Fiscal Year 2026-27

Santa Cruz County Mosquito & Vector Control (SCCMVC)

Mosquito, Vector and Disease Control Assessment

Engineer's Report

August 2025

Pursuant to the Health and Safety Code, Government Code and Article XIIID of the California Constitution

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Introduction

Overview of the Division

The Santa Cruz County Mosquito and Vector Control (SCCMVC) Division or 'Division', established in 1993, is committed to protecting public health by managing mosquito populations and controlling vector-borne diseases. Operating under the County Agricultural Commissioner's Office, the Division employs Integrated Vector Management (IVM) strategies, including mosquito surveillance, biological control, source reduction, and the use of highly specific, least toxic pesticides to minimize environmental impact.

In August 2005, SCCMVC significantly expanded its operations by forming the North County Mosquito and Disease Control Assessment, which was approved by over 70% of property owners. This ballot measure extended services from two original zones to the entire county, covering 445 square miles and including the Cities of Capitola, Santa Cruz, and Scotts Valley. The $12.00 assessment per single-family home generated approximately $710,000 for the 2005-06 fiscal year, allowing for enhanced mosquito control and increased staffing, especially in high-need areas.

The Santa Cruz County Board of Supervisors certified the measure, enabling SCCMVC to address public health threats such as West Nile Virus and encephalitis more effectively. Additionally, the funding supports the control of other vectors such as rodents, ticks, and flies. This Program consists of a dynamic combination of surveillance, treatment criteria, and the use of multiple control activities in a coordinated program including public education.

Over the years, SCCMVC has adapted to challenges such as urbanization and economic changes that affect mosquito breeding sites. The countywide expansion has enhanced the Program's ability to conduct extensive surveillance, implement targeted control measures, and respond promptly to public health threats.

Overview of Vector Control

A vector is defined by the State of California as "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, other insects, ticks, mites, and rats, but not including any domesticated animal…" [California Health and Safety Code Section 2200(f)]. The diseases of most concern in the area covered by the Division (Service Area or Assessment Area) are as follows, by the vector they are associated with:

- Mosquito-transmitted illnesses: West Nile virus (WNV), Western Equine Encephalitis virus (WEEV), Saint Louis Encephalitis virus (SLEV), dog and cat heartworm, malaria, Dengue virus, Chikungunya virus, and Zika virus.
- Tick-transmitted illnesses: Lyme disease, Hard Tick Relapsing Fever (HTRF), babesiosis, ehrlichiosis, tularemia, rickettsial illnesses, anaplasmosis.
- Rodent-transmitted illnesses: leptospirosis, hantavirus, tularemia, plague, and rat-bite fever.
- Other vector-transmitted illnesses: rabies by bats or other wildlife, plague and murine typhus transmitted by fleas, and raccoon roundworm.

Depending on the specific disease, both human and domestic animal health may face risks of illness, disability, or even death. Additionally, existing vectors can introduce and spread new diseases, and new disease vectors can enter the Service Area.

SCCMVC's Integrated Vector Management (IVM) practices involve a continuous series of coordinated actions aimed at controlling mosquitoes and other vectors that cause human disease and discomfort. The Division's efforts include identifying vector-related issues; taking responsive measures to reduce current vector populations, preventing the emergence of new vector sources, and managing habitats to limit vector breeding; and educating landowners and the public on strategies to decrease vector presence or interactions.

This integrated systems approach to mosquito and vector control means that pesticides are used as the last line of defense for vector management. When pesticides are necessary, SCCMVC's inventory consists of products that are naturally derived, organic, and/or highly specific to the target pest. Additionally, when pesticides are required to protect public health, they are used in rotation, which is an environmentally responsible technique to prevent resistance.

Introduction to Benefit to Property

The services to be provided to the Assessment Area will include intensive surveillance, disease prevention, abatement, and control of mosquitoes for properties within the Assessment Area. Such mosquito, vector and disease prevention services, projects and programs include, but are not limited to: source reduction, biological control, larvicide applications, adulticide applications, disease monitoring, public education, reporting, accountability, research and interagency cooperative activities, as well as capital costs, maintenance, and operation expenses as further described below.

The Assessment Area is narrowly drawn to include only properties that can request and/or receive service, that are located within the scope of the vector surveillance area, that are located within flying or traveling distance of potential vector sources monitored by SCCMVC, and that will benefit from a reduction in the amount of vectors reaching and impacting the property as a result of the enhanced mosquito surveillance and control. The Assessment Diagram included in this report shows the boundaries of the Assessment Area.

Summary of Services

The following is an outline of the primary programs, projects, services, and improvements (collectively "Services") that will be funded by the Mosquito, Vector and Disease Control assessment:[1]

- County-wide surveillance of native and invasive mosquitoes and the diseases they carry.
- Testing for a variety of vector-borne diseases carried by mosquitoes, ticks, and other vectors of public health concern.
- Rodent exclusion inspection and consultation services as a long-term solution to prevent public health hazards associated with rodent damage and their common ectoparasites like mites and fleas.
- Tick identification and disease risk consultation based on species, life stage, and other risk factors.
- Delivery of mosquito-eating fish for county residents for use in backyard ponds, livestock troughs, and other artificial water sources.
- Rapid response to service requests concerning mosquitoes, rodents, ticks, and other vectors.
- Environmentally responsible and highly specific mosquito control treatments when necessary to reduce disease risk and protect public health.

[1] The improved mosquito and vector control and disease prevention services would materially increase the usefulness, utility, livability and desirability of properties in the Assessment Area.

- Community engagement through education, presentations, and events designed to promote awareness and empower residents to practice vector safety and vector-borne disease prevention.

This Engineer's Report (Report) defines the proposed benefit assessment, which will provide funding for these improved mosquito, vector and disease control services for property throughout the Division, as well as related costs for equipment, capital improvements and services, and facilities necessary and incidental to mosquito, vector and disease control programs.

As used within this Report and the benefit assessment ballot proceeding, 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 rodents and other vertebrates (Health and Safety Code Section 2002(k)).

"Vector Control" means 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(l)).

The Division operates under the authority of the Mosquito Abatement and Vector Control District Law of the State of California. The following are excerpts from the Mosquito Abatement and Vector Control District Law of 2002, codified in the Health and Safety Code, Section 2000, et seq., which serve to summarize the State Legislature's findings and intent with regard to mosquito abatement and other vector control services:

2001. (a) The Legislature finds and declares all of the following:
(1) California's climate and topography support a wide diversity of biological organisms.
(2) Most of these organisms are beneficial, but some are vectors of human disease pathogens or directly cause other human diseases such as hypersensitivity, envenomization, and secondary infections.
(3) Some of these diseases, such as mosquitoborne viral encephalitis, can be fatal, especially in children and older individuals.
(4) California's connections to the wider national and international economies increase the transport of vectors and pathogens.
(5) Invasions of the United States by vectors such as the Asian tiger mosquito and by pathogens such as the West Nile virus underscore the vulnerability of humans to uncontrolled vectors and pathogens.
(b) The Legislature further finds and declares:
(1) Individual protection against the vectorborne diseases is only partially effective.
(2) Adequate protection of human health against vectorborne diseases is best achieved by organized public programs.

(3) The protection of Californians and their communities against the discomforts and economic effects of vectorborne diseases is an essential public service that is vital to public health, safety, and welfare.

(4) Since 1915, mosquito abatement and vector control districts have protected Californians and their communities against the threats of vectorborne diseases.

(c) In enacting this chapter, it is the intent of the Legislature to create and continue a broad statutory authority for a class of special districts with the power to conduct effective programs for the surveillance, prevention, abatement, and control of mosquitoes and other vectors.

(d) It is also the intent of the Legislature that mosquito abatement and vector control districts cooperate with other public agencies to protect the public health, safety, and welfare. Further, the Legislature encourages local communities and local officials to adapt the powers and procedures provided by this chapter to meet the diversity of their own local circumstances and responsibilities.

Further the Health and Safety Code, Section 2082 specifically authorizes the creation of benefit assessments for vector control, as follows:

(a) A district may levy special benefit assessments consistent with the requirements of Article XIIID of the California Constitution to finance vector control projects and programs.

Assessment Process

This Report describes the mosquito, vector and disease control services to be funded by the assessment, to establish the estimated costs for those services, to determine the special benefits and general benefits received by property from the services, and to apportion the assessments to lots and parcels within the Division's Service Areas based on the estimated special benefit each parcel receives from the services funded by the benefit assessment.

Following submittal of this Report to the Board of Supervisors (Board) for preliminary approval, the Board, by Resolution, may call for an assessment ballot protest proceeding and public hearing on the proposed establishment of Assessments for the provision of the Services.

If the Board so directs, a notice of assessment and assessment ballot will be mailed to property owners within the Assessment District boundaries who receive special benefit from the Services. Such notice will include a description of the Services to be funded by the proposed Assessments, the proposed assessment amount for each parcel owned, and an explanation of the method of submitting a ballot on the Assessments. Each notice will include a ballot on which the property owner would mark their support for or opposition to the proposed Assessments and signature, as well as a postage prepaid envelope in which to return the ballot. Ballots are scheduled to be mailed on September 2, 2025.

After the ballots are mailed to property owners in the Improvement District, a minimum 45-day time period must be provided for the return of the assessment ballots. Following this 45-day time period, a public hearing must be held for the purpose of allowing public testimony regarding the proposed Assessments, and the submission of property owner ballots. The Public Hearing is tentatively scheduled for November 4 at 9:00 am. At the Public Hearing, the public will have the opportunity to speak on the issue, voice any concerns or protests, obtain further information about the proposed Assessments, and submit ballots.

Tabulation of the returned ballots will begin after the close of the public input portion of the Public Hearing. It is anticipated that the tabulation results will be announced at the Board meeting on November 18, 2025. If it is determined that the assessment ballots submitted in opposition to the proposed Assessments do not exceed the assessment ballots submitted in favor of the Assessments (each ballot is weighted by the proportional financial obligation of the property for which the ballot is submitted) the Board may take action to approve the levying of Assessments for Fiscal Year 2026-27. If the Assessments are so confirmed and approved, the assessment information will be submitted to the County Auditor/Controller. The County Auditor/Controller will include the Assessments on the property tax roll for Fiscal Year 2026-27.

Legislative Analysis

Proposition 218

This assessment will be formed consistent with Proposition 218, The Right to Vote on Taxes Act, which was approved by the voters of California on November 6, 1996, and is now Article XIIIC and XIIID of the California Constitution. Proposition 218 provides for benefit assessments to be levied to fund the cost of providing services, improvements, as well as maintenance and operation expenses to a public improvement which benefits the assessed property.

Proposition 218 describes a number of important requirements, including a property-owner balloting, for the formation and continuation of assessments, and these requirements are satisfied by the process used to establish this assessment. When Proposition 218 was initially approved in 1996, it allowed for certain types of assessments to be "grandfathered" in, and these were exempted from the property–owner balloting requirement.

> *Beginning July 1, 1997, all existing, new, or increased assessments shall comply with this article. Notwithstanding the foregoing, the following assessments existing on the effective date of this article shall be exempt from the procedures and approval process set forth in Section 4:*
> *(a) Any assessment imposed exclusively to finance the capital costs or maintenance and operation expenses for sidewalks, streets, sewers, water, flood control, drainage systems or vector control.*

Vector control was specifically "grandfathered in," underscoring the fact that the drafters of Proposition 218 and the voters who approved it were satisfied that funding for vector control is an appropriate use of benefit assessments and therefore confers special benefit to propert

Silicon Valley Taxpayers Association, Inc. v Santa Clara County Open Space Authority *(2008) 44 Cal.4th 431*

On July 14, 2008, the California Supreme Court issued its ruling on the Silicon Valley Taxpayers Association, Inc. v. Santa Clara County Open Space Authority ("*Silicon Valley*"). Several of the most important elements of the ruling included further emphasis that:

- Benefit assessments are for special, not general benefit
- The services and/or improvements funded by assessments must be clearly defined
- Special benefits are directly received by and provide a direct advantage to property in the Assessment District

Dahms v. Downtown Pomona Property (2009) 174 Cal.App.4th 708

On June 8, 2009, the 4th Court of Appeal amended its original opinion upholding a benefit assessment for property in the downtown area of the City of Pomona. On July 22, 2009, the California Supreme Court granted review and transferred the case to the Court for Appeal for reconsideration in light of the Supreme Court's discussion in the above cited Silicon Valley Taxpayers Association case. In Dahms the Appellate Court on reconsideration upheld the assessment that was 100% special benefit (i.e. 0% general benefit) on the rationale that the services and improvements funded by the assessments were directly provided to property in the assessment district. The Court also upheld discounts and exemptions from the assessment for certain properties.

Bonander v. Town of Tiburon *(2009) 46 Cal.4th 646*

On December 31, 2009, the First Appellate District overturned a benefit assessment approved by property owners to pay for placing overhead utility lines underground in an area of the Town of Tiburon. The Court invalidated the assessments on the grounds that the assessments had been apportioned to assessed property based in part on relative costs within sub-areas of the assessment district instead of proportional special benefits.

Beutz v. County of Riverside *(2010) 184 Cal.App.4th 1516*

On May 26, 2010, the Fourth Appellate District issued a decision on the Steven Beutz v. County of Riverside ("*Beutz*") appeal. This decision overturned an assessment for park maintenance in Wildomar, California, primarily because the general benefits associated with improvements and services were not explicitly calculated, quantified and separated from the special benefits.

Golden Hill Neighborhood Association V. City of San Diego *(2011)199 Cal.App.4th 416*

On September 22, 2011, the Fourth Appellate District issued a decision in the Golden Hill Neighborhood Association v. City of San Diego. This decision overturned an assessment for street and landscaping maintenance in the Greater Golden Hill neighborhood of San Diego, California. The court described two primary reasons for its decision. First, as in *Beutz*, the court found the general benefits associated with services were not explicitly calculated, quantified and separated from the special benefits. Second, the court found that the City had failed to document the basis for the assessment on its own parcels.

Concerned Citizens for Responsible Government v. West Point Fire Protection District *(2011)149 Cal. Rptr. 3d 640*

On November 28, 2012, the California Supreme Court dismissed the appeal in the case of Concerned Citizens for Responsible Government v. West Point Fire Protection District (Case No. S195192) "as moot." The Court granted review of the decision early in July 2012 after several local government organizations petitioned the Court to have the decision de-published because of its apparent conflicts with the California Constitution and potentially overly broad impact on other assessments.

For fire agencies, the most concerning aspect of the decision from the Third Appellate District was that it stated that fire services (as opposed to improvements) may be in whole or in part a general benefit, and therefore unsuitable for funding with an assessment. The decision remains unpublished and cannot be cited as binding precedent.

Compliance with Current Law

This Report is consistent with the requirements of Article XIIIC and XIIID of the California Constitution and with the *Silicon Valley* decision because the Services to be funded are clearly defined; the Services are available to and will be directly provided to all benefited property in the Assessment District; the Services provide a direct advantage to property in the Assessment District that would not be received in absence of the assessment, and are benefits that are over and above general benefits conferred on real property located in the district or to the public at large by other public entities that make up the membership of the Authority.

This Report is consistent with *Dahms* because, similar to the Downtown Pomona assessment validated in *Dahms*, the Services will be directly provided to property in the Assessment District. More specifically, as discussed hereafter, the Services afford benefits specifically unique and supplied only to property owners within the District with a corresponding effect that is not shared by other parcels outside of the District or real property in general including the public at large. While *Dahms* could be used as the basis for a finding of 0% general benefits, this Engineer's Report establishes a more conservative separation and quantification of general benefits.

The Report is also consistent with *Bonander* because the Assessment has been apportioned based on the proportional special benefit to each property. Furthermore, the Assessment is consistent with *Beutz* and *Golden Hill* because the general benefits have been explicitly calculated, quantified, and excluded from the assessment.

Current Funding for Vector Control Program is Inadequate

Since its formation in 1993, the Santa Cruz County Mosquito & Vector Control Division has been funded primarily through a benefit assessment charged on property tax bills, ranging from approximately $18.69 to $24.26 annually for single-family homes. While this modest fee has supported essential mosquito and vector control services across the county's 445 square miles, including surveillance, prevention, and environmentally responsible control, the assessment has not kept pace with rising operational costs, including increased expenses for supplies, equipment, and responding to emerging vector threats.

The Division does not receive funding from the County general fund and has been relying on reserve funds to cover budget shortfalls. With operational expenses continuing to rise, the current funding is insufficient to maintain existing service levels or address new challenges effectively.

A critical emerging concern is the invasive *Aedes aegypti* mosquito, first detected in Watsonville in 2022. This species has been responsible for dengue virus transmission in Southern California in recent years and poses a growing public health risk in Santa Cruz County. Controlling *Aedes aegypti* requires increased and sustained monitoring, testing, and treatment efforts, which place additional financial demands on the program.

The proposed Benefit Assessment aims to close the funding gap and allow the Division to maintain and enhance critical services, including:

- Monitoring native and invasive mosquitoes and the diseases they may carry.
- Testing mosquitoes, ticks, and other vectors for diseases of public health concern.
- Inspections and advice to prevent and mitigate rodent infestations.
- Tick identification and disease risk consultation.
- Delivery of mosquito-eating fish for ponds and troughs.
- Rapid response to service requests from the public related to mosquitoes, rodents, ticks, and other vectors.
- Environmentally responsible mosquito control when needed to protect public health.
- Engaging the community through education to promote vector safety and disease prevention.

Summary of Benefit Assessment Rates and Revenue by Zone

To fund the cost of providing mosquito, vector and disease control services in the Fiscal Year 2026-27, the proposed Assessment will generate approximately $1,118,297. This funding amount reflects the financial needs of the program and is distributed proportionally based on benefits received. The assessment includes two service zones: Zone A, assessed at $11.99 per Single Family Equivalent (SFE), is expected to generate approximately $1,103,610, while Zone B, assessed at $11.69 per SFE, is expected to generate approximately $14,687.

General Description of the Division and Services to be Provided

About the Santa Cruz County Mosquito & Vector Control Division

Established in 1993 as a division of the County Agricultural Commissioner's Office, the Santa Cruz County Mosquito & Vector Control Division (SCCMVC) is dedicated to managing mosquitoes and other vectors to protect public health. SCCMVC employs Integrated Vector Management (IVM) practices to address vector-related challenges. These practices include source reduction, biological control, rodent exclusion, public education, and frequent surveillance of dangerous invasive species throughout the county.

In 2005, the program expanded its service area to encompass the entire County of Santa Cruz, covering approximately 445 square miles. This expansion included key cities such as Capitola, Santa Cruz, Scotts Valley, Davenport, Soquel, Live Oak, Corralitos, the San Lorenzo Valley, and other unincorporated regions, in addition to areas that had been served since 1994. The Division now serves over 270,000 residents and handles more than 500 service calls annually, addressing a wide range of vector-related issues. This growth has enhanced the Division's capacity for extensive mosquito surveillance, targeted control measures, and timely responses to public health threats like West Nile Virus, encephalitis, Lyme disease, and other vector-borne diseases.

Year-round and countywide, SCCMVC conducts regular inspections of mosquito habitats, monitors mosquito populations through sampling and trapping, and implements control strategies focused on the aquatic stages of mosquito development to ensure effective and sustainable management. Additionally, SCCMVC provides valuable services such as distributing mosquitofish for backyard ponds, offering rodent inspections, and educating the community on minimizing vector interactions.

Introduction

The Services to be provided by the Division are over and above the baseline level of service that would be provided if the measure is not approved. The formula below identifies the final level of service as the sum of the baseline level of service (without the assessment) and the enhanced level of service to be funded by the assessment.

Final Level of Service	=	**Baseline Level of Service**	+	**Enhanced Level of Service**

Mosquitoes

Mosquitoes generally occur where there is adequate vegetation for harborage and where water is standing and/or stagnant. Although mosquitoes have seasonal breeding cycles throughout the rest of the State, Santa Cruz County's temperate climate tends to produce mosquitoes and other vectors year-round. The mosquito species listed in the table below can be generally described as species of concern in Assessment Area:

SPECIES	HABITAT	ABUNDANCE	SEASON	DISEASE ASSOCIATIONS
Culex tarsalis	Many	Great	Year Round	West Nile Virus, St. Louis Encephalitis, Western Equine Encephalitis
Culex quinquefasciatus	Many	Great	Year Round	West Nile Virus, St. Louis Encephalitis, dog heart worm
Culex erythrothorax	Tule Ponds	Great	Year Round	Potential for secondary reservoir for WNV
Culex stigmatosoma	Foul water	Great	Year Round	West Nile and other arboviruses
Aedes. squamiger	Saltwater tidal	Great	Winter	Serious daytime pest in recreational areas
Culex pipiens	Many	Great	Spring, Summer, Fall	West Nile virus, St. Louis encephalitis
Culiseta incidens	Many	Moderate	Winter, Spring, Fall	None, serious pest in urban/suburban areas
Culiseta inornata	Many	Moderate	Winter, Spring, Fall	None, serious pest in urban/suburban areas
Anopheles franciscannis	Creeks, lakes, wetlands	Moderate	Summer, Fall	Dawn/ Dusk pest
Anopheles punctipennis	Creeks, lakes	Moderate	Summer, Fall	Malaria
Aedes aegypti	Small sources around homes	Undetermined	Summer, Fall	Dengue, Chikungunya, Zika, West Nile virus
Aedes sierrensis	Oak tree holes, walnut orchards	Moderate	Late Winter, Spring	Canine heartworm, serious pest in urban/suburban areas

Culiseta particepts	Many	Moderate	Spring, Summer, Fall	None, serious pest in urban/suburban areas rural
Aedes washinoi	Fresh floodwater sites	Moderate	Winter, Spring	Pest in spring (day)
Aedes dorsalis	Saltwater tidal	Moderate	Summer	Serious daytime pest in recreational areas

The mosquito breeding habitats in Northern Santa Cruz County range from street gutters to catch basins, marsh areas, irrigated lands, storm water basins, neglected pools, ponds, creeks, birdbaths, or any artificial containers found in backyards. Mosquito and/or vector control activities are conducted at a wide variety of locations or sites throughout the Division's Service Area, including tidal marshes, duck clubs, other diked marshes, lakes and ponds, rivers and streams, vernal pools and other seasonal wetlands, stormwater detention basins, flood control channels, spreading grounds, street drains and gutters, wash drains, irrigated pastures, or agricultural ditches, as well as animal troughs, artificial containers, tire piles, fountains, ornamental fishponds, swimming pools, liquid waste detention ponds, and non-natural harborage (such as covered wood piles, residential and commercial landscape, trash receptacles). Throughout the Assessment Area, activities would be conducted at similar sites. Of particular note in the table above, *Aedes aegypti* may be eradicated from one area but can reappear elsewhere; the Division conducts ongoing surveillance and rapid response to prevent its establishment and protect public health.

Culex tarsalis (Western Encephalitis Mosquito) is the primary vector of West Nile Virus (WNV), Saint Louis encephalitis (SLE) and the Western Equine encephalomyelitis (WEE) viruses. This species lives in a variety of aquatic sources ranging from clean to polluted waters, flooded agricultural fields to backyard stagnant pools, and fresh water to high salinity brackish water. This mosquito breeds year-round and prefers to feed on birds. However, it readily attacks humans, horses and cattle.

Culex quinquefasciatus (Southern House Mosquito) is most frequently found in residential communities. This species breeds in highly polluted waters, artificial containers, septic tanks, underground channels, catch basins, waste treatment ponds, and neglected swimming pools. Birds are the principal blood meal source; however, they will readily attack humans and invade their homes. This mosquito is also an excellent vector for West Nile virus.

Culex erythrothorax (Tule Mosquito) is associated with ponds containing water plants called Tules. The Tule mosquito is a late morning/nighttime-biting mosquito and has been identified as a species of concern in the transmission of West Nile virus to birds. (Secondary reservoir)

Culex stigmatosoma: This mosquito breeds in foul water. It is primarily a bird feeder but will bite humans and animals.

Culiseta spp: This species breeds in a variety of habitats during the cooler months, and active mostly during late fall and winter. These mosquitoes are also associated with the transmission of arboviruses.

Anopheles spp: These mosquitoes also breed in cool shaded areas in riparian habitats and a variety of other habitats. This species is known to transmit malaria.

Native Aedes species: Breed in environments such as irrigated pastures, salt marshes, containers, and tree holes. These mosquitoes are known to be fierce day biters. An example of a native species is Aedes sierrensis, which is capable of transmitting dog heartworm.

Invasive Aedes species: notably the Asian Tiger mosquito (Aedes albopictus) and the Yellow Fever mosquito (Aedes aegypti), have spread extensively across Southern California, the Central Valley, and portions of Northern California over the past decade. This spread represents a significant public health concern because these invasive mosquitoes can transmit several serious diseases, including Dengue, Chikungunya, Yellow Fever, and Zika viruses. In 2022, Aedes aegypti was discovered in Watsonville, marking its continued expansion in the state. These invasive species have already been linked to dengue transmission in Southern California in 2023 and 2024. Due to their aggressive nature and disease vector potential, combating these invasive mosquitoes requires enhanced resources and coordinated control efforts.

The Santa Cruz County Mosquito & Vector Control Division applies the latest integrated and environmentally sound methods to control mosquitoes in the county. SCCMVC works with City, County, State, and Federal agencies toward the permanent correction of mosquito breeding sources.

The mosquito-borne diseases of most concern locally are: WNV, WEE, and SLE which are all transmitted by mosquitoes. Among the principal threats to which the Division responds are:

- Human and animal diseases associated with mosquitoes
- Annoyance and economic disruption caused by mosquitoes

Integrated Vector Management (IVM)

SCCMVC's Services address several types of vectors through Integrated Vector Management (IVM). This includes the identification and control of vector populations, the prevention of new sources of vectors from developing, and the management of habitat in order to minimize vector production. Also included is the education of residents on measures to minimize vector production or interaction with vectors, and the provision and administration of funding and institutional support necessary to accomplish these goals.

Program

SCCMVC's IVM program seeks by definition to use procedures that will minimize potential environmental impacts. SCCMVC employs IVM principles by first determining the species and abundance of mosquitoes/vectors through evaluation of public service requests and field surveys of immature and adult mosquito/vector populations and, then, if the populations exceed predetermined criteria, using the most efficient, effective, and environmentally sensitive means of control. For all vector species, public education is an important control strategy. In some situations, water management or other physical control activities can be instituted to reduce mosquito-breeding sites or habitats for other vectors like ticks. SCCMVC also uses biological control such as mosquito-eating fish in ornamental fishponds, water troughs, water gardens, fountains, and unmaintained swimming pools. When these approaches are not effective or are otherwise deemed inappropriate, then pesticides are used to treat specific pest-producing or pest-harboring areas.

Three core tenets are essential to the success of a sound IVM program:

- First, a proactive approach is necessary to minimize impacts and maximize successful vector management. Elements such as thorough surveillance and a strong public education program make all the difference in reducing potential human vector interactions.
- Second, long-term environmentally based solutions (e.g., water management, reduction of harborage and food resources, exclusion, and enhancement of predators and parasites) are optimal as they reduce the potential pesticide load in the environment as well as other potential long- and short-term impacts.
- Lastly, utilizing the full array of options and tools (public education, surveillance, physical control, biological control, and when necessary chemical control) in an informed and coordinated approach supports the overall goal of an environmentally sensitive vector management program.

Physical Control

When managing vector habitat to reduce vector production or migration, either directly or through public education is often the most cost-effective and environmentally benign element of an Integrated Vector Management (IVM) program. This approach to the control of vectors and other pests is often called "physical control" to distinguish it from those vector management activities that directly rely on the application of chemical pesticides (chemical control) or the introduction or relocation of living agents (biological control). Other terms that have been used for vector habitat management include "source reduction," which emphasizes the significance of reducing the habitat value of an area for vectors, or "permanent control," to contrast with the temporary effectiveness of pesticide applications. Vector habitat management is important because its use can virtually eliminate the need for pesticide use in and adjacent to the affected habitat and, in some situations, can virtually eliminate vector production from specific areas for long periods of time, reducing the potential disturbances associated with frequent biological or chemical control activities. The intent is to reduce the abundance of vectors produced or sheltered by an area while protecting or enhancing the habitat values of the area for desirable species. In many cases, physical control activities involve restoration and enhancement of natural ecological functioning, including the production and dispersal of special-status species and/or predators of vectors.

Physical control for mosquitoes consists of the management of mosquito-producing habitats (including freshwater marshes and lakes, saltwater marshes, temporary standing water for 1 week or more, and wastewater treatment facilities), especially through water control and maintenance or improvement of channels, tide gates, levees, and other water control facilities. Physical control is usually the most effective mosquito control technique because it provides a long-term solution by reducing or eliminating mosquito developmental sites and ultimately reduces and potentially eliminates the need for chemical applications.

For vegetation management, SCCMVC uses hand tools, mechanical means (i.e., power saws), and expertise for vegetation removal or thinning and sometimes applies herbicides (chemical pesticides with specific toxicity to plants) to improve surveillance or reduce vector habitats. Vegetation removal or thinning primarily occurs in aquatic habitats to increase access for SCCMVC staff for thorough monitoring and control of mosquitoes in water bodies that are habitats for mosquitoes. To reduce the potential for mosquito breeding associated with water retention and infiltration structures, SCCMVC staff may systematically clear weeds and other obstructing vegetation in wetlands and retention basins (or request the structure's owners to perform this task). In some sensitive habitats and/or where sensitive species concerns exist, vegetation removal and maintenance actions would be restricted to those months or times of the year that minimize disturbance/impacts.

Tools ranging from shovels and pruners to chain saws and "weed-whackers" up to heavy equipment such as an ARGO or airboat can all be used at times to clear or move through plant matter that either prevent access to mosquito breeding sites or that prevent good water management practices that would minimize mosquito populations. Strict adherence to bird nesting parameters is observed. Generally, however, SCCMVC "brushing" activities rely almost entirely on hand tools. Trimmed vegetation is either removed and disposed of properly from the site or broadcast in such a way as to minimize visual degradation of the habitat. SCCMVC engages in coordination with landowners, and the acquisition of necessary permits is completed before any work is undertaken. Follow-up surveys are also conducted to verify that the work undertaken was effective and that the physical manipulation of the vegetation did not result in any unintended overall habitat degradation.

The Division is organized into three principal sections to accomplish integrated Vector Management (IVM). First, the administration provides leadership, expertise, public relations/education, and interface with other governmental authorities.

Second, the operations program of the Division includes technicians who perform IVM in the field. Each technician is assigned a zone of operation, with the technician responsible for service requests and control activities in his or her area. Due to the independent nature of their job duties, certification and training are provided to technicians through the collaborative state-wide continuing education program which is overseen by the California Department of Public Health. Technicians perform visual surveillance by responding to resident complaints and by extensive examination of vector breeding habitats. In addition, technicians monitor their areas to be sure that their control efforts have been successful.

Finally, the surveillance program provides oversight of safety and personal protection, supplements surveillance performed by technicians with advanced trapping techniques, interacts with local government agencies for long-term reduction of vector sources, and performs operational research in support of IVM. Training programs are conducted for the safe use of equipment, lab work, machinery, or tools and the safe use and disposal of pesticides.

Chemical Control

When pesticides are necessary for use as part of the SCCMVC's IVM program, inventory consists of products that are naturally derived, organic, and/or highly specific to the target pest. The pesticides are applied according to label requirements to ensure the safety of the applicators, the environment, and the public. The active ingredients used in these formulations are applied at low concentrations and thus minimize impacts on non-target organisms from acute and/or chronic exposures. Manufacturers carefully establish application amounts mandated by product use requirements for treatment efficacy and low potential risk to non-target organisms. The active ingredients of modern mosquito control products and those used by SCCMVC are substantially below the thresholds used for toxicity studies in the laboratory. The pesticides SCCMVC selects are designed to degrade rapidly in the environment, thereby reducing the opportunity for residual presence and environmental persistence. Additionally, mosquito control products are rotated, which is a responsible step in the IVM process to prevent and limit pesticide resistance in local pest populations.

Best Management Practices

SCCMVC has implemented a number of procedures and practices under current Program activities that would continue for the division. These Best Management Practices (BMPs) represent measures to avoid, minimize, eliminate, rectify, or compensate for potential adverse effects on the human, biological, and physical environments and Division Staff. While similar to mitigation measures under CEQA, these BMPs are already in use and will continue to be used as part of the Program.

- Conduct Regular Surveillance: Monitor mosquito populations and disease presence to inform control measures.
- Eliminate Standing Water: Remove or treat water sources to prevent mosquito breeding.
- Apply Larvicides Judiciously: Use EPA-registered larvicides in standing water that cannot be removed.
- Use Biological Control Agents: Introduce natural predators to reduce mosquito larvae populations.
- Engage in Public Education: Inform the community about mosquito prevention and control practices.
- Evaluate and Adapt Control Strategies: Regularly assess the effectiveness of control measures and adjust as necessary.

The Division will observe all state and federal regulations. The Division will follow all appropriate laws and regulations pertaining to the use of pesticides and herbicides and safety standards for employees and the public, as governed by the USEPA, CDPR, and local jurisdictions (with some exceptions). Although the products the Division uses are all tested, registered, and approved for use by the USEPA and/or CDPR, Divisions provide additional margins of safety with the adherence to additional internal guidance based on BMPs and the principles embodied in Division IVM policies, where applicable.

- Ensure all Division and contracted applicators are appropriately licensed by the state.
- Division staff or contractors will coordinate with the County Agricultural Commissioner, and obtain and verify all required licenses and permits as current prior to pesticide/herbicide application.
- All applicators and handlers will use proper personal protective equipment.

Mosquito Adulticides

The Division maintains the capability to implement aerosolized insecticide applications for adult mosquito control when necessary to protect public health. While this method is not currently in use, it may be employed in the future if conditions warrant. Any such application would require prior approval from the Santa Cruz County Board of Supervisors.

Mosquitoes

Risk assessment: Historically, *Culex tarsalis* and *Culex pipiens* have been abundant in Santa Cruz County. The great vector potential of these species identifies them as the principal mosquito species of concern. *Culiseta spp.*, particularly *Culiseta inornata*, is widespread in the County, occurring in many kinds of habitats throughout the year. However, tests of their ability to transmit viral pathogens show them to be of little significance as vectors.

Surveillance: Surveillance of mosquitoes is accomplished by using a combination of methods. First, technicians and surveillance staff actively examine potential sites by sampling mosquito habitats and collecting larvae, and then laboratory staff identifies the larvae to species. Second, individual residents and property owners call SCCMVC with complaints about bites or potential larval sites. Finally, various traps (light traps, carbon dioxide-baited traps, foul water (gravid), and red box traps are used to collect adult mosquitoes. The adults are collected weekly and/or bi-weekly and are subsequently classified and identified as species. (As described below)

During the warm months, additional temporary staff is hired to help inspect and treat tens of thousands of sources throughout the county. Catch basins in particular can produce *Culex pipiens* in great numbers at locations close to residences and businesses.

Viruses transmitted by mosquitoes are surveyed by testing mosquitoes, as well as the avian reservoirs and humans. Viral tests of mosquitoes or birds are performed by the California Department of Public Health or the Davis Arbovirus Research and Training Laboratory.

Control: SCCMVC currently uses four principal control materials to kill mosquito larvae. The toxins of the naturally occurring bacteria *Bacillus thuringiensisisraelensis* (Bti) can be applied as either a liquid or a granule. Bti has the tremendous advantage of specificity, only affecting mosquitoes and related groups of flies. The spores of *Bacillus sphaericus* (Bs) are also available in liquid spray or granular application. This product has the advantage over Bti of reproducing in the water, extending the life of its effectiveness. Bs is only effective against the *Culex* species of mosquitoes and works well in highly polluted water. Methoprene is an analog for natural insect hormone that prevents the successful completion of mosquito development. It is available as a liquid and longer-acting granules and briquettes. Spinosad, a naturally derived bacterial insecticide, is also used to target mosquito larvae by disrupting their nervous system. Finally, the Division uses monomolecular surface oil to suffocate immature mosquitoes when they are found in appropriate water bodies.

Larvicides are applied when the chemical control criteria for mosquito larvae are present and application rates vary according to time of year, water temperature, the level of organic content in the water, the type of mosquito species present, larval density, and other variables. Additionally, the Division utilizes essential oil-based larvicidal products as part of its integrated mosquito control strategy. Larvicide applications may be repeated at any site at recurrence intervals ranging from annually to weekly.

Larvicides the Division routinely uses include:

Bti is a biological larvicide. Bti is a bacterium that is ingested by mosquito larvae and that disrupts their gut lining, leading to death before pupation. The Division applies Bti as a liquid or bonded to an inert substrate (sand or corncob granules) to assist penetration of vegetation. Persistence is low in the environment, and efficacy depends on careful timing of application to coincide with periods in the life cycle when larvae are actively feeding. Pupae and late-stage larvae do not feed and, therefore, will not be controlled by Bti. Low water temperature inhibits larval feeding behavior, reducing the effectiveness of Bti during very cold periods. High organic conditions also reduce the effectiveness of Bti. Therefore, the use of Bti requires frequent inspections of larval sources during periods of larval production and may require frequent applications of material. Application can be by hand, from an ATV, from a watercraft, or aircraft (helicopter).

- Bs is a biological larvicide. Bs is a bacterium that when ingested by mosquito larvae produces microbial gut toxins that destroy the insect gut wall, leading to paralysis and death. Bs is a biological larvicide the Division applies as a liquid or bonded to an inert substrate (corncob granule) to assist penetration of vegetation. The mode of action is similar to that of Bti, but Bs may be used more than Bti in some sites because of its

higher effectiveness in water with higher organic content and residual properties that allow longer larvicidal action. Persistence is low in the environment, and efficacy depends on careful timing of application to coincide with periods in the life cycle when larvae are actively feeding. Pupae and late 4th stage larvae do not feed and, therefore, will not be controlled by Bs. Low water temperature inhibits larval feeding behavior, reducing the effectiveness of Bs during very cold periods. Bs is also ineffective against certain mosquito species such as those in the genus Aedes. Knowing the stage and species present can increase the effectiveness of this material, restricting it to sources containing susceptible species. Therefore, the use of Bs requires frequent inspections of larval sources during periods of larval production and may require frequent applications of the material. The application can be by hand, from an ATV, from a watercraft, or from an aircraft (helicopter).

- Spinosad is an Omri-Listed Dow AgroSciences active ingredient that is a fermentation product of bacteria first discovered in an old rum distillery. Spinosad is a fermentation product of the naturally occurring soil bacterium *Saacharopolysporaspinosa*. It causes excitation of the mosquito's nervous system, ultimately leading to paralysis and death. This mode of action makes this pesticide a good option for rotational use in the prevention of resistance. Its action on the target organism is either by contact or by ingestion, and as with other bacterial larvicides, activity can be reduced in highly organic water. The Division applies Spinosad as a liquid or as a sustained-release product that can persist for up to 30 or 180 days. It is applied either in response to high observed populations of mosquito larvae at a site or as a sustained-release product that can persist for up to about 4 months. This product has a very low potential for accumulation in soil or groundwater contamination. Application can be performed by hand, from an ATV, from a watercraft, or aircraft.
- Methoprene, common brand names known as Altosid and Metalarv, is a synthetic juvenile hormone that is designed to disrupt the transformation of a juvenile mosquito into an adult. Methoprene products must be applied (or present, if using a slow-release formula) to the late instar (e.g., third and fourth) and/or pupal stages of mosquitoes. It is not effective against other life stages. Methoprene can be applied in granular, liquid, pellet, or briquet formulations. Sustained-release products can persist for up to 30 or 150 days. The application can be performed by hand, from an ATV, from a watercraft, or aircraft.
- BVA-2 Larvicide is a highly refined petroleum distillate (mineral oil). These new larvicides demonstrate a low level of toxicity to plant growth (phytotoxicity) and rapid environmental breakdown. BVA-2 larvicide oil has a water-white clear color and is also practically odorless. It forms a thin film on water and kills larvae through suffocation and/or direct toxicity. It is typically applied at application rates of 3 to 5 gallons per acre and can be applied by hand, from an ATV, from a watercraft, or a truck.
- Depending on emerging risks and vectors, SCCMVC may use alternative Larvicides.

The Division uses the mosquito fish, *Gambusia affinis*, as a form of biological control. These work particularly well during warm weather in decorative ponds, swimming pools, and other man-made bodies of water. Mosquito fish can be used in combination with Bti, Bs, and methoprene in a process sometimes referred to as Integrated Biological Control.

Surveillance

Monitoring: Monitoring is an extension of surveillance activities. Technicians specifically re-check treatment sites to be sure that applications are successful. Surveillance personnel deploy carbon-dioxide baited traps, light traps, foul-water traps, and BG-Sentinel traps (designed to attract and capture container-breeding mosquitoes, especially Aedes aegypti and Aedes albopictus) to evaluate the success of the program.

Surveillance involves monitoring the abundance of mosquito populations, their habitat, mosquito-borne disease pathogens, and the interactions between mosquitoes and people over time and space. The Division routinely uses a variety of traps for surveillance of adult mosquitoes, regular field investigation of known mosquito sources for direct sampling for immature stages, public service requests for adult mosquitoes, and Argo all-terrain vehicles and airboats to access remote and difficult-to-reach mosquito habitats as part of its comprehensive surveillance efforts. The Division conducts surveillance by way of a variety of activities that include but are not limited to:

- Field counting/sampling and use of trapping, along with the laboratory analysis of mosquitoes, their hosts, and pathogens to evaluate population densities and potential disease threats such as WNV, WEE, and SLE. Sampling of presence and abundance of mosquito populations tends to occur in areas where the citizenry would have a likelihood of exposure to them; field counts take place both at immature and adult stages of mosquito development or life cycle. Three kinds of traps, host-seeking traps, light traps, and gravid/oviposition traps, are used as described below:

    i. Host-seeking traps use dry ice (carbon dioxide) to attract female mosquitoes behaviorally cued to seek a host to blood feed. The trap's components include a dry ice container, a battery power source, a low ampere motor/fan combination, an LED light source, and a collection container for holding captured adults.
    ii. Oviposition traps are used to collect gravid Aedes and Culex spp. mosquitoes and/or to measure their egg-laying activity. As an example, they may use 5-day-old hay-infused water contained in a small plastic dishpan that has a battery-operated fan directly above to draw the gravid female mosquitoes into the small collection net.

Mosquito immatures include eggs, four larval stages, and a transitional pupal stage. Mosquito control agencies routinely target the larval and pupal stages to preclude the emergence of adults. Operation evaluation of the presence and abundance of immature mosquitoes is limited to the larval and pupal stages, although the Division may sample eggs for research reasons. Sampling and collection of the immature stages (egg, four larval stages, and a transitional pupal stage) involves the use of a 1-pint dipper (a standardized small plastic pot or cup-like container on the end of a 36-inch handle), which scoops up a small amount of water from the mosquito-breeding site. Operationally, the abundance of the immatures in any identifiable "breeding" source is measured through direct sampling, which provides relative local abundance as the number of immatures per unit volume or area of the source. This method requires access by field personnel to within about 3 feet of larval sites at least every 2 weeks in warm weather. The spatial patchiness of larvae requires access to multiple locations within each source, rather than to single "bell-weather" stations.

- "Arbovirus"[2] surveillance to determine the likelihood and occurrence of mosquito-borne illness is accomplished by two methods commonly used in California: (1) capturing and testing female vector mosquitoes for the presence of mosquito-borne encephalitis viruses as explained above and (2) periodic testing for the presence of encephalitis virus-specific antibodies in the blood serum of either sentinel chickens or wild birds. The first method involves the use of host-seeking traps to capture female vector mosquitoes. Captured females are sorted into groups of up to 50 (called pools) and submitted to the Davis Arbovirus and Research and Training Laboratory at the University of California, Davis to test for the presence of mosquito-borne viruses. Field inspection of known or suspected habitats where mosquitoes live and breed. Sites, where water can collect, be stored, or remain standing for more than a few days, are potential habitats for mosquito breeding that require continuous inspection and surveillance. Water runoff into catch basins and stormwater detention systems from land uses including, but not limited to, residential communities, parks and recreation areas, and industrial sites, as well as ornamental ponds, unmaintained swimming pools, seeps/seepages, seasonal wetlands, tidal and diked marshes, freshwater marshes, wastewater ponds, sewer plants, winery waste/agricultural ponds, managed waterfowl ponds, canals, creeks, streams, tree holes, tires, man-made containers, flooded basements/crawl spaces, and other standing waters are likely sources.
- Maintenance of paths and clearings to facilitate sampling and to provide access to vector habitat. It is Division policy that staff manages vegetation periodically for accessibility to water bodies and use preexisting roads, trails, walkways, and open areas to conduct routine and essential surveillance activities with the least impact on the

[2]Arthropod-borne viruses. The primary reservoir for the pathogens that cause these diseases is wild birds, and humans only become exposed as a consequence of an accidental exposure to the bite of infective mosquito vectors.

environment. Surveillance is conducted using ATVs, but offroad access is minimized and used only when roads and trails are not available. Some access for inspection is conducted on foot.

- Additionally, the Division conducts dead-bird collection and testing as part of its arbovirus surveillance program to detect and monitor mosquito-borne viruses in the environment.

Analysis of public service requests and surveys and other methods of data collection. The Division's mosquito surveillance activities are conducted in compliance with accepted federal and state guidelines, in particular the California Mosquito-borne Virus Surveillance and Response Plan (CDPH 2010a) and Best Management Practices for Mosquito Control in California (CDPH 2010b). These guidelines recognize that local conditions will necessarily vary and, thus, call for flexibility in selection and specific application of control methods.

Public Relations, Outreach, and Education

The Division does not have a dedicated public relations position; instead, all staff actively participate in community outreach efforts. Team members engage with the public through events such as school presentations and informational booths, including those at the annual Santa Cruz County Fair. The Division collaborates closely with the County Public Information Officer (PIO) to distribute press releases, manage social media communications, and respond promptly to media inquiries. These coordinated efforts ensure that accurate and timely information about mosquito and vector control is effectively communicated to the public, promoting awareness and encouraging community participation in prevention activities.

Estimate of Costs and Budget

Figure 1 – Cost Estimate – FY 2026-27 Budget

Santa Cruz Mosquito and Vector Control Division
Mosquito, Vector and Disease Control Assessment
Estimate of Cost - Fiscal Year 2026-27

		Preliminary Budget
Mosquito & Vector Control Services and Related Expenditures		
Salaries and Benefits	$	1,918,899
Services and Supplies	$	401,410
Capital Replacement	$	500,000
Total Mosquito Control Services and Related Expenditures	**$**	**2,820,309**
Incidental Costs[1]		
Levy Administration, County Collection Fee, and Other Incidentals	$	65,546
Total Incidental Costs	$	65,546
Total Benefit of Services and Related Expenses	**$**	**2,885,855**
Less Contributions from other Sources (i.e. current budget)[2]		
CSA 53 Mosquito Abatement/Vector Control Assessment	$	289,495
CSA 53 North and South Assessments	$	1,478,062
Total Contributions from other Sources	**$**	**1,767,557**
Total Mosquito, Vector and Disease Control Services and Incidentals (Net Amount to be Assessed)	**$**	**1,118,297**

Budget Allocation to Property

Zones of Benefit	Total SFE Units[3]	Assessment per SFE[4]	Total Assessment[5]
Zone A	92044.2	$11.99	$1,103,610
Zone B	1256.4	$11.69	$14,687
Total	93300.6	-	**$1,118,297**

Notes:
1. As determined in the following section, at least 5% of the cost of the Services must be funded from sources other than the assessments to account for general benefits. Based on the total cost of the Services of $2,885,855 the Division must contribute at least $144,293 from non-assessment sources. The Division will contribute more than this minimum requirement, thereby covering all general benefits associated with the Services. This contribution also offsets the minimal baseline mosquito and vector control services currently provided in the Assessment Area.
2. Incidental Costs include allowance for uncollectible assessments from assessments on public agency parcels, County collection charges, and assessment administration costs.
3. SFE Units means Single Family Equivalent benefit units. See the method of assessment in the following Section for further definition.
4. The assessment rate per SFE is the total amount of assessment per Single Family Equivalent benefit unit.
5. Funds raised by the assessment shall be used only for the purposes stated within this Report. Any balance remaining at the end of the fiscal year, June 30, must be carried over to the next fiscal year. The assessment amounts are rounded down to the even penny for purposes of complying with the collection requirements from the County Auditor. Therefore, the total assessment amount for all parcels subject to the assessments may vary slightly from the net amount to be assessed.

Method of Assessment

This section of the Report explains the benefits to be derived from the Services to be provided for property in the Assessment Area, and the methodology used to apportion the total assessment to properties within the Mosquito, Vector and Disease Control Assessment Area.

The Mosquito, Vector and Disease Control Assessment District area consists of the Assessor Parcels in the Santa Cruz County Mosquito, Disease and Vector Control Division boundaries, as defined within the area of the boundary diagram included within this Engineer's Report (see the Assessment Roll for a list of all the parcels included in the Mosquito, Vector and Disease Control Assessment).

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 in the assessment area or to the public at large. Special benefit is calculated for each parcel in the Assessment Area.

1. Identification of total benefit to the properties derived from the Services
2. Calculation of the proportion of these benefits that are special vs. general
3. Determination of the relative special benefit within different areas within the Assessment Area
4. Determination of the relative special benefit per property type and property characteristic
5. Calculation of the specific assessment for each individual parcel based upon special vs. general benefit; location, property type and property characteristics

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 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 and general benefit received by property within the Assessment Area as a result of the improvements or services provided by a local agency. The 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."

The below benefit factors, when applied to property in the Assessment Area, confer special benefits to property and ultimately improve the safety, utility, functionality, and usability of property in the Assessment Area. These are special benefits to property in the Assessment Area in much the same way that storm drainage, sewer service, water service, sidewalks, and paved streets enhance the utility and functionality of each parcel of property served by these improvements, providing them with more utility of use and making them safer and more usable for occupants.

It should also be noted that Proposition 218 includes a requirement that existing assessments in effect upon its effective date were required to be confirmed by either a majority vote of registered voters in the assessment area or by weighted majority property owner approval using the new ballot proceeding requirements. However, certain assessments were excluded from these voter approval requirements. Of note is that in California Constitution Article XIIID Section 5(a) this special exemption was granted to assessments for sidewalks, streets, sewers, water, flood control, drainage systems and vector control. The Howard Jarvis Taxpayers Association explained this exemption in their Statement of Drafter's Intent:

"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."[3]

Therefore, the drafters of Proposition 218 acknowledged that vector control assessments were "traditional" and therefore acknowledged and accepted use.

Since all assessments, existing before or after Proposition 218 must be based on special benefit to property, the drafters of Proposition 218 impliedly found that vector control services confer special benefit on property. Moreover, the statement of drafter's intent also acknowledges that any new or increased vector control assessments after the effective date of Proposition 218 would need to comply with the voter approval requirements it established. This is as an acknowledgment that additional assessments for such "traditional" purposes would be established after Proposition 218 was in effect. Therefore, the drafters of Proposition 218 clearly recognized vector assessments as a "traditional" use of assessments, acknowledged that new vector assessments may be formed after Proposition 218 and impliedly were satisfied that vector control services confer special benefit to properties.

[3]Howard Jarvis Taxpayers Association, "Statement of Drafter's Intent", January 1997.

The Legislature also made a specific determination after Proposition 218 was enacted that vector control services constitute a proper subject for special assessment. Health and Safety Code section 2082, which was signed into law in 2002, provides that a district may levy special assessments consistent with the requirements of Article XIIID of the California Constitution to finance vector control projects and programs. The intent of the Legislature to allow and authorize benefit assessments for vector control services after Proposition 218 is shown in the Assembly and Senate analysis the Mosquito Abatement and Vector Control District Law where it states that the law:

> *Allows special benefit assessments to finance vector control projects and programs, consistent with Proposition 218.*[4]

Therefore, the State Legislature unanimously indicated that vector control services are a valuable and important public service that can be funded by benefit assessments. To be funded by assessments, vector control services must confer special benefit to property.

Mosquito and vector control is a Special Benefit to Properties

As described below, this Engineer's Report concludes that mosquito and vector control is a special benefit that provides direct advantages to property in the Assessment Area. For example, if approved, the assessment would provide for 1) surveillance throughout the Assessment Area to measure and track the levels and sources of mosquitoes impacting property in the area and the people who live and work on the property; 2) mosquito and mosquito source control, treatment and abatement throughout the Assessment Area such that all property in the area benefits from a comparable reduction of mosquito levels; 3) monitoring throughout the Assessment Area to evaluate the effectiveness of District treatment and control and to ensure that all properties are receiving the equivalent level of mosquito reduction benefits; and 4) service requests which result in District staff directly visiting, inspecting and treating property.

The services to be provided by the District will be provided throughout the Assessment Area, that is, the benefit received in the Assessment Area will be District-wide. All property will receive benefits from the comprehensive mosquito, vector and disease monitoring, control, and prevention services.

Moreover, the Services funded by the Assessments will reduce the level of mosquitoes and vectors arriving at and negatively impacting properties within the Assessment District.

[4] Senate Bill 1588, Mosquito Abatement and Vector Control District Law, Legislative bill analysis

The following section, Benefit Factors, describes how the Services would specially benefit properties in the Assessment District. These benefits are particular and distinct from their effect on property in general or the public at large.

Benefit Factors

In order to allocate the assessments, the Engineer identified the types of special benefit arising from the Services and that will be provided to property within the Assessment Area. These types of special benefit are as follows:

Reduced mosquito and vector populations on property and as a result, enhanced desirability, utility, usability and functionality of property in the Assessment Area.

The assessments will provide new and enhanced services for the control and abatement of nuisance and disease-carrying mosquitoes and other vectors. These Services will materially reduce the number of vectors on properties throughout the Assessment Area. The lower mosquito and vector populations on property in the Assessment Area are a direct advantage to property that will serve to increase the desirability and "usability" of property. Clearly, properties are more desirable and usable in areas with lower mosquito populations and with a reduced risk of vector-borne disease. This is a special benefit to residential, commercial, agricultural, industrial, and other types of properties because all such properties will directly benefit from reduced mosquito and vector populations and properties with lower vector populations are more usable, functional, and desirable.

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, properties in many areas in the State 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 and usability of property caused by mosquitoes is a clear and direct advantage and special benefit to property in the Assessment Area.

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*

[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.

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 a 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]

Mosquitoes and other vectors emerge from sources throughout the Assessment District, and with an average flight range of two miles, mosquitoes from known sources can reach all properties in the Assessment District. These sources include standing water in rural areas, such as marshes, pools, wetlands, ponds, drainage ditches, drainage systems, tree holes and other removable sources such as old tires and containers. The sources of mosquitoes also include numerous locations throughout the urban areas in the Assessment District. These sources include underground drainage systems, containers, unattended swimming pools, leaks in water pipes, tree holes, flower cups in cemeteries, over-watered landscaping and lawns and many other sources. By controlling mosquitoes at known and new sources, the Services will materially reduce mosquito populations on property throughout the Assessment District.

A recently increasing source of mosquitoes is unattended swimming pools:

"Anthropogenic landscape change historically has facilitated outbreaks of pathogens amplified by peridomestic vectors such as Cx. pipiens complex mosquitoes and associated commensals such as house sparrows. The recent widespread downturn in the housing market and increase in adjustable rate mortgages have combined to force a dramatic increase in home foreclosures and abandoned homes and produced urban landscapes dotted with an expanded number of new mosquito habitats. These new larval habitats may have contributed to the unexpected early season increase in WNV cases in Bakersfield during 2007 and subsequently have enabled invasion of urban areas by the highly competent rural vector Cx. tarsalis. These factors can increase the spectrum of competent avian hosts, the efficiency of enzootic amplification, and the risk for urban epidemics."[7]

[6] Assembly Concurrent Resolution 52, chaptered April 1, 2003

[7] Riesen William K. (2008). Delinquent Mortgages, Neglected Swimming Pools, and West Nile Virus, California. Emerging Infectious Diseases.Vol. 14(11).

Increased safety of property in the Assessment Area.

The Assessments will result in new year-round proactive Services to control and abate mosquitoes and other vectors that otherwise would occupy properties throughout the Assessment Area. Mosquitoes and other vectors are transmitters of diseases, so the reduction of mosquito and other vector populations makes property in the Assessment Area safer for use and enjoyment. In absence of these assessments, these Services would not be provided, or provided on a very limited basis, so the Services funded by the assessments make properties in the Assessment Area safer, which is a distinct special benefit to property in the Assessment Area.[8] This is not a general benefit to property in the Assessment Area or the public at large because the Services are tangible mosquito, vector and disease control services that will be provided directly to the properties in the Assessment Area, and the Services are over and above the baseline services that could be provided by the Santa Cruz County Mosquito Abatement without the assessment.

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."*[9]

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."*

[8] . By reducing the risk of disease and increasing the safety of property, the Services will materially increase the usefulness and desirability of certain properties in the Assessment Areas.
[9] Assembly Concurrent Resolution 52, chaptered April 1, 2003

Reductions in the risk of new diseases and infections on property in the Assessment Area.

Mosquitoes have proven to be a major contributor to the spread of new diseases such as West Nile Virus, among others. A highly mobile population combined with migratory bird patterns can introduce new mosquito-borne diseases into previously unexposed areas.

> *"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."*[10]

> *"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."* [11] *(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).*

A study of the effect of aerial spraying conducted by the Sacramento-Yolo Mosquito and Vector Control District (SYMVCD) to control a West Nile Virus disease outbreak found that the SYMVCD's mosquito control efforts materially decreased the risk of new diseases in the treated areas:

> *After spraying, infection rates decreased from 8.2 (95% CI 3.1–18.0) to 4.3 (95% CI 0.3–20.3) per 1,000 females in the spray area and increased from 2.0 (95% CI 0.1–9.7) to 8.7 (95% CI 3.3–18.9) per 1,000 females in the untreated area. Furthermore, no additional positive pools were detected in the northern treatment area during the remainder of the year, whereas positive pools were detected in the untreated area until the end of September (D.-E.A Elnaiem, unpub. data). These independent lines of evidence corroborate our conclusion that actions taken by SYMVCD were effective in disrupting the WNV transmission cycle and reducing human illness and potential deaths associated with WNV.*[12]

[10] Rose, Robert. (2001). Pesticides and Public Health: Integrated Methods of Mosquito Management. Emerging Infectious Diseases. Vol. 7(1); 17-23.
[11] Center for Disease Control.(2004). West Nile Virus Activity --- United States, November 9--16, 2004.Morbidity and Mortality Weekly Report. 53(45); 1071-1072.
[12] Carney, Ryan. (2008), Efficiency of Aerial Spraying of Mosquito Adulticide in Reducing the Incidence of West Nile Virus, California, 2005. Emerging Infectious Diseases, Vol 14(5)

The Services funded by the assessments will help prevent, on a year-round basis, the presence of vector-borne diseases on property in the Assessment Area. This is another tangible and direct special benefit to property in the Assessment Area that would not be received, or received only minimally, in the absence of the assessments.

Protection of economic activity on property in the Assessment Area.

As demonstrated by the SARS outbreak in China and outbreaks of Avian Flu, outbreaks of pathogens can materially and negatively impact economic activity in the affected area. Such outbreaks and other public health threats can have a drastic negative effect on tourism, business and residential activities in the affected area. The assessments will help prevent the likelihood of such outbreaks in the Assessment Area.

Mosquitoes hinder, annoy and harm residents, guests, visitors, farm workers, and employees. A vector-borne disease outbreak and other related public health threats would have a drastic negative effect on agricultural, business, and residential activities in the Assessment Area.

The economic impact of diseases is well documented. According to a study prepared for the Centers for Disease Control and Prevention, economic losses due to 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.* [13]

13Zohrabian 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/vol10no10/03-0925.htm

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 lifespans 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 would be 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.* [14]

The Services to be funded by the assessments will help prevent the likelihood of such outbreaks on property in the Assessment Area and will reduce the harm to economic activity on property caused by existing mosquito populations and other vectors. This is another direct advantage in the Assessment Area that would not be received, or received minimally, in absence of the assessments.

Protection of the Assessment Areas' agriculture, tourism, and business industries.

The agriculture, tourism and business industries in the Assessment Area will benefit from reduced levels of harmful or nuisance mosquitoes and other vectors. Conversely, any outbreaks of emerging vectorborne pathogens such as West Nile Virus could also materially negatively affect these industries. Diseases transmitted by mosquitoes and other vectors can adversely impact business and recreational functions.

> *A study prepared for the United States Department of Agriculture in 2003 found that over 1,400 horses died from West Nile Virus in Colorado and Nebraska and that these fatal disease cases created over $1.2 million in costs and lost revenues. In addition, horse owners in these two states spent over $2.75 million to vaccinate their horses for this disease. The study states that "Clearly, WNV has had a marked impact on the Colorado and Nebraska equine industry."* [15]

> *Pesticides for mosquito control impart economic benefits to agriculture in general. Anecdotal reports from farmers and ranchers indicate that cattle, if left unprotected, can*

14Utz, 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

[15] 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

be exsanguinated by mosquitoes, especially in Florida and other southeast coastal areas. Dairy cattle produce less milk when bitten frequently by mosquitoes. [16]

The assessments will serve to protect the businesses and industries in the Assessment Area. This is a direct advantage and special benefit to property in the Assessment Area.

Reduced risk of nuisance and liability on property in the Assessment Area.

In addition to health-related factors, uncontrolled mosquito and vector populations create a nuisance for residents, employees, customers, tourists, farm workers, and guests in the Assessment Area. Properties in the Assessment Area benefit from the reduced nuisance factor that will be created by the Services. Agricultural and rangeland properties also benefit from the reduced nuisance factor and harm to livestock and employees from lower mosquito and vector populations.

Agricultural, range, golf courses, cemeteries, open spaces, and other such lands in the Assessment Area contain large areas of mosquito and vector habitat and are therefore a significant source of mosquito and vector populations. In addition, residential and business properties in the Assessment Area can also contain significant sources.[17] It is conceivable that 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 property owners who don't remove standing water sources of mosquitoes on their property.

The Services to be provided by the Division will reduce the mosquito and vector-related nuisance and health liability to properties in the Assessment Area. The reduction of that risk of liability constitutes a special benefit to property in the Assessment Area and this special benefit would not be received, or only received minimally, in the absence of the Services funded by the assessments.

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

[17] . Sources of mosquitoes on residential, business, agricultural, range and other types of properties include removable sources such as containers that hold standing water.

Improved marketability of property.

As described previously, the Services will specially benefit properties in the Assessment Area by making them more useable, livable, and functional. The Services also make properties in the Assessment Area more desirable, and more desirable properties also benefit from improved marketability. This is another tangible special benefit to certain property in the Assessment Area which will not be enjoyed in absence of the Services.[18]

Benefit Finding

In summary, the special benefits described in this Report and provision of Services to the Assessment Area ("enhanced level of service") would directly benefit and protect the real properties in the Assessment Area in excess of the assessments for these properties. Therefore, the Assessment Engineer finds that the cumulative special benefits to property from the Services are reasonably equal to or greater than the proposed assessment of $11.99 per benefit unit or Single Family Equivalent(SFE) for Zone A and $11.69 per SFE for Zone B (Figure 1 – Cost Estimate). These rates per SFE generate revenues of $1,118,297 which is the amount needed to fund the Division's budget total of $2,885,855, less the Division contribution of $1,767,557. Further, the Engineer has judged that the special benefit to each parcel reasonably exceeds the assessments imposed on each parcel.

[18] . If one were to compare two hypothetical properties with similar characteristics, the property with lower mosquito infestation and reduced risk of vector-borne disease will clearly be more desirable, marketable and usable.

General vs. Special Benefit

Article XIIID of the California Constitution requires any local agency proposing to increase or impose a benefit assessment to "separate the general benefits from the special benefits conferred on a parcel." The rationale for separating special and general benefits is to ensure that property owners subject to the benefit assessment are not paying for general benefits. The assessment can fund the special benefits to property in the assessment area but cannot fund any general benefits. Accordingly, a separate estimate of the special and general benefit is given in this section.

In other words:

Total Benefit	=	General Benefit	+	Special Benefit

There is no widely accepted or statutory formula for general benefit from vector control services. General benefits are benefits from improvements or services that are not special in nature, are not "particular and distinct" and are not "over and above" benefits received by other properties. General benefits are conferred to properties located "in the district,"[19] but outside the narrowly-drawn Assessment District and to "the public at large." *Silicon Valley* provides some clarification by indicating that general benefits provide "an indirect, derivative advantage" and are not necessarily proximate to the improvements and services funded by the assessments.

[19] *Silicon Valley* explains as follows:
OSA observes that Proposition 218's definition of "special benefit" presents a paradox when considered with its definition of "district." Section 2, subdivision (i) defines a "special benefit" as "a particular and distinct benefit over and above general benefits conferred on real property located in the district or to the public at large." (Art. XIII D, § 2, subd. (i), italics added.) Section 2, subdivision (d) defines "district" as "an area determined by an agency to contains all parcels which will receive a special benefit from a public improvement or property-related service." (Art. XIII D, § 2, subd. (d), italics added.) In a well-drawn district — limited to only parcels receiving special benefits from the improvement — every parcel within that district receives a shared special benefit. Under section 2, subdivision (i), these benefits can be construed as being general benefits since they are not "particular and distinct" and are not "over and above" the benefits received by other properties "located in the district."
We do not believe that the voters intended to invalidate an assessment district that is narrowly drawn to include only properties directly benefiting from an improvement. Indeed, the ballot materials reflect otherwise. Thus, if an assessment district is narrowly drawn, the fact that a benefit is conferred throughout the district does not make it general rather than special.

A formula to estimate the general benefit is listed below:

General Benefit	=	**Benefit to Real Property Outside the Assessment District**	+	**Benefit to Real Property Inside the Assessment District that is Indirect and Derivative**	+	**Benefit to the Public at Large**

Special benefit, on the other hand, is defined in the state constitution as "a particular and distinct benefit over and above general benefits conferred on real property located in the district or to the public at large." The *Silicon Valley* decision indicates that a special benefit is conferred to a property if it "receives a direct advantage from the improvement (e.g., proximity to a park)." In this assessment, the overwhelming proportion of the benefits conferred to property is special, since the advantages from the mosquito, vector and disease protection funded by the Assessments are directly received by the properties in the Assessment District and are only minimally received by properties outside the Assessment District or the public at large.

Proposition 218 twice uses the phrase "over and above" general benefits in describing special benefit. (Art. XIIID, sections 2(i) & 4(f).) Significantly, without this assessment, only the existing, minimal, baseline services would be provided. The majority of the Services to be funded by the assessment therefore would be a special benefit because the Services would particularly and distinctly benefit and protect the Assessment Area over and above the minimal baseline benefits and service. However, some of the Services could benefit the public at large and properties outside the Assessment Area. In this report, the general benefit is conservatively estimated and described, and then budgeted so that it is funded by sources other than the assessment.

In the 2009 *Dahms* case, the court upheld an assessment that was 100% special benefit on the rationale that the services funded by the assessments were directly provided to property in the assessment district. Similar to the assessments in Pomona that were validated by *Dahms*, the Assessments described in this Engineer's Report fund mosquito, vector and disease control services directly provided to property in the assessment area. Moreover, as noted in this Report, the Services directly reduce mosquito and vector populations on all property in the assessment area. Therefore, *Dahms* establishes a basis for minimal or zero general benefits from the Assessments. However, in this report, the general benefit is more conservatively estimated and described, and then budgeted so that it is funded by sources other than the assessment.

Calculating General Benefit

Without the new assessment, the Division would be unable to continue to provide the same level of Services. Consistent with footnote 8 of *Silicon Valley decision*, and for the reasons described above, the Division has determined that all parcels in the Assessment Area would receive a shared direct advantage and special benefit from the Services. The Services would directly and particularly serve and benefit each parcel, and would not be a mere indirect, derivative advantage. As explained above, Proposition 218 relies on the concept of "over and above" in distinguishing special benefits from general benefits. As applied to an assessment proceeding the baseline general benefits are minimal and that the majority of the vector control services, which provide a direct advantage to property in the Assessment Area, are over and above the baseline and therefore are special.

Nevertheless, the Services may provide a degree of general benefit, in addition to the predominant special benefit. This section provides a conservative measure of the general benefits from the Assessments.

Benefit to Property Outside the District

Properties within the Assessment District receive almost all of the special benefits from the Services because the Services funded by the Assessments will be provided directly to protect property within the Assessment District from mosquitoes, vectors and vector-borne disease. However, properties adjacent to, but just outside of, the boundaries may receive some benefit from the Services in the form of reduced mosquito populations on property outside the Assessment Area. Since this benefit is conferred to properties outside the district boundaries, it contributes to the overall general benefit calculation and will not be funded by the assessment.

A measure of this general benefit is the proportion of Services that would affect properties outside of the Assessment Area. Each year, the Division will provide some of its Services in areas near the boundaries of the Assessment Area. By abating mosquito populations near the borders of the Assessment Area, the Services could provide benefits in the form of reduced mosquito populations and reduced risk of disease transmission to properties outside the Assessment Area. If mosquitoes were not controlled inside the Assessment Area, more of them would fly from the Assessment Area. Therefore, control of mosquitoes within the Assessment Area provides some benefit to properties outside the Assessment Area but within the normal travel range of vectors, in the form of reduced mosquito populations and reduced vector-borne disease transmission. This is a measure of the general benefits to property outside the Assessment Area because this is a benefit from the Services that is not specially conferred upon property in the assessment area.

The mosquito potential outside the Assessment Area is based on studies of mosquito dispersion concentrations. Based upon a 2024 study in Santa Cruz County average concentration of mosquitoes from the Assessment Area on properties within two miles of the Assessment Area is calculated to be 6%.[20] This relative vector population reduction factor within the destination range is combined with the number of parcels outside the Assessment Area and within the destination range to measure this general benefit. This is calculated as follows:

CRITERIA:

THERE ARE 5,858 PARCELS WITHIN TWO MILES OF, BUT OUTSIDE OF THE ASSESSMENT DISTRICT, THAT MAY RECEIVE SOME MOSQUITO, VECTOR AND DISEASE PROTECTION BENEFIT

6 % PORTION OF RELATIVE BENEFIT THAT IS RECEIVED (FROM STUDY)

THERE ARE 101,086 ASSESSABLE PARCELS IN THE ASSESSMENT DISTRICT

CALCULATIONS:

TOTAL BENEFIT = 5,858 PARCELS X 6% = 351 PARCEL EQUIVALENTS

PERCENTAGE OF OVERALL PARCEL EQUIVALENTS = 351/101,086 =**0.35%**

It should also be noted that the Assessment Area is completely surrounded by the current District boundaries. Therefore, it is estimated that the general benefit received by properties within two-mile radius outside of the Assessment Area offsets the same amount of general benefit received within the Assessment Area. Therefore, for the overall benefits provided by the Services to the Assessment Area, it is determined that 0.35% of the benefits would be received by the parcels within two miles of the Assessment Area boundaries. Recognizing that this calculation is an approximation, this benefit will be rounded up to 1.5%.

[20]Tietze, Noor S., Stephenson, Mike F., Sidhom, Nader T. and Binding, Paul L., "Mark-Recapture of *Culex Erythrothorax* in Santa Cruz County, California", Journal of the American Mosquito Control Association, 19(2):134-138, 2003.

Benefit to Property *Inside* the District that is *Indirect and Derivative*

The "indirect and derivative" benefit to property within the Assessment Area is particularly difficult to calculate. As explained above, all benefit within the Assessment Area is special because the mosquito, vector and disease control services in the Assessment Area would provide direct service and protection that is clearly "over and above" and "particular and distinct" when compared with the minimal level of services under current conditions. Further, the properties are within the Assessment Area boundaries and this Engineer's Report demonstrates the direct benefits received by individual properties from mosquito, vector and disease control services.

The Engineer has drawn the assessment area to include parcels that will directly receive the services. (There are a small number of parcels within the District Boundary that do not receive special benefit such as certain right of way parcels, etc.) All parcels within the District boundaries will directly benefit from the surveillance, monitoring, and treatment that will be provided on an equivalent basis throughout the Assessment Area in order to maintain the same improved level of protection against mosquitoes and reduced mosquito populations throughout the area. The surveillance and monitoring sites would be spread on a balanced basis throughout the area. Mosquito and vector control and treatment would be provided as needed throughout the area based on the surveillance and monitoring results.

The shared special benefit - reduced mosquito and vector levels and reduced presence of vector-borne diseases - would be received on an equivalent basis by all parcels in the Assessment Area. Furthermore, all parcels in the Assessment District would directly benefit from the ability to request service from the Division and to have a Division field technician promptly respond directly to the parcel and address the owner's or resident's service need. The *Silicon Valley* decision indicates that the fact that a benefit is conferred throughout the assessment district area does not make the benefit general rather than special, so long as the assessment district is narrowly drawn and limited to the parcels directly receiving shared special benefits from the service. This concept is particularly applicable in situations involving a landowner-approved assessment-funded extension of a local government service to benefit lands previously not receiving that particular service or receiving only minimal services. While difficult to precisely separate any general benefits from the benefits conferred on parcels in the Assessment Area, a 1% requirement is established to conservatively account for any indirect and derivative general benefit.

Benefit to the Public at Large

With the type and scope of Services to be provided to the Assessment Area, it is very difficult to calculate and quantify the scope of the general benefit conferred on the public at large. Because the Services directly serve and benefit all of the property in the Assessment Area, any general benefit conferred on the public at large would be small. Nevertheless, there would be some indirect general benefit to the public at large.

The public at large uses the public highways, streets and sidewalks, and when traveling in and through the Assessment Area they will benefit from the Services. A fair and appropriate measure of the general benefit to the public at large therefore is the amount of highway, street and sidewalk area within the Assessment Area relative to the overall land area. An analysis of maps of the Assessment District shows that approximately 1.81% of the land area in the Assessment District is covered by highways, streets and sidewalks. This 1.81% therefore is a fair and appropriate measure of the general benefit to the public at large within the Assessment Area.

Summary of General Benefits

Using a sum of the measures of general benefit for the public at large and land outside the Assessment District, we find that approximately 3.31% of the benefits conferred by the Mosquito, Vector and Disease Control Assessment may be general in nature and should be funded by sources other than the assessment.

General Benefit Calculation

	1.5%	**(Outside the District)**
+	**1.0%**	**(Inside the District – Indirect and Derivative)**
+	**1.81%**	**(Public at Large)**
=	**4.31%**	**(Total General Benefit)**

Although this analysis supports the finding that 4.31% of the assessment may provide general benefit only, this number is increased by the Assessment Engineer to 5% to more conservatively ensure that no assessment revenue is used to support general benefit. This additional amount allocated to general benefit also covers general benefit to parcels in the Assessment District if it is later determined that there is some general benefit conferred on those parcels.

The estimated cost of the Services is $2,885,855. Of this total amount, the Division will contribute $1,767,557, including $289,495 from pre-Proposition 218 sources, such as the existing Mosquito Abatement and Vector Control assessment. This contribution is sufficient to offset the cost of any general benefits associated with the Mosquito, Vector, and Disease Control Assessment Services.

Zones of Benefit

The boundaries of the Assessment Area have been carefully drawn to include all the properties in the County of Santa Cruz that will receive special benefit from the Services. Such parcels are in areas with a material population of people, pets and livestock on the property. The current and future population of property is a conduit of benefit to property because people, pets, and livestock are ultimately affected by mosquitoes and vector-borne diseases and the special benefit factors of desirability, utility, usability, livability, and marketability are ultimately determined by the population and usage potential of property. Certain areas in the County receive a reduced level of services in 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 in the Assessment Diagram included with this Report. All other parcels within the County boundaries are within Zone A.

In other words, the boundaries of the Assessment Area have been narrowly drawn to include only properties that will specially benefit from the mosquito and vector control services and do not currently receive services from the Division.

The *Silicon Valley* decision indicates:

> *In a well-drawn district — limited to only parcels receiving special benefits from the improvement — every parcel within that district receives a shared special benefit. Under section 2, subdivision (i), these benefits can be construed as being general benefits since they are not "particular and distinct" and are not "over and above" the benefits received by other properties "located in the district."*
>
> *We do not believe that the voters intended to invalidate an assessment district that is narrowly drawn to include only properties directly benefitting from an improvement. Indeed, the ballot materials reflect otherwise. Thus, if an assessment district is narrowly drawn, the fact that a benefit is conferred throughout the district does not make it general rather than special. In that circumstance, the characterization of a benefit may depend on whether the parcel receives a direct advantage from the improvement (e.g., proximity to park) or receives an indirect, derivative advantage resulting from the overall public benefits of the improvement (e.g., general enhancement of the district's property values).*

In the assessment, the advantage that each parcel receives from the mosquito and vector control services is direct, and the boundaries are narrowly drawn to include only parcels that benefit from the assessment. Therefore, the even spread of assessment throughout the narrowly drawn district is indeed consistent with the OSA decision.

The Division has reviewed service levels in regards to its core services including surveillance, larviciding, and service requests throughout the Assessment Area, and confirmed that service levels and benefits are essentially equivalent across all parcels within the Assessment Area's boundaries (except as noted below). Regarding service requests, the Division will respond to any parcel located within the Division, regardless of how remote, and provide mosquito control services appropriate to the situation.

As part of the evaluation of service levels, the Division's review showed that certain areas within the assessment area submit fewer service requests, are less accessible, and require less frequent surveillance due to significantly lower human activity. Additionally, these areas have a lower concentration of mosquito breeding sites. These lower-service areas generally include remote and mountainous regions, as well as some rural areas outside more densely populated communities.

To monitor mosquito activity, the Division uses traps to collect and quantify species, population levels, and potential disease presence. Trap locations are selected through a multi-factor evaluation and adjusted seasonally or when high mosquito concentrations are identified. Field staff regularly inspect areas within the assessment area, conducting mosquito surveillance and assessing potential breeding sites.

Through a review of service distribution, the Division determined that these lower-service areas typically receive fewer general surveillance efforts, particularly routine adult mosquito trapping. Based on this analysis, properties in these areas will be subject to a reduced assessment, proportional to the lower level of service they receive. If mosquito surveillance and control efforts are expanded in these areas in the future, assessment zones and corresponding rates may be adjusted accordingly.

Method of Assessment

As previously discussed, the assessments will fund comprehensive, year-round mosquito and vector control and disease surveillance and control Services that will clearly confer special benefits to properties in the Assessment Area. These benefits can partially be measured by the property owners, guests, employees, tenants, pets and animals who will enjoy a more habitable, safer and more desirable place to live, work or visit. As noted, these benefits ultimately flow to the underlying property.

Therefore, the apportionment of benefit is partially based on people who potentially live on, work at, or otherwise use the property. This methodology of determining benefit to property through the extent of use by people is a commonly used method of apportionment of benefits from assessments.

Moreover, assessments have a long history of use in California and are in large part based on the principle that any benefits from a service or improvement funded by assessments that is enjoyed by tenants and other non-property owners ultimately is conferred to the underlying property. [21]

With regard to benefits and source locations, the Assessment Engineer determined that since mosquitoes readily fly from their breeding locations to all properties in their flight range and since mosquitoes are actually attracted to properties occupied by people or animals, the benefits from mosquito and vector control extend beyond the source locations to all properties that would be a "destination" for mosquitoes and other vectors. In other words, the control and abatement of mosquito and vector populations ultimately confer benefits to all properties that are a destination of mosquitoes and vectors, rather than just those that are sources of mosquitoes.

Although some primary mosquito sources may be located outside of residential areas, residential properties can and do generate their own, often significant, populations of mosquitoes and vector organisms. For example, stormwater catch basins in residential areas in the Assessment Area are a common source of mosquitoes. Moreover, there are many other common residential sources of mosquitoes, such as miscellaneous backyard containers, neglected swimming pools, leaking water pipes and tree holes. Clearly, there is a potential for mosquito sources on virtually all property. More importantly, all properties in the Assessment Area are within the destination range of mosquitoes and most properties are actually within the destination range of multiple mosquito source locations.

Because the Services will be provided throughout the Assessment Area with the same level of control objective, mosquitoes can rapidly and readily fly from their breeding locations to other properties over a large area, and there are current or potential breeding sources throughout the Assessment Area, the Assessment Engineer determined that all similar properties in the Assessment Area have generally equivalent mosquito "destination" potential and, therefore, receive equivalent levels of benefit.

[21]For example, in *Federal Construction Co. v. Ensign (1922) 59 Cal.App. 200 at 211*, the appellate court determined that a sewer system specially benefited property even though the direct benefit was to the people who used the sewers: "Practically every inhabitant of a city either is the owner of the land on which he resides or on which he pursues his vocation, or he is the tenant of the owner, or is the agent or servant of such owner or of such tenant. And since it is the inhabitants who make by far the greater use of a city's sewer system, it is to them, as lot owners or as tenants, or as the servants or agents of such lot owners or tenants, that the advantages of actual use will redound. But this advantage of use means that, in the final analysis, it is the lot owners themselves who will be especially benefited in a financial sense."

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.

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.

In conclusion, the Assessment Engineer determined that the appropriate method of assessment apportionment should be based on the type and use of property, the relative size of the property, its relative population, and usage potential and its destination potential for mosquitoes. This method is further described below.

Assessment Apportionment

The special benefits derived from the Mosquito, Vector 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. The opportunity to use and enjoy property within the Assessment Area without the excessive nuisance, diminished "livability" or the potential health hazards brought by mosquitoes and the diseases they carry is a special benefit to properties in the Assessment Area. This benefit can be in part measured by 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.[22]

[22] Benefits conferred upon property are related to the average number of people who could potentially live on, work at or otherwise could use a property, not how the property is currently used by the present owner.

In order to apportion the cost of the Services to property, each property in the Assessment Area is assigned a relative special benefit factor. 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. For the purposes of this Engineer's Report, all properties are designated a SFE value, which is each property's relative benefit in relation to a "benchmark" parcel in the Assessment Area. The "benchmark" property is the single family detached dwelling on a parcel of less than one acre. This benchmark parcel is assigned one Single Family Equivalent benefit unit or one SFE.

The special benefit conferred upon a specific parcel is derived as a sum function of the applicable special benefit type (such as improved safety (i.e. disease risk reduction) on a parcel for a mosquito assessment) and a parcel-specific attributes (such as the number of residents living on the parcel for a mosquito assessment) which supports that special benefit. Calculated special benefit increases accordingly with an increase in the product of special benefit type and supportive parcel-specific attribute.

The calculation of the special benefit per parcel is summarized in the following equation:

$$\textbf{Special Benefit}_{\text{(per parcel)}} = \sum f\,\textbf{(Special Benefits, Property Specific Attributes}^{1}\textbf{)}_{\text{(per parcel)}}$$

1. Such as use, property type, and size.

Residential Properties

Certain residential properties in the Assessment Area that contain a single residential dwelling unit and are on a lot of less than or equal to one acre are assigned one Single Family Equivalent or 1.0 SFE. Traditional houses, zero-lot line houses, and town homes are included in this category of single family residential property.

Single family residential properties in excess of one acre receive additional benefit relative to a single family home on up to one acre, because the larger parcels provide more area for mosquito sources and the mosquito, vector and disease control 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 equal to the agricultural rate described below of 0.0021 SFE per one-fourth 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 on the property.

Properties with more than one residential unit are designated as multi-family residential properties. These properties, along with condominiums, benefit from the Services 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 the Assessment Area. This Report analyzed County of Santa Cruz population density factors from the 2010 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 2 below.

The SFE factor of 0.48 per dwelling unit for multifamily residential properties applies to such properties with 20 or fewer units. Properties in excess of 20 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 Division. Therefore, the benefit for properties in excess of 20 units is determined to be 0.27 SFE per unit for the first 20 units and 0.10 SFE per each additional unit in excess of 20 dwelling units.

Figure 2 – Residential Assessment Factors

Type of Residential Property	Pop. Density Equivalent	SqFt Factor	SFE Factor
Single Family Residential	1.00	1.00	**1.00**
Condominium	0.97	0.64	**0.62**
Duplex, Triplex, Fourplex	0.89	0.54	**0.48**
Multi-Family Residential (5+ Units)	0.75	0.36	**0.27**
Mobile Home on Separate Lot	0.67	0.82	**0.55**

Source: 2000 Census and County of Santa Cruz, and property dwelling size information from the Santa Cruz County Assessor data and other sources.

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 the Assessment Area is 0.25 acres. Therefore, a commercial property with 0.25 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 the following Figure, 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 fourth 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 and golf course property benefit factors are similarly based on average usage densities. The following Figure lists the benefit assessment factors for such business properties.

Agricultural, Dry Rangeland, and Golf Course Properties

Utilizing research and agricultural employment reports from UC Davis, 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, 1.2 for cemeteries, and 3.0 for golf courses. Since these properties typically are a source of mosquitoes and vectors 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 and industrial properties. The SFE factors per 0.25 acres of land area, after adjustment for the usage density, are shown in the following Figure 3.

Figure 3 – Commercial/Industrial Benefit Assessment Factors

Type of Commercial / Industrial Land Use	Average Employees Per Acre [1]	SFE Units per Fraction Acre [2]	SFE Units per Acre After 5
Commercial	24	**0.500**	0.500
Office	68	**1.420**	1.420
Shopping Center	24	**0.500**	0.500
Industrial	24	**0.500**	0.500
Self Storage or Parking Lot	1	**0.021**	
Golf Course	3	**0.033**	
Cemeteries	1.20	**0.050**	
Agriculture	0.05	**0.0021**	
Timberland / Dry Rangeland	0.01	**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 fourth acre of land area or portion thereof. Additional acres over five for commercial, office, shopping center and industrial parcels are calculated per acre 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 Santa Cruz County found that approximately 64% 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 benefit discount is applied to the valuation factor of 0.64 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. To further reflect the reduced level of service benefit, a 25% exemption is applied to the 0.64 valuation factor, resulting in an SFE factor of 0.48 for vacant parcels.

It must be noted that in future years, the SFE factors for properties in the Service Area will be reviewed and updated to reflect changes in land use – i.e., vacant land that has been developed, residential land that has been rezoned to commercial –for assessment calculation purposes.

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, agricultural or institutional uses is benefited and assessed at the same rate as such privately owned property.

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.

Duration of Assessment

The assessment ballot proceeding authorized the Assessment to be levied for fiscal year 2026-27 and each year thereafter, so long as mosquitoes and other vectors remain in existence and the Santa Cruz County Mosquito & Vector Control Division requires funding from the Assessment for its Services in the Assessment Area. As noted previously, if the Assessment and the duration of the Assessment are approved by property owners in an assessment ballot proceeding, the Assessment can be levied annually after the Santa Cruz County Mosquito & Vector Control Division Board of Trustees approves an annually updated Engineer's Report, budget for the Assessment, Services to be provided, and other specifics of the Assessment. In addition, the Board of Supervisors must hold an annual public hearing to continue the Assessment.

Implementation of Government Code §§ 53759.1 and 53759.2 (AB 2257 Compliance)

In accordance with Government Code § 53759.1, as enacted by Assembly Bill 2257 and effective January 1, 2025, the Santa Cruz County Mosquito & Vector Control Division intends to implement an exhaustion of administrative remedies requirement for the proposed Mosquito, Vector and Disease Control Assessment under Proposition 218.

Property owners will be required to submit any written objections to the proposed assessment in writing, by a deadline no less than 45 days after the mailing of the Proposition 218 notice. Property owners who do not submit a timely written objection in accordance with this process will be prohibited from subsequently challenging the assessment in court, pursuant to Government Code § 53759.1.

The Division will compile written responses to all timely submitted objections and will present these responses to the Santa Cruz County Board of Supervisors prior to the close of the Proposition 218 protest hearing. The Board will then make the findings and determinations required under Government Code § 53759.1. This administrative objection process will run concurrently with the Proposition 218 protest procedures and does not limit a property owner's right to vote against the proposed assessment.

Pursuant to Government Code § 53759.2, if a legal challenge is later brought against the adopted assessment, the court's review shall be limited to the administrative record of the ratemaking proceeding, provided the Division complied with Government Code § 53759.1. All relevant deadlines, procedures, and instructions for submitting objections will be included in the mailed Proposition 218 notice.

Appeals and Interpretation

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 Manager of the Santa Cruz County Mosquito & Vector Control Division or his or her designee. Any such appeal is limited to the correction of an assessment during the then current fiscal year or, if before July 1, the upcoming fiscal year. Upon the filing of any such appeal, the Division Manager or his or her designee will promptly review the appeal and any information provided by the property owner. If the Division Manager or his or her designee finds that the assessment should be modified, the appropriate changes shall be made to the assessment roll. If any such changes are approved after the assessment roll has been filed with Santa Cruz County for collection, the Division Manager or his or her designee is authorized to refund to the property owner the amount of any approved reduction. Any dispute over the decision of the Division Manager, or his or her designee, shall be referred to the Board of Supervisors. The decision of the Board of Supervisors shall be final.

Assessment

WHEREAS, the Santa Cruz County Mosquito & Vector Control Division contracted with the undersigned Engineer of Work to prepare and file a report presenting an estimate of costs of Services, a diagram for the benefit assessment for the Assessment Area, an assessment of the estimated costs of Services, and the special and general benefits conferred thereby upon all assessable parcels within the Assessment Area; and

NOW, THEREFORE, the undersigned, by virtue of the power vested in me under Article XIIID of the California Constitution, the Government Code, the Health and Safety Code, and the order of the Santa Cruz County Mosquito & Vector Control Division Board of Trustees, hereby make the following determination of an assessment to cover the portion of the estimated cost of the Services, and the costs and expenses incidental thereto to be paid by the Mosquito, Vector and Disease Control Assessment.

The Division has evaluated and estimated the costs of extending and providing the Services to the Assessment Area. The estimated costs are summarized in Figure 4 below and detailed in Figure 1.

The amount to be paid for the Services and the expenses incidental thereto, to be paid by the SCCMVC for fiscal year 2026-27 is generally as follows:

Figure 4 – Summary Cost Estimate – FY 2026-27 Budget

Mosquito Control Services and Related Expenditures	$2,820,309
Total Incidental Costs	$65,546
Total Mosquito, Vector and Disease Control Services and Incidentals	$2,885,855
Total Contributions from other Sources	($1,767,557)
Net Amount to be Assessed	**$1,118,297**

An Assessment Diagram is hereto attached and made a part hereof showing the exterior boundaries of the Assessment Area. The distinctive number of each parcel or lot of land in the Assessment Area is its Assessor Parcel Number appearing on the Assessment Roll.

I do hereby determine and apportion the net amount of the cost and expenses of the Services, including the costs and expenses incidental thereto, upon the parcels and lots of land within the Mosquito, Vector and Disease Control Assessment, in accordance with the special benefits to be received by each parcel or lot, from the Services, and more particularly set forth in this Engineer's Report.

The assessment determination is made upon the parcels or lots of land within the Assessment Area in proportion to the special benefits to be received by the parcels or lots of land, from the Services.

The assessment is subject to an annual adjustment tied to the Consumer Price Index-U for Northern California (San Francisco-Oakland-Hayward) as of December of each succeeding year (the "CPI"), with a maximum annual adjustment not to exceed 3%. Any change in the CPI in excess of 3% shall be cumulatively reserved as the "Unused CPI" and shall be used to increase the maximum authorized assessment rate in years in which the CPI is less than 3%. The maximum authorized assessment rate is equal to the maximum assessment rate in the first fiscal year the assessment was levied, adjusted annually by the minimum of 1) 3% or 2) the change in the CPI plus any Unused CPI as described above.

The estimate of cost and budget in this Engineer's Report proposes assessments for the fiscal year 2026-27 at the rates of $11.99 for Zone A and $11.69 for Zone B.

Each parcel or lot of land is described in the Assessment Roll by reference to its parcel number as shown on the Assessor's Maps of the County of Santa Cruz for the fiscal year 2026-27. For a more particular description of the property, reference is hereby made to the deeds and maps on file and of record in the office of the County Assessor of the County of Santa Cruz.

I hereby place opposite the Assessor Parcel Number for each parcel or lot within the Assessment Roll, the amount of the assessment for fiscal year 2026-27 for each parcel or lot of land within the Mosquito, Vector and Disease Control Assessment Area.[23]

Dated: August 19, 2025

Engineer of Work

By _____

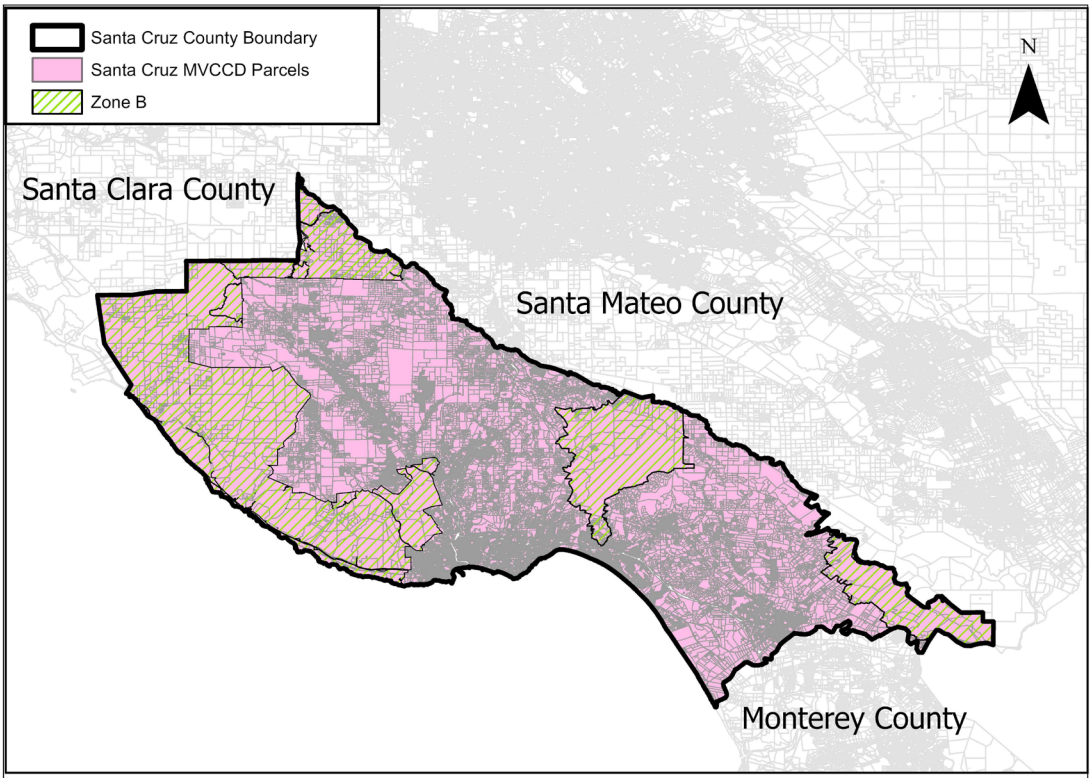
John W. Bliss, License

[23] Each parcel has a uniquely calculated assessment based on the estimated level of special benefit to the property as determined in accordance with this Engineer's Report.

Assessment Roll

Reference is hereby made to the Assessment Roll in and for the assessment proceedings on file in the office of the Santa Cruz County Mosquito & Vector Control Division, as the Assessment Roll is too voluminous to be bound with this Report.

Assessment Diagram



FILED IN THE CHAMBERS OF THE
SANTA CRUZ COUNTY BOARD OF SUPERVISORS,
COUNTY OF SANTA CRUZ,
CALIFORNIA, THIS _____ DAY OF _____, 2025.

_____
CLERK OF THE BOARD

RECORDED IN THE CHAMBERS OF THE
SANTA CRUZ COUNTY BOARD OF SUPERVISORS,
COUNTY OF SANTA CRUZ,
CALIFORNIA, THIS _____ DAY OF _____, 2025.

_____
CLERK OF THE BOARD

Note:
REFERENCE IS HEREBY MADE TO THE MAPS AND DEEDS OF RECORD IN THE OFFICE OF THE ASSESSOR OF THE COUNTY OF SANTA CRUZ FOR A DETAILED DESCRIPTION OF THE LINES AND DIMENSIONS OF ANY PARCEL SHOWN HEREIN. THOSE MAPS SHALL GOVERN FOR ALL DETAILS CONCERNING THE LINES AND DIMENSIONS OF SUCH PARCELS. EACH PARCEL IS IDENTIFIED IN SAID MAPS BY ITS DISTINCTIVE ASSESSOR'S PARCEL NUMBER.

AN ASSESSMENT WAS CONFIRMED AND LEVIED BY THE BOARD OF SUPERVISORS OF SANTA CRUZ COUNTY ON THE LOTS, PIECES AND PARCELS OF LAND ON THIS ASSESSMENT DIAGRAM ON THE _____ DAY OF _____, 2025 FOR THE FISCAL YEAR 2026-27 AND SAID ASSESSMENT DIAGRAM AND THE ASSESSMENT ROLL FOR SAID FISCAL YEAR WERE FILED IN THE OFFICE OF THE COUNTY AUDITOR OF THE COUNTY OF SANTA CRUZ ON THE _____ DAY OF _____, 2025. REFERENCE IS HEREBY MADE TO SAID RECORDED ASSESSMENT ROLL FOR THE EXACT AMOUNT OF EACH ASSESSMENT LEVIED AGAINST EACH PARCEL OF LAND.

_____
CLERK OF THE BOARD

FILED THIS _____ DAY OF _____, 2025 AT THE HOUR OF _____ O'CLOCK __.M. IN THE OFFICE OF THE COUNTY TAX COLLECTOR OF THE COUNTY OF SANTA CRUZ, STATE OF CALIFORNIA, AT THE REQUEST OF THE SANTA CRUZ COUNTY BOARD OF SUPERVISORS

_____
COUNTY TAX COLLECTOR, COUNTY OF SANTA CRUZ

SCI Consulting Group
4745 Mangels Blvd
Fairfield, CA 94534
707-430-4300

Santa Cruz County Mosquito & Vector Mosquito, Vector and Disease Control Assessment Diagram