Lake County Vector Control District

Mosquito, Vector and Disease
Control Assessment

Engineer's Report
Fiscal Year 2024-25

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

Engineer of Work:

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LAKE COUNTY VECTOR CONTROL DISTRICT

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Introduction

Overview

The Lake County Mosquito Abatement District was established in 1948 as an independent special district to control the Clear Lake gnat, a non-biting midge that reached great nuisance densities along the lake shorelines, affecting the Lake County tourism industry. The District's responsibilities were expanded a few years later to include mosquito control. In July 1995, the District's name was changed from "Lake County Mosquito Abatement District" to "Lake County Vector Control District" ("District") to reflect all the services provided by the District, which include comprehensive mosquito and vector control services and public health protection services in the County of Lake.

The District serves the entire County of Lake, covering an area of 1,329 square miles, of which 1,258 square miles is land and 72 square miles is water. The District provides its services to properties accommodating approximately 65,000 residents and is the only agency providing mosquito and vector control and vector-borne disease protection and prevention services in the County.

The Lake County Vector Control District is governed by a Board of Trustees ("Board"): one trustee is appointed by each of the two cities located within the District (Clearlake and Lakeport) and the remaining three trustees are appointed by the County Board of Supervisors to represent the County-at-Large. The Board meetings are held at 1:30 PM on the second Wednesday of every month and the public is welcome to attend.

The District provides mosquito control; treatment of ground-nesting yellow jackets, surveillance of gnats, ticks, and other vectors; and disease control services within its boundaries ("Assessment Area" or "Assessment District"). The District's services are available to all properties in the County of Lake. The purpose of the Lake County Vector Control District is to reduce the risk of vector-borne disease and mosquito nuisance to property and the inhabitants of property within the District. The District's core services are summarized as follows:

- Early detection of public health threats through comprehensive vector surveillance
- Reducing vectors or exposure to vectors that transmit diseases
- Appropriate, timely response to requests to prevent/control vector-borne diseases on property
- Public education about mosquitoes and other vectors, the diseases they carry, and how residents can help control them on their property

In 2008, the District provided a "baseline" level of mosquito, vector and disease control services in the County. For the 10 years before that, a significant portion of the District's property tax share has been transferred by the State and the County to other agencies. In addition, cost increases and the cost of controlling West Nile Virus further stressed the District's limited budget. Without the additional assessment, Services would have deteriorated. The services provided to the Assessment Area consist of expanded services, as listed below, above the existing baseline level of services currently provided.

The Assessment Area is narrowly drawn to include only properties that may request and/or receive direct and more frequent 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 the District, and that will benefit from a reduction in the amount of vectors reaching and impacting the property as a result of the enhanced vector surveillance and control. The Assessment Diagram included in this report shows the boundaries of the Assessment Area.

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

- Faster response to requests in the Assessment District concerning mosquitoes, insects, rodents, and other vectors
- Improved mosquito inspections, surveillance, and control in the Assessment District
- Treat sources within the Assessment District with environmentally safe products wherever mosquito larvae and/or pupae are found
- Improved mosquitofish program which provides free mosquito-eating fish for backyard ponds and other water features to property owners in the Assessment District
- Expanded identification of mosquitoes, ticks, and other arthropods in the Assessment District
- Improved testing for mosquito- and other vector-borne diseases in the Assessment District
- Upgrades to the laboratory and other facilities and equipment utilized by the District
- Improved surveillance and testing of ticks and rodents in the Assessment District, and the diseases they carry
- Adult mosquito control within the Assessment District when necessary to protect public health on property in the Assessment District

[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 education, presentations, and other outreach programs to educate property owners and the occupants of property within the Assessment District about mosquitoes, vectors and the diseases they can transmit

This Engineer's Report ("Report") defines the benefit assessment, which provides funding for the improved mosquito, vector and disease control services for property throughout the District, 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(m)).

The District operates under the authority of the Mosquito Abatement and Vector Control District Law of the State of California. 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 mosquito borne 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 vector borne diseases is only partially effective.

(2) Adequate protection of human health against vector borne diseases is best achieved by organized public programs.
(3) 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.
(4) Since 1915, mosquito abatement and vector control districts have protected Californians and their communities against the threats of vector borne 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.

This Engineer's Report ("Report") was prepared by SCI Consulting Group ("SCI") to describe the vector 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 District based on the estimated special benefit each parcel receives from the Services funded by the benefit assessment.

Legal Analysis

Proposition 218

This assessment was 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 imposes a number of important requirements, including 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 property.

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

On July 14, 2008, the California Supreme Court issued its ruling in *Silicon Valley Taxpayers Association, Inc. v. Santa Clara County Open Space District* ("*Silicon Valley*"). Several of the most important elements of the ruling are:

- 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

This Engineer's Report, and the process used to establish this assessment is consistent with the *Silicon Valley* decision.

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

On June 8, 2009, the 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 back to the Court of Appeal for reconsideration in light of the Supreme Court's discussion in the *Silicon Valley* case. In *Dahms*, the Appellate Court then upheld the assessment that was 100% special benefit (i.e. 0% general benefit) holding 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 Court of Appeal 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 each individual property's proportional special benefits.

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

On May 26, 2010, the California Court of Appeal issued its decision in *Steven Beutz v. County of Riverside ("Beutz")*. 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, California Court of Appeal issued its decision in 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 city-owned parcels.

Compliance with Current Law

This Engineer's 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 the absence of the Assessment.

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. While *Dahms* could be used as the basis for a finding of 0% general benefits, this Engineer's Report establishes a more generous separation and quantification of general benefits.

This Report is also consistent with *Bonander* because the Assessment has been apportioned based on the overall cost of the services and 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.

Assessment Process

To allow property owners to ultimately decide whether funding should be provided for the Services summarized above, the Board authorized by Resolution the Initiation of proceedings for a benefit assessment on January 14, 2009. In May and June of 2009, the District conducted an assessment ballot proceeding pursuant to the requirements of Article XIIID of the California Constitution ("The Taxpayer's Right to Vote on Taxes Act") and the Government Code. During this ballot proceeding, owners of property in the District were provided with a notice and ballot for the proposed special assessment. A 45-day period was provided for balloting and a public hearing was conducted on June 30, 2009.

It was determined after the conclusion of the public input portion of the public hearing that 57.74% of the weighted ballots returned were in support of the assessment. Since the assessment ballots submitted in opposition to the proposed assessments did not exceed the assessment ballots submitted in favor of the assessments (with each ballot weighted by the proportional financial obligation of the property for which ballot was submitted), the District gained the authority to approve the levy of the assessments for fiscal year 2009-10 and future years. The authority granted by the ballot proceeding includes an annual increase in the maximum authorized assessment rate equal to the annual change in the Consumer Price Index for the San Francisco Bay Area, not to exceed 3%. In the event that the annual change in the CPI exceeds 3%, any percentage change in excess of 3% can be cumulatively reserved and added to the annual change in the CPI for years in which the CPI change is less than 3%. The Board took action, by Resolution No.09-09 passed on July 15, 2009, to approve the levy of the assessments.

In each subsequent year for which the assessments will be levied, the Board must approve an updated Engineer's Report for the upcoming fiscal year at a noticed public hearing. The Engineer's Report should include a budget for the upcoming fiscal year's costs and services and an updated assessment roll listing all parcels and their proposed assessments for the upcoming fiscal year.

If the Board approves this Engineer's Report and the assessments it establishes for fiscal year 2024-25, the assessments would be submitted to the County Auditor for inclusion on the property tax rolls for fiscal year 2024-25.

General Description of the District and Services

About the District

The Lake County Vector Control District is an independent special district (not part of any County or city) that controls and monitors mosquitoes, and other vectors such as ticks, biting black gnats, ground-nesting yellowjackets, and the Clear Lake Gnat. The District protects the usefulness, desirability and livability of property and the inhabitants of property within its jurisdictional area through the abatement of vertebrate and invertebrate vectors. In addition, the District regularly tests for diseases carried by mosquitoes and ticks, and educates property owners and the occupants of property in the District about how to protect themselves from diseases transmitted by these and other organisms.

The Lake County Mosquito Abatement District was officially created on February 16, 1948 to address the swarms of Clear Lake Gnats that plagued the area and threatened the burgeoning tourist industry. The District changed its name to the Lake County Vector Control District in 1995 to reflect its mission more accurately.

Description of Vector Control Program

As mentioned earlier, the District currently provides a "baseline" level of services in the County as permitted with the limited funding available. The Assessment provides the additional funding to operate the program and expand the services provided in the Assessment Area to an optimum level necessary to protect the usefulness, utility, desirability and livability of property and the inhabitants of property within its jurisdictional area.

In addition to being nuisances by disrupting human activities and the use and enjoyment of public and private areas, certain insects and animals may transmit diseases. The diseases of most concern are West Nile Virus (WNV), Western Equine Encephalitis (WEE) virus, St. Louis Encephalitis (SLE) virus, Dog Heartworm, and Malaria, which are transmitted by mosquitoes; and Lyme disease, Rickettsiosis, Bartonellosis, Rocky Mountain Spotted Fever (RMSF), Babesiosis, and Ehrlichiosis, which are transmitted by ticks. The District also conducts surveillance for the biting black gnat (*Culicoides* spp.*)* and works with the California Department of Public Health—Vector-borne Disease Section to conduct surveillance for plague, leptospirosis, hantavirus, and other new or remerging diseases that could affect the health of county residents and visitors. In 2018. The District added treatment of ground-dwelling yellowjacket nests to its services.

The spread of these diseases is minimized through ongoing vector surveillance activities, source reduction, source treatment, abatement, and educational outreach. These efforts also minimize the nuisance impacts vectors can have on residents. To fulfill this purpose, the District may take any and all necessary steps to control mosquitoes, monitor rodents and other vectors, and perform other related vector control services.

Specifically, the assessment provides an adequate funding source for the continuation of the projects and programs for surveillance, prevention, abatement, and control of vectors on property within the District. Such mosquito abatement and vector control projects and programs include, but are not limited to, source reduction, larvicide applications, disease monitoring, public education, reporting, accountability, research and interagency cooperative activities, as well as capital costs, maintenance, and operation expenses (collectively "Services"). The cost of these services also includes capital costs comprised of equipment, capital improvements and facilities necessary and incidental to the vector control program.

Introduction

Following are the Services and resulting level of service for the Assessment Area. As previously noted, the District provides a baseline level of service in the County. These Services are over and above the current baseline level of service. The formula below describes the relationship between the final level of service, the existing baseline level of service, and the enhanced level of service to be funded by the assessment.

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

The Services are further defined as follows:

- Response to mosquito problems as well as other vectors defined by California Health and Safety code.
- Control of mosquito larvae on residential property, agricultural sources, ditches, drain lines, vaults, seasonally flooded ponds, horse troughs, wastewater treatment plants, under buildings, freshwater marshes, creeks, catch basins, and other sources on property in the District.
- Survey and data analysis of mosquito larvae populations to assess public health risks and allocate control efforts on property in the District.
- Monitoring of mosquito and other hematophagous dipteran populations using carbon dioxide-baited traps, resting boxes, New Jersey light traps, gravid traps, BG Sentinel traps, ovitraps, and other surveillance methods on property in the District.

- Monitoring for diseases carried and transmitted by mosquitoes and other arthropods on property in the District, such as Encephalitis, Malaria, Dog Heartworm, and West Nile Virus.
- Deployment and testing of sentinel chicken flocks, testing of dead birds and mosquitoes for arboviruses and other diseases, and other disease surveillance methods to detect vector-borne diseases on property in the District.
- Testing of new insecticide materials and investigation of their efficacy.
- Cooperation with the local health department, the State Department of Public Health, State Universities, and other agencies to survey and identify arthropod-borne diseases such as Lyme disease, rickettsiosis, and Plague found in parks, on trails, and in other locations frequented by the public.
- Facilitation of testing and monitoring for diseases carried and transmitted by ticks on property in the District, such as Lyme disease, Rickettsiosis, Ehrlichiosis, Anaplasmosis, Rocky Mountain Spotted Fever, Pacific Coast tick fever, and Babesiosis.
- Treatment of underground yellowjacket wasp nests.
- Monitoring and/or advice for controlling other nuisance and potentially hazardous organisms and vectors such as ticks, mites, and fleas on property in the District.
- Education of residents on property in the District about the risks of diseases carried by mosquitoes, ticks, and other disease vectors, and how to better protect themselves and their pets.
- Assisting State and universities in testing for Hantavirus, Arenavirus, Plague, and other diseases carried by small mammal populations.
- Monitoring of invasive mosquitoes such as the Asian Tiger Mosquito and Yellow Fever Mosquito.
- Testing for and control of new and emerging pathogens such as West Nile Virus and Rickettsiosis.
- Education programs on vectors and disease abatement at school, community, and civic group meetings in the District.
- Distribution of printed material and brochures that describe what residents, employees and property owners in the District can do to keep their homes and property free of mosquitoes and other vectors.

The District protects the public from vector-borne disease and mosquito nuisance while protecting the environment, through a coordinated set of activities collectively known as the Integrated Vector Management (IVM) Program. For all vector species, public education is a primary control strategy. In addition, the District determines the abundance of vectors and the risk of vector-borne disease or discomfort through evaluation of public service requests and field and laboratory surveillance activities. If the populations exceed or are anticipated to exceed predetermined criteria, District staff employs the most efficient, effective, and environmentally sensitive means of control for the situation. Where feasible, water management or other physical control activities are instituted to reduce vector production. In some circumstances, the District also uses biological control such as the planting of mosquitofish. When these approaches are not effective or are otherwise inappropriate, pesticides are used to treat specific pest-producing or pest-harboring areas.

Vectors and Vector-Borne Diseases in the District Service Area

The District undertakes activities through its Integrated Vector Management Program to control the following vectors of disease and/ or discomfort within the District:

Mosquitoes

Certain species of mosquitoes found in Lake County can transmit West Nile Virus, Western Equine Encephalomyelitis, St. Louis Encephalitis, Malaria, and potentially other encephalitis viruses. A few species of mosquitoes are also capable of transmitting dog heartworm. Although some species of mosquitoes have not been shown to transmit disease, all species can cause human discomfort when the female mosquito bites to obtain blood. Reactions range from irritation in the area of the bite to severe allergic reactions or secondary infections resulting from scratching the irritated area. Additionally, an abundance of mosquitoes can cause economic losses, and loss of use or enjoyment of recreational, agricultural, or industrial areas.

Of the world's 3,000 mosquito species, more than 50 live in California, and 24 have been identified in Lake County. Continuous surveillance and special control efforts are aimed at the most troublesome species: *Aedes increpitus, Aedes sierrensis, Aedes nigromaculis, Aedes vexans, Anopheles freeborni, Anopheles franciscanus, Culex stigmatosoma, Culex pipiens*, and *Culex tarsalis*.

Aedes	***Anopheles***	***Culex***	***Culiseta***
Ae. bicristatus	*An. franciscanus*	*Cx. apicalis*	*Cs. incidens*
Ae. fitchii	*An. freeborni*	*Cx. boharti*	*Cs. inornata*
Ae. increpitus	*An. occidentalis*	*Cx. erythrothorax*	*Cs. particeps*
Ae. melanimon	*An. punctipennis*	*Cx. pipiens*	
Ae. nigromaculis		*Cx. stigmatosoma*	
Ae. sierrensis	***Coquillettidia***	*Cx. tarsalis*	***Orthopodomyia***
Ae. vexans	*Cq. perturbans*	*Cx. territans*	*Or. signifera*
		Cx. thriambus	

Ground-nesting Yellowjacket Wasps

Ground-nesting yellowjackets have a painful sting and bite, can fly moderate distances, and are found throughout the District. More significantly, yellowjacket stings can result in anaphylactic shock and rapid death for the approximately 0.5% of the public with severe allergies. In response to public requests, the District added the treatment of in-ground yellowjacket nests to its services in 2018. The District will treat ground-nesting yellowjacket nests that pose an imminent threat to humans, livestock or pets. However, the District does not control any yellowjackets that are located inside or on a structure. Aerial yellowjacket nests may treated to protect the health and safety of District residents under special circumstances. If a technician finds that a stinging insect nest is located inside a structure or above ground, the resident is directed to local pest control companies that are certified for structural control or removal of stinging insects. If a District technician elects to treat stinging insects, he or she applies an insecticide directly to the insect nest, in accordance with District policies and the product label. Care is taken to avoid any unwanted drift and harm to other organisms. Bee swarms located by District technicians are referred to beekeepers from the list maintained by the Lake County Agricultural Commissioner's Office.

Other Animals of Importance

Although certain animal species such as bats, ground squirrels, chipmunks, fleas, ticks, kissing bugs, opossums, wood rats, roof rats, and house mice will not be regularly controlled, these animals play important roles in the transmission of Plague, Rickettsiosis, Anaplasmosis, Ehrlichiosis, Chagas' Disease Murine Typhus, Hantavirus, and Lyme Disease, and may be surveyed for other diseases. The District routinely provides education and consulting services to the public about disease risk associated with these vectors and appropriate measures to protect human health. In extreme cases where the transmission of disease is likely, as with the other District activities, control efforts may be employed. Control of these animals will be done in consultation with the California Department of Health Services, Lake County Department of Health Services, Lake County Animal Control Departments, Lake County Agricultural Commissioner's Offices, and other State and local agencies.

Most of the vectors mentioned above are extremely mobile and cause the greatest hazard or discomfort away from their sources. Each of these potential vectors has a unique life cycle and most occupy different habitats. In order to effectively control these vectors, an integrated vector management program must be employed. District policy is to identify those species that are currently vectors, to recommend techniques for their prevention and control, and to anticipate and minimize any new interactions between vectors and humans.

Integrated Vector Management

The Integrated Vector Management Program of the Lake County Vector Control District is a long-standing, ongoing program of surveillance and control of mosquitoes and other vectors of human disease and discomfort. The program consists of six types of activities:

1. Surveillance for vector populations, vector habitats, disease pathogens, and public distress associated with vectors; this includes trapping and laboratory analysis of vectors to evaluate populations and disease threats, direct visual inspection of known or suspected vector habitats, the use of all-terrain vehicles, maintenance of paths, and public surveys;
2. Public education to encourage and assist reduction or prevention of vector habitats on private and public property;
3. Management of vector habitat, especially through water control and maintenance or improvement of channels, tide gates, levees, and other water control facilities, etc. ("PHYSICAL CONTROL"), usually through education and cooperation of property owners;
4. Vegetation Management to improve surveillance or reduce vector populations, usually through education and cooperation of property owners;

5. Rearing, stocking, and provision to the public of the "mosquitofish" *Gambusia affinis*; application of the bacterium *Lysinibacillus sphaericus* (previously known as *Bacillus sphaericus*) or the fungus *Lagenidium giganteum*; and possibly use of other predators or pathogens of vectors ("Biological Control");
6. Application of non-persistent selective insecticides to reduce populations of larval or adult mosquitoes and other invertebrate threats to public health ("Chemical Control").

The District's activities address mosquitoes and other arthropods ,and appliescommon general principles and policies including identification of vector problems; responsive actions to control existing populations of vectors, prevent new sources of vectors from developing, and manage habitat to minimize vector production; education of land-owners and others on measures to minimize vector production or interaction with vectors; and provision and administration of funding and institutional support necessary to accomplish these goals.

In order to accomplish effective and environmentally sound vector management, the manipulation and control of vectors must be based on careful surveillance of their abundance, habitat (potential abundance), pathogen load, and/or potential contact with people; the establishment of treatment criteria (thresholds); and appropriate selection from a wide range of control methods. This dynamic combination of surveillance, treatment criteria, and use of multiple control activities in a coordinated program is generally known as Integrated Pest Management (IPM) (Glass 1975, Davis et al. 1979, Borror et al. 1981, Durso 1996, Robinson 1996).

The District's Integrated Vector Management (IVM) Program, like any other IVM program, by definition involves procedures for minimizing potential environmental impacts. The District employs IVM principles by first determining the species and abundance of vectors through evaluation of public service requests and field surveys of immature and adult 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, and for some vectors (rodents, ticks) it is the District's primary control method. In some situations, water management or other physical control activities (historically known as "source reduction" or "permanent control") can be instituted to reduce vector sources. The District also uses biological control such as the planting of mosquitofish in some settings. When these approaches are not effective or are otherwise inappropriate, pesticides are used to treat specific pest-producing or pest-harboring areas.

In order to maximize familiarity by the operational staff with specific vector sources in the Project area, the District is divided into mosquito and other arthropod zones (currently four). Each zone is assigned a full-time Vector Control Technician whose responsibilities include inspection and treatment of known vector sources, finding and controlling new sources, minor physical control, and responding to service requests from the public.

Vector control activities are conducted at a wide variety of sites throughout the District's Project area. These sites can be roughly divided into those where activities may have an effect on the natural environment either directly or indirectly (through drainage), and sites where the potential environmental impacts are negligible "Non-Environmental Sites." Examples of "Environmental Sites" in the Project area include Lakes and Ponds, Rivers and Streams, Vernal Pools and other Seasonal Wetlands, Storm Water Detention Basins, Flood Control Channels, Street Drains and Gutters, Wash Drains, Irrigated Pastures, or Agricultural Ditches. Examples of "Non-Environmental Sites" include Animal Troughs, Artificial Containers, Tire Piles, Fountains, Ornamental Fish Ponds, Swimming Pools, Animal Waste Detention Ponds, and Non-Natural Harborage (such as wood piles, residential and commercial landscape, trash receptacles, etc.).

Surveillance and Site Access

In addition to the nuisance of disrupting human activities and causing our environment to be uninhabitable, certain insects and animals may transmit a number of diseases. The diseases of most concern in Lake County are West Nile Virus (WNV), Western Equine Encephalomyelitis (WEE) virus, and St. Louis Encephalitis (SLE) virus transmitted by mosquitoes; Plague and Murine Typhus transmitted by fleas; Leptospirosis and Hantavirus Pulmonary Syndrome associated with rats and other rodents; and Lyme Disease, Pacific Coast tick fever, rickettsiosis, babesiosis, and ehrlichiosis transmitted by ticks.

The District has found mosquito and other potential vector sources scattered throughout the District. All properties within the District are within mosquito-flying range of one or more mosquito sources, and/or the normal travel range of one or more other vectors. Furthermore, the District area has long suffered from mosquitoes and other vectors and includes a large number of sources.

Mosquito populations are surveyed using a variety of field methods and traps. Surveillance is conducted in a manner based upon an equal spread of resources throughout the District boundaries, focusing on areas of likely sources. Treatment strategies are based upon the results of the surveillance program, and are specifically designed for individual area. Small volume mosquito "dippers" and direct observation are used to evaluate larval populations, and service requests from the public, light traps, resting boxes, gravid traps, ovitraps, and carbon dioxide-baited traps are used to evaluate adult populations. The surveillance traps are located and spread throughout the District in a balanced approach such that the traps measure mosquito levels throughout the District.

Mosquito-borne diseases are surveyed using sentinel chickens, adult mosquitoes, and wild birds. Coops with sentinel chickens are maintained on the property of willing landowners. The District employs standard practices of good animal husbandry to ensure the health and well-being of the sentinel animals.

Adult mosquitoes are collected and tested for infection with WNV, SLE, and WEE viruses. Collections are made with small battery-powered traps baited with carbon dioxide in the form of dry ice or aspirated from resting boxes and natural resting sites. Although the traps must be placed in vegetated areas with little light competition, care is taken to ensure that placement of traps does not significantly damage any vegetation.

Surveillance is also conducted to determine vector habitat (e.g., standing water) and the effectiveness of control operations. Inspections will be conducted using techniques with insignificant impacts on the environment. Staff routinely uses pre-existing accesses such as roadways, open areas, walkways, and trails. Vegetation management (i.e., pruning trees, clearing brush, and herbicide application) is conducted where overgrowth impedes safe access. All of these actions only result in a temporary/localized physical change to the environment with regeneration/regrowth occurring within a span of six to nine months.

In order to access various sites throughout the District for surveillance and for control, District staff utilizes specialized equipment such as light trucks, all-terrain vehicles, unmanned aerial vehicles (UAVs), and boats. District policies on use of this equipment are designed to minimize environmental impact.

In addition, the District's jurisdictional powers allow for testing for the presence of Plague and Murine Typhus by collecting ground squirrels, wild rodents, opossums, and fleas. Currently the District does not conduct regular independent surveillance for rodent-borne diseases, but cooperates with the California Department of Public Health Vector-borne Disease Section to conduct surveillance for plague annually and other rodent-borne diseases periodically. Testing for the presence of Hantavirus Pulmonary Syndrome could be conducted by collecting wild rodents. Small animals could be trapped using live traps baited with food. The traps would be set in late afternoon and would be collected within 24 hours. The animals would be anesthetized and blood, tissue, and flea samples would be obtained. Threatened and endangered species and other legally protected animals that might become trapped would be released immediately and would not be used in these tests.

Disposable supplies contaminated while collecting blood and tissue would be stored in appropriate biohazard containers in the District's laboratory and disposed of in accordance with all applicable laws. Reusable items would be cleaned and sterilized before being used again. The disposal of animal carcasses would be in compliance with all Federal, State, and local laws and regulations.

Education

The primary goal of the District's activities is to prevent vectors from reaching public nuisance or disease thresholds by managing their habitat while protecting habitat values for their predators and other beneficial organisms. Vector prevention is accomplished through public education, including site-specific recommendations on water and land use, and by physical control (discussed in a later section).

The District's education program teaches the people within the District how to recognize, prevent, and suppress vector breeding and harborage on their property. This part of the District's Services is accomplished through the distribution of brochures, fact sheets, and newsletters, participation in local fairs and events, presentations to community organizations, contact with Technicians in response to service requests, and public service announcements and news releases. Education also includes a school program to teach future adults in the District to be responsible by eliminating vector sources, and to educate their parents or guardians about District services and how they can reduce vector-human interaction on property within the District.

Control of Mosquitoes

When a mosquito source produces mosquitoes above District treatment thresholds, the Technician will generally work with the landowner or responsible agency to reduce the habitat value of the site for mosquitoes ("physical control"). If this is ineffective, then the Technician will determine the best method of further treatment, including biological control and/ or chemical control. The District's objective is to provide the properties a District-wide level of consistent mosquito and vector control such that all properties would benefit from equivalent reduced levels of mosquitoes and other vectors. Surveillance and monitoring are provided on a District-wide basis. The District, though, cannot predict where control measures will be applied because the type and location of control depends on the surveillance and monitoring results. However, the control thresholds and objectives are comparable throughout the District.

Physical Control

The District, in conjunction with property owners and managers, physically manipulates and manages mosquito habitat areas ("sources") within the District to reduce mosquito production. This may include removal of containers and debris, removing standing water from unmaintained swimming pools and spas, removal of vegetation or sediment, interrupting water flow, rotating stored water, pumping and/or filling sources, improving drainage and water circulation systems, breaching or repairing levees, and installing, improving, or removing culverts, and other water control structures in wetlands.

Biological Control

The mosquitofish, *Gambusia affinis*, is the District's primary biocontrol agent used against mosquitoes. Mosquitofish are not native to California, but have been widely established in the state since the early 1920s, and now inhabit most natural and constructed water bodies. The District rears mosquitofish in its ponds and periodically uses nets to collect mosquitofish from these and other water bodies located in the District. When catching mosquitofish from natural settings, other aquatic animals that are caught accidentally, such as bluegill sunfish, other freshwater fish, amphibians, and crustaceans, are returned to the habitat. District technicians place mosquitofish in appropriate natural and man-made settings within the District where either previous surveillance has demonstrated a consistently high production of mosquitoes, or where current surveillance indicates that mosquito populations will likely exceed chemical control thresholds without prompt action. Mosquitofish are also made available to people to control mosquito production only in artificial containers such as ornamental fishponds, water plant barrels, horse troughs, and abandoned swimming pools within the District.

Material Control

Since many mosquito sources cannot be adequately controlled with physical control measures or mosquitofish, the District also uses biological materials and/or chemical insecticides approved by the U. S. Environmental Protection Agency, the California Department of Pesticide Regulation, and other environmental agencies to control mosquito production where observed mosquito production exceeds District thresholds. When field inspections indicate the presence of vector populations which meet District criteria for chemical control (including abundance, density, species composition, proximity to human settlements, water temperature, presence of predators, levels of disease activity, and others), the District's California-certified Vector Control Technicians apply these materials to the site in strict accordance with the label instructions. When possible, the District uses selective larvicides; if large numbers of adult mosquitoes are present and public health is threatened, the District may apply selective, low persistence aerosol adulticides to reduce the number of adult mosquitoes.

MOSQUITO LARVICIDES: Depending on time of year, water temperature, organic content, mosquito species present, larval density, and other variables, pesticide applications may be repeated at any site at recurrence intervals ranging from annually to weekly. Larvicides routinely used by the District include Bti (*Bacillus thuringiensis israelensis*), Bs (*Lysinibacillus sphaericus* (previously *Bacillus sphaericus*), Methoprene, Spinosad, and CocoBear.

a. Bti (*Bacillus thuringiensis israelensis*) is a bacterium that is ingested by larval mosquitoes and disrupts their gut lining, leading to death before pupation. Bti is applied by the District as a liquid or bonded to inert substrate (typically corncob granules) to assist penetration of vegetation. Persistence is low in the environment, and efficacy depends on careful timing of application relative to the larval instar. Therefore, 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, ATV, or aircraft.
b. Bs *(Lysinibacillus sphaericus* (formerly *Bacillus sphaericus*)) is a biological larvicide that the District uses. The mode of action is similar to that of Bti, but *L*. *sphaericus* may be used more than *Bti* in some sites because of its greater effectiveness in water with high organic content. Application can be by hand, ATV, or aircraft.
c. Methoprene is a synthetic juvenile hormone designed to disrupt the transformation of a juvenile mosquito into an adult. It is applied either in response to observed high populations of mosquito larvae at a site, or as a sustained-release product that can persist for approximately four months. Application can be by hand, ATV, or aircraft.
d. Spinosad is a naturally-derived active ingredient produced by the soil organism, *Saccharopolyspora spinosa*. It paralyzes the mosquito larvae, but does not affect vertebrates. Spinosad breaks down quickly and does not bioaccumulate in the environment. It is applied in response to observed high populations of mosquito larvae at a site, or as a sustained-release product that can persist for up to thirty days. Application can be by hand, ATV, or aircraft.
e. CocoBear is the trade name for a larvicidal oil. Application is made by hand.

MOSQUITO ADULTICIDES: In addition to chemical control of mosquito larvae, the District also makes aerosol applications of pesticides for control of adult mosquitoes within the District if specific criteria are met, including species composition, population density (as measured by landing count or other quantitative method), proximity to human populations, and/or human disease risk. As with larvicides, adulticides are applied in strict compliance with label requirements.

Control of In-ground Yellowjacket Nests

The District applies insecticides to control ground-nesting yellowjackets that pose an imminent threat to humans, pets, or livestock. This activity is triggered by a public request for assistance, rather than in response to direct population monitoring. Drione® is an insecticide used by the District to control ground-nesting yellowjackets. The potential environmental impact of these applications is minimal because (1) the active ingredients include pyrethrins, piperonyl butoxide, and amorphous silica gel, (2) the application rate is minimal, and (3) the mode of application, into underground nests, further limits the potential for environmental exposure from these materials.

Control of Other Vectors

Other animals, such as ground squirrels and fleas, could be controlled by the District in response to the threat to injury or disease transmission to humans. These animals would only be controlled after consultation with local and State health officials. In specific situations, control of other vectors would be considered either as policy of the Board of Trustees or as directed by management.

Service Requests

The District responds to service requests within its boundaries. Any property owner, business or resident in the District may contact the District to request vector control related service or inspection and a District field technician will respond promptly to the particular property to evaluate the property and situation and to perform appropriate surveillance and control services. The District responds to all service requests in a timely manner, regardless of location, within its boundaries.

Cost Estimate

Figure 1 – Cost Estimate – FY 2024-25 Budget

	Estimate Budget
Mosquito & Vector Control Services and Related Expenditures	
Mosquito & Vector Control and Disease Prevention Operations	$1,396,000
Materials, Utilities and Supplies	$583,300
Capital Equipment and Fixed Assets	$85,000
Contingency	$95,000
Mosquito & Vector Control Services and Related Expenditures	**$2,159,300**
Incidental Costs[1]	
Local Agency Formation Commission (LAFCo) charges	$3,000
Ad Valorem (AV) Tax Admin Fee	$33,000
District's Ad Valorem property tax share diverted to Redevelopment Ag	$227,000
Allowance for Uncollectable Assessments	$17,085
Levy Administration, County Collection Fee, and Other Incidentals	$36,230
Total Incidental Costs	**$316,315**
Total Cost of Mosquito & Vector Control Services	**$2,475,615**
Single Family Equivalent Units (SFEs)	**$37,356**
Benefit received per SFE Unit	**$66.27**
Reserves	
Less Contributions from other Sources[2]	($1,906,112)
Net Cost of Mosquito & Vector Control Services	**$569,503**

Budget Allocation to Property

Zones of Benefit	Total SFE Units[3]	Assessment per SFE[4]	Total Assessment[5]
Zone A	36,798	$15.36	$565,217
Zone B	558	$7.68	$4,285
	37,356		**$569,503**

Notes:

1. Incidental Costs includes: LAFCo fees, Lake County Tax Collector fees for the District's share of Ad Valorem taxes, District's funds diverted to three Redevelopment Agencies, allowance for uncollectible assessments from assessments on public agency parcels, County collection charges, and assessment administration costs.
2. As determined in the following section, at least 10% of the cost of the improved Services funded by the Assessments must be funded from sources other than the assessments, to cover any general benefits from these improved Services.
3. SFE Units means Single-Family Equivalent benefit units. See 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. The proceeds from the assessments will be deposited into a special fund for the Assessment. 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 provided for property in the District, and the methodology used to apportion the total assessment to properties within the Assessment Area.

The Lake County Vector Control District service area includes all the parcels in Lake County. The Assessment Area consists of all the Assessor Parcels within the County, as defined by the approved boundary description (boundary will be coterminous with the County of Lake).

The method used for apportioning the assessment is based upon the proportional special benefits to be derived by the properties in the District over and above the general benefits conferred to real property in the Assessment District. Special benefit is calculated for each parcel in the Assessment District using the following process:

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 District
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 benefit is received by property over and above any general benefits. This special benefit is received by property over and above any general benefits from the additional 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 District 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 codified 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, lighting, sidewalks and paved streets enhance the safety, 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 included a requirement that existing assessments in effect upon their 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."[2]

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

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

Since all assessments, existing before or after Proposition 218 must be based on special benefit to property, the drafters of Proposition 218 inherently 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 they established. This is as an acknowledgement 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 inherently were satisfied that vector control services confer special benefit to properties.

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.* [3]

Therefore, the State Legislature unanimously found 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.

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

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 District. For example, the assessment provides reduced levels of mosquitoes and other vectors on property throughout the Assessment District. Moreover, the assessment will reduce the risk of the presence of diseases on property throughout the Assessment District, which is another direct advantage received by property in the Assessment District. Moreover, the assessment funds Services that improve the use of property and reduce the nuisance and harm created by vectors on property throughout the Assessment District. These are tangible and direct special benefits that will be received by property throughout the specific area covered by the Assessment.

The following section, Benefit Factors, describes how and why vector control services specially benefit properties in the Assessment Area. 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 aforementioned Services and that would be provided to property in the Assessment District. The following benefit factors have been established that represent the types of special benefit to parcels resulting from the Services financed with the assessment proceeds. 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 District.

The assessments provide enhanced services for the control and abatement of nuisance and disease-carrying mosquitoes. These Services will materially reduce the number of vectors on properties throughout the Assessment District. The lower mosquito and vector populations on property in the Assessment District is 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.[4] 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 District.

The State Legislature made the following finding on this issue:

> *"Excess numbers of mosquitoes and other vectors spread diseases of humans, livestock, and wildlife, reduce enjoyment of outdoor living spaces, both public and private, reduce property values, hinder outdoor work, reduce livestock productivity; and mosquitoes and other vectors can disperse or be transported long distances from their sources and are, therefore, a health risk and 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."* [5]

Increased safety of property in the Assessment District.

The Assessments result in improved year-round proactive Services to control and abate mosquitoes and other vectors that otherwise would occupy properties throughout the Assessment District. Mosquitoes and other vectors are transmitters of diseases, so the reduction of mosquito and vector populations makes property safer for use and enjoyment. In absence of the assessments, these Services would not be provided, so the Services funded by the assessments make properties in the Assessment District safer, which is a distinct special benefit to property in the Assessment District.[6] This is not a general benefit to property in the Assessment District 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 District and the Services are over and above what otherwise would be provided by the District or any other agency.

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[4] Prior to the commencement of modern mosquito control services, areas in the State of California such as the San Mateo Peninsula, Napa County, Lake County and areas in Marin and Sonoma Counties had such high mosquito populations or other vector 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 vector populations were lower.

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

[6] 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 Area.

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." [7]

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 vectorborne diseases is an essential public service that is vital to public health, safety, and welfare."

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

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."[8]

"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." [9] *(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).*

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

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

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

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 District. This is another tangible and direct special benefit to property in the Assessment District that would not be received in absence of the assessments.

Protection of economic activity on property in the District.

As demonstrated by the COVID-19 pandemic, SARS outbreak in China, outbreaks of Avian Flu, and Zika virus, 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 to prevent the likelihood of such outbreaks in the District.

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 District.

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.* [10]

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:

[10] Zohrabian A, Meltzer MI, Ratard R, Billah K, Molinari NA, Roy K, et al. West Nile Virus economic impact, Louisiana, 2002. Emerging Infectious Disease, 2004 Oct. Available from http://www.cdc.gov/ncidod/EID/vol10no10/03-0925.htm

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. [11]

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

Protection of Assessment District's agriculture, tourism, and business industries.

The agriculture, tourism and business industries will benefit from reduced levels of harmful or nuisance mosquitoes and other vectors. Conversely, any outbreaks of emerging vector-borne pathogens such as West Nile Virus could also materially 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." [12]

Pesticides for mosquito control impart economic benefits to agriculture in general. Anecdotal reports from farmers and ranchers indicate that cattle, if left unprotected, can be exsanguinated by mosquitoes, especially in Florida and other southeast coastal areas. Dairy cattle produce less milk when bitten frequently by mosquitoes. [13]

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

[12] 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

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

The assessments serve to protect the businesses and industries and the employees and residents that benefit from these businesses and industries. This is a direct advantage and special benefit to property in the Assessment District.

Reduced risk of nuisance and liability on property in the Assessment District

In addition to health-related factors, uncontrolled mosquito and vector populations create a nuisance for the occupants of property in the Assessment District. Properties in the Assessment District, therefore, will 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 course, cemetery, open space and other such lands in the Assessment District 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 District can also contain significant sources.[14] 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 serve to protect the businesses and industries in the Assessment District. This is a direct advantage and a special benefit to property in the Assessment District.

Improved marketability of property

As described previously, the Services specially benefit properties in the Assessment District by making them more useable, livable and functional. The Services also make properties in the Assessment District more desirable, and more desirable properties also benefit from improved marketability. This is another tangible special benefit to property which will not be enjoyed in absence of the Services.[15]

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

[15] 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.

Benefit Finding

In summary, the special benefits described in this Report and the expansion of Services in the Assessment District directly benefit and protect the real properties in the Assessment District 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 annual assessment amount per benefit unit.

General Versus Special Benefit

Article XIIIC 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 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,[16]" but outside the narrowly-drawn Assessment District and to "the public at large." SVTA 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.

[16] *SVTA* 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 proposed 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

A formula to estimate the general benefit is listed below:

	1.) Benefit to Real Property Outside the Assessment District
+	*2.) Benefit to Real Property Inside the Assessment District that is Indirect and Derivative*
+	*3.) Benefit to the Public at Large*
=	*General Benefit*

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 *SVTA* 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 and disease protection funded by the Assessments are directly received by the properties in the Assessment District and are only minimally received by property 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).) There currently are some mosquito and vector related services being provided to the Assessment District area. Consequently, there currently are some mosquito control related benefits being provided to the Assessment District and any new and extended service provided by the District would be over and above this baseline. Arguably, all of the Services funded by the assessment therefore would be a special benefit because the additional Services would particularly and distinctly benefit and protect the Assessment District over and above the previous baseline benefits and service.

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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.

Nevertheless, arguably some of the Services would benefit the public at large and properties outside the Assessment District. 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.

Calculating General Benefit

Without this Assessment the District would lack the funds to extend the additional Services to the Assessment District. The only additional service that is being provided is the vector control program assessment-funded Services. Consistent with footnote 8 of *SVTA*, and for the reasons described above, the District has determined that all parcels in the Assessment District receive a shared direct advantage and special benefit from the Services. The Services directly and particularly serve and benefit each parcel, and are not 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, this concept means that all vector control services, which provide direct advantage to property in the Assessment District, 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 and vector-borne diseases. 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 District. 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 District. Each year, the District will provide some of its Services in areas near the boundaries of the Assessment District. By abating mosquito populations near the borders of the Assessment District, the Services could provide benefits in the form of reduced mosquito populations and reduced risk of disease transmission to properties outside the Assessment District. If mosquitoes were not controlled inside the Assessment District, more of them would fly from the Assessment District. control of mosquitoes within the Assessment District provides some benefit to properties outside the Assessment District but within the normal flight range of mosquitoes, 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 District 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 District is based on studies of mosquito dispersion concentrations. Mosquitoes can travel up to two miles, on average, so this destination range is used. Based on studies of mosquito destinations, relative to parcels in the Assessment District, average concentration of mosquitoes from the Assessment Area on properties within two miles of the Assessment District is calculated to be 6%.[17] This relative vector population reduction factor within the destination range is combined with the number of parcels outside the Assessment District and within the destination range to measure this general benefit and is calculated as follows:

Criteria:

Mosquitoes may fly up to 2 MILES from their breeding source.

954 parcels within 2 miles of, but outside of the District, may receive some mosquito and disease protection benefit

6% portion of relative benefit that is received

64,392 Parcels in the District

Calculations:

Total Benefit = 954 parcels * 6% = 57 parcels equivalents

Percentage of overall parcel equivalents = 57 / 64,392 = **0.09 %**

17 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.

Therefore, for the overall benefits provided by the Services to the Assessment District, it is determined that 0.09% of the benefits would be received by the parcels within two miles of the Assessment District boundaries. Recognizing that this calculation is an approximation, this benefit will be rounded up to 1.0%.

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

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

In determining the Assessment District area, the District has been careful to limit it to an area of parcels that will directly receive the Services. All parcels will directly benefit from the surveillance, monitoring and treatment that will be provided on an equivalent basis throughout the Assessment District in order to maintain the same improved level of protection against mosquitoes and other vectors and reduced mosquito and vector 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 levels and reduced presence of vector-borne diseases - would be received on an equivalent basis by all parcels in the Assessment District. Furthermore, all parcels in the Assessment District directly benefit from the ability to request service from the District and to have a District field technician promptly respond directly to the parcel and address the owner's or resident's service need. The *SVTA* 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. The District therefore concludes that, other than the small general benefit to properties outside the Assessment District (discussed above) and to the public at large (discussed below), all of the benefits of the Services to the parcels within the Assessment District are special benefits and it is not possible or appropriate to separate any general benefits from the benefits conferred on parcels in the Assessment District.

Benefit To The Public At Large

With the type and scope of Services provided to the Assessment District, 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 Area shows that approximately 6% of the land area in the Assessment Area is covered by highways, streets and sidewalks. This 6% 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 Area, we find that approximately 7.0% of the benefits conferred by the Mosquito and Disease Control Assessment may be general in nature and should be funded by sources other than the Assessment.

General Benefit Calculation

	1.0 %	(Outside the Assessment District)
+	0.0 %	(Property within the Assessment District)
+	6.0 %	(Public at Large)
=	**7.0 %**	(Total General Benefit)

Although this analysis supports the findings that 7.0% of the assessment may provide general benefit only, this number is increased by the Assessment Engineer to 10% to 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 Area if it is later determined that there is some general benefit conferred on those parcels.

The Assessment District's contributions from other sources for 2024-25 is $1,906,112. This contribution constitutes significantly more than the 10% general benefits estimated by the Assessment Engineer that must be paid for by non-assessment sources.

Zones of Benefit

The District's mosquito, vector, and disease control programs, projects, services and improvements funded by the Mosquito, Vector and Disease Control Assessment provide in all areas within the District boundaries.

Since the Services provided throughout the County and will result in reduced vector populations and the other special benefits for property in the County, the boundaries of the Assessment Area have been drawn to match the boundaries of the County. Moreover, within the Assessment Area, certain areas will receive different levels of special benefits. These areas, which are named "Zones of Benefit," are described as follows.

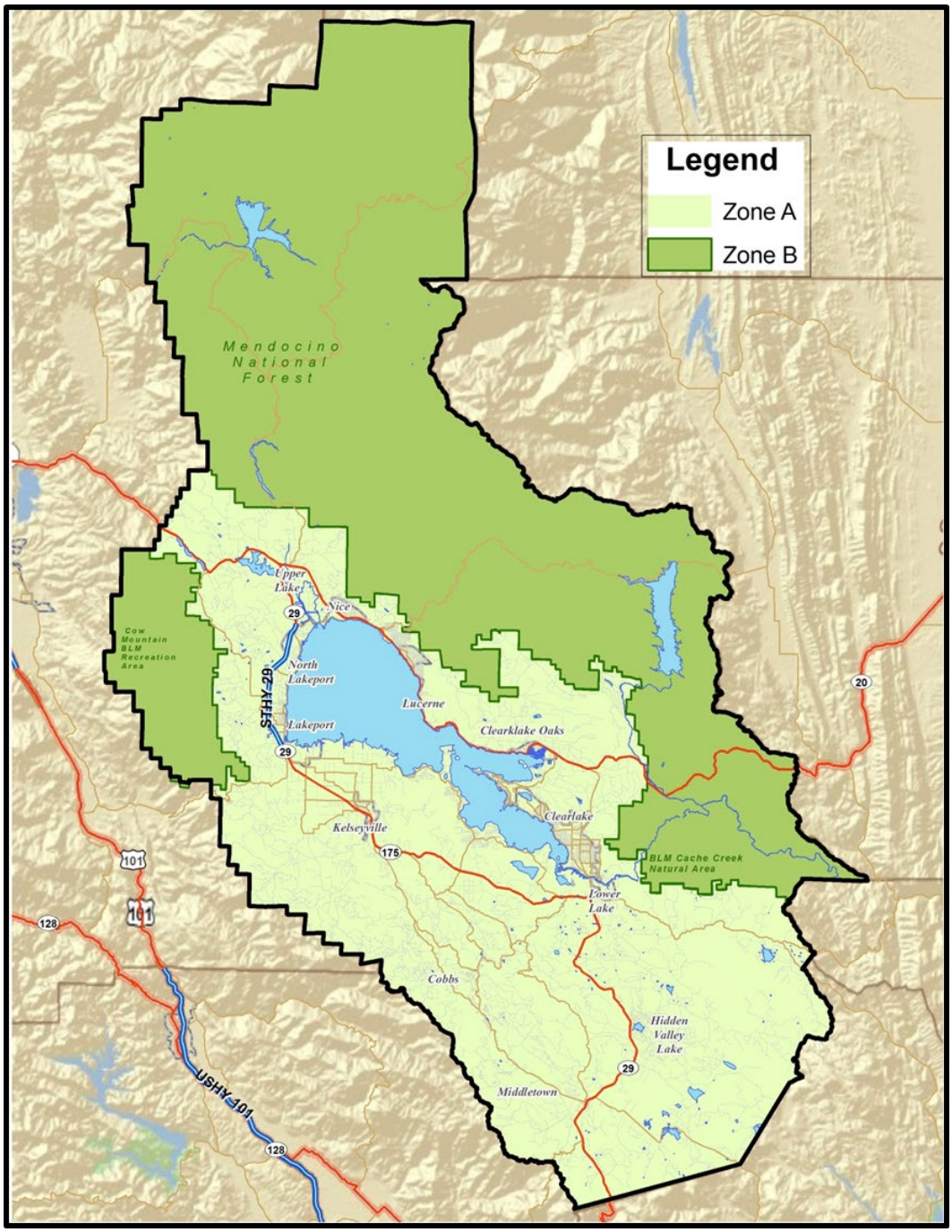
The majority of the properties in the Assessment District will receive equal levels of Services and therefore equal levels of benefits. The areas that will receive the full level of Services were carefully drawn to be within Zone A. Relative to Zone A, there are three areas that are remotely and sparsely populated and have been identified to receive reduced level of services:

the area in the western side of the County occupied by the Cow Mountain Bureau of Land Management (BLM) Recreation Area

- the areas in the northern part of the County occupied by the Mendocino National Forest, the State Game Refuge, and the Snow Mountain Wilderness
- the eastern areas around Indian Valley Reservoir, the BLM Cache Creek Natural Area, and Cache Creek State Wildlife Area

These three areas are more remotely located and sparsely populated and receive a reduced level of Services and corresponding benefits relative to other parcels in the District. These areas are hereinafter referred to as Zone of Benefit B or Zone B and are depicted on the Assessment Diagram included with this Report. All other parcels within the District boundaries are within Zone of Benefit A or Zone A.

The Zones of Benefit are shown in the following graphic:



The boundaries of the two Zones of Benefit have been carefully drawn. Zone of Benefit A includes the properties in the District that receive the full level of Services and the full level of benefits. Such parcels are in areas with a material population of people, pets and livestock on the property.

Zone of Benefit B contains the properties in the far western, northern and eastern portions of the County that receive a reduced level of Services and corresponding benefits relative to other parcels in the District because these properties are generally in more remote, mountainous or inaccessible areas and they support less population. In other words, the boundaries of the two Zones of Benefit within the Assessment Area have been narrowly and specifically drawn to include properties that will specially benefit from the mosquito and vector control services at two different levels.

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

The *SVTA* 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 Services is direct, and the boundaries for each Zone of Benefit are narrowly drawn so each Zone includes parcels that receive similar levels of benefit from the Services. Therefore, the even spread of assessment for similar properties in each of the narrowly drawn Zones of Benefit within the District is indeed consistent with the OSA decision.

Method of Assessment

As previously discussed, the Assessments fund enhanced, comprehensive, year-round mosquito and vector control, disease surveillance and control Services that will reduce mosquito and vector populations on property and 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 on property in the Assessment Area who will enjoy a more habitable, safer and more desirable place to live, work or visit.

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 directly to the underlying property.[18]

With regard to benefits and source locations, the assessment engineer determined that since mosquitoes and other vectors readily fly from their larval sources 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 confers 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 and vector 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, storm water catch basins

[18] 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 residential areas are a common source of mosquitoes. Since the typical flight range for a female mosquito on average is 2 miles, most homes in the Assessment Area are within the flight zone of many mosquito sources. 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 types of 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 provided throughout the Assessment District with the same level of control objective in each zone, mosquitoes can rapidly and readily fly from their larval sources to other properties over a large area, and because there are current or potential mosquito sources literally everywhere in the Assessment District, the Assessment Engineer determined that all similar properties in the Assessment District have generally equivalent mosquito "destination" potential and, therefore, receive equivalent levels of benefit within areas in a same Zone of Benefit.

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 District without the excessive nuisance, diminished "livability" or the potential health hazards brought by mosquitoes, vectors and the diseases they carry is a special benefit to properties in the Assessment District. 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.[19]

In order to apportion the cost of the Services to property, each property in the Assessment District 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 District. 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 calculation of the special benefit apportionment and relative benefit to properties in the Assessment Area from the Services is summarized in the following equation:

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

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

[19] It should be noted that the 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.

Residential Properties

Certain residential properties in the Assessment District 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. Properties with more than one detached single-family residence on one acre or less are assigned 1.0 SFE per single-family home.

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 each 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 (other than properties with more than one single-family home as described above) 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 Lake County population density factors from the 2000 US Census as well as average dwelling unit size for each property type. After determining the Population Density Factor and Square Footage Factor for each property type, an SFE rate is generated for each residential property structure, as indicated in Figure 2 below.

The SFE factor of 0.51 per dwelling unit for multi-family residential properties applies to such properties with two to four units (duplex, triplex, fourplex). Properties in excess of 5 units typically offer on-site management, monitoring and other control services that tend to offset some of the benefits provided by the Mosquito, Vector and Disease Control Assessment District. Therefore, the benefit for properties in excess of 5 units is determined to be 0.44 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	1.20	0.78	**0.93**
Duplex, Triplex, Fourplex	0.96	0.53	**0.51**
Multi-Family Residential (5+ Units)	0.84	0.52	**0.44**
Mobile Home on Separate Lot	0.89	0.44	**0.39**

Source: 2000 Census, Lake County, and property dwelling size information from the Lake 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 Figure 3, 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 ¼ 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. Figure 3 below lists the benefit assessment factors for such business properties.

Agricultural, Dry Rangeland, Cemetery and Golf Course Properties

Utilizing research and agricultural employment reports from UC Davis and the California Employment Development Department and other sources, this Report calculated an average usage density of 0.05 people per acre for agriculture property, 0.01 for rangelands and timber, 1.2 for cemeteries and 3.0 for golf courses. Since these properties typically are a source of mosquitoes and/or are typically closest to other sources of mosquitoes and other vectors, it is reasonable to determine that the benefit to these properties is twice the usage density ratio of commercial 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

Commercial/Industrial Land Use Types	Average Employees Per Acre [1]	SFE Units per Fraction Acre [2]	SFE Units per Acre After 5 Acres
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**	
Wineries	12	**0.250**	
Golf Course	3.00	**0.063**	
Cemeteries	1.20	**0.050**	
Agriculture / Vineyards	0.050	**0.0021**	
Timberland / Dry Rangeland	0.010	**0.00042**	

1. Source: San Diego Association of Governments Traffic Generators Study, University of California, Davis and other studies and sources

2. The SFE factors for commercial and industrial parcels indicated above are applied to each fourth acre of land area or portion thereof. (Therefore, the minimum assessment for any assessable parcel in these categories is the SFE Units listed herein.)

Vacant Properties

The benefit to vacant properties is determined to be proportional to the corresponding benefits for similar type developed properties. However, vacant properties are assessed at a lower rate due to the lack of active benefits, as measured by use by residents, employees, customers and guests. A measure of the benefits accruing to the underlying land is the average value of land in relation to improvements for developed property. An analysis of the assessed valuation data from Lake County found that 36% of the assessed value of improved properties is classified as land value. Since vacant properties have very low to zero population/use densities until they are developed, a 50% benefit discount is applied to the valuation factor of 0.36 to account for the current low use density and potential for harm or nuisance to the property owner, residents, employees, customers and guests. The combination of these measures results in a 0.18 factor. It is reasonable to assume, therefore, that approximately 18% of the benefits are related to the underlying land and 82% are related to the day-to-day use of the property. Using this ratio, the SFE factor for vacant parcels is 0.18 per parcel.

Other Properties

Article XIIID stipulates that publicly owned properties must be assessed unless those properties are reasonably determined to receive no special benefit from the assessment.

All properties that are specially benefited are assessed. Publicly owned property that is used for purposes similar to private residential, commercial, industrial, 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

It is that the Assessment be levied for fiscal year 2024-25 and every year thereafter, so long as mosquitoes and vectors remain in existence and the Lake County Vector Control District requires funding from the Assessment for its Services. 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 Lake County Vector Control District 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 District Board of Trustees must hold an annual public hearing to continue the Assessment.

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 Lake County Vector Control District or his or her designee. Any such appeal is limited to correction of an assessment during the then current fiscal year or, if before July 1, the upcoming fiscal year. Upon the filing of any such appeal, the District Manager or his or her designee will promptly review the appeal and any information provided by the property owner. If the District 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 Lake County for collection, the District 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 District Manager, or his or her designee, shall be referred to the District Board of Trustees. The decision of the District Board of Trustees shall be final.

Assessment

WHEREAS, the Lake County Vector Control District Board of Trustees 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 district, an assessment of the estimated costs of Services, and the special and general benefits conferred thereby upon all assessable parcels within the Lake County Vector Control District – Mosquito, Vector and Disease Control Assessment;

NOW, THEREFORE, the undersigned, by virtue of the power vested in me under Article XIIID of the California Constitution, the Government Code and the Health and Safety Code and the order of the Lake County Vector Control District 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 District has evaluated and estimated the costs of extending and providing the Services to the Assessment District. The estimated costs are summarized in Figure 1 and detailed in Figure 4, below.

The amount to be paid for the Services and the expenses incidental thereto, to be paid by the Lake County Vector Control District for fiscal year 2024-25 is generally as follows:

Figure 4 – Summary Cost Estimate – FY 2024-25 Budget

Lake County Vector Control District **Mosquito, Vector and Disease Control Assessment**	
Mosquito Control Services and Related Expenditures	$2,064,300
Contingency	$95,000
Incidentals	$316,315
Total Cost of Mosquito & Vector Control Services	$2,475,615
Contributions from Other Sources	($1,906,112)
Net Amount To Assessments	**$569,503**

An Assessment Diagram is hereto attached and made a part hereof showing the exterior boundaries of the Assessment District. The distinctive number of each parcel or lot of land in the Assessment District 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 authorized maximum assessment rate for the Assessment includes: (1) an annual adjustment by an amount equal to the annual change in the San Francisco Bay Area Consumer Price Index ("Annual CPI"), not to exceed 3% per year; and (2) if the Annual CPI is less than 3% in a given year, any unused Annual CPI adjustment from any prior year(s) not exceeding a total of 3% in any given year. Therefore, the maximum authorized assessment shall be equal to the base year assessment adjusted by the Annual CPI, plus any and all unused Annual CPI adjustments deferred in prior years, not to exceed 3%.

The change in the CPI from December 2022 to December 2023 was 2.6245%. Therefore, the maximum assessment rate for fiscal year 2024-25 is the maximum rate for fiscal year 2023-24 ($20.40) plus the Unused CPI from previous fiscal years was used increase the maximum authorized assessment rate by 3%. Consequently, the maximum authorized Assessment rate for fiscal year 2024-25 is $21.02 per single-family equivalent benefit unit. The estimate of cost and budget in this Engineer's Report proposes assessments for fiscal year 2024-25 at the rate of $15.36 for Zone A and $7.68 for Zone B, which is below the maximum authorized assessment rate.

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 Lake for the fiscal year 2024-25. 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 Lake.

I hereby place opposite the Assessor Parcel Number for each parcel or lot within the Assessment Roll, the amount of the assessment for the fiscal year 2024-25 for each parcel or lot of land within the Mosquito, Vector and Disease Control Assessment District.[20]

Dated: June 3, 2024

Engineer of Work

By _____

John W. Bliss, License No. C52091

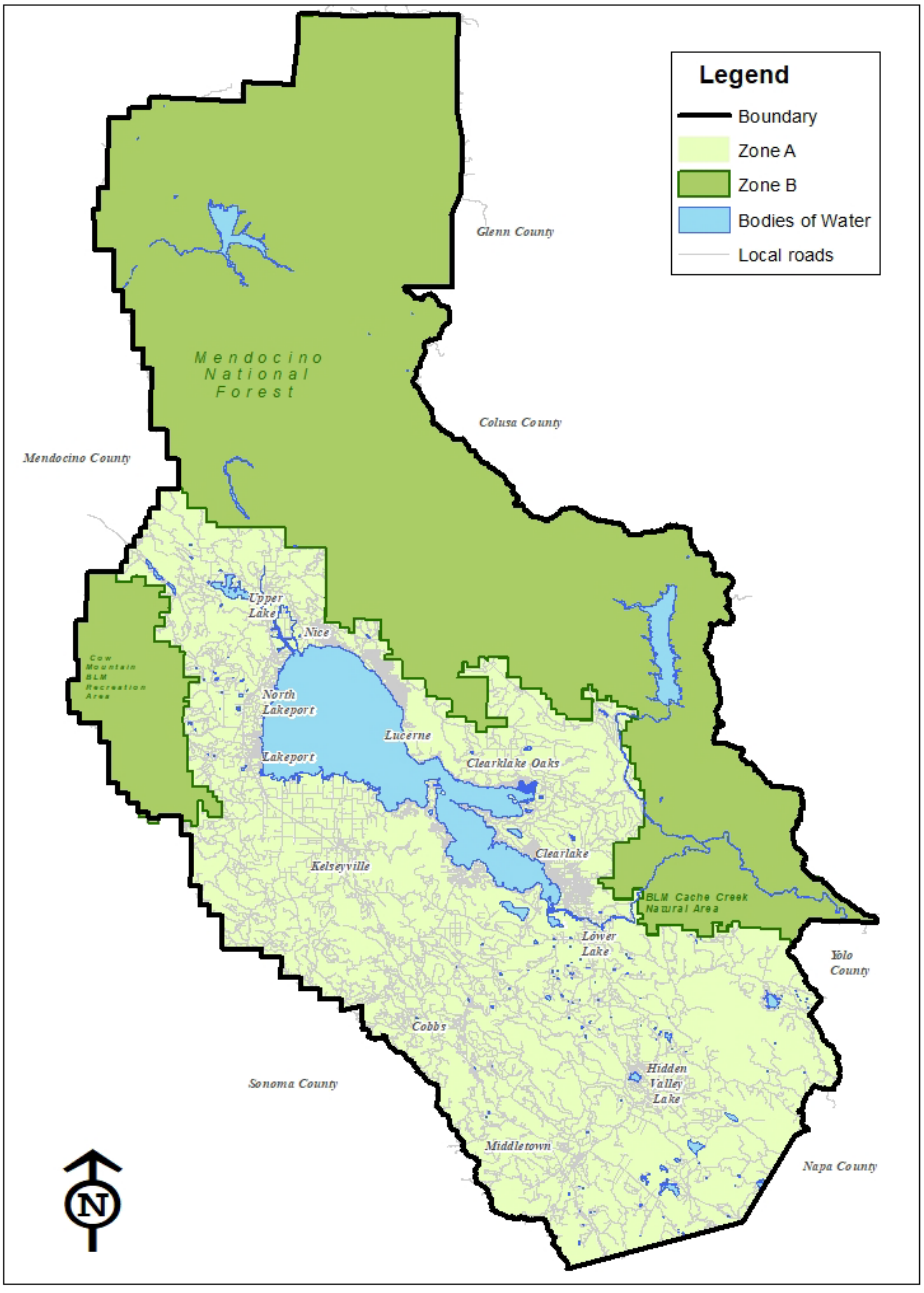
[20] Each parcel has a uniquely calculated assessment based on the estimated level of special benefit to the property as determined in accordance with this Engineer's Report.

Assessment Diagram

The Lake County Vector Control District, Mosquito, Vector and Disease Control Assessment area includes all properties within the boundaries of the Assessment Area.

The boundaries of the Mosquito, Vector and Disease Control Assessment Area are displayed on the following Assessment Diagram.

Lake County Vector Control District
Mosquito, Vector and Disease Control Assessment
Assessment Diagram



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

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Assessment Roll

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