred Inflow of Resources - Leases	31,250.22
2300	Net OPEB Liaibility	(351,251.00)

CVMVCD

Balance Sheet - Unposted Transactions Included In Report

As of 5/31/2026

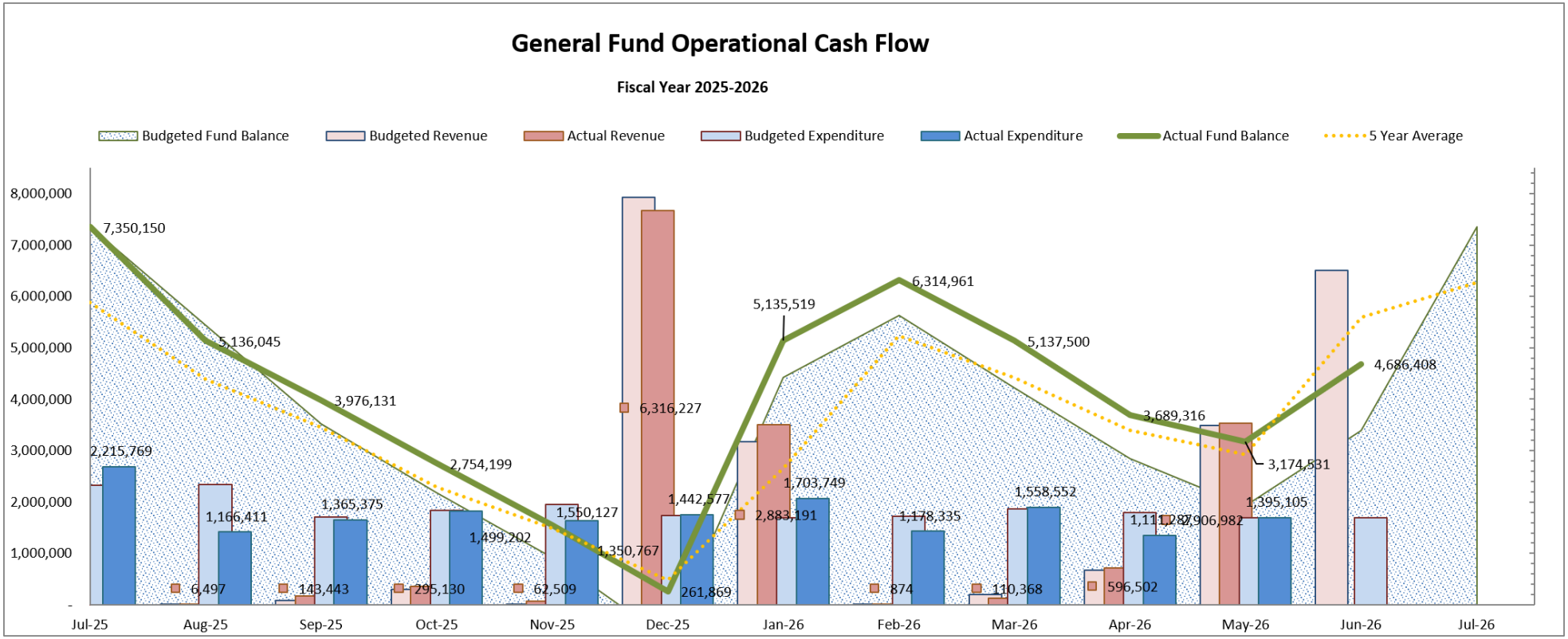
		Current Year
2500	Compensated Absences Payable	1,012,304.19
	Total Long-term Liabilities	5,253,791.41
	Total Liabilities	5,869,071.99
	Fund Balance	
	Restricted Fund Balance	
3901	Restricted Fund Balance - Pension Stabilization	426,380.05
	Total Restricted Fund Balance	426,380.05
	Non Spendable Fund Balance	
3920	Investment in Fixed Assets	10,673,170.66
3945	Reserve for Prepaids & Deposit	1,853,432.51
3960	Reserve for Inventory	641,544.59
	Total Non Spendable Fund Balance	13,168,147.76
	Committed Fund Balance	
3965	Public Health Emergency	6,063,874.00
	Total Committed Fund Balance	6,063,874.00
	Assigned Fund Balance	
3910	Reserve for Operations	7,350,150.00
3955	Thermal Remediation Fund	365,108.00
3970	Reserve for Equipment	594,506.25
3971	Reserve for Facility & Vehicle Replacement	6,794,714.69
	Total Assigned Fund Balance	15,104,478.94
	Unassigned Fund Balance	
3900	Fund Equity	165,069.11
3999	P&L Summary	702,886.56
	Total Unassigned Fund Balance	867,955.67
	Current YTD Net Income	
		(2,107,320.02)
	Total Current YTD Net Income	(2,107,320.02)
	Total Fund Balance	33,523,516.40

CVMVCD

Balance Sheet - Unposted Transactions Included In Report

As of 5/31/2026

	Current Year
Total Liabilities and Net Assets	39,392,588.39



The **General Fund Operational Cash Flow** graph outlines the District's working capital for the fiscal year July 1, 2025, to June 30, 2026. The beginning Operational Cash Flow fund balance is $7.3 million and the ending Operational Cash Flow fund balance is $7.3 million. Expenditure is approximately divided by 12 equal months, with some differences accounting for the seasonality of the program for example control products and seasonal employment which are greater in the mosquito breeding season. July expenditure is higher than average because of the prefunding lump sum of $0.5 million for CalPERS unfunded liability. The budget also accounts for prepayments. The revenue follows a different pattern, Riverside County distributes the property tax revenue in January and May with advancements in December and April. The *shaded area* represents the **Budgeted Operational Cash Flow Fund Balance** which has a formula of (beginning) **Fund Operational Cash Flow Balance** plus **Revenue** minus **Expenditure**. The *green line* represents the **Actual Operational Cash Flow Fund Balance** and is graphed against the *shaded area* **Budgeted Operational Cash Flow Fund Balance**. The *three-year average* Fund Operational Cash Flow Balance is the orange dash line.

The graph shows $7.3 million **Operational Cash Flow Fund Balance** plus total Revenue for July 1 to May 31, 2026, of $13,323,386 minus total Expenses of $15,987,129 is $4,686,407. Revenue shows a positive variance of $237,237 expenditure shows a positive variance of $1,040,476, overall positive variance of $1,277,713. For planning purposes, the District is under budget. As long as the green line stays out of the shaded area the District is within budget, as of May 31, 2026, the line is outside the shaded area.

Government Finance Officers Association

Certificate of Achievement for Excellence in Financial Reporting

Presented to

Coachella Valley Mosquito and Vector Control District California

For its Annual Comprehensive Financial Report
For the Fiscal Year Ended

June 30, 2025

and issued to the public 163 days after the fiscal year end

Christopher P. Morrill

Executive Director/CEO

	Coachella Valley Mosquito and Vector Control District **Staff Report**	**July 14, 2026**

Agenda Item: Informational Item

Approval of Resolution 2026-12 Biennial Adoption of a Conflict-of-Interest Code **—**
Megan Scarborough-Eckel, Clerk of the Board

Background:

The Political Reform Act requires every local government agency to review its Conflict of Interest Code biennially each even-numbered year. Local government agencies are required to submit to the County Board of Supervisors a notice indicating whether or not an amendment is necessary.

The amendments are 1) Adding the title of the Assistant General Manager position.

With the approval of this Resolution by the County Board of Supervisors, all previously adopted District Conflict of Interest Codes are rescinded. The District's amended Code is not effective until it has been approved by the Board of Supervisors.

Staff Recommendation:
Staff recommends approval of Resolution 2026-12 Adopting a Conflict of Interest Code for the District.

Attachments:

- Resolution 2026-12
- Appendix "A"

RESOLUTION NO. 2026-12

A RESOLUTION OF THE BOARD OF TRUSTEES OF THE COACHELLA VALLEY MOSQUITO AND VECTOR CONTROL DISTRICT BIENNIAL ADOPTION OF CONFLICT OF INTEREST CODE

WHEREAS, the Coachella Valley Mosquito and Vector Control District ("District") is a special district and local government agency required by Government Code Section 87300 to promulgate a Conflict of Interest Code; and

WHEREAS, the Political Reform Act (Government Code Section 81000, et seq.) requires the District to adopt and promulgate a conflict of interest code; and

WHEREAS, the Fair Political Practices Commission ("FPPC") has adopted a provision at Title 2, section 18730 of the California Code of Regulations which sets forth the terms of a standard model conflict of interest code which may be incorporated by reference so as to constitute the adoption of a Conflict of Interest Code by the District; and

WHEREAS, the FPPC requires that every local agency review its Conflict of Interest Code every even-numbered year to determine whether amendment of its code is necessitated by changed circumstances; and

WHEREAS, the District's Board of Trustees desires to amend the District's Conflict of Interest Code by removing from the list of positions designated as being subject to the Code, the position of the Public Information Officer and adding the position of Public Information Manager.

NOW, THEREFORE, THE BOARD OF TRUSTEES OF THE COACHELLA VALLEY MOSQUITO AND VECTOR CONTROL DISTRICT DOES HEREBY RESOLVE AS FOLLOWS:

Section 1. Recitals.

The recitals set forth above are true and correct.

Section 2. Recession.

That all previously adopted resolutions approving the District's Conflict of Interest Code are hereby rescinded.

Section 3. Code Adoption.

The District hereby adopts, by this reference, the model conflict of interest code promulgated by the FPPC as Regulation 18730 of Title 2 of the California Code of Regulations ("FPPC Model Conflict of Interest Code") as the Conflict of Interest Code for the Coachella Valley Mosquito and Vector Control District ("District Conflict of Interest Code"). A copy of the FPPC Model Conflict of Interest Code effective as of the date of adoption of this resolution is attached as Exhibit A. Future amendments to the FPPC Model Conflict of Interest Code approved by the Fair Political Practices Commission are hereby incorporated into the District Conflict of Interest Code.

Section 4. Disclosure Categories and Designated Positions.

(a) Those officials, employees and consultants designated in the attached Appendix A - Disclosure Categories and Designated Positions ("Appendix A"), incorporated herein by this reference as though fully set forth, shall be subject to the provisions of the District Conflict of Interest Code pursuant to the applicable disclosure categories.

(b) Any consultant who performs the ongoing duties of any of the designated positions shall be assigned the same disclosure categories as that position, subject to the following limitation: The District General Manager may determine in writing that a particular consultant, although a designated position, is hired to perform a range of duties that is limited in scope and thus is not required to fully comply with the disclosure requirements in this section. Such written determination shall include a description of the consultant's duties and, based upon that description, a statement of the extent of disclosure requirements. The District General Manager's determination shall be filed with the District's Clerk of the Board and is a public record and shall be retained for public inspection in the same manner and location as the District Conflict of Interest Code.

Section 5. Filing.

Pursuant to Title 2, section 18730(b)(4) of the California Code of Regulations, those officials, employees and consultants designated in Appendix A shall file statements of economic interest with the Clerk of the Board to whom the Board of Trustees of the Coachella Valley Mosquito and Vector Control District hereby delegates the authority to carry out the duties of filing officer. The annual statement of economic interests shall be duly filed no later than April 1 of each calendar year.

Section 6. Prohibition Concerning Prospective Employment.

No District employee who is designated in Appendix A shall make, participate in making, or otherwise use their official position to influence any governmental decision directly relating to any person with whom they are negotiating or has any arrangement concerning, prospective employment. For purposes of the District Conflict of Interest Code, the term "person" includes any natural person, corporation or other form of business entity and extends to any of its agents.

Section 7. Ethics Training.

Those employees designated in Appendix A are required to attend ethics training as set forth at Government Code section 53235.

Section 8. Violations.

Violations of the District Conflict of Interest Code by any employee designated in Appendix A may result in discipline up to and including termination. Alleged violations of this Code by an employee shall be processed as otherwise provided in the District's personnel policies and procedures.

Section 9. Transmission to the County.

The Board of Trustees hereby authorizes the Clerk of the Board to transmit a copy of this Resolution to the Board of Supervisors of the County of Riverside ("Board of Supervisors") for their approval as the code reviewing body for the District.

Section 10. Effective Date.

This Resolution shall take effect upon its approval by the Board of Supervisors.

[REMAINDER OF PAGE WAS INTENTIONALY LEFT BLANK]

Section 11. Certification.

The Clerk of the Board shall certify as to the adoption of this Resolution and shall cause the same to be processed in the manner required by law.

PASSED, ADOPTED, AND APPROVED by the Board of Trustees of the Coachella Valley Mosquito and Vector Control District this 14th day of July 2026.

_____
Benjamin Guitron, IV, President
Board of Trustees

ATTEST:

_____
Megan Scarborough-Eckel, Clerk of the Board

APPROVED AS TO FORM:

_____
Lena D. Wade, General Counsel

REVIEWED:

_____
Jeremy Wittie, MS, CSDM, General Manager

EXHIBIT "A"
FPPC MODEL CONFLICT OF INTEREST CODE
Effective as of July 14, 2026

[Attached]

APPENDIX A

APPENDIX TO THE CONFLICT OF INTEREST CODE FOR THE COACHELLA VALLEY MOSQUITO AND VECTOR CONTROL DISTRICT

II. Disclosure Categories

The following categories of reportable economic interests are established:

Category 1: Persons in this category shall disclose on FPPC Form 700, Schedule B, all reportable interests in real property located within the jurisdictional boundaries of the District, or within two miles of the District's jurisdictional boundaries, or within two miles of land located outside the District's jurisdictional boundaries which is owned or used by the District..

Category 2: Persons in this category shall disclose on FPPC Form 700, Schedules C and D, all reportable income, loans and business positions.

Category 3: Persons in this category shall disclose on FPPC Form 700, Schedules A-1 and A-2, all reportable investments.

Category 4: Persons in this category shall disclose on FPPC Form 700, Schedules E and F, all reportable gifts and travel payments.

II. Designated Positions

A "Designated Position" is an officer, employee, member or consultant of the District whose position is designated in the District Conflict of Interest Code because the position entails the making or participation in the making of governmental decisions that may foreseeably have a material effect on any financial interest as set forth at Government Code section 82019.

Any Designated Employee whose position is listed in the following table shall be required to file a Statement of Economic Interest with the Board of Supervisors of the County of Riverside, the District's code reviewing body.

DESIGNATED POSITION	DISCLOSURE CATEGORY(IES)
General Manager	1, 2, 3, 4
Assistant General Manager	1, 2, 3, 4
Administrative Finance Manager	1, 2, 3, 4
Information Technology Manager	1, 2, 3, 4

Human Resources Risk Manager	1, 2, 3, 4
Public Information Manager	1, 2, 3, 4
Laboratory Manager	1, 2, 3, 4
Operations Manager	1, 2, 3, 4
Clerk of the Board	1, 2, 3, 4
Consultants who perform the ongoing duties of any Designated Position	To be determined by the General Manager per the District Conflict of Interest Code

	Coachella Valley Mosquito and Vector Control District **Staff Report**	**July 14, 2026**

Agenda Item: Informational Item

District Travel for the Board of Trustees

Background:

CSDA Annual Conference and Exhibitor Showcase – Palm Desert, CA
(August 24-27, 2026)

Requests to attend must be made by July 22, 2026, VIA EMAIL:
mscarborougheckel@cvmosquito.org

Strategic Business Plan Alignment:
Goal 2 – Governance and HR – A strong culture supports the Board and staff team that grows in skill, teamwork, and experience.
Objective 2.4 – Establish conditions that ensure the Board of Trustees are engaged and productive and possess a deep understanding of the District.

SEMI-ANNUAL RESEARCH REPORTS

	Coachella Valley Mosquito and Vector Control District **Staff Report**	**July 14, 2026**

Agenda Item: Informational Item

Semi-annual research reports from the Mount Sinai School of Medicine; University of California, Irvine; University of California, Riverside; and the USDA for 2026 **— Jennifer A. Henke, M.S., BCE, Laboratory Manager**

Background:

The Research Department (Department 600) supports cooperative work with the University of California system and other research institutions for conducting mosquito-borne disease and vector research, optimizing control measures for vectors, and understanding vector biology. The proposals include examining control interventions to predict when to better time future applications; understanding how weather impacts mosquito activity at fine scales; examining whether our environment will impact the survival of irradiated male mosquitoes; determining how mosquitoes move between different parts of the valley; and examining control methods for red imported fire ants. Four of the proposals was approved by the Research Committee and later approved by the full Board of Trustees at the October 2025 Board Meeting. The proposal from Dr. David Oi was approved in 2024 and has been extended to complete the work. The research program is part of the 2025 Strategic Plan objective 5.2.

As described in District's Research Funding Policy and Procedure, researchers are to provide semiannual progress reports. The reports are from the following proposals:

1. **Icahn School of Medicine at Mount Sinai (Dr. N. DeFelice)**
   - West Nile virus or St. Louis encephalitis: what determines annual transmission in Coachella Valley, California
2. **UC Irvine (Dr. D. Parker)**
   - From data to deployment: Modeling *Aedes aegypti* risk to guide sterile insect releases
3. **UC Riverside (Dr. K Chandrasegaran)**
   - Assessing the impact of heat stress and radiation dosage on the effectiveness of sterile insect technique (SIT) males in the Coachella Valley
4. **UC Riverside (Dr. B. Nyman)**
   - Neural networks reveal heterogenous surveillance site contributions to predicting spatiotemporal trends in arbovirus systems
5. **USDA (Dr. D. Oi)**
   - Determining a fast-acting treatment for rapid elimination of fire ant colonies

Staff Recommendation:
To accept the reports as presented

Exhibits:
Reports from Dr. DeFelice, Dr. Parker, Dr. Chandrasegaran Dr. Nyman, and Dr. Oi

Strategic Business Plan Alignment:
Goal 5.2 – Validate and improve vector control programs through applied scientific research.

West Nile virus or St. Louis Encephalitis: what determines annual transmission in Coachella Valley, California?

Nicholas DeFelice, Rishi Kowalski, Aman Patel, Matthew J. Ward

Narrative.

Recently, we developed an environmentally informed real-time forecast system for West Nile virus (WNV) mosquito infection rates in Coachella that captures both space and time predictions.[2-5] We adapted our previously developed forecast systems for WNV and applied them to St. Louis encephalitis virus (SLEV) by tailoring them to SLEV's highly similar vector-virus-host ecology. Integrating real-time environmental and mosquito monitoring data in a biologically informed mathematical model that describes the interactions between vector and host allows for more certainty in developing SLEV spatial/temporal risk predictions. We coalesced monitoring data with real-time environmental modeling data. This provides fine spatial resolution of the variability in physical environmental factors (e.g., temperature and hydrology), all of which influence mosquito development, WNV/SLEV transmission dynamics, and the potential risk of human spillover infections. We leveraged statistical techniques and environmental monitoring to develop spatially refined risk maps of WNV and SLEV and validation of the forecast predictions.

Aim 1. Evaluate the association between the previous year's viral transmission (WNV and/or SLEV) and early season viral transmission and the magnitude of the outbreak, given fluctuations in environmental conditions that influence viral amplification. We will use a multi-model inference system that combines early-season environmental conditions with the previous year's infection rates to generate a statistically informed model to make real-time, spatially refined predictions of both WNV and SLEV infection rates. Hypothesis: Avian WNV and SLEV infection produce cross-reactive immune responses conveying partial to complete protection from infection by the other in bird hosts. The preceding year's late-season viral activity will influence the early-season transmission of the following season. Similarly, the virus, magnitude of early season transmission, and avian immunity developed will directly influence transmission following the high heat events in summer, characteristic of the Coachella Valley.

Aim 2. Determine which birds are associated with the first detection of WNV and SLEV in the Coachella Valley. The bird population in Coachella Valley demonstrates seasonality as does viral transmission (Figures 1 & 2). We will use eBird data and mosquito viral testing with Weighted Quantile Sum (WQS) regression analysis to determine which avian species or combination of species is associated with first transmission of WNV or SLEV and potential introduction. Hypotheses: Resident and migratory birds of the Coachella Valley congregate near resources and/or leave the valley in search of cooler temperatures and water returning when temperatures are milder. Congregating around water resources results in viral amplification and leaving the valley may expose birds to other viral transmission and infection before returning to the valley and introducing that virus into the Coachella Valley.

Aim 3. Integrate models from Aims 1 & 2 to predict the bi-modal transmission cycles of WNV and SLEV in the Coachella Valley. Risk of both, WNV and SLEV infected mosquitoes will be added to our previously developed web-based platform to communicate the spatial and temporal risk of WNV and SLEV transmission along with the ecological process driving increased risk.

Aim 1. Evaluate the association between the previous year's viral transmission (WNV and/or SLEV) and early season viral transmission and the magnitude of the outbreak, given fluctuations in environmental conditions that influence viral amplification. We will use a multi-model inference system that combines early-season environmental conditions with the previous year's infection rates to generate a statistically informed model to make real-time, spatially refined predictions of both WNV and SLEV infection rates. Hypothesis: Avian WNV and SLEV infection produce cross-reactive immune responses conveying partial to complete protection from infection by the other in bird hosts. The preceding year's late-season viral activity will influence the early-season transmission of the following season. Similarly, the virus, magnitude of early season transmission, and avian immunity developed will directly influence transmission following the high heat events in summer, characteristic of the Coachella Valley.

Further work is needed to fully understand the relationship of vector infection rates with SLEV, WNV, and the interaction between SLEV and WNV at the abatement district level (Figures 1 to 3). It is highly likely these two viruses interact both in the mosquito vector and avian hosts and that to accurately forecast either, we will need to incorporate both in the same model. High infection rates for WNV were seen in 2019 and 2024, then following the high WNV season SLEV was seen the following year (Figure 1).

We generated environmental groupings from a combination of hydrology and meteorological conditions to identify the most relevant combination of environmental conditions for viral amplification of WNV (Figure 2) and SLEV (Figure 3. We are using these environmental conditions to develop an inference system that combines meteorological and hydrological conditions over time with viral activity (WNV or SLEV). Mosquito trapping data for *Cx. tarsalis* were used to calculate the annual WNV and SLEV infection rate using the maximum likelihood estimate (MLE) at the North American Land Data Assimilation System (NLDAS) grid cells (~13 km^2) level (Figures 2 and 3).

We employed a multi-model average prediction of different combinations of these meteorological and hydrological data. This multi-model inference system provides a formal probabilistic interpretation across the disparate individual model predictions. This allows us to determine which models align with the ensemble, indicating an association between environmental conditions, previous viral activity, and the increased risk of WNV or SLEV infection rates. This is the same method as used to develop the WNV forecast system.[5] We found that the combination of a cooler and drier winter, followed by a wetter and warmer spring, and a cooler-than-normal summer was most predictive of the prevalence of West Nile-positive mosquitoes in the Coachella Valley (Figure 4).[5] When applying this multi-model approach on SLEV, we saw that a higher infection rate of WNV the previous season alongside a warm January into a cool, wet spring, and a dry, cool summer, was associated with an increased risk of SLEV (Figure 5). More work is being done to validate the SLEV multi-model inference system, but it looks promising, as the leave-one-year-out validation from 2016 to 2025 showed sensitivities and specificities of 84% and 51%, respectively.

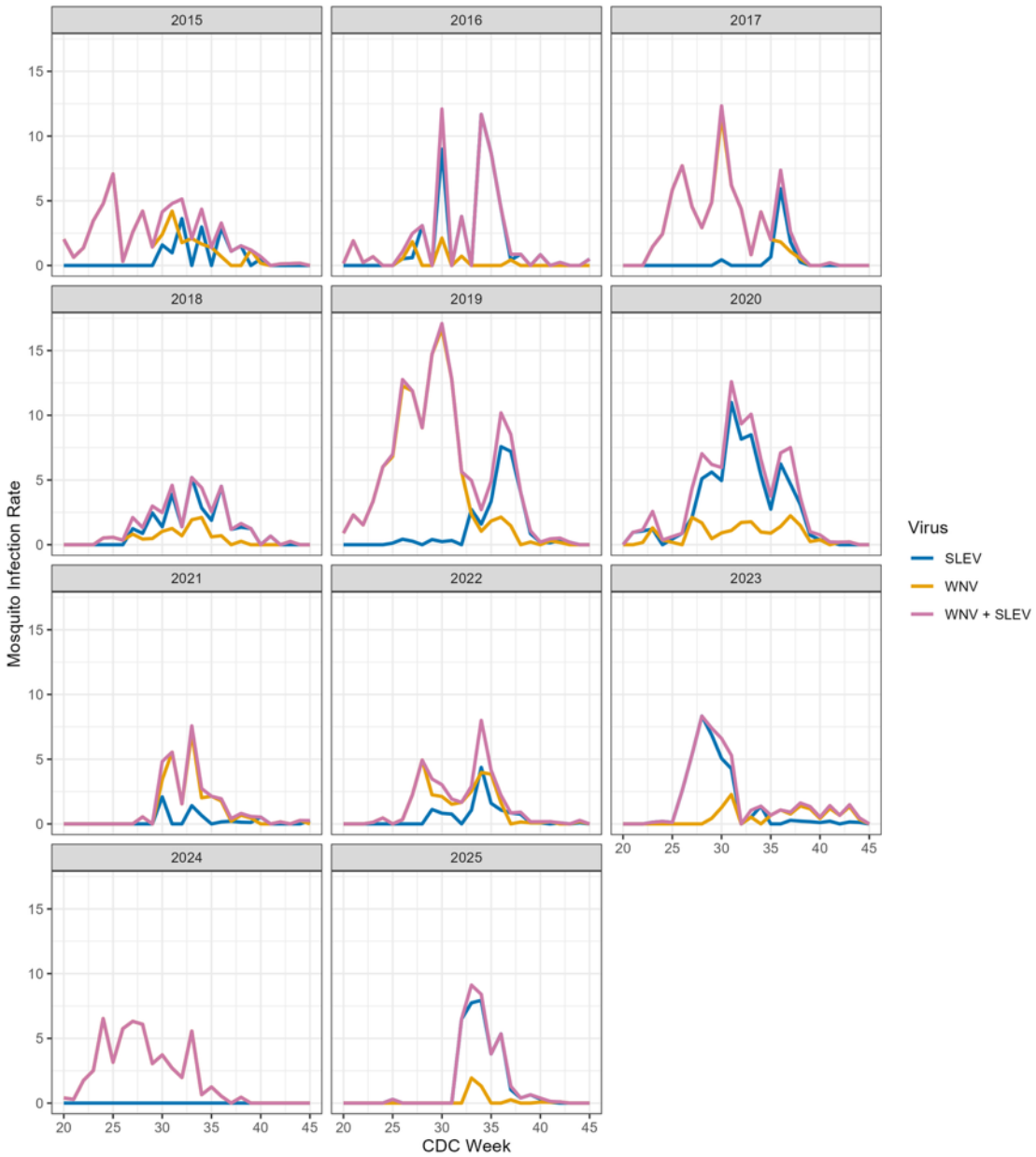


Figure 1. Weekly mosquito infection rates per 1,000 tested for WNV (orange), SLEV (blue), and WNV + SLEV (magenta) (2015 - 2025).

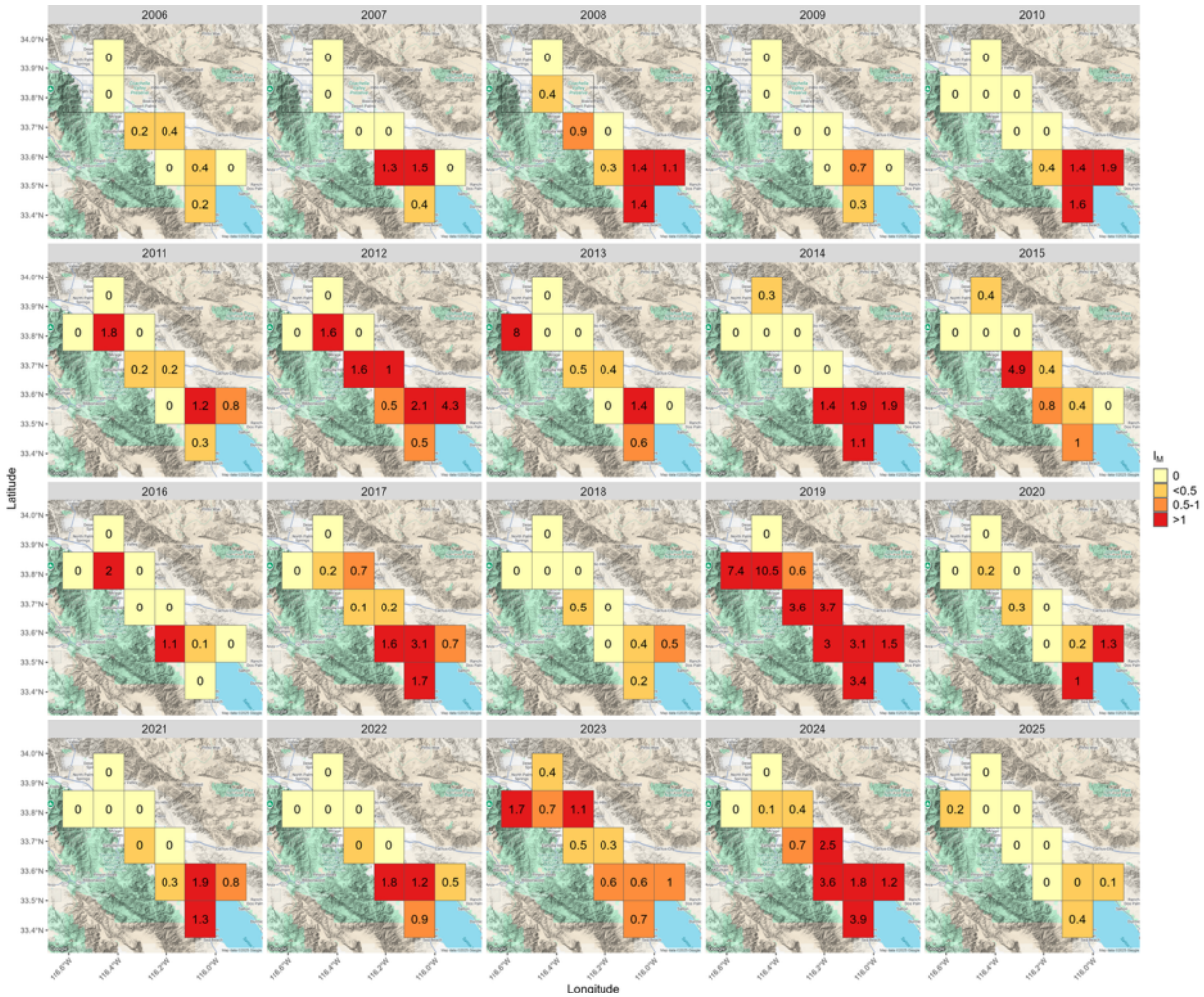


Figure 2. Annual WNV infection rate per 1,000 *Cx. tarsalis* and *Cx. quinquefasciatus* mosquitoes tested (I_M) for 2006-2024 at the NLDAS scale (13 km^2 grid) in Coachella Valley, CA.

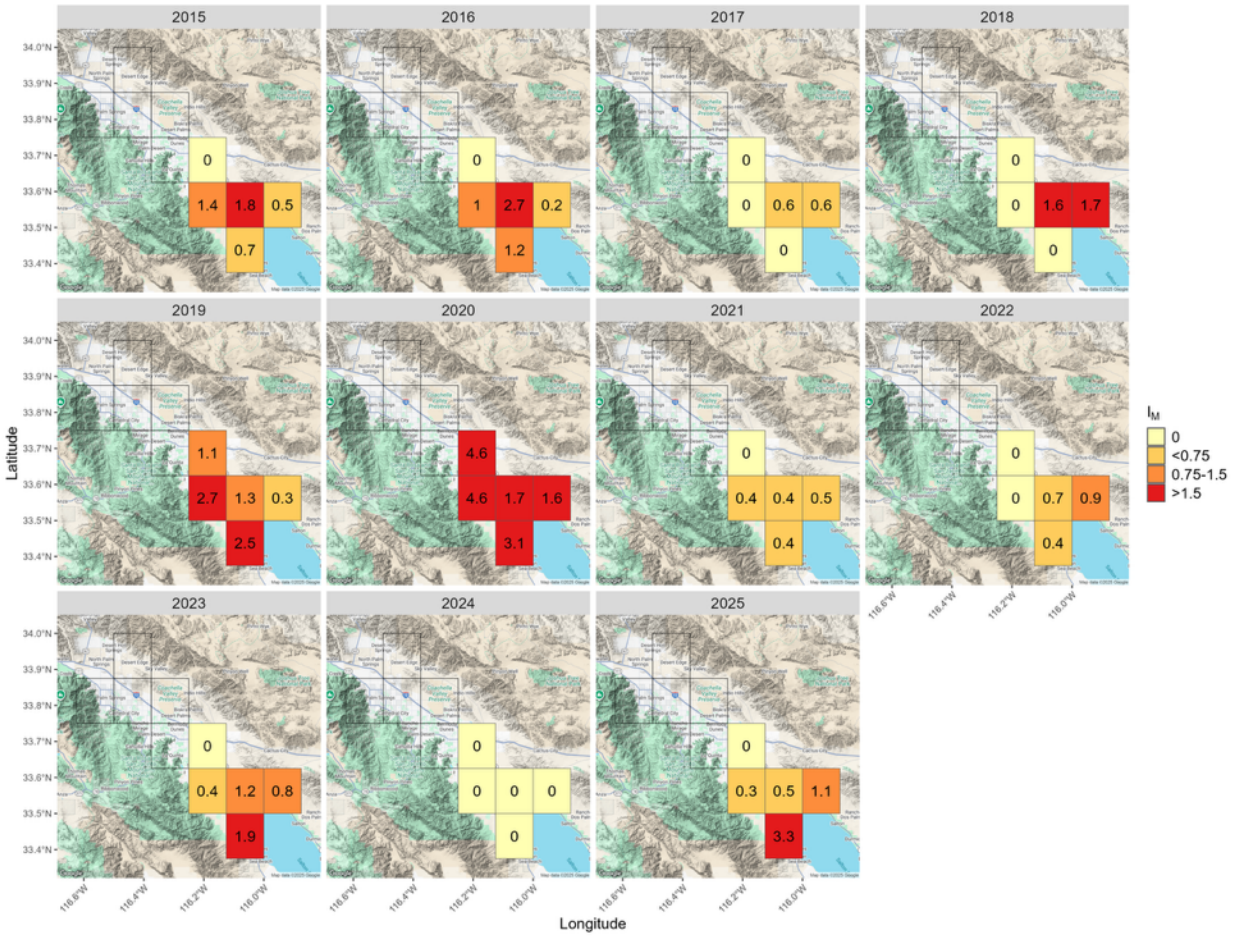


Figure 3. Annual SLEV infection rate per 1,000 *Cx. tarsalis* mosquitoes tested (I_M) for 2015-2024 at the NLDAS scale (13 km^2 grid) in Coachella Valley, CA.

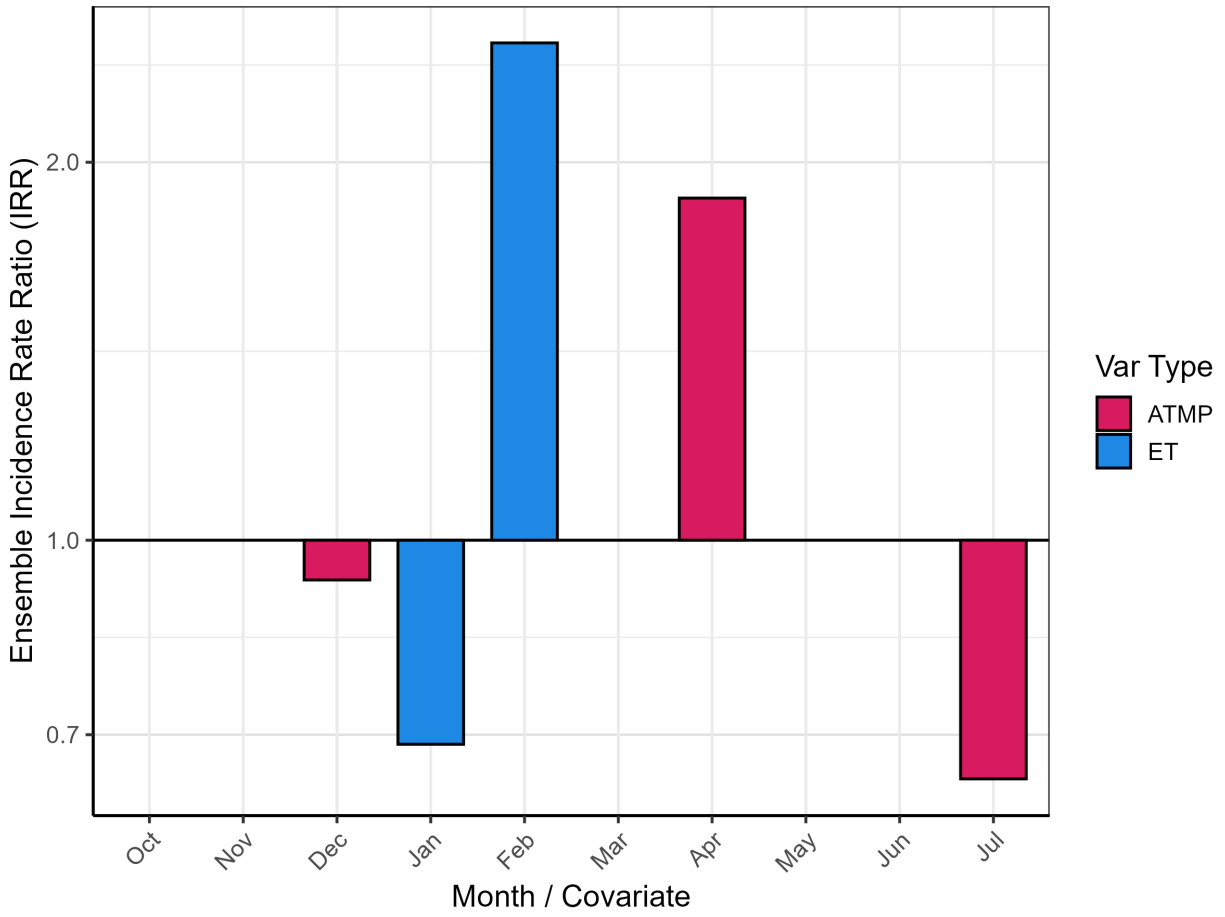


Figure 4. Ensemble incidence rate ratios (IRR) of EVP (blue) and ATMP (pink) to the ensemble model associated with the estimated change of WNV I_M at the monthly NLDAS grid scale (0.125° or ~ 13 km^2) for 2006 - 2021. Bars indicate the weight and direction of deviation of EVP and ATMP in the ensemble from the average that causes an increase in I_M, e.g., an increase in February EVP by 1 standard deviation relative to historical averages is associated with a ~150% increase in WNV infection rates (IRR = ~2.5).

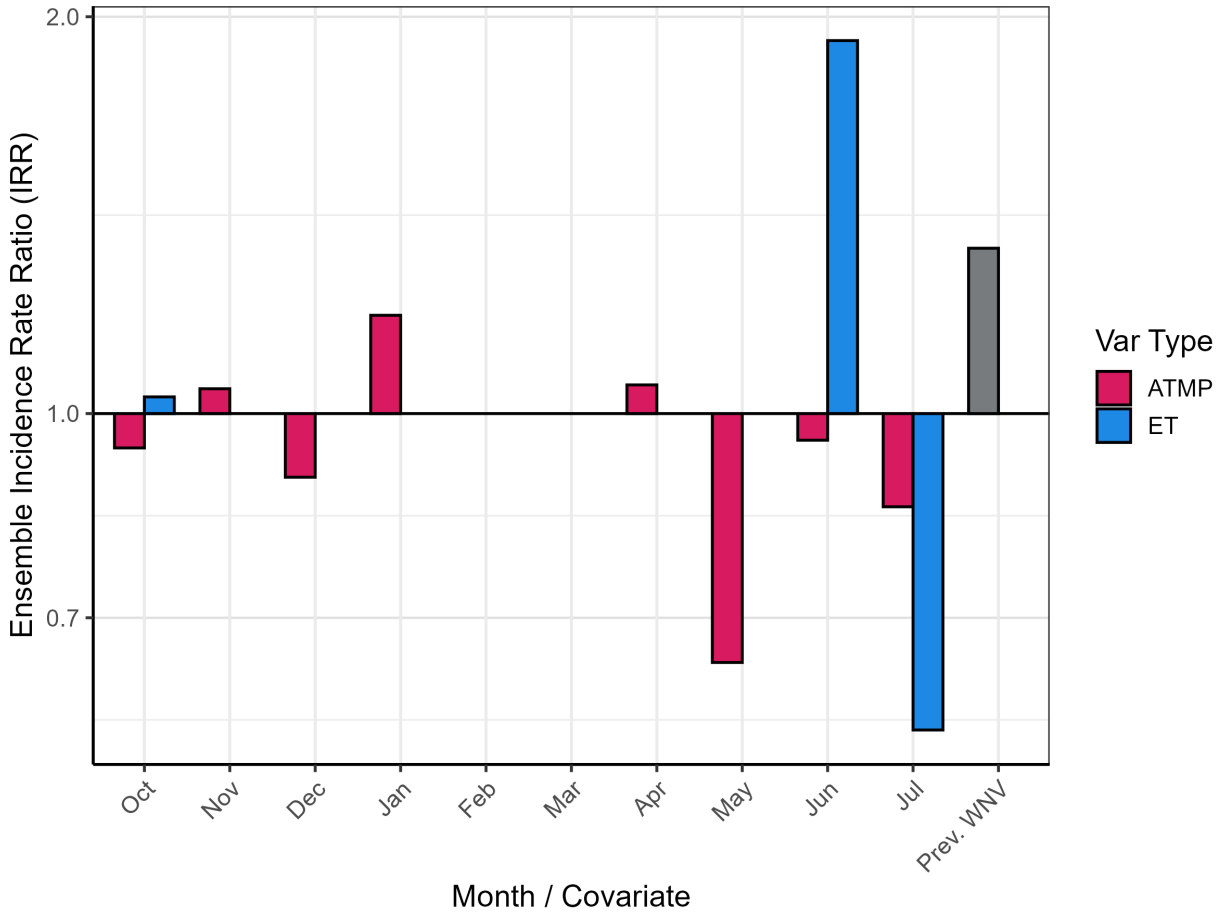


Figure 5. Ensemble incidence rate ratios (IRR) of EVP (blue), ATMP (pink), and previous WNV (gray) to the ensemble model associated with the estimated change of SLEV I_M at the monthly NLDAS grid scale (0.125° or ~ 13 km^2) for 2016 - 2025. Bars indicate the weight and direction of deviation of EVP and ATMP in the ensemble from the average that causes an increase in I_M, e.g., an increase in previous season's WNV by 1 per 1000 tested is associated with a ~33% increase in SLEV infection rates (IRR = ~1.33).

Real-time *multi-model inference system* forecast for 2026. We applied an environmentally informed ensemble to forecast the annual *Culex* mosquito WNV, and SLEV infection rates at a 13 km^2 resolution for 2026 in the Coachella Valley, CA. This forecast was generated using data through May of 2026 using a multi-model inference system that was calibrated with data from 2006 to 2021 for West Nile virus and 2015 to 2025 for SLEV. Forecasts used environmental data from October 2026 to May 2026. The multi-model inference system was generated using 4-parameter models, which accounted for all monthly combinations of evapotranspiration and atmospheric temperature from October to July. We assume all values after May follow the climatology. Real-time infection rate ensemble forecasts for WNV in *Culex* mosquitoes, SLEV in *Culex tarsalis*, and both WNV and SLEV in *Culex tarsalis* are shown in Figures 6 & 7, respectively. These forecasts were generated for Coachella Valley, CA, at the NLDAS (13x13km) cell level using annual mosquito infections and monthly environmental conditions. Cells were defined as high-risk when infection rates surpassed the 75th percentile of historical infections. Current forecasts predict that no cells will be above the 75th percentile in 2026.

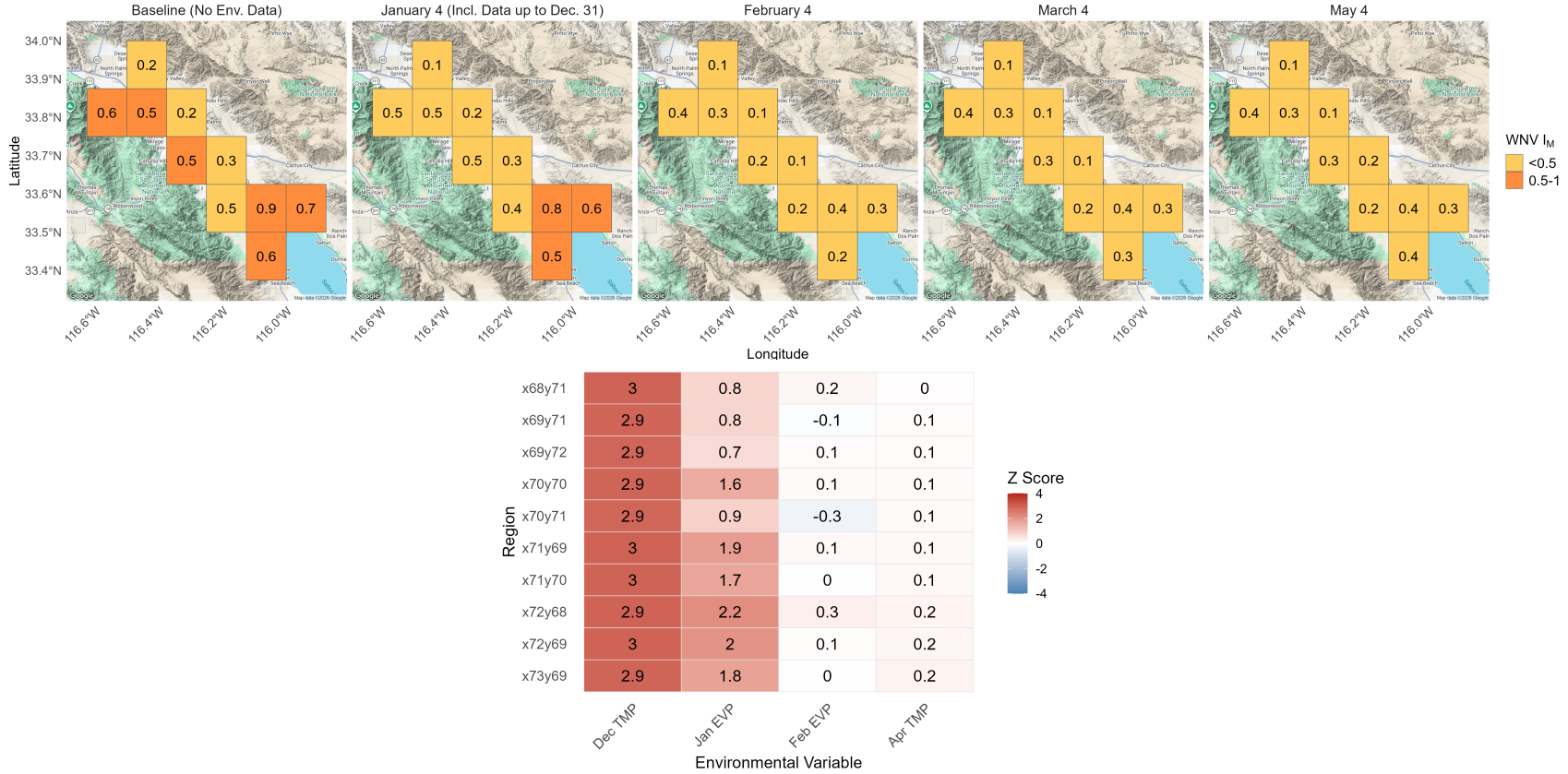


Figure 6. A 13km^2 ensemble forecast of annual WNV mosquito infection rate per 1,000 *Cx. tarsalis* and *Cx. quinquefasciatus* mosquitoes tested (I_M) for 2026, generated on October 4th, 2026, January 4th, February 4th, March 4th, and June 4th, 2026, using NLDAS environmental data. Top: forecasted infection rate. Bottom: normalized environmental input. Top left panel: baseline forecast assuming an average year of evapotranspiration (EVP) and temperature (TMP) for all cells. Each following panel is the forecast updated to include the environmental data corresponding to key environmental drivers identified by the ensemble. E.g. the January 4th forecast includes December temperature, and the February 4 forecast includes January evapotranspiration. Z Scores indicate the weight of the corresponding environmental variable.

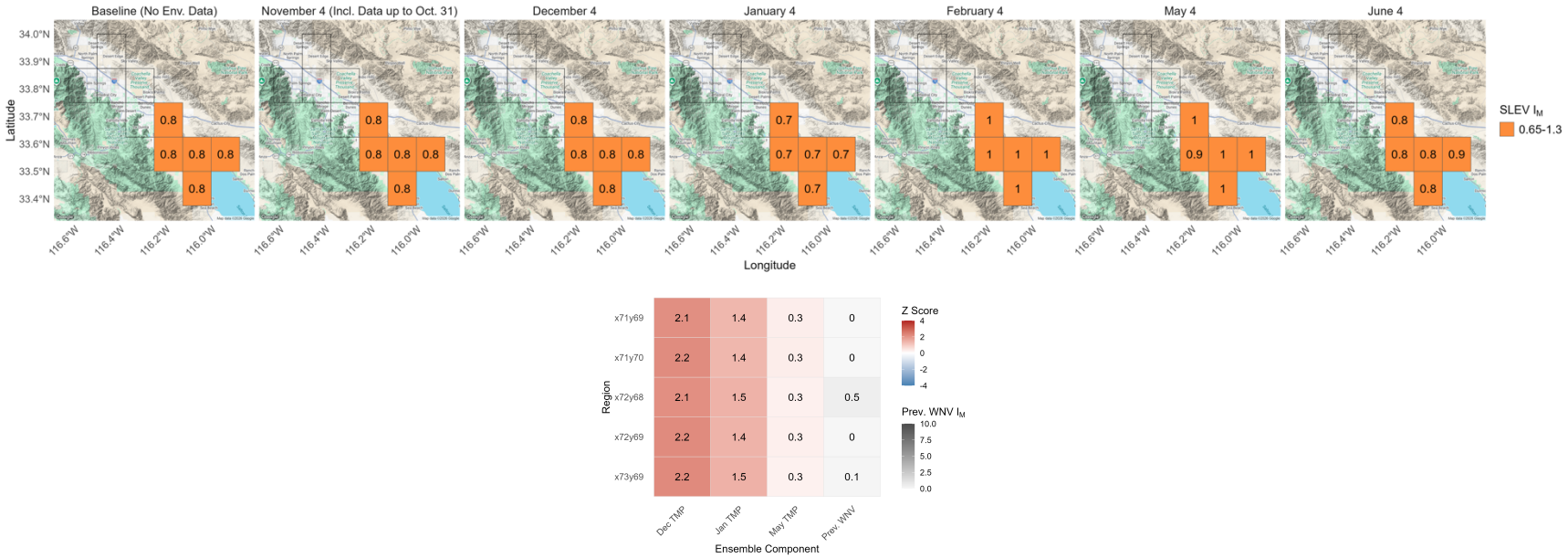


Figure 7. A 13km^2 ensemble forecast of annual SLEV mosquito infection rate per 1,000 *Cx. tarsalis* mosquitoes tested (I_M) for 2026, generated on October 4th, November 4th, December 4th, January 4th, February 4th, May 4th, and June 4th, 2026, using NLDAS environmental data and previous season WNV infection rates. All grid cells are expected to be below the historical 75th percentile.

In addition to the multi-model inference system, we developed an abatement-wide forecasting system using a data assimilation method (EAKF). Using the temperature-forced forecast model that accounts for mosquito lifespan, we predict a 36% chance that mosquito infection rates will peak within ±1 week of 08-Aug-2026 (week 31, 5 weeks in the future) and an 11% chance that peak mosquito infection rates will fall within ±25% of 5 infected mosquitoes per 1,000 tested. The model also predicts 2 human cases (50% PI: 0 - 15) will be reported during 2025 and in the next 4 weeks a 50% chance of between 0 and 1 human WNV cases.

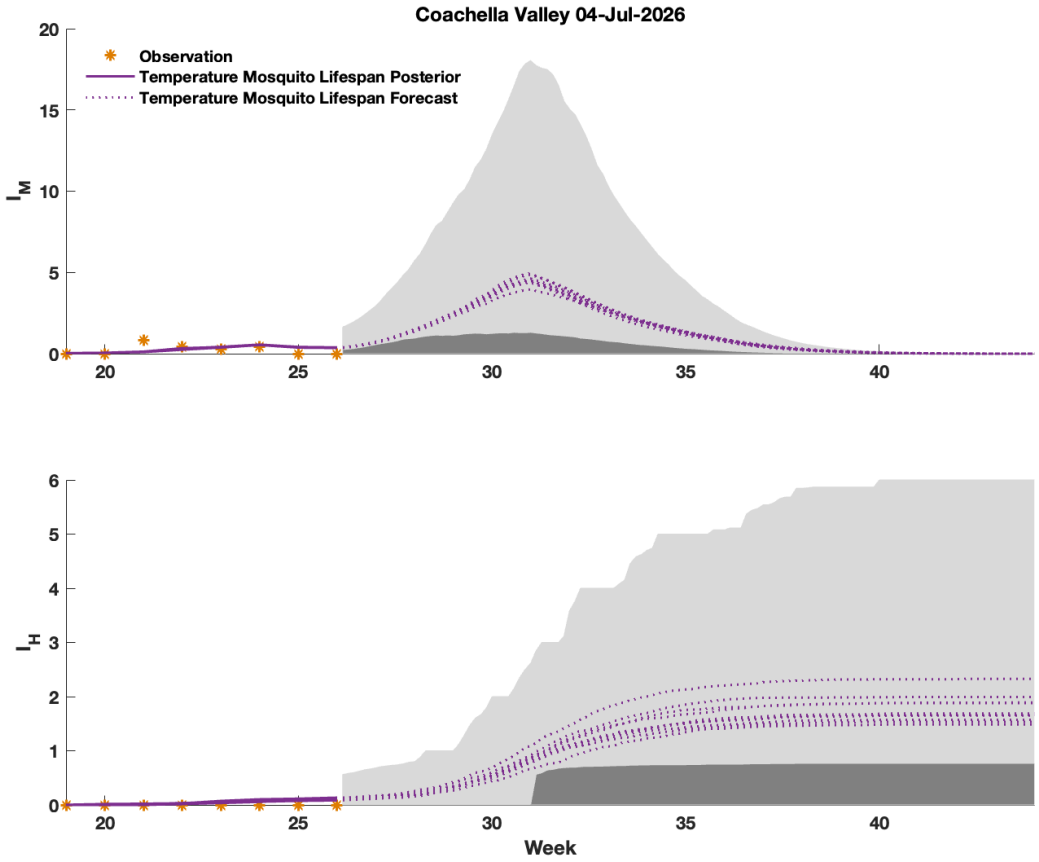


Figure 8. Temperature-forced mosquito lifespan forecasts of mosquito infection rates, I_M, and human WNV cases, I_H. The solid purple lines are the ensemble mean posterior distribution and the dotted purple lines are the ensemble mean forecasts. The grey area is the spread of the ensemble forecast (light grey represents the area between the 10th and 90th percentiles and the darker grey area represents the spread between the 25th and 75th percentiles, i.e. the 50% prediction interval); gold *'s are data points assimilated into the model.

Aim 2. Determine which birds are associated with the first detection of WNV and SLEV in the Coachella Valley. The bird population in Coachella Valley demonstrates seasonality as does viral transmission (Figures 1 & 2). We will use eBird data and mosquito viral testing with Weighted Quantile Sum (WQS) regression analysis to determine which avian species or combination of species is associated with first transmission of WNV or

SLEV and potential introduction. Hypotheses: Resident and migratory birds of the Coachella Valley congregate near resources and/or leave the valley in search of cooler temperatures and water returning when temperatures are milder. Congregating around water resources results in viral amplification and leaving the valley may expose birds to other viral transmission and infection before returning to the valley and introducing that virus into the Coachella Valley.

We are in the initial stages of putting together the migratory bird database for Coachella Valley Figure 9. This database will consist of resident birds, such as sparrows, along with migratory shorebirds. Work will continue over the next 6 months to identify which birds or combination of birds are most associated with positive trap locations.

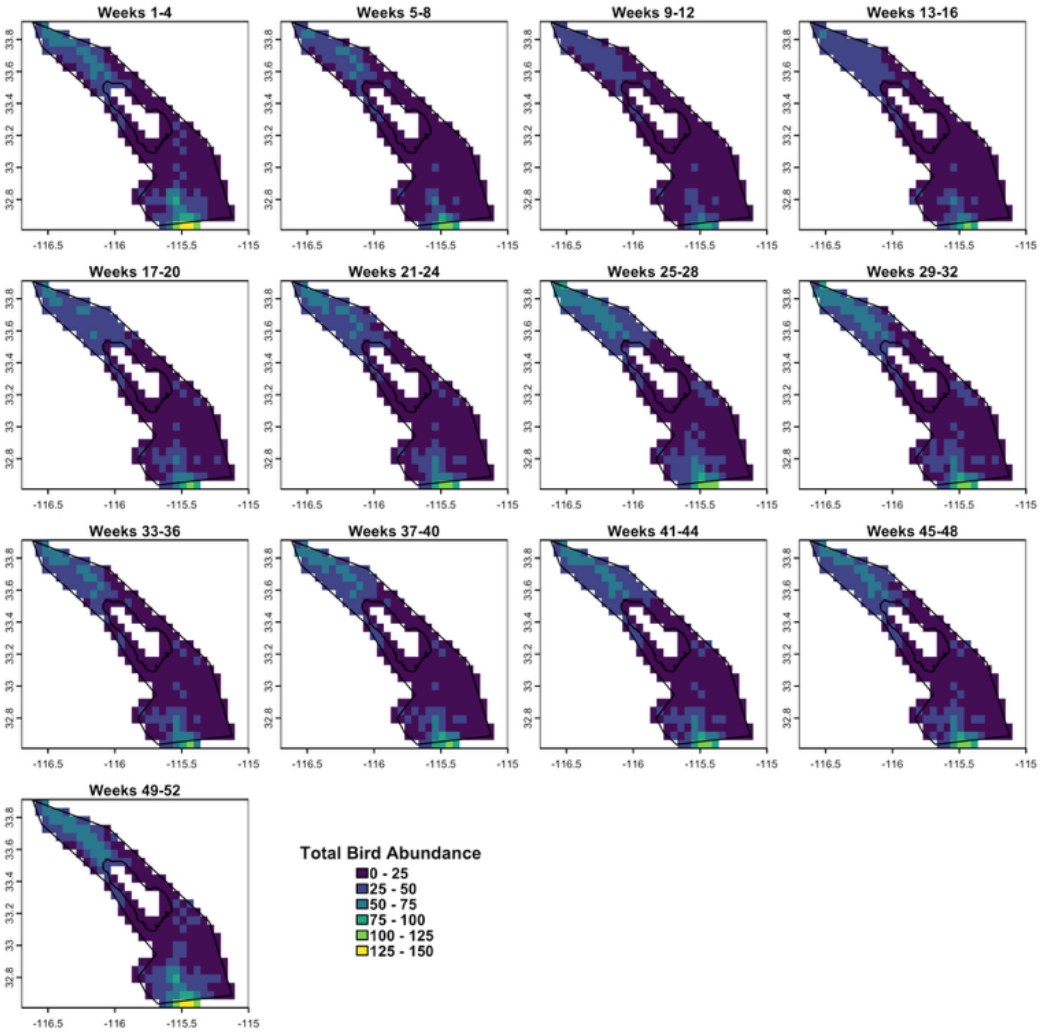


Figure 9. eBird monthly overall relative abundance of avian hosts surrounding the Salton Sea for 2022.

Aim 3. Integrate models from Aims 1 & 2 to predict the bi-modal transmission cycles of WNV and SLEV in the Coachella Valley. Risk of both, WNV and SLEV infected mosquitoes will be added to our previously developed web-based platform to communicate the spatial and temporal risk of WNV and SLEV transmission along with the ecological process driving increased risk.

Web Application for Data and Forecast Visualization. We are currently finalizing an R Shiny App for mosquito and environmental data visualization, as well as WNV forecast visualizations at county and NLDAS spatial scales. Users can log in at:

https://rstudio-connect.hpc.mssm.edu/cv_wnv_forecast_viz/
Username: COAV_WNV
Password: WNV_forecast_CV_2024

Users will be able to visualize annual mosquito trapping/testing data and weekly environmental data at the NLDAS cell and abatement district levels (Figure 10). The dashboard also shows retrospective Ensemble-Adjustment Kalman Filter (EAKF) forecasts, and our multi-model inference system forecasts since 2022 (Figure 11). We are also working to build out the application to include SLEV testing data and forecast results.

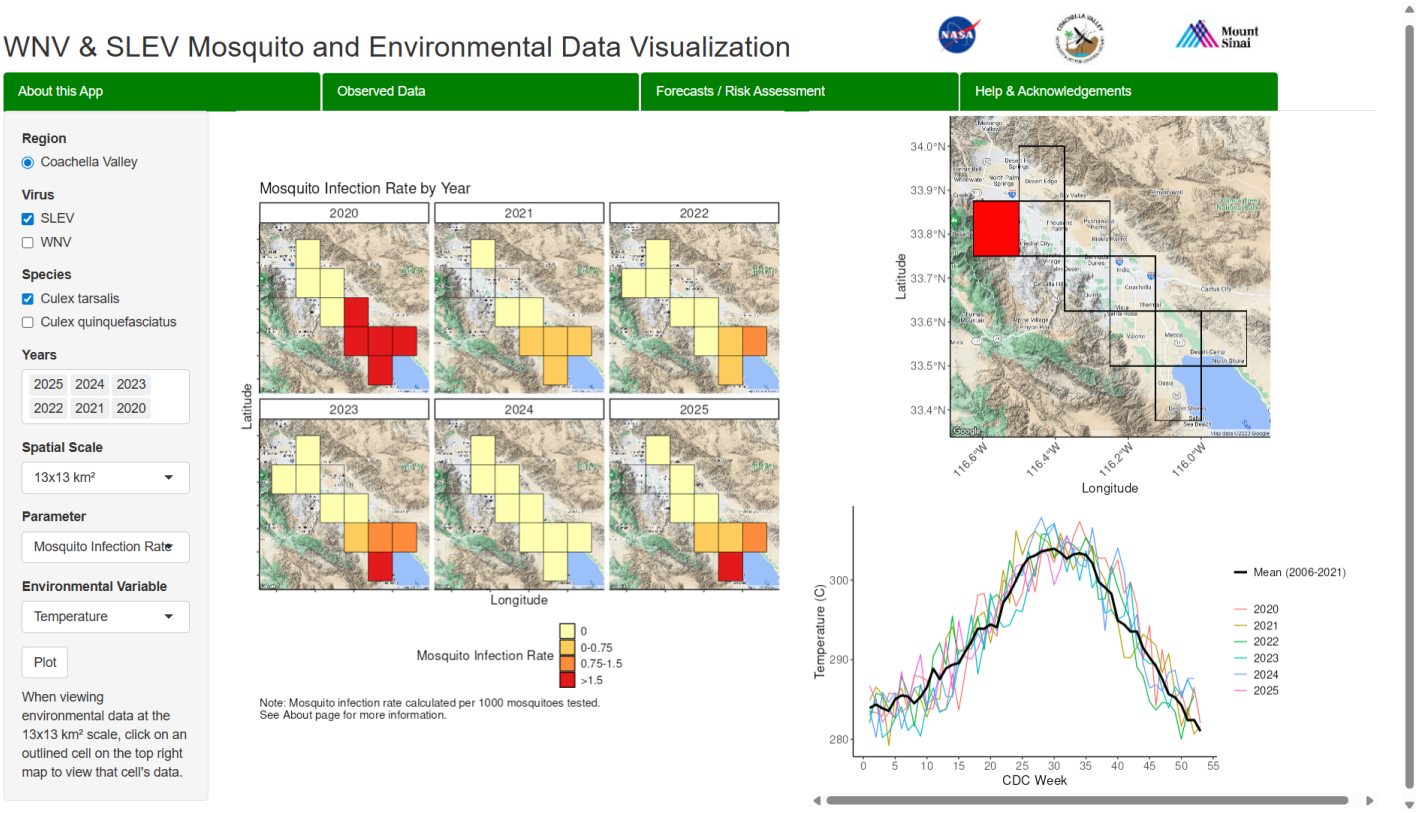


Figure 10. Mosquito and environmental data visualization at 13x13km^2 (NLDAS) spatial scale. **Left:** Sidebar with user inputs for plot generation. **Center:** Mosquito SLEV mosquito infection rates by NLDAS cell for 2020 - 2025. **Right:** Weekly mean 2-meter atmospheric temperature in 2020 - 2025 for the selected NLDAS cell (red) and overall weekly mean atmospheric temperature for the selected NLDAS cell (black line).

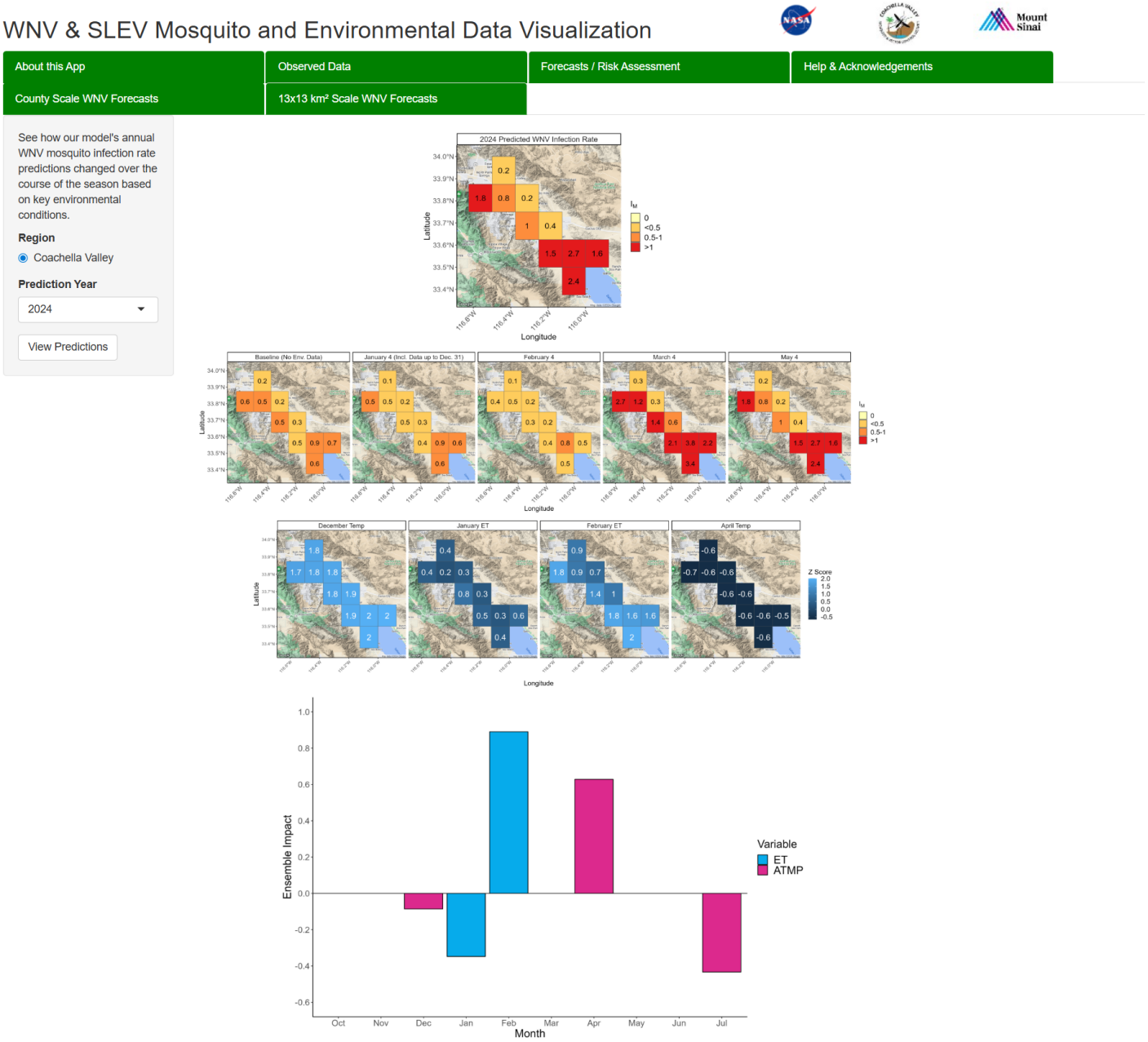


Figure 11. Real-time 2024 forecast of mosquito WNV infection rates (I_M) at the NLDAS spatial scale. **Left Sidebar:** User inputs for plot generation. **Top:** Forecast map of annual 2024 predicted mosquito WNV infection rate (I_M) by NLDAS cell. **Row 2:** Baseline and updated monthly forecasts of I_M as environmental data becomes available. **Row 3.** Environmental data assimilated into the ensemble model for monthly forecasts in Row 2. **Bottom:** Effect and contribution of ET and ATMP to the ensemble model associated with the estimated change of I_M at the monthly NLDAS grid scale (0.125° or ~ 13 km^2) for 2006 - 2021. Bars indicate the weight and direction of deviation of atmospheric temperature (ATMP, pink) and evapotranspiration (ET, blue) in the ensemble from the average that increases I_M.

General Outcomes

This project has resulted in two conference presentations, the development of a prototype version of web-based application for WNV/SLEV infection forecasting in mosquitoes, a Springer-Nature book chapter, and a manuscript published in AGU's GeoHealth.

Deliverables and accomplishments

- Developed 13 km^2 environmentally informed forecasts and compared to annual WNV infection observations in real time in 2024 for months available
- Generated weekly Coachella Valley, CA WNV forecasts
- Evaluated the WNV and SLEV viral interactions developing temporal and spatial maps
- Presented at EEID, Stanford, CA, June 2024
- Presented at ASTMH, New Orleans, LA, November 2024
- Presented at AMCA, San Juan, Puerto Rico, March 2025
- Presented at EEID, South Bend, IN, June 2025
- Presented at AMCA, Protland, OR, March 2026
- Forecasting has been accurate for 74% of predictions from 2022 to 2025
- Manuscript published in AGU's GeoHealth
- Developed prototype web-based Shiny application
- Developed 13 km^2 environmentally informed forecasts and compared to annual WNV infection observations in real time in 2025 for months available

Publications, Submitted Manuscripts, Manuscripts in Preparation, Presentations

- DeFelice NB, Ward MJ, Patel A. Environmental Drivers of West Nile virus risk. Keystone Symposium on Climate Change & Infectious Disease Threats. Hanover, Germany. June 24, 2025.
- DeFelice NB, Ward MJ, Patel A. Environmental Drivers of West Nile virus risk. Ecology and evolution of infectious disease South Bend, Indiana. June 17, 2025.
- Patel, Aman, Matthew J. Ward, Nicholas DeFelice. Environmental Conditions Associated with High Transmission of WNV, SLEV, and Combined Flavivirus Infections in Coachella Valley. Poster Presentation. Ecology and evolution of infectious disease. South Bend, Indiana. June 17, 2025.
- DeFelice NB Ward MJ, Patel A. Spatially refined estimates of the risk of West Nile virus. AMCA, Puerto Rico, March 4, 2025.
- Ward MJ, Sorek-Hamer M, Henke JA, Patel A, DeFelice NB. *A Spatially Resolved and Environmentally Informed Forecast Model of West Nile Virus in Coachella Valley, California.* AMCA, Puerto Rico, March 4, 2025.
- Patel, Aman, Matthew J. Ward, Sunita Dewpal, Nicholas DeFelice. *Communicating arboviral forecast models: A decision tool for West Nile & St. Louis Encephalitis virus transmission.* Poster Presentation. American Society for Tropical Medicine and Hygiene. New Orleans, Louisiana. November 15, 2024.
- Ward MJ, Sorek-Hamer M, Henke JA, Patel A, DeFelice NB. *A Spatially Resolved and Environmentally Informed Forecast Model of West Nile Virus in Coachella Valley, California.* Ecology of Evolution of Infectious Disease, Stanford, CA, June 26, 2024.
- Ward MJ, Sorek-Hamer M, Henke JA, Little E, Patel A, Shaman J, Vemuri K, DeFelice NB. *A Spatially Resolved and Environmentally Informed Forecast Model of West Nile Virus in Coachella Valley, California.* Geohealth. 2023 Dec 7;7(12):e2023GH000855. doi: 10.1029/2023GH000855. PMID: 38077289; PMCID: PMC10702611.
- Ward, Matthew J., Meytar Sorek-Hamer, Yuxuan Chen, Jennifer Henke, Aman Patel, Nicholas DeFelice. *Disparities in risk of West Nile virus transmission in Coachella Valley, CA.* Poster Presentation. International Society for Environmental Epidemiology. OSU, Corvallis, Oregon. June 20, 2023.

- Ward, Matthew J., Meytar Sorek-Hamer, Yuxuan Chen, Jennifer Henke, Aman Patel, Nicholas DeFelice. *Disparities in risk of mosquito-borne arbovirus transmission in Coachella Valley, CA.* Poster Presentation. International Workshop on High-Resolution Thermal EO. ESA-ESRIN, Frascati, Italy. May 10 - 12, 2023.
- Ward, M.J., Sorek-Hamer, M., Vemuri, K.K., DeFelice, N.B. (2023). *Statistical Tools for West Nile Virus Disease Analysis.* In: Bai, F. (eds) West Nile Virus. Methods in Molecular Biology - Springer Nature, vol 2585. Humana, New York, NY. https://doi.org/10.1007/978-1-0716-2760-0_16. November 5, 2022.
- Holcomb, K. M., Mathis, S., Staples, J. E., Fischer, M., Barker, C. M., Beard, C. B., DeFelice, N., ... & Johansson, M. A. 2022. *Evaluation of an open forecasting challenge to assess skill of West Nile virus neuroinvasive disease prediction.*
- DeFelice, N. B. M. Sorek-Hamer, MJ. Ward, K. Vemuri, J. Henke. *An ECOSTRESS environmentally informed statistical model for West Nile virus infection rates among mosquitoes in the Coachella Valley, CA.* ESA. Montreal CA, August 18, 2022.
- Ward, Matthew J., Meytar Sorek-Hamer, Jennifer Henke, Krishna Vemuri, Nicholas DeFelice. *Developing high-resolution risk maps of West Nile virus in Coachella Valley using ECOSTRESS data.* AMCA Annual meeting. March 5, 2021.
- Ward, Matthew J., Meytar Sorek-Hamer, Jennifer Henke, Krishna Vemuri, Nicholas DeFelice. *Developing high-resolution risk maps of West Nile virus in Coachella Valley using ECOSTRESS data.* PacVec Annual meeting. February 17, 2021.
- Ward, Matthew J., Meytar Sorek-Hamer, Jennifer Henke, Krishna Vemuri, Nicholas DeFelice. *Developing high-resolution risk maps of West Nile virus in Coachella Valley using ECOSTRESS data.* MVCAC Annual meeting. February 1, 2021.
- Keyel, Alexander C., Morgan E. Gorris, Ilia Rochlin, Johnny A. Uelmen, Luis F. Chaves, Gabriel L. Hamer, Imelda K. Moise, Marta Shocket, A. Marm Kilpatrick, Nicholas B. DeFelice, Justin K. Davis, Eliza Little, Patrick Irwin, Andrew J. Tyre, Kelly Helm Smith, Chris L. Fredregill, Oliver Elison Timm, Karen M. Holcomb, Michael C. Wimberly, Matthew J. Ward, and Rebecca L. Smith. *A qualitative evaluation of West Nile virus models and their application to local public health decision-making.* Accepted, PNTD. August 2021.
- Ward, Matthew J., Meytar Sorek-Hamer, Jennifer Henke, Krishna Vemuri, Nicholas DeFelice. *Using space based high resolution remote sensing data to forecast WNV in Coachella Valley, CA.* PacVec Fall seminar series. November 9, 2021.
- DeFelice N.B., 2021 Forecasting West Nile Virus AMCA Annual meeting. March 3, 2021.
- DeFelice, N; Sorek-Hamer, M; Ward, M; Vemuri, K; Henke, J; Campbell, S; Romano, C; Santoriello M. *An environmentally informed statistical model and forecast system for West Nile virus infection rates among mosquitoes in the Coachella Valley, CA*. AGU Fall Meeting 12/15/2021.
- Ward, Matthew J., Meytar Sorek-Hamer, Jennifer Henke, Krishna Vemuri, Nicholas DeFelice. *Developing high-resolution risk maps of West Nile virus in Coachella Valley using ECOSTRESS data.* Proceedings and Papers of the Mosquito and Vector Control Association of California, 89(1):000–000.

Prospects

We are in the final phase of running models to developing an environmentally forced forecasts system for WNV & SLEV that maximizes our understanding how meteorological conditions are most appropriate for WNV/SLEV amplification in the Coachella Valley. We will use this fine scale to develop an understanding of the temporal role climatic and hydrological parameters play in WNV/SLEV transmission. We will then generate environmentally informed early season risk forecast maps. Additionally, we will continue development of a web-based tool allowing for real time visualization of risk driven by our ensemble model system.

Table 1. Project timeline

	Year 1			
	Q1	Q2	Q3	Q4
Task #1				
Develop NLDAS grid Multi-model inference system for SLEV				
Task #2				
Develop disease transmission associated with avian species model				
Task #3				
Verify decision support system				
Verify decision support system complete Implement in real time Integrate into Shiny Application				

1 Danforth, M. E. *et al.* Epidemiologic and environmental characterization of the Re-emergence of St. Louis Encephalitis Virus in California, 2015-2020. *PLoS Negl Trop Dis* **16**, e0010664 (2022). https://doi.org/10.1371/journal.pntd.0010664

2 N.B. DeFelice, R. B., N. DeFelice, A. Gagner, S.R. Campbell, C. Romano, M. Santoriello, J. Henke, J. Wittie , B. Cole, C. Kaiser, J. SHAMAN. . Modeling and Surveillance of Reporting Delays of Mosquitoes and Humans Infected With West Nile Virus and Associations With Accuracy of West Nile Virus Forecasts,. *JAMA network open* **2**, e193175 (2019). https://doi.org/10.1001/jamanetworkopen.2019.3175

3 DeFelice, N. B., Little, E., Campbell, S. R. & Shaman, J. Ensemble forecast of human West Nile virus cases and mosquito infection rates. *Nat Commun* **8**, 14592 (2017). https://doi.org/10.1038/ncomms14592

4 DeFelice, N. B., Schneider Z. , Little E., Barker C., Caillouet K. A., Campbell S. R., Damian D., Irwin P., Jones H. M.P., Townsend J. , and Shaman J. . Use of temperature to improve West Nile virus forecasts. *Plos Computational Biology* **14** (2018). https://doi.org/https://doi.org/10.1371/journal.pcbi.1006047

5 Ward, M. J. *et al.* A spatially resolved and environmentally informed forecast model of West Nile virus in Coachella Valley, California. *GeoHealth* **7**, e2023GH000855 (2023).

Semiannual Progress Report

From Data to Deployment: Modeling *Aedes aegypti* Risk to Guide Sterile Insect Releases

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Joe C. Wen School of Population and Public Health
University of California, Irvine

Collaborators:
Gaëlle T. Sehi; Audrey Oliver

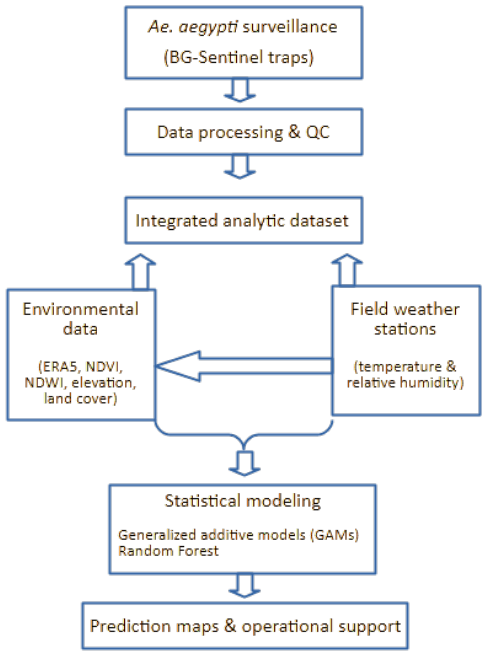
Project Overview

The goal of this two-year project is to develop statistical models of *Aedes aegypti* abundance that can support mosquito surveillance and control activities by the Coachella Valley Mosquito and Vector Control District (CVMVCD). Ultimately, these models will help identify where and when mosquito populations are expected to be most abundant and to provide a scientific foundation for operational decision-making, including the District's Sterile Insect Technique (SIT) program.

We made substantial progress during this first reporting period. Rather than immediately fitting statistical models, we first focused on organizing and understanding the surveillance data, building the computational framework needed to support long-term analyses, integrating environmental datasets, and initiating a field validation study to evaluate environmental data commonly used in ecological modeling. These efforts allowed us to develop the first generation of statistical models describing *Ae. aegypti* abundance across the Coachella Valley.

The project has also provided valuable training opportunities for students in quantitative vector ecology, spatial epidemiology, and environmental data science. One graduate student who helped develop the original proposal has since transitioned to a postdoctoral position in Germany. A second graduate student has joined the project to assist with model development, and additional undergraduate data science students are currently being recruited to participate in the weather station component of the project.

Figure 1. Overview of the analytical workflow developed during the first phase of the project.



Building the Analytical Framework

During the first phase of this project, we focused on building the analytical framework that will support the remainder of the study (**Figure 1**). Although much of this work occurs behind the scenes, it provides the foundation for integrating mosquito surveillance, environmental information, field observations, and eventually mosquito control activities into a common modeling framework.

Building on analytical workflows previously developed by our group for *Ae. aegypti* studies in neighboring San Bernardino County [1], we developed an updated

workflow tailored specifically to the Coachella Valley surveillance program. The revised framework places greater emphasis on automation, consistency, and reproducibility so that new surveillance and environmental data can be incorporated with minimal manual processing as the project progresses.

Before fitting statistical models, we carefully explored the surveillance dataset. This included evaluating trapping effort, examining seasonal and long-term temporal trends, quantifying potential spatial autocorrelation, identifying local hotspots or coldspots of mosquito abundance, comparing candidate response variables, and assessing relationships among environmental predictors. These exploratory analyses guided model development, identified environmental variables likely to influence mosquito abundance, and informed the design of the field validation study.

Major accomplishments during this reporting period include:

- Organized and quality-controlled nearly a decade of mosquito surveillance records.
- Standardized methods for accounting for trapping effort (trap numbers and trap nights).
- Automated acquisition of environmental data using Google Earth Engine (GEE).
- Automated extraction of environmental variables for individual mosquito collections.
- Completed exploratory analyses of seasonal, temporal, and spatial patterns.
- Developed reproducible workflows for updating surveillance and environmental datasets.
- Built an integrated analytical pipeline linking surveillance, environmental, and field data.

We currently incorporate remotely sensed and geospatial variables including air temperature and precipitation (ERA5-Land), elevation, vegetation indices (NDVI), surface water indices (NDWI and MNDWI), and land use/land cover. We will continue evaluating additional environmental datasets as the project progresses based on biological plausibility and their contribution to explaining mosquito abundance. We built this analytical framework early in the project so that newly acquired surveillance and environmental data can now be incorporated with minimal additional processing. As a result, we can focus the next phase of the project on improving the statistical models themselves.

Figure 2. Initial deployment of the field weather station network used to validate remotely sensed environmental data.

Field Validation and Statistical Model Development

A major objective of this project is ensuring that environmental datasets accurately represent the conditions experienced by mosquitoes within the Coachella Valley.

To address this question, we designed a field validation study using portable weather stations (**Figure 2**) that continuously measure air temperature and relative humidity at representative mosquito trapping locations throughout the Coachella Valley. We completed the study design and deployed the first weather stations. Initial deployments placed multiple stations at the same location to evaluate instrument performance and consistency before broader field deployment. The weather stations are now being distributed across a wider range of environmental settings throughout the study area.

Since mosquitoes experience environmental conditions at much finer spatial scales than most gridded meteorological products provide, understanding these local differences is an important step toward improving

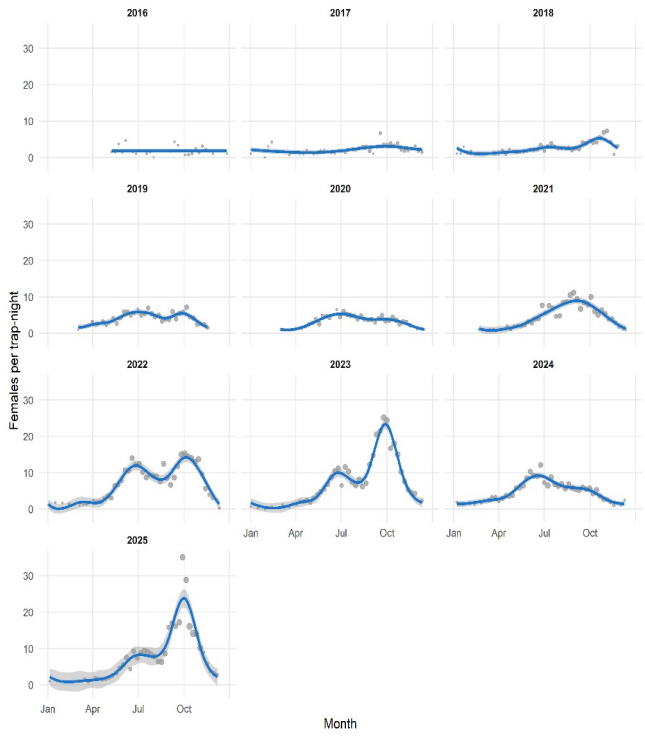
ecological models of mosquito abundance. We will use these observations to compare locally measured weather conditions with ERA5-Land and other commonly used environmental products, quantify potential biases, and determine which datasets are most appropriate for long-term ecological modeling under desert conditions. In addition to evaluating existing environmental datasets, we will explore whether local weather observations, together with land cover information, can be used to improve estimates of environmental conditions across the study area.

Preliminary Statistical Models

With the analytical framework established and environmental data streams in place, we next turned to developing statistical models of mosquito abundance.

Building on this analytical framework, we developed our first statistical models describing adult female *Ae. aegypti* abundance across the Coachella Valley. We began with generalized additive models (GAMs), which are well suited for ecological data because they allow nonlinear relationships between mosquito abundance and environmental conditions. We developed the models sequentially, beginning with a model that only accounted for spatial location and seasonal patterns (**Figure 3**), followed by adding meteorological variables, and finally by including remotely sensed environmental variables (land cover, vegetation, and surface water). The models also account for differences in trapping effort and include a flexible spatial component to account for remaining geographic variation not explained by the other variables in the model.

Figure 3. Seasonal pattern of adult female *Ae. aegypti* abundance by year in BG-Sentinel traps. Weekly values are shown as gray points, with point size proportional to trapping effort. Blue curves represent smoothed seasonal trends for each year. Although mosquito abundance varies substantially among years, the timing of seasonal peaks is remarkably consistent despite substantial year-to-year variation in mosquito abundance.

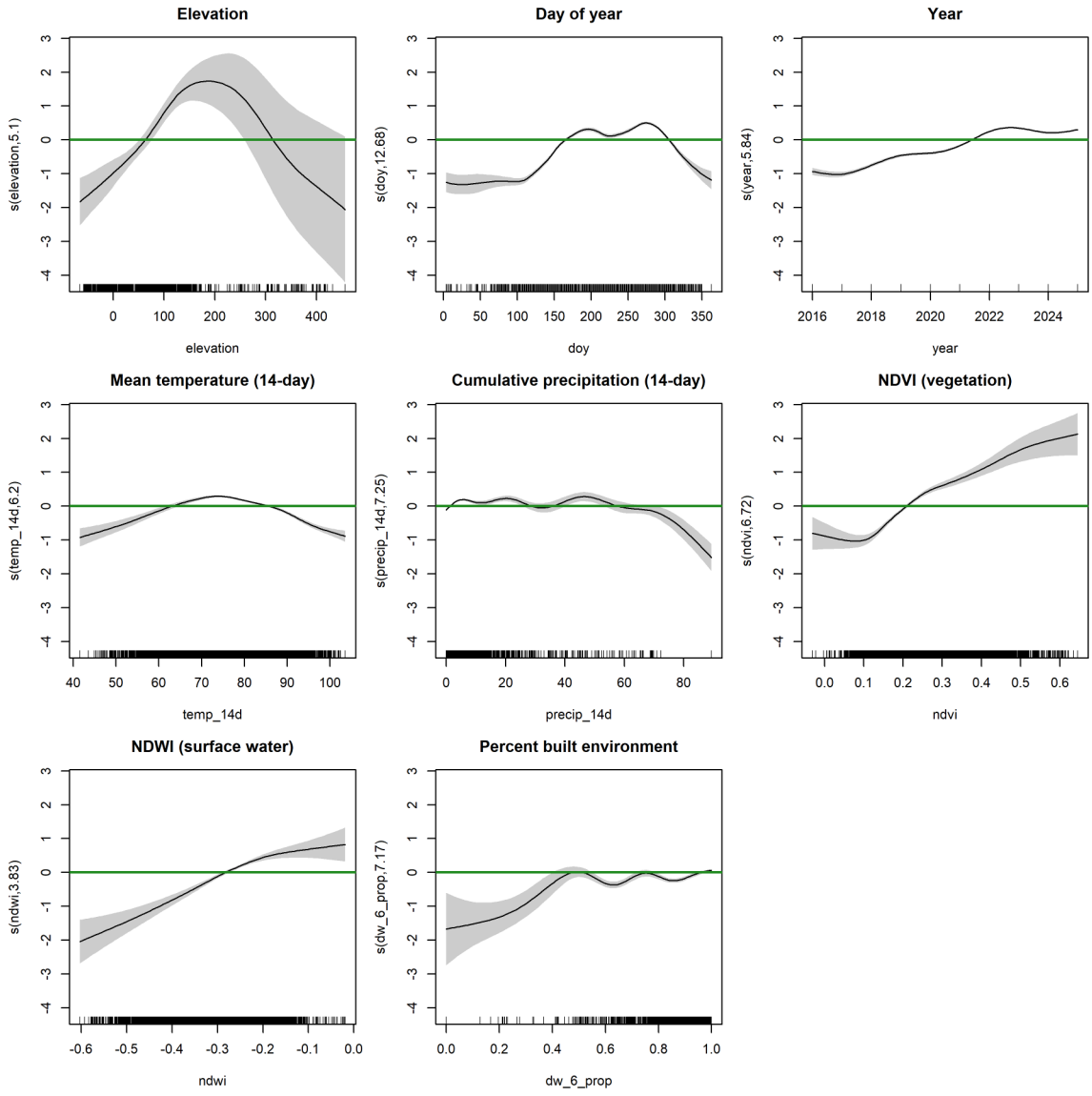


The current models explain approximately 40% of the observed variation in adult female abundance despite representing only the first stage of model development. Model performance improved substantially after adding meteorological and remotely sensed environmental variables, demonstrating that these data explain important patterns beyond geographic location and season alone. That is, these environmental and meteorological variables help explain some (but not yet all) of the spatial and temporal patterns of *Ae. aegypti* abundance in this setting.

The fitted relationships are also biologically plausible. Adult female abundance exhibited clear nonlinear relationships with season, long-term temporal trends, temperature, vegetation greenness, surface moisture/water, elevation, and characteristics of the built environment (**Figure 4**). We also compared multiple remotely sensed representations of surface moisture and found measurable differences in their ability to explain mosquito abundance, reinforcing the importance of carefully evaluating candidate environmental datasets rather than assuming that similar products perform equally well. To provide an independent comparison, we also developed Random Forest models using the same mosquito surveillance and environmental datasets. Although based on a different statistical approach, these

models identified many of the same environmental variables as important contributors to mosquito abundance, including season, long-term temporal trends, vegetation greenness, temperature, elevation, and surface water. Overall, the Random Forest analyses broadly supported the ecological patterns identified by the generalized additive models.

Figure 4. Partial relationships from a negative binomial generalized additive model describing adult female *Ae. aegypti* abundance in BG-Sentinel traps. The model accounts for differences in trapping effort (trap nights), broad spatial variation, seasonality, long-term temporal trends, weather, and remotely sensed environmental variables. Each panel shows the estimated relationship for one variable while accounting for the effects of the remaining variables in the model. Shaded regions represent approximate 95% confidence intervals.



Together, these analyses establish the foundation for the next phase of the project. The analytical framework is now capable of integrating surveillance data, weather, remotely sensed environmental information, and future mosquito control records within a common statistical framework. This foundation will support the next phase of model development and ultimately the production of spatial prediction maps that could be used in operational decision-making.

Next Steps

Work during the next reporting period will focus on expanding and refining the statistical models of mosquito abundance while continuing to strengthen the environmental data framework.

Specific objectives include:

- Complete deployment of the field weather station network and compare locally measured weather conditions with gridded environmental products.
- Evaluate additional biologically plausible environmental datasets, including remotely sensed measures of vegetation, surface water, and atmospheric conditions.
- Explore temporal lags between environmental conditions and mosquito abundance.
- Incorporate historical larviciding and other mosquito control activities into the statistical modeling framework.
- Continue comparing complementary statistical modeling approaches.
- Develop spatial prediction maps that can support mosquito surveillance and future Sterile Insect Technique planning.

Acknowledgements

We greatly appreciate the continued collaboration of the Coachella Valley Mosquito and Vector Control District. District staff have provided valuable surveillance data, operational expertise, and assistance with development of the field weather station study. The project also continues to provide training opportunities for graduate and undergraduate students in quantitative vector ecology, spatial modeling, and environmental data science while strengthening the long-term research partnership between UC Irvine and CVMVCD.

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Mid-Year Progress Report, June 2026

Assessing the Impact of Heat Stress and Radiation Dosage on the Effectiveness of Sterile Insect Technique Males in the Coachella Valley

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Objectives

The overall goal of this project is to optimize the implementation of the Sterile Insect Technique (SIT) for *Aedes aegypti* control under the extreme desert conditions of the Coachella Valley. SIT depends on the release of sterile males that remain viable, active, and competitive long enough to locate and mate with wild females. This requirement is particularly challenging in arid environments, where high temperature and low humidity may interact with irradiation-associated physiological costs to reduce male longevity and mating performance (Helinski et al., 2009; Oliva et al., 2021).

The project was designed around three objectives:

1. Determine how radiation dosage and temperature stress affect SIT male survival, longevity, and circadian activity.
2. Evaluate how the interaction between radiation dosage and heat stress affects male mating competitiveness.
3. Determine whether a post-irradiation recovery period improves male survival, activity, and reproductive performance under heat-stressed conditions.

During this reporting period, we focused on establishing the experimental foundation needed to address these objectives under operationally relevant Coachella Valley conditions. Specifically, we established a Coachella Valley *Ae. aegypti* colony, developed a reproducible pipeline using an environmental chamber and a Locomotor Activity Monitor (LAM), and standardized a high-heat regime that imposes field-relevant thermal stress while still allowing sufficient male survival for downstream assays of radiation, circadian activity, recovery, and mating competitiveness.

Background and Rationale

The Coachella Valley is among the most thermally challenging environments in California for implementing *Ae. aegypti* SIT. Released sterile males must remain alive and behaviorally active long enough to compete with wild males, yet they may encounter intense daytime heat, low humidity, and variable access to shaded refugia. These environmental pressures likely interact with irradiation-induced physiological stress, potentially reducing survival, disrupting circadian activity, and narrowing the window during which sterile males can effectively contribute to population suppression.

The original experimental design included a low-temperature condition of approximately 22 °C and a fixed high-temperature condition of 37–39 °C. The fixed high-temperature treatment was intended to represent peak summer thermal stress in the Coachella Valley. However, preliminary standardization showed that adult males did not survive even 36 hours of continuous exposure to 37–39 °C. This indicated that the fixed

high-temperature treatment was too severe for downstream performance assays and likely imposed an artificially extreme heat- and desiccation-related challenge.

More importantly, constant exposure to peak daytime temperatures is unlikely to represent the thermal conditions experienced by released mosquitoes in the field. Adult mosquitoes encounter heterogeneous microclimates and can behaviorally reduce thermal exposure by occupying cooler or more protected resting sites during the hottest parts of the day. Semi-field evidence shows that mosquitoes can select cooler resting microhabitats than those indicated by nearby meteorological stations. Ziegler et al. (2023) found that sugar-fed and blood-fed *Aedes japonicus* avoided warm resting boxes and preferentially occupied cooler resting sites; blood-fed females rested at temperatures averaging approximately 4 °C below outdoor weather-station temperatures, while sugar-fed females showed a smaller offset of approximately 1.5 °C. Although that study was conducted with *Ae. japonicus* females in a temperate semi-field system, it supports the broader principle that mosquito-relevant microclimates may differ substantially from ambient meteorological temperatures (Paaijmans and Thomas, 2011; Sauer et al., 2021; Ziegler et al., 2023).

Therefore, rather than applying a universal temperature correction or maintaining a fixed high-temperature exposure, we refined the heat-stress treatment to a field-informed diel high-heat regime (Fig. 1). This regime retains a field-relevant daytime peak of 37 °C while incorporating cooler evening and nighttime temperatures that more closely approximate post-release thermal exposure. This refinement preserves the project's central objective, i.e., testing how heat stress affects SIT male survival and performance, while improving the assay's ecological realism and experimental utility.

Materials and Methods

Mosquito colony

A laboratory colony of the Coachella Valley *Ae. aegypti* strain was established with assistance from Dr. Kim Hung, Vector Ecologist at the Coachella Valley Mosquito and Vector Control District. The colony is maintained under standardized insectary conditions at 26 °C, 50–60% relative humidity, and a 12:12 light-dark cycle. This colony provides the biological material required for the planned survival, activity, radiation, recovery, and mating-competitiveness assays. Using the Coachella Valley strain is essential because the project aims to generate results directly relevant to SIT implementation in the target region.

Diel high-heat regime

The selected diel high-heat regime was developed from hourly mean temperature data from Weather Underground (https://www.wunderground.com/; South of Movie Colony - KCAPALMS217) for the mid-August to mid-September period across 2016–2025. This mid-to-late-summer window was chosen because sustained heat stress during this period is expected to be operationally relevant for SIT implementation in the Coachella Valley. The resulting chamber program was designed to replicate a daily warming-and-cooling cycle, reaching a daytime maximum of 37 °C before declining through the evening and overnight period (Fig. 1). Relative humidity was maintained at 50% throughout the assay. Light conditions followed a 12:12 light-dark cycle, with lights on from 7 AM to 7 PM and off from 7 PM to 7 AM.

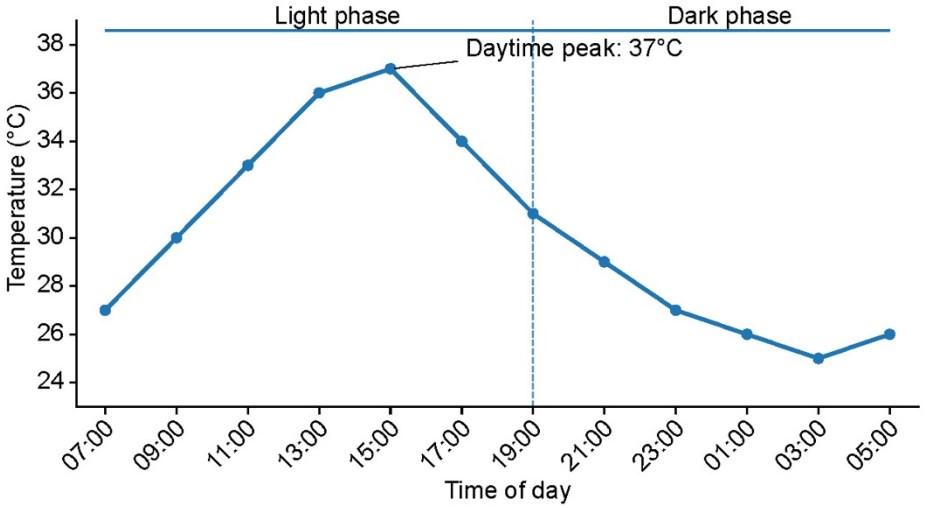

Figure 1. Diel high-heat regime used for temperature standardization. Field-informed diel high-heat regime developed from Weather Underground hourly mean temperature data from the South of Movie Colony station (KCAPALMS217) for mid-August to mid-September across 2016–2025. The regime reaches a daytime maximum of 37 °C, with cooler evening and nighttime temperatures. Relative humidity was maintained at ~50%, with light from 7 AM to 7 PM and dark from 7 PM to 7 AM.

Preliminary survival assessment using Locomotor Activity Monitor (LAM)

Non-irradiated adult male mosquitoes from the Coachella Valley strain were individually placed in glass tubes compatible with the LAM system and exposed to the diel high-heat regime in a programmable environmental chamber (Araripe et al., 2018; Eilerts et al., 2018). Because each LAM tube contained one male, survival was scored at the individual level. The LAM setup houses individual mosquitoes in standardized tubes and records locomotor activity via infrared beam breaks, enabling assessment of survival and activity under the same controlled environmental conditions. For this preliminary standardization phase, the LAM setup served primarily as a feasibility screen to determine whether males could survive the diel high-heat regime long enough to support downstream assays for radiation, circadian activity, recovery, and mating competitiveness. This standardization also established a reproducible workflow for combining individual male housing, controlled light-dark cycling, fixed humidity, and programmable diel temperature exposure.

Results and progress to date

The Coachella Valley *Ae. aegypti* colony has been established and is now available for project assays. Initial temperature standardization showed that the originally proposed fixed 37–39 °C high-temperature regime was unsuitable as the primary assay condition: no adult males survived even 36 hours of continuous exposure (Table 1). This indicated that the fixed high-temperature treatment was too severe for downstream survival, activity, recovery, and mating-competitiveness assays, and was less representative of the fluctuating thermal conditions mosquitoes are likely to encounter after release. Based on the weather-informed temperature framework described above, we constructed a programmable diel high-heat regime that captures morning warming,

an afternoon temperature peak, evening cooling, and lower overnight temperatures. We then established a reproducible environmental-chamber pipeline for exposing individual males to this diel high-heat regime in LAM tubes. This setup allows individual survival and locomotor activity to be evaluated under the same controlled conditions of light, humidity, and temperature. Under the diel high-heat regime, 10 of 16 Coachella Valley males survived to day 13, corresponding to 62.5% survival (Table 1). These results indicate that the diel regime is sufficiently stressful to represent high-heat exposure but not so severe as to preclude downstream performance assays.

Table 1. Preliminary survival under fixed high temperature and the diel high-heat regime.

Temperature	Observation point	Survival outcome
Fixed high-temperature regime, 37–39 °C	<36 hours	No males survived beyond 36 hours
Diel high-heat regime	Day 13	62.5% survival (10/16 males)

Interpretation and Significance

The main accomplishment of this reporting period is establishing an experimentally tractable high-heat framework to test SIT male performance in the Coachella Valley. The fixed 37–39 °C treatment served as an initial upper-bound stress test, but continuous exposure caused mortality too rapidly to support behavioral or reproductive assays. In contrast, the diel high-heat regime retains a daytime peak of 37 °C while incorporating cooler evening and nighttime periods, making it more consistent with the fluctuating thermal conditions mosquitoes are likely to experience after release.

This refinement is supported by the broader understanding that mosquito performance is shaped not only by ambient temperature but also by microclimate use, resting behavior, and diel activity patterns (Paaijmans and Thomas, 2011; Reinhold et al., 2018; Sauer et al., 2021; Ziegler et al., 2023). By enabling measurable survival over a timeframe relevant to post-release performance assessment, the diel high-heat regime provides a practical platform for testing how radiation dosage, recovery period, and heat stress interact to influence sterile male survival, activity, and mating performance.

This directly addresses the operational question at the center of the project: whether sterile males (irradiated at 50 Gy) should be released soon after irradiation to maximize field time, or held briefly to allow recovery of activity and performance before release. The standardized diel high-heat regime now provides the experimental foundation needed to evaluate that tradeoff under conditions that are both challenging and operationally relevant.

Ongoing and Planned Work

The next phase of the project is being developed using the diel high-heat regime as the working high-temperature condition, while retaining the low-temperature baseline comparison described in the original proposal. Specifically, SIT males (irradiated at 50 Gy) will be evaluated under two thermal contexts: a low-temperature baseline of approximately 22 °C, representing cooler spring/fall conditions, and the diel high-heat regime, representing summer-representative Coachella Valley heat exposure. This

preserves the proposal's core radiation × temperature framework while replacing the fixed 37–39 °C exposure with a more operationally relevant high-heat treatment.

Survival and circadian activity assays are the immediate next steps. These assays will be expanded to include the planned radiation dosage treatments, with males from each dosage group evaluated under both the 22 °C baseline condition and the diel high-heat regime. Survival will be monitored longitudinally, and once sufficient data are collected, longevity will be analyzed using Kaplan–Meier survival curves and Cox proportional hazards models. In parallel, locomotor activity will be recorded with the LAM system to assess whether radiation dosage, temperature regime, or their interaction alters total activity, activity peak timing, and diel rhythmicity. These activity traits are central to SIT performance because sterile male activity must overlap with female mating windows for releases to be effective.

Recovery-period assays will also be incorporated as the pipeline is further developed. These experiments will compare males tested soon after irradiation with those held for several days before testing, under both the low-temperature baseline and diel high-heat conditions. This will allow us to assess whether post-irradiation holding improves survival or activity and whether any recovery benefit depends on the thermal environment.

Mating-competitiveness assays will proceed once survival and activity data identify treatment combinations suitable for reproductive testing. Irradiated males (at 50 Gy) from the relevant radiation × temperature × recovery treatments will be tested against untreated wild-type males for access to virgin females. Mating success will be assessed by spermathecal dissections, and functional sterility will be evaluated using egg-hatch assays. These assays will determine whether males exposed to realistic summer heat stress remain sufficiently viable, active, and competitive to support SIT implementation in the Coachella Valley.

Together, these ongoing and planned experiments will build on the current standardization work to conduct a comprehensive evaluation of how radiation dose, temperature regime, and recovery period shape SIT male performance. The project is therefore now positioned to move from temperature-regime feasibility testing to formal performance assays under both cooler baseline and summer-relevant heat conditions.

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Mid-Year Report for CVMVCD Research Grant, One Year Project

Project Title: Neural networks reveal heterogenous surveillance site contributions to predicting spatiotemporal trends in arbovirus systems

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Project Summary: This research proposes to develop and validate a novel analysis pipeline to **objectively score mosquito trap sites** in the Coachella Valley based on their spatiotemporal influence within historical surveillance data patterns. By integrating network analyses with **graph neural networks** (GNN's) and **recurrent neural networks** (RNN's), this approach quantifies each site's predictive power regarding vector abundance (*Culex quinquefasciatus* and *Culex tarsalis*) and pathogen risk (WNV and SLE) across the district and towards upcoming mosquito seasons. This performance can then be correlated to operational factors like trap type and placement, and environmental factors like climate, development, and local demographics. Modelling the effect of these variables on site performance will not only inform current practices but also guide future surveillance efforts. Over the course of the proposed one-year project duration, we will complete the following aims:

Aim 1: Use historical vector abundance data and virus testing to quantify how individual trap sites participate in and inform overall spatiotemporal trends.

Aim 2: Evaluate the relationship between surveillance site characteristics and contribution score.

Aim 3: Validate both trap site contribution score and its drivers using structured auxiliary trapping in strategic locations and bootstrapping historical data.

Through this method, site influence can then be composited into a **"contribution score"** across the district by considering the directionality, number, and strength of causal edges, downstream predictive accuracy, and stability over recurring units of time (Figure 1). This metric incorporates existing measures of centrality and importance and applies them to public health data in a novel way. Sites that score highly in this analysis have higher predictive power for vector and pathogen patterns, making them not only better sites to base decisions on, but potentially treatment targets in themselves, depending on the strength of causal linkages. Managers can use signals and thresholds on these high contribution sites with confidence that they reflect real patterns. In contrast, sites that score lower on this index are more prone to stochastic patterns of vector abundance or virus positivity, where calculated metrics like Vector Index would not be very indicative of larger scale or future trends. Building on prior network-based analyses, the proposed aims uniquely focus on trap site influence rather than just outcomes, leveraging unsupervised models and convergent cross mapping to define causality within complex, time-lagged spatial systems.

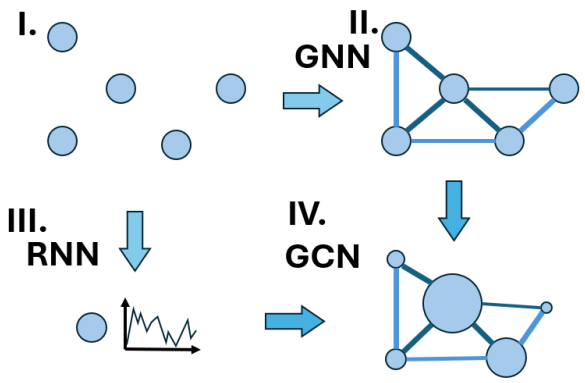

Figure 1. Proposed analysis schematic for aim one. Sites are treated as nodes (**I.**) and linkage of trends in abundance or virus positivity are quantified (edge weights) in space using graph neural networks (**II.**) while temporal patterns at each site are used as recurrent nodes in a recurrent neural network (**III.**). These networks are then integrated considering both space and time in a graph convolutional network (**IV.**) where trap contribution to overall patterns is quantified, visualized here as node size.

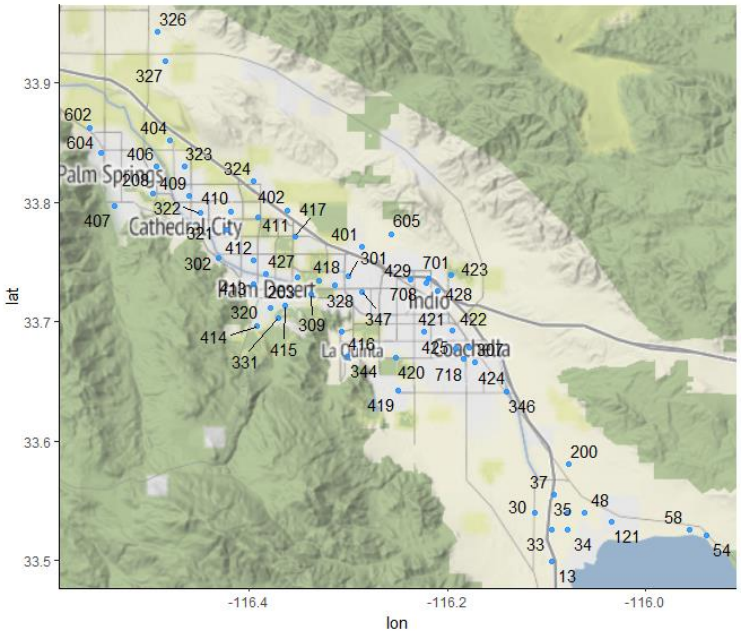

Figure 2. Map of the Coachella Valley MVCD trap sites by site code that were included in the full "Contribution Score" analysis pipeline based on consistency and CCM. As of this report all sites except the SE Mecca and Salton Sea area have been visited.

Progress to Date

Aim 1: Mosquito abundance data and pool testing for SLEV and WNV for 2014-2024 was received from the district, providing a robust 11 year dataset for progressing the project aims and developing and testing the proposed analytical pipeline. The data was processed and cleaned for downstream analysis, primarily by identifying the trapping locations with consistent representation within and across years. Analytical work for Aim 1 is substantially complete for the primary Culex vector-abundance track, and

preliminary extension into virus data is already underway. We aggregated Culex quinquefasciatus + Culex tarsalis counts across 2014–2024, built a weekly-interpolated spine, and filtered to 72 high-quality sites with ≥5-year coverage. The pipeline combining network analysis, empirical dynamic modeling (EDM), convergent cross mapping (CCM), and a spatiotemporal graph neural network (STGNN) is operational end-to-end, and an initial composite sentinel site contribution score has been generated and ranked across the site core network, which further filtered down to 60 sites (Figure 2) with enough data and model response to be analyzed. Two parallel virus-informed scoring tracks have also produced preliminary rankings for comparison against the vector-based score.

Simplex projection identified optimal embedding dimension and local predictability (simplex rho) for every site. This was then fed into a full pairwise CCM (1,770 pairs) which quantified causal influence of each site on all others, the direction of influence, and the strength (Figure 3A+B). A recurrent neural network was built for each site based on its own history using long short-term memory (LSTM), which warm-started into an STGNN using GATConv, four attention heads, and the edge features from the CCM. The resulting neural network allows for site level abundance prediction across epiweeks (Figure 3C). We evaluated the performance of this model compared to solely temporal or spatial models and confirmed that the integration improves predictions overall and validates the contribution of each site to the spatiotemporal trends characterized in the model. From this STGNN, graph attention network (GAT) weights were converted into per-site and per-timestep focality metrics, then combined with CCM directionality, edge count, edge strength, STGNN predictive accuracy, and temporal stability into a single 0–100 composite contribution score (Table 1).

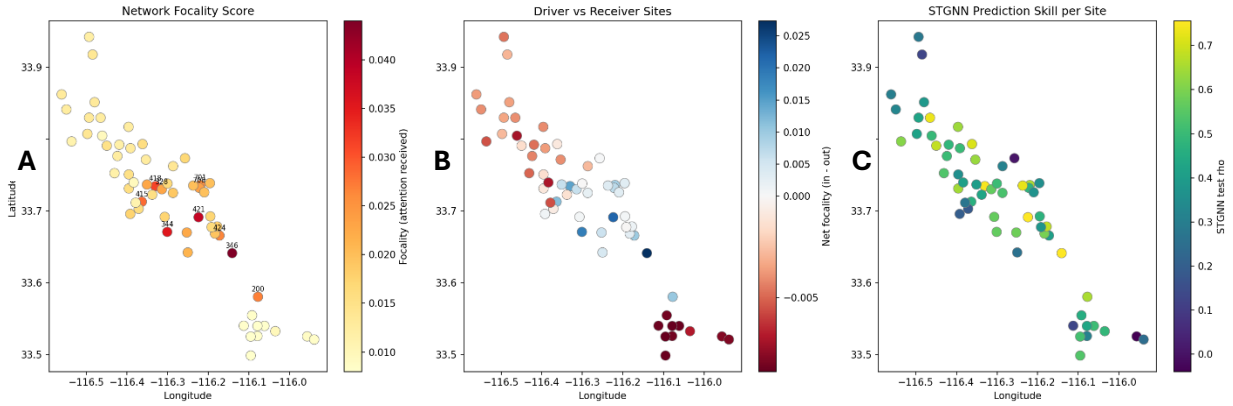

Figure 3. Graphs depicting surveillance sites as points with color corresponding with the computed features of the 60 focal sites for different aspects leading to a final contribution score. **A.** Two-way network characteristics in vector abundance computing focality from number and strength of linkages. **B.** Unidirectional causality strength of each site from Convergent Cross Mapping net focality results where positive values represent network drivers and negative values represent net receivers. **C.** Per-site correlation to neural network results where higher values represent higher rank correlation coefficients between prediction and observation.

In summary this score fulfills the proposed aim by learning from the whole network at once. The score incorporates how self-predictable each trap is while testing how traps influence each other in time and space and comparing model prediction performance. While the range in scores is somewhat arbitrary (e.g. the substantive difference between 90 and 95, etc.), the result is an evidence-based ranking of the traps by how valuable their data is to the district's overall vector abundance picture. Extension of this methodology to the virus data is currently in progress, though current CCM methods

required adaptation for the sparser positivity rates compared to abundance data, resulting in 26 sites with sufficient time series for EDM/CCM ahead of STGNN. Interestingly, findings show that while traps with high year-over-year consistency are easy to predict based on their own history, they do not contribute meaningfully to explaining regional or seasonal trends. On the opposite end traps with high volatility are also not reliable predictors for abundance trends, leaving the traps with occasional variations the most valuable for guiding decision-making. This framework will be further developed as the abundance and virus data is further explored and combined with environmental characteristics in Aim 2.

Table 1. Highest ranking sites by scaled contribution score showing contribution of different factors. Note that these results are liable to change as the analysis pipeline is validated and finalized.

Rank	Site Code	Contribution Score	STGNN	CCM Net	Scaled Edges
1	346	100.0	0.98	1.0	0.86
2	323	90.0	0.97	0.83	0.70
3	402	89.9	0.94	0.86	0.75
4	301	89.1	0.68	0.95	0.86
5	422	87.6	0.64	0.91	0.98

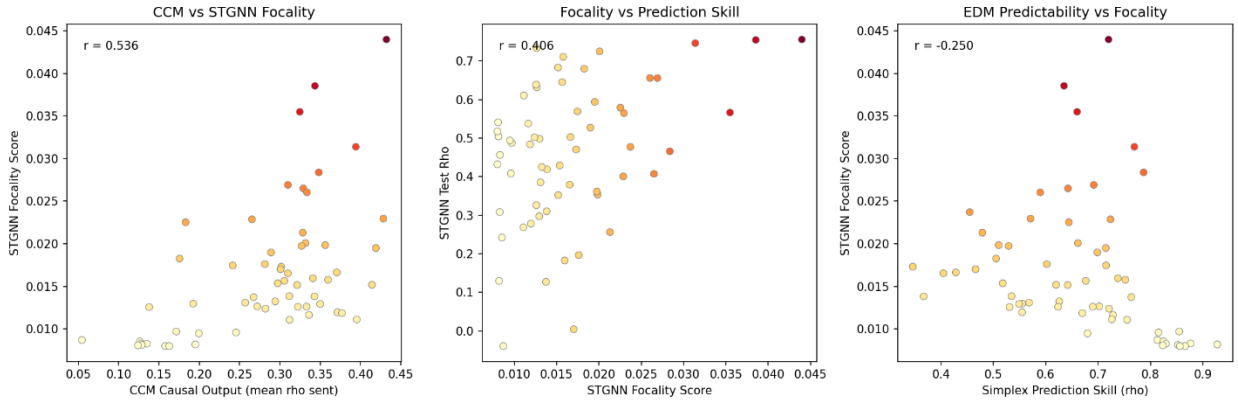

Figure 4. Correlation between contribution score components across the different analyses for each site showing complex relationships between causality, predictability, and network structure.

Aims 2 and 3: Development of the Aim 1 analysis pipeline identified 60 sites (Figure 2) and 113 site x trap type combinations of interest for neural network development. As the contribution scores for these sites and trap types is finalized, we have already begun characterizing the potentially important environmental factors. Site coordinates were used with GIS datasets to extract historical climate conditions, land use classification, vegetation, water, human activity, and other important features. In addition to satellite data, the surveillance sites that were maintained in the full contribution score analysis are also visited by the researchers in collaboration with district personnel. At each site, a variety of in-place data was taken in addition to images and notes on the overall landscape and trap setup. Data recorded on site includes detailed notes on vegetation (type, presence, cover, maintenance), water (small and large features, irrigation, drainage, historical presence), built environment (substrate,

development type, infrastructure), shade and exposure, and the presence of possible access channels and barriers like hedges and walls. As of this report 45 out of 60 sites have been visited, with the only remaining sites being those that surround the Salton Sea and Mecca areas.

Next steps

For completion of Aim 1, the vector abundance and virus positivity contribution score pipeline will be finalized. Vital to this process is validation of these scores against various intuitive metrics through discussions with the district. This will ensure that not only are the resulting scores and rankings statistically supported, but also track with the original goals of providing direct evidence for decision-making. Current validation procedures looks at correlation to time-lagged district-wide patterns (Figure 5), response to perturbations, and cross-validated year-over-year performance. This also serves as valuable internal feedback for the handling of contribution score calculations that can be tuned to maximize practical applicability. Continued development of these metrics for virus data is complicated by the sparser data and increased stochasticity but will follow the same validation and improvement process. These results will also be validated subjectively by district personnel to ensure that all concerns and questions are addressed. As per the proposed timeline this process will be completed at the end of the summer in preparation for development of Aims 2 and 3 and serve as its own result for publication.

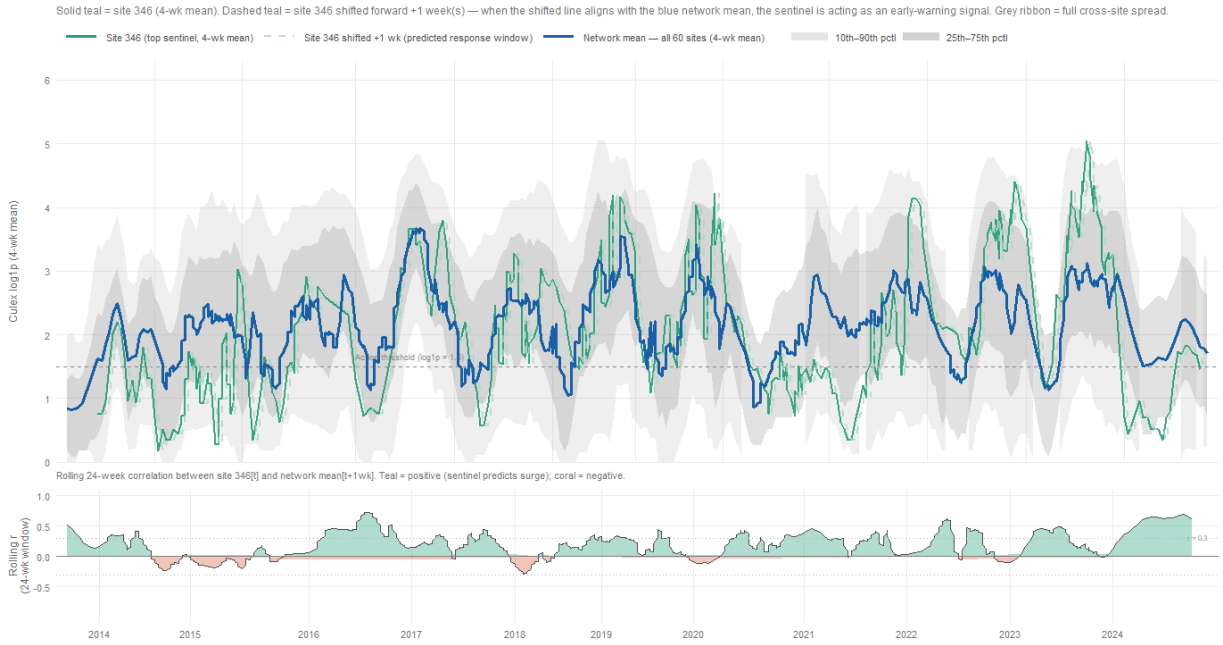

Figure 5. Example validation framework (in progress) for sites with high contribution score examining the correlation between individual site vector abundance patterns and the district averages at a one-week lead time. Lower graph area under curve represents total correlation for the 11 year period and can be compared to site score to see if there is a relationship between the computed metric and the valuable properties.

Once the contribution score pipeline for abundance and virus detection is completely finalized and validated, these characteristics will be weighed against score and interacting factors such as trap type to model the influence of local environmental factors on trap data performance. Factors that correlate with contribution score can then be characterized across the district to map out the spatial patterns in trap value, highlighting areas where additional trapping may yield higher quality insights.

Imminent completion of these visits and development of Aim 2 results will provide the necessary foundation for Aim 3 planning, identifying areas of high predicted value to conduct further surveillance. This will be conducted in the fall, with data to be analyzed through the end of the year. If sufficient auxiliary trapping in highlighted areas presents issues, Aim 3 can be bolstered using a hold-out and bootstrap computational approach. This will model existing sites as held-out validation sites across time and base their performance metrics against modeled predictions. Data from these trapping events (new sites or bootstrap) will then be compared to predicted trends based on contribution, e.g. did the counts from predicted high value sites lead that season's local or district-wide peak. The combined results of Aims 2 and 3 will then be combined for publication next year. In accordance with the proposed project, completion of these aims will provide objective evidence for deciding which traps are best used for predicting overall trends, supporting the IVM program overall and guiding future surveillance efforts.

Semiannual Research Progress Report #5 for CVMVCD grant:

Determining a fast-acting treatment for the rapid elimination fire ant colonies

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July 3, 2026

Summary of Activity January 2024 through June 2026.

The goal of the proposed 2-year (2024–25, extended through 2026) project is to determine an implementable method to rapidly eliminate red imported fire ant (fire ant) colonies in urban landscapes. A fast-acting fire ant mound treatment would complement the CVMVCD's fire ant baiting program by adding to the District's ability to respond effectively when the fast elimination of visible fire ant colonies in public facing areas is needed.

The specific objective in 2024 was to: *Determine the time to colony death of after spraying fire ant nests with non-repellent insecticides in Florida.*

- In 2024 (year 1) two field trials were conducted where the non-repellent insecticides with the active ingredients dinotefuran and indoxacarb showed promising results. The first trial occurred during a dry spell with minimal rain and high temperatures that started soon after the treatments were applied. During the second trial, there were frequent afternoon thundershowers and a tropical storm after treatments were applied. Results under the dry and wet conditions yielded less consistent results with the indoxacarb and dinotefuran, respectively. These varying rainfall extremes most likely affected colony splitting and movement.

- Trial 1 resulted in the elimination of all fire ant colonies treated with dinotefuran insecticide (Alpine WSG). Of the 11 treated nests (mounds), all were inactive 1–5 days after treatment. None of the dinotefuran treated colonies split or moved to new locations. The indoxacarb (Advion WDG) treatment had colonies moving or splitting in 4 of the 5 mound clusters which resulted in an addition of 4 mounds by the end of the study. Half of the 14 monitored mounds were active at the end of the study. In contrast, over 80% of the control mounds remained active, with mounds splitting in one cluster. The sum of the Population Indices (PIs) per cluster for the dinotefuran and indoxacarb treatments were significantly lower than the controls.

- In Trial 2 the dinotefuran treatment had 6 new mounds appear, probably due to colony splitting or moving from an original mound. At the end of the study, 19% (3/16) of the mounds in the dinotefuran clusters were active. Of the original mounds that received the dinotefuran sprays 50% (5/10) were inactive by day 4. In the indoxacarb treatment, colonies also split/moved resulting in the appearance of 4 additional mounds. Of the original treated mounds, 8 of 10 were rated as inactive by day 4. When the trial ended, 14% of the mounds were active. The control mounds had an increase of 10 mounds from the original 7 mounds.

When the study ended, 53% (9/17) of the control mounds were active. The final sum of the PIs per cluster for the dinotefuran and indoxacarb treatments were significantly lower than the controls.

- The results are very promising. It should be noted that the amount of non-repellent insecticide solution applied to thoroughly wet the surface of a large fire ant mound would be about 5 cups in contrast to 1–2 gallons of a standard insecticide drench application, or 68 – 84% less insecticide use.

In 2025 the objective is to: *Determine the speed of efficacy of spraying fire ant nests with non-repellent insecticides in the Coachella Valley.*

- **2025 (year 2)**. Under the new federal administration and USDA leadership, research was delayed due to a moratorium on processing agreements, and a prohibition on overnight travel. This moratorium was loosened in June and funding for the 2025 CVMVCD project became available. Overnight travel for research that can be justified as being critical with the potential to lose time-sensitive data may be approved.

- The moratorium on agreements resulted in the unavailability of funding for my lab's two interns and their service was "interrupted" as of February 28, 2025. The moratorium on agreements was lifted in the summer of 2025, but there is still a processing backlog due to staffing shortages and the federal government shutdown (Oct 1-Nov 12). The lab's former interns are no longer available as they have found employment elsewhere and/or moved.

- The Department of Government Efficiency's (DOGE) initiative to cut the federal workforce through buyout offers to resign, under the threat of possibly being laid off, has resulted in my lab's biological science technician, Rachel Atchison, to resign. She stopped working at the lab on May 1, 2025. Thus, my lab is currently without technical staff.

- The following article that was based on research funded by the District was published online in April 2025 in the Florida Entomologist journal.

  Oi, D.H., Atchison, R.A., Henke, J.A. (2025) Acceptance of fire ant baits by nontarget ants in Florida and California. *Florida Entomologist*. 108. https://doi.org/doi:10.1515/flaent-2024-0076.

- A 1 year no-cost extension was granted to complete the project. I plan to accomplish the second-year objective of conducting a fire ant field study in the Coachella Valley in 2026. I wanted to schedule the study in early spring (March/April) of 2026, however ARS only began to slowly reopen hiring in May. I am still without technical assistance, and as such, all research progress has slowed. The field study is now planned for early fall (Sept./Oct.) with the District's concurrence and assistance to locate potential study sites.

Year 3. Research Design and Methods (revised).
Obj. Determine the speed of efficacy of spraying fire ant nests with non-repellent insecticides in the Coachella Valley.

Based on the year 1 results, both dinotefuran and indoxacarb will be considered for field testing in irrigated desert conditions of the Coachella Valley of California. A randomized complete block design will be followed, using similar methods of the year 1 study with modifications for Coachella conditions. To determine active fire ant nests, each nest will be minimally disturbed by probing nests with a 1/4-inch diameter rod (or other minimal disturbance) and rated for activity: 0 = no or only moribund ants present; 1 = 1–20 live ants present; 2 = >20 live fire ants present. Nest activity will further be evaluated by fire ant counts at food lures (dollops of peanut butter or pureed hotdog) placed directly on the ground adjacent to nests. Ratings and counts will be used to assess pretreatment and final nest activity. Nests will be minimally excavated to confirm RIFA inactivity/survivorship on the 3rd consecutive day of nest activity ratings of zero. Population Index ratings will not be used because they are unreliable indicators of colony status in desert climates (DHO personal observations). Nests will be monitored daily for 1-week after treatments are applied. A two-way analysis of variance and a multiple comparison test (e.g., Ryan-Einot-Gabriel-Welsch test [$P \leq 0.05$]) will compare initial and final sums of RIFA counts on lures among treatments. The number of active nests and the average time to inactivity also will be reported per treatment.

Potential District Involvement.
Requested involvement of CVMVCD staff is as follows for Year 3 only:

1) Assistance with locating and obtaining access to sites that have visible fire ant nests (mounds). Criteria for these sites include the following:
    a. Minimum of 16 obviously visible, active RIFA mounds per site.
    b. Prefer 2 – 3 sites, thus a minimum total of 32 mounds over all test sites.
    c. Sites are accessible over weekends for data collection.
    d. Prefer sites to be irrigated during study.

2) Assist with conducting test: plot set up and treatment.

3) Total estimated assistance includes one CVMVCD staff; for one trip to the District, with the trip utilizing 1 – 3 days of staff time.

Milestones for: Determining a fast-acting treatment for the rapid elimination fire ant colonies, 2024–26 (Years1-2 + 1 yr ext.).

Year / Quarter	FL field tests	CA field test
2024 Jan-Mar	Test site(s) located: - completed	
2024 Apr-Jun	Field test 1: - completed	
2024 Jul-Sep	Field test 2 ~~if needed~~	
2024 Oct-Dec	Final report: - completed	
2025 Jan-Mar		~~Field test~~
2025 Apr*-Jun		~~Field test 2 if needed~~
2025 Jul-Sep		~~Final report~~
2025 Oct-Dec		~~Field test~~; Status report
2026 Jan-Mar		~~Field test prep~~
2026 Apr-Jun		~~Field test completed~~
2026 Jul-Sep		Field test prep & start
2026 Oct-Dec		Field test completed; Final report

ACTION ITEMS

	Coachella Valley Mosquito and Vector Control District **Staff Report**	**July 14, 2026**

Agenda Item: Action

Accept the resignation of Trustee Steve Downs **— Jeremy Wittie, MS, CSDM, General Manager**

Background:

Trustee Steve Downs resigned from his position on the Board of Trustees effective June 18, 2026.

The City of Rancho Mirage appointed a new Trustee, Michael O'Keefe, at their City Council Meeting on Thursday, June 18th to serve the remaining term of Trustee Down's term (January 2027).

Staff Recommendation:
Staff recommends accepting the resignation of Trustee Downs and thank him for his service to the District.

Attachments

- Trustee Downs' Resignation Letter

CITY OF RANCHO MIRAGE

Jeremy Wittie
Megan Scarborough-Eckel
43-420 Trader Pl,
Indio, CA 92201

Dear Jeremy and Megan,

This letter will serve as my intent to resign from the Board of Trustees of the Coachella Valley Mosquito and Vector Control District. My resignation will be effective as of Thursday, June 18, 2026.

There are several other Boards, Commissions and Agencies on which I've been appointed to serve, and I find that I'm time challenged in conducting my obligation to the District. To assure adequate attention to the business of the District, I believe it best for me to step back in favor of another appointment from the City of Rancho Mirage.

It has been my great pleasure to serve and to be a small part of advancing the District's mission of protecting public health. Many thanks to the two of you, to District Staff and to the entire Board of Trustees for your help and support during my time on the Board.

At the next meeting of the Rancho Mirage City Council on June 18, 2026, there will be an agenda item for the purpose of making an appointment to replace me. I'll keep you posted as to the outcome of that appointment.

With gratitude,

Steve Downs
Rancho Mirage City Council Member

	Coachella Valley Mosquito and Vector Control District **Staff Report**	**July 14, 2026**

Agenda Item: Action

Approval after the fact for immediate cleanup of pigeon feces on the long carport in the amount of **$30,092.63**, performed by Clean Harbors **— Jeremy Wittie, MS, CSDM, General Manager, Executive Committee, and David I'Anson, Administrative Finance Manager**

Background:

On June 6, contractors notified staff that the carport roof was heavily contaminated with pigeon feces and must be cleaned prior to proceeding with the installation of new solar panels. Staff contacted three vendors; two responded—Clean Harbors and ServPro. Clean Harbors submitted the lowest responsible proposal at $30,092.63 utilizing the Omnia Cooperative Purchasing Agreement, which allows the District to proceed without issuing a formal RFP.

This situation is considered a health and safety concern and requires immediate action rather than waiting until after the July Board Meeting. Delaying may also impact other costs associated with the project. The General Manager received approval from the Executive Committee to proceed. A claim has been submitted to the District's insurance provider for potential reimbursement. The Administrative Finance Manager spoke with the adjuster on June 22, and coverage is currently under review. If the expense is not covered, funds will be drawn from the District's VCJPA Contingency Fund, which currently has a balance of approximately $1.2 million.

Staff Recommendation:

- Staff recommends approval of expenditure

COMMITTEE AND TRUSTEE REPORTS

COACHELLA VALLEY MOSQUITO AND VECTOR CONTROL DISTRICT

Finance Committee Meeting
Minutes

TIME 4:30 p.m. **DATE:** June 9, 2026

LOCATION: 43420 Trader Place Indio, CA 92201

COMMITTEE MEMBERS PRESENT:

Indian Wells	John Vallat, Trustee
Palm Desert	Doug Walker, Trustee

COMMITTEE MEMBERS ABSENT:

Coachella	Frank Figueroa, EdD, Treasurer

OTHER TRUSTEES PRESENT:
None

STAFF PRESENT:
Jeremy Wittie, General Manager
David I'Anson, Administrative Finance Manager
Jennifer A Henke, Laboratory Manager
Megan Scarborough-Eckel, Clerk of the Board

MEMBERS OF THE PUBLIC PRESENT:
No

1. **Call to Order**
   Committee Member Walker called the meeting to order at 4:46 pm

2. **Roll Call**
   Roll Call indicated that two (2) Finance Committee members were present.

   Standing member, Treasurer Figueroa is absent.

3. **Confirmation of Agenda**
   Committee Member Walker inquired if anything on the agenda needed to be changed; seeing no comments or requests, the agenda was confirmed as stands.

4. **Public Comments**
   - **A. PUBLIC Comments — NON-AGENDA ITEMS:**
     None
   - **B. PUBLIC Comments — AGENDA ITEMS:**

None

5. **Items of General Consent**
    A. Minutes from Tuesday, May 12, 2026, Finance Committee Meeting

On a motion from Committee Member Walker, seconded by Committee Member Vallat, the Finance Committee approved all Items of General Consent.

Ayes: Committee Members Vallat, Walker

Noes: None

Abstained: None

Absent: Treasurer Figueroa

6. **Discussion, Review, and/or Update**-

A. Review of Check Report from Abila MIP for the period of May 8, 2026, to June 4, 2026

B. Credit Card Charges (Abila report & Microix Workflow Report) – Umpqua Statement dated May 31, 2026

C. Review of April 2026 Financials and Treasurers Report

D. 2026 Finance Committee Items

E. Review of finance related items on the June Board agenda

The committee had various questions and comments for staff.

7. **Trustee and/or staff comments/future agenda items**

    A. Next meeting: Tuesday, July 14, 2026, at 4:30 pm

8. **Adjournment**

There being no further business to discuss, Committee Member Walker adjourned the meeting at 5:07 pm.