SAN BENITO COUNTY MOSQUITO ABATEMENT PROGRAM

MOSQUITO AND DISEASE CONTROL ASSESSMENT

FINAL ENGINEER'S REPORT

JULY 2019

FISCAL YEAR 2019-20

PURSUANT TO THE HEALTH AND SAFETY CODE, GOVERNMENT CODE AND ARTICLE XIIID OF THE CALIFORNIA CONSTITUTION

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SAN BENITO COUNTY MOSQUITO ABATEMENT PROGRAM

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INTRODUCTION

OVERVIEW

The San Benito County Mosquito Abatement Program ("Program") is a division within the San Benito County Agricultural Commissioner's Office in San Benito County. The San Benito County Mosquito Abatement Program Service Area ("Service Area") covers the most populated areas of the County. The Service Area includes the northwest section of San Benito County, bordered by the Monterey County boundary to the west and the Santa Clara County boundary to the north. The east boundary of the Service Area begins at the Santa Clara County line and Hawkins Lake. The south boundary includes the Paicines Reservoir. The cities of Hollister and San Juan Bautista, and the communities of Aromas, Tres Pinos and Paicines are included in the service area as well. The Program's mosquito and disease control services serve to reduce mosquito populations on property throughout the Service Area.

The San Benito Mosquito Abatement Program was created in 2007 by the San Benito County Board of Supervisors ('the Board') in accordance with local authority provided by the Mosquito Abatement Act of 1915 and further supported by the California Health and Safety Codes. As part of the Agricultural Commissioner's Department, the Program is governed by the Board of Supervisors.

The Program provides mosquito abatement and disease control services within its boundaries. The Program services are available to all properties within the Program's boundaries. The purpose of the San Benito Mosquito Abatement Program is to reduce the risk of mosquito-borne disease and mosquito nuisance to property and the inhabitants of property within the Program. The Program's core services are summarized as follows:

- Early detection of public health threats through comprehensive mosquito and disease surveillance.
- Elimination and control of mosquitoes to protect public health and to diminish the nuisance and harm caused by mosquitoes.
- Protection of public health by reducing mosquitoes or exposure to mosquitoes that transmit diseases
- Appropriate, timely response to customer requests to prevent/control mosquitoes, and the diseases they can transmit, on property.

Prior to the formation of the Program in 2007, the County only provided a "baseline" level of mosquito and disease control services in the Service Area. San Benito County provided limited short-term mosquito control services in the County as a combined effort between the County Health and Human Services Agency and the County Agricultural Commissioner's Office. These limited mosquito abatement services were primarily funded by State special emergency grants, which were authorized by the State Legislature and Governor for use in combating West Nile Virus, and other mosquito-borne diseases. As the State emergency

funding for such services was exhausted it became evident that it would be unlikely that the State would provide sufficient funding for future mosquito and disease control services in San Benito County.

In order to provide increased levels of service, to enhance disease surveillance and vector control services to better respond to the growing threat of West Nile Virus and other public health issues in the Service Area, San Benito County proposed in 2007 the formation of the San Benito County Mosquito Abatement Program in the northwest and most populated areas of the County. The formation of the Program was dependent on a successful assessment ballot proceeding that would provide the funding for the proposed increased services for mosquito and disease control. The services currently provided in the Service Area consist of expanded services, as listed below, above the pre-existing baseline level of services.

The Program Service 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 mosquito surveillance area, that are located within flying or traveling distance of potential mosquito sources monitored by the Program, and that will benefit from a reduction in the amount of mosquitoes reaching and impacting the property as a result of the enhanced mosquito surveillance and control. The Assessment Diagram included in this report shows the boundaries of the Program Service Area.

The following is an outline of the primary services and improvements funded by the mosquito and disease control assessment ("Services")[1]:

- Mosquito control and abatement
- Surveillance for vectorborne diseases
- Mosquito inspections in the Program's Service Area
- Response to service requests in the Program's Service Area
- Mosquitofish for backyard fish ponds and other appropriate habitats
- Presentations to schools and civic groups
- Vectorborne disease surveillance services
- Mosquito surveillance and disease testing
- Upgrading of the facilities and equipment utilized by the Program

This Engineer's Report defines the benefit assessment, which provides funding for mosquito and disease control services for property throughout the Program's Service Area, as well as related costs for equipment, capital improvements and services and facilities necessary and incidental to mosquito and disease control programs.

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

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

The Program is controlled by 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 mosquito and disease control services 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 Program 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 to be consistent with Proposition 218, The Right to Vote on Taxes Act, which was approved by the voters of California on November 6, 1996, and is now Article XIIIC and XIIID of the California Constitution. Proposition 218 provides for benefit assessments to be levied to fund the cost of providing services, improvements, as well as

maintenance and operation expenses to a public improvement which benefits the assessed property.

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

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

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

SILICON VALLEY TAXPAYERS ASSOCIATION, INC. V. SANTA CLARA COUNTY OPEN SPACE AUTHORITY

In July of 2008, the California Supreme Court issued its ruling on the Silicon Valley Taxpayers Association, Inc. v. Santa Clara County Open Space Authority ("SVTA vs. SCCOSA"). This ruling is the most significant legal document in further legally clarifying Proposition 218. Several of the most important elements of the ruling included further emphasis that:

- Benefit assessments are for special benefit to property, not general benefits[2]
- 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 Service Area

This Engineer's Report, and the process used to establish this assessment are consistent with the SVTA vs. SCCOSA decision.

[2] Article XIII D, § 2, subdivision (d) of the California Constitution states defines "district" as "an area determined by an agency to contain all parcels which will receive a special benefit from the public improvement or property-related service."

DAHMS V. DOWNTOWN POMONA PROPERTY

On June 8, 2009, the 4th Court of Appeal amended its original opinion upholding a benefit assessment for property in the downtown area of the City of Pomona. On July 22, 2009, the California Supreme Court denied review. On this date, Dahms became good law and binding precedent for assessments. In Dahms the Court upheld an assessment that was 100% special benefit (i.e. 0% general benefit) on the rationale that the services and improvements funded by the assessments were directly provided to property in the assessment district. The Court also upheld discounts and exemptions from the assessment for certain properties.

BONANDER V. TOWN OF TIBURON

On December 31, 2009, the 1st District 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 on in part on relative costs within sub-areas of the assessment district instead of proportional special benefits.

BEUTZ V. COUNTY OF RIVERSIDE

On May 26, 2010 the 4th District Court of Appeals issued a decision on the Steven Beutz v. County of Riverside ("Beutz") appeal. This decision overturned an assessment for park maintenance in Wildomar, California, primarily because the general benefits associated with improvements and services was not explicitly calculated, quantified and separated from the special benefits.

GOLDEN HILL NEIGHBORHOOD ASSOCIATION V. CITY OF SAN DIEGO

On September 22, 2011, the San Diego Court of Appeal issued a decision on the Golden Hill Neighborhood Association v. City of San Diego appeal. 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, like 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 record the basis for the assessment on its own 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 *SVTA* decision because the services to be funded are clearly defined; the services are available to and will be directly provided to all benefiting property in the Assessment District; and the services provide a direct advantage to property in the Assessment District that would not be received in absence of the Assessments.

This Engineer's Report is consistent with *Beutz*, *Dahms* and *Greater Golden Hill* because the Services will directly benefit property in the Assessment District and the general benefits have been explicitly calculated and quantified and excluded from the

assessments. Moreover, while *Dahms* could be used as the basis for a finding of 0% general benefits, this Engineer's Report establishes a more conservative measure of general benefits.

The Engineer's Report is consistent with *Bonander* because the Assessments have been apportioned based on the overall cost of the services and proportional special benefit to each property. Finally, the Assessments are consistent with *Beutz* because the general benefits have been explicitly calculated and quantified and excluded from the Assessments.

ASSESSMENT PROCESS

In order to allow property owners to ultimately decide whether funding would be provided for the services summarized above, the Board authorized the initiation of proceedings for a benefit assessment in 2007. A preliminary Engineer's Report ("Report") was prepared to establish the estimated costs for mosquito, disease surveillance and control services and related costs that would be funded by the proposed assessments, to determine the special benefits and general benefits received from the services and to apportion the proposed assessments to lots and parcels within the Program's Service Area based on the estimated special benefit each parcel receives from the services funded by the benefit assessment.

Following submittal of the Preliminary Report to the Board for approval, on April 10, 2007, the Board, by Resolution No. 2007-17, called for an assessment ballot proceeding and Public Hearing on the establishment of the Mosquito and Disease Control Assessment ("Assessment").

Pursuant to the Board's approval of the Resolution directing the mailing of notices and ballots, a notice of assessment and assessment ballot were mailed to property owners on May 8, 2007. Such notice included a description of the assessments as well as an explanation of the method of voting on the assessments. Each notice included a ballot on which the property owner could mark his or her approval or disapproval of the assessments and a postage-prepaid ballot return envelope.

After the ballots were mailed to property owners, the required 45-day time period was provided for the return of the assessment ballots. Following this 45-day time period, a public hearing was held on June 26, 2007, for the purpose of allowing public testimony regarding the assessments and services. At this hearing, the public was given the opportunity to provide input on this issue and a final opportunity to submit ballots. After the conclusion of the public input portion of the hearing, the hearing was continued to July 24, 2007 to allow time for the tabulation of ballots.

With the passage of Proposition 218 on November 6, 1996, The Right to Vote on Taxes Act, now Article XIIIC and XIIID of the California Constitution, the assessments could be levied for fiscal year 2007-08, and be continued in future years, only if the ballots submitted in favor of the assessments are greater than the ballots submitted in opposition to the assessments. (Each ballot is weighted by the amount of assessment for the property that it represents).

After the conclusion of the public input portion of the Public Hearing held on June 26, 2007, all valid received ballots were tabulated by C.G. Uhlenberg, LLP, an independent accounting and auditing firm. At the continued public hearing on July 24, 2007, after the ballots were tabulated, it was determined that the assessment ballots submitted in opposition to the 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 the ballot was submitted). The final balloting result was 62.88% weighted support from ballots returned.

As a result, the Board gained the authority to approve the levy of the assessments for fiscal year 2007-08 and to continue to levy them in future years. The Board took action, by Resolution No. 2007-65 passed on July 24, 2007, to approve the first year levy of the assessments for fiscal year 2007-08.

The authority granted by the ballot proceeding was for a maximum assessment rate of $9.80 per single family home, increased each subsequent year by the San Francisco Bay Area Consumer Price Index (CPI) not to exceed 3% per year. In the event that the annual change in the CPI exceeds 3%, any percentage change in excess of 3% can be cumulatively reserved and can be added to the annual change in the CPI for years in which the CPI change is less than 3%.

ENGINEER'S REPORT AND CONTINUATION OF ASSESSMENTS

In each subsequent year for which the assessments will be continued, the Board will preliminarily approve at a public meeting a budget for the upcoming fiscal year's costs and services, an updated annual Engineer's Report, if necessary, and an updated assessment roll listing all parcels and their assessments for the upcoming fiscal year. At this meeting, the Board will also call for the publication in a local newspaper of a legal notice of the intent to continue the assessments for the next fiscal year and set the date for the noticed public hearing. At the annual public hearing, members of the public can provide input to the Board prior to the Board's decision on continuing the services and assessments for the next fiscal year.

This Engineer's Report has been prepared specifically in advance of the adoption of the assessments for fiscal year 2019-20. However, to the extent that special benefits and general benefits received from the services in future years are consistent with the analysis herein, except for minor, non-significant deviations, the special benefit each parcel receives from the services funded by the benefit assessment will be substantially similar to the special benefit described herein.

FISCAL YEAR 2019-20 BUDGET

The fiscal year 2019-20 Mosquito Abatement budget provides funding for West Nile Virus surveillance and mosquito control, capital equipment, supplies, disease testing programs, and other mosquito and disease control programs. If the Board approves this Engineer's Report for fiscal year 2019-20 and the continuation of the assessments by resolution, a notice of assessment levies must be published in a local paper at least 10 days prior to the

date of the public hearing. Following the minimum 10-day time period after publishing the notice, a public hearing will be held for the purpose of allowing public testimony about the continuation of the assessments for fiscal year 2019-20.

The public hearing is scheduled for August 6, 2019. At this hearing, the Board will consider approval of a resolution confirming the budget and continuation of the assessments for fiscal year 2019-20. If it is so confirmed and approved, the assessments shall be submitted to the San Benito County Auditor/Controller for inclusion on the property tax rolls for Fiscal Year 2019-20.

GENERAL DESCRIPTION OF THE PROGRAM AND SERVICES

ABOUT THE MOSQUITO ABATEMENT PROGRAM

The San Benito County Mosquito Abatement Program is a division within the San Benito County Agricultural Commissioner's Office and is governed by the County Board of Supervisors. The Program provides protection to people, wildlife while also protecting the usefulness, desirability and livability of property and the inhabitants of property within its jurisdictional area by controlling and monitoring disease-carrying insects such as mosquitoes. In addition, the Program frequently test for diseases carried by mosquitoes and helps prevent mosquito-borne disease outbreaks through mosquito control, regular surveillance and regularly educating property owners and the occupants of property in the Program's Service Area about disease risks and how to protect themselves from diseases transmitted by mosquitoes.

DESCRIPTION OF MOSQUITO ABATEMENT PROGRAM

The assessment provides funding for the continuation and enhancement of the projects, services and programs for surveillance, disease prevention, abatement, and control of mosquitoes within the most populated sections of San Benito County, which are generally in the northwest portions of the County (the "Service Area"). Such mosquito abatement and disease prevention projects and programs include, but are not limited to, source reduction, biological control, larvicide applications, adulticide applications, disease monitoring, public education, reporting, accountability, research and interagency cooperative activities, as well as capital costs, maintenance, and operation expenses (collectively "Services"). The cost of these Services also includes capital costs comprised of equipment, capital improvements and facilities and other incidental expenses necessary and incidental to the mosquito control program.

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

INTRODUCTION

Following are the Services and resulting level of service for the Program Service Area. As previously noted, the Program provides a baseline level of service in the Service Area. 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 services funded by the assessment.

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

MOSQUITOES

Mosquitoes generally occur where there is adequate vegetation for harborage and where water is standing and/or stagnant. Although these mosquitoes have seasonal cycles, they tend to reproduce continuously while conditions are suitable.

The following species are currently important in the Service Area:

SPECIES	HABITAT	ABUNDANCE	SEASON	DISEASE ASSOCIATIONS
Culex tarsalis	Many	Great	Spring, Summer, Fall	West Nile virus, St. Louis encephalitis, Western equine encephalitis
Culex pipiens	Many	Great	Spring, Summer, Fall	West Nile virus, St. Louis encephalitis
Culiseta incidens	Many	Moderate	Winter, Spring, Fall	None, serious pest in urban/suburban areas
Culiseta inornata	Many	Moderate	Winter, Spring, Fall	None, serious pest in urban/suburban areas
Anopheles freeborni	Creeks, lakes, wetlands	Moderate	Summer, Fall	Malaria
Anopheles punctipennis	Creeks, lakes	Moderate	Summer, Fall	Malaria
Ochlerotatus sierrensis	Oak tree holes, walnut orchards	Moderate	Late winter, Spring	Canine heartworm, serious pest in urban/suburban areas
Ochlerotatus melanimon	Pastures, wetlands	Moderate	Spring, Summer, Fall	Western equine encephalitis, serious pest
Ochlerotatus nigromaculis	Pastures, irrigated crops	Moderate	Spring, Summer, Fall	None, serious pest species in agricultural areas
Ochlerotatus washinoi	Fresh floodwater sites	Moderate	Winter, Spring	none
Aedes vexans	Fresh floodwater sites	Moderate	Summer	None, serious pest in recreational areas

Culex erythrothorax could become an important mosquito in the north part of San Benito County. This mosquito variety is associated with large emergent vegetation in fresh water (e.g., tules), but is abundant in only limited areas of Hollister. *Culex erythrothorax* is a strong vector of West Nile virus and an avid human biter.

Mosquitoes that lay their eggs in damp soil that might be flooded up to two years later occupy floodwater habitats. Once the area floods, most of the eggs hatch, producing a large number of mosquitoes for a short period of time. The Service Area has two floodwater species of concern. Floodwater mosquitoes prefer to bite in the evening, but they also bite during the day. One species, *Ochlerotatus washinoi* has only one generation annually, spending most

of the year as eggs. *Aedes vexans* has multiple generations, but its numbers are restricted by the lack of rainfall during the warm part of the season when it occurs.

Aedes and *Ochlerotatus spp.* are major pests in the Central Valley of California and can potentially take advantage of changing conditions in the north sections of San Benito County. *Ochlerotatus nigromaculis* is abundant in parts of the County associated with irrigated pastures. It can have many generations per year, can travel long distances, and is an aggressive hard-biting pest species.

Outdoor containers that hold standing water are another common mosquito habitat in Hollister and San Juan Bautista. Containers can range from naturally occurring holes in trees, to discarded tires, swimming pools, ornamental ponds, bird baths, discarded cans, cemetery flower cups, crumpled plastic and plugged rain gutters. Both *Culex pipiens* and *Culiseta incidens* commonly occur in containers other than tree holes. The tree hole-breeders are characterized by day-biting activity, bright markings, and deposition of eggs above the water line in the container. San Benito County has a native tree-hole mosquito, *Ochlerotatus sierrensis*, which normally hatches only one generation per year. It can reach great abundance locally but it does not fly far. *Ochlerotatus sierrensis* is commonly considered the area's most important vector of dog heartworm. *Aedes albopictus* and *Aedes aegypti* are two potentially important container breeders that could get introduced into the Service Area. Historically these types of mosquitoes have been introduced to many other areas of the U.S. through transportation associated with international commerce. *Aedes albopictus* is an important species because it reaches great abundance, bites during the day, and reproduces continuously in containers often associated with human habitations. *Aedes aegypti* has similar habits, but has the additional drawback of being a powerful virus vector, specifically, dengue and yellow fever.

Mosquito-transmitted diseases in the Service Area are caused by either viruses or the protozoan parasite of malaria (*Plasmodium falciparum* or *Plasmodium vivax*). This region has historically had sporadic detections of common California viruses like Western equine encephalitis and St. Louis encephalitis. Starting in 2004, West Nile virus was found in wild birds, sentinel chicken flocks, mosquito pools and horses. Malaria does not circulate in California at this time, but it used to be a major health problem in the Central Valley. Trappers, miners and other immigrants introduced malaria into California in the 1800s from areas where malaria was common. Effective mosquito control and drugs to cure malaria in humans led to the eradication of malaria in California in the 1950s. Consistent reintroduction in humans from overseas creates a constant threat from malaria. In addition, some strains of malaria found in the world today are resistant to drugs that helped to eradicate the disease in the 1950s. The mosquitoes that can spread malaria are still abundant in the region and are capable of redistributing this serious health threat if the virus should somehow be reintroduced to the 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: Western equine encephalitis (WEE), St. Louis encephalitis (SLE), West

Nile virus (WNV), and malaria, which are all transmitted by mosquitoes. Among the principal threats to which the San Benito County Mosquito Abatement Program currently responds are:

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

INTEGRATED PEST MANAGEMENT

The Program's services address several types of vectors and share general principles and policies. These include the identification of vector problems; responsive actions to control existing populations of vectors, prevention of new sources of vectors from developing, and the management of habitat in order 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.

The Program's objective is to provide the properties a "Program-wide" level of consistent mosquito and disease control such that all properties would benefit from equivalent reduced levels of mosquitoes. Surveillance and monitoring are provided on a Program-wide basis. The Program, 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 Service Area

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 San Benito County Mosquito Abatement Program's Vector Management Program, like any other IPM program, by definition involves procedures for minimizing potential environmental impacts. The Program employs IPM principles by first determining the species and abundance of vectors through evaluation of public service requests and field surveys and trapping of immature and adult pest populations; and then, if the populations exceed predetermined criteria, using the most efficient, effective, and environmentally sensitive means of control. For all vector species, public education is an important control strategy. In appropriate situations, water management or other physical control activities (historically known as "source reduction" or "physical control") can be instituted to reduce vector-breeding sites. The Program also uses biological control such as the planting of mosquitofish (in ornamental ponds, unused swimming pools and other standing water bodies). When these approaches are not effective or are otherwise inappropriate, natural

materials that have been found to be environmentally safe are used to treat specific pest-producing or pest-harboring areas.

The San Benito County Mosquito Abatement Program is organized into two principle sections to accomplish IPM. First, the administrative element provides leadership, expertise, public relations/education, and interface with other governmental authorities. Second, the operational section includes a technician that performs IPM in the field. The technician performs control and surveillance functions by responding to complaints from individual residents and by extensive examination of aquatic sites for mosquito larvae. The technician also monitors the treated areas to be sure that their control efforts have been successful.

The Program maintains the capability of applying aerosolized insecticide for area treatment of adult mosquitoes. This method is used to abate severe pest problems caused by active adult mosquitoes within the Service Area, to quickly reduce significant populations of adult mosquitoes and to prevent or to reduce the spread of mosquito-borne disease in the environment. The Program uses only products that have been deemed safe, approved and labeled by the U.S. Environmental Protection Agency for this purpose. Applications are made by personnel licensed by the California Department of Health Services and trained in the proper use of the products and specialized equipment used for this type of public health pest control. In addition, the administrative staff holds a Qualified Applicator Certificate issued by the California Department of Pesticide Regulation.

PERMANENT WATER MOSQUITOES

Risk assessment: Historically, *Culex tarsalis* and *Culex pipiens* have been very abundant in San Benito County. The great disease transmission potential of these species documented in this and other parts of the State suggests that they are the principal vector mosquito species within the Service Area. *Anopheles spp.* mosquitoes have persisted as a problem in standing water isolations in fields, wetlands and along a number of major drainages that provide persistent areas of standing water in the north areas of San Benito County. The threat of *Anopheles* as vectors is reduced by the absence of resident malaria pathogens in the area, but they remain an important pest species in this area. *Culiseta*, particularly *Culiseta incidens* and *Culiseta inornata*, are very widespread in the area, occurring in many kinds of habitats during most of the year. However, tests of their ability to transmit viral pathogens show them to be of little significance as vectors.

Surveillance: Surveillance of these mosquitoes is accomplished by a combination of methods. First, technicians actively examine potential sites by sampling water, collecting larvae, and identifying the larvae to species. Second, various traps (carbon dioxide baited traps, foul water traps to attract ovipositing females) are used to collect adult mosquitoes. The traps are set weekly during the season and the collected mosquitoes are subsequently classified and identified to species. Finally, individual residents and property owners call the Program directly with complaints about mosquito bites or to report standing water and potential larval sites.

Currently, during the warm months, the San Benito County Mosquito Abatement Program's existing seasonal staff is utilized as needed to help assist with surveillance and control projects, such as adult mosquito collections, mosquito fish rearing and dissemination, and public education/outreach. The Program's one full-time agricultural biologist routinely inspects and treats residential, agricultural, industrial and natural standing water sources known to produce mosquitoes within the Service Area. These sources need to be monitored on a regular schedule for the presence of standing water and mosquito larvae. One type of standing water of particular concern to the Program is runoff held in catch basins throughout the County, particularly in the urbanized areas. Catch basins can produce *Culex pipiens* in great numbers at locations close to residences and businesses. In rural areas of the Service Area, standing water in fields, wetlands, and other man-made sources produce *Culex tarsalis* in great numbers. This species is capable of flying long distances and is considered the primary vector of West Nile virus.

Viruses transmitted by permanent water mosquitoes are surveyed by testing the mosquito vectors, the avian reservoirs, horses and humans. West Nile virus can be detected by submitting samples to neighboring mosquito districts which test using a commercial strip immunoassay and rapid assay instrument. The California Department of Health Services, the California Department of Food and Agriculture, and the University of California perform other viral tests of mosquitoes, birds, or mammals. The Program participates in the statewide dead bird surveillance program for WNV, responding to reports of dead birds from the public. Dead birds deemed appropriate for testing are submitted to the California Animal Health and Food Safety Laboratory. The Program also collects and submits blood samples from sentinel chickens located in fixed sites and cared for by the Program and property owners or residents. Blood samples are submitted to DHS for evidence of SLE, WEE and WNV. Various County, State and private laboratories throughout California and elsewhere test humans and horses for WNV. The California Department of Health Services tries to obtain and compile human and horse test results from all testing facilities and reports them to the appropriate local mosquito control agencies.

Control: The San Benito County Mosquito Abatement Program uses several techniques to control permanent-water mosquito larvae, including biological, chemical, and physical control. Chemical control agents include the toxin of the natural bacteria *Bacillus thuringiensis israelensis* (Bti), which can be applied as either a liquid or a granule. This toxin must be eaten by larvae, restricting its use to the first through third instar stages of development. Bti has the tremendous advantage of specificity, only affecting mosquitoes and related groups of flies. The spores of *Bacillus sphaericus* (Bs) are also available for liquid spray or granular application. This product has the advantage over Bti of sometimes reproducing in the water, extending the life of its effectiveness. Bs is only effective against *Culex* and works well in highly polluted water. Methoprene is an analogue of a natural insect hormone that prevents successful development of larvae. It is available as a short-lived liquid and longer-acting granules and briquets. Finally, the San Benito County Mosquito Abatement Program uses a short life-cycle oil combined with surfactants (Golden Bear) in situations where the materials above will not work. Golden Bear is the only material available

that is effective against pupae. Additional chemical control materials include dimilin and temephos.

The San Benito County Mosquito Abatement Program uses the mosquito fish, *Gambusia affinis*, for biological control. These mosquito-eating fish work particularly well during warm months in decorative ponds, unused swimming pools, animal watering troughs, and a variety of other permanent, natural or artificial sources of standing water (stock ponds).

In the future, the Program may use physical control as required; its application can temporarily or permanently alter habitats so that they do not produce mosquitoes. Currently, property owners and residents are educated to use physical control when it is appropriate. Examples of physical control include clearing vegetation around pond or stream banks, improving drainage, and providing access for other types of control work.

Monitoring: For the most part, monitoring is the continuation of surveillance activities. Staff specifically checks treatment sites to be sure that applications were successful. In addition to physically checking the site, traps are utilized to evaluate the success of the program.

FLOODWATER MOSQUITOES

Risk assessment: Freshwater floodwater species are an intermittent major pest and potential disease vector problem in the northern areas of San Benito County when irrigation practices or wetland flood-up cause sudden increases in the numbers of *Ochlerotatus nigromaculis* and *Ochlerotatus melanimon.* These species as well as *Aedes vexans* mosquitoes frequently create pest and potential disease vector problems when their populations rise due to intermittently flooded areas. The northern part of the County is susceptible to seasonal flooding. The vector potential of all of these species is low in San Benito County, though the isolation of West Nile virus from a mosquito identified as *Aedes squaminger* in San Luis Obispo raises some concern about the potential for spread of this disease by floodwater mosquito species not normally thought of as vectors.

Monitoring: *Ochlerotatus melanimon*, *Ochlerotatus nigromaculis*, and *Aedes vexans* are aggressive day-time and night-time biters. As a result, public complaints are helpful in pinpointing intermittently flooded areas where these mosquitoes breed. Calls from the public are also used to help the San Benito County Mosquito Abatement Program to help assess success or failure of treatments. However, field inspections of intermittently flooded areas known to create mosquito habitat can also be used by the Program to determine the need for treatment and to assess the effectiveness of treatments. Carbon dioxide baited traps are also an effective means of monitoring the adults of these species.

CONTAINER-BREEDING MOSQUITOES

Risk assessment: The tree-hole breeding mosquito, *Ochlerotatus sierrensis,* can be a significant nuisance. Although most emerge in the late winter and spring, many adults survive into early summer. This species generally only travels short distances, with the advantage that neighbors are unlikely to be affected, but with the disadvantage that residents

with larval sites are likely to have an intense problem. The species is an important vector of dog heartworm.

Surveillance: Complaints from residents in the early spring is the method for determining areas with a high level of *Ochlerotatus sierrensis* activity. *Aedes albopictus* is not highly attracted to carbon dioxide baited traps. The best ways to monitor are the use of black cups attractive to ovipositing females (eggs are counted on strips of paper in the cups), landing collections on humans, and inspection of container larval sites. Informing the public to look for day-biting, black and white mosquitoes is also effective.

Control: Depending on the need, the Program may increase its public education efforts to encourage residents to eliminate breeding sites by using tree patches or filling tree holes with materials to displace the water in which these mosquitoes breed. Larvaiciding operations can begin in late February or early March, weather permitting. The Program responds to individual requests in combating the *Ochlerotatus sierrensis* mosquitoes if the trees are easily accessible and the holes are reachable. The combination of denying oviposition sites to females and reduction of the adult mosquito population by adulticiding can be helpful in reducing levels of local infestation.

PUBLIC RELATIONS, OUTREACH, AND EDUCATION

The recent emergence of West Nile Virus has created a need for regular and fairly extensive media contacts, outreach and education. San Benito Mosquito Abatement Program staff has introduced public relations, outreach, and educational materials when needed. This includes making press releases, publishing brochures, responding to requests for interviews from all media and contact with other government agencies. If the funding is available, the Program could develop an elementary school program. The Program's employees could visit classrooms to present information about mosquito and vector biology and control issues, as well as personal protection, and techniques used by San Benito County to control pests of public health importance.

The Program currently interacts professionally at many levels with other agencies. Through the West Nile Virus Task Force, the Program regularly meets with representatives from the County Public Health, County Environmental Health, County Public Works and the City of Hollister. The Program staff also regularly attends meetings of the Mosquito and Vector Control Association of California at both the regional and state level.

RESEARCH AND TESTING

If requested, the Program would cooperate with University of California researchers and scientists to perform special research projects. These projects could be those that relate directly to operational problems so that the results would enhance protection of health and property within the Service Area.

SERVICE REQUESTS

The Program responds to service requests within its boundaries. Any property owner, business or resident in the Service Area may contact the Program to request mosquito

control related service or inspection and a Program field technician will respond promptly to the particular property to evaluate the property and situation and to perform appropriate surveillance and control services, as necessary.

However, property owners who allow a public nuisance to exist on their properties, such as, but not limited to, “green pools” which may exist when a swimming pool on an abandoned or foreclosed property is no longer cared for, may be charged for code enforcement and mosquito abatement measures

ESTIMATE OF COST

FIGURE 1 – COST ESTIMATE – FISCAL YEAR 2019-20 ASSESSMENT

San Benito County Mosquito Abatement Program
Mosquito and Disease Control Assessment
Estimate of Cost
Fiscal Year 2019-20

	Total Budget
Vector Control Services and Related Expenditures	
Vector Control and Disease Prevention Operations	$155,000
Materials, Utilities and Supplies	$54,749
Capital Equipment and Fixed Assets	$0
Other Charges	$10,000
Total Vector Control Services and Related Expenditures	$219,749
Incidental Costs[2]	
Other Charges Cost Plan	$5,011
Subtotal - Incidentals	$5,011
Total Vector Control Services and Incidental Expenses	$224,760
Total Benefit of Improvements	$224,760
SFE Units	19,631.47
Benefit received per Single Family Equivalent Unit	$11.45
Less:	
District Contribution and Other Sources for General Benefit[1]	($4,495)
	($4,495)
Net Cost of Vector Control Services	$220,265
Budget Allocation to Property	
Total Assessment Budget[5]	$220,265
Total SFE Units[3]	19,631.47
Assessment per Single Family Equivalent[5]	$11.22

Footnotes:

1. Contribution from other sources to cover the costs of any general benefits and special benefits not funded by the assessments. As determined in the following section, at least 2% of the cost of the Services must be funded from sources other than the assessments to cover any general benefits from the Services. Therefore, out of the total cost of Services of $224,760, the Program must contribute at least $4,495 from sources other than the assessments. The Program will contribute $4,495.

2. Includes allowance for uncollectable assessments from assessments on public agency parcels, county collection charges, assessment administration costs, and interdepartmental costs.

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 to 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.

6. 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 assessment.

METHOD OF ASSESSMENT

This section of the Report explains the benefits derived from the Services provided for property in the San Benito County Mosquito Abatement Program, and the methodology used to apportion the total assessment to properties within the Mosquito and Disease Control Assessment Service Area.

The Mosquito and Disease Control Assessment Service Area consists of all Assessor Parcels in the northwest section of San Benito County as defined by the approved boundary description (see the Assessment Roll for a list of all the parcels included in the Mosquito and Disease Control Assessment Service Area).

The method used for apportioning the assessment is based upon the proportional special benefits derived by the properties in the Assessment Service Area over and above general benefits conferred on real property in the Service Area. Special benefit is calculated for each parcel in the Assessment Service Area 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 Service Area
4. Determination of the relative special benefit per property type and property characteristic
5. Calculation of the specific assessment for each individual parcel based upon special vs. general benefit; location, property type and property characteristics

DISCUSSION OF BENEFIT

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

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

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

The below benefit factors, when applied to property in the Service Area, confer special benefits to property and ultimately improve the safety, utility, functionality and usability of

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

> *"This is the "traditional purposes" exception. These existing assessments do not need property owner approval to continue. However, future assessments for these traditional purposes are covered."*[3]

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

Since all assessments, existing before or after Proposition 218 must be based on special benefit to property, the drafters of Proposition 218 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 it 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

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

shown in the Assembly and Senate analysis the Mosquito Abatement and Vector Control District Law where it states that the law:

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

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

MOSQUITO AND DISEASE CONTROL IS A SPECIAL BENEFIT TO PROPERTIES

As described below, this Engineer's Report concludes that mosquito and disease control is a special benefit that provides direct advantages to property in the Service Area. For example, the assessment provides reduced levels of mosquitoes on property throughout the Service Area. Moreover, the assessment reduces the risk of the presence of diseases on property throughout the Program's Service Area, which is another direct advantage received by property in the Service Area. Moreover, the assessment funds Services that improve the use of property and reduce the nuisance and harm created by mosquitoes on property throughout the Program Service Area. These are tangible and direct special benefits that are received by property throughout the specific area covered by the Assessment.

The following section, Benefit Factors, describes how and why mosquito and disease control services specially benefit properties in the Program Service Area. These benefits are particular and distinct from its 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 mosquito and disease control services that are provided to properties within the Program Service Area. 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 POPULATIONS ON PROPERTY AND AS A RESULT, ENHANCED DESIRABILITY, UTILITY, USABILITY AND FUNCTIONALITY OF PROPERTY IN THE SERVICE AREA.

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

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

properties because all such properties will directly benefit from reduced mosquito populations and properties with lower mosquito populations are more usable, functional and desirable.

Excessive mosquitoes in the area can materially diminish the utility and usability of property. For example, prior to the commencement of mosquito control and abatement services, properties in many areas in the State were considered to be nearly uninhabitable during the times of year when the mosquito populations were high.[5] The prevention or reduction of such diminished utility and usability of property caused by mosquitoes is a clear and direct advantage and special benefit to property in the Program Service Area.

The State Legislature made the following finding on this issue:

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

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

A recently increasing source of mosquitoes is unattended swimming pools:

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[5] 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.

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

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

INCREASED SAFETY OF PROPERTY IN THE SERVICE AREA.

The Assessments result in improved year-round proactive Services to control and abate mosquitoes that otherwise would occupy properties throughout the Program Service Area. Mosquitoes are transmitters of diseases, so the reduction of mosquito 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 Program Service Area safer, which is a distinct special benefit to property in the Program.[8] This is not a general benefit to property in the Service Area or the public at large because the Services are tangible mosquito, vector and disease control services that will be provided directly to the properties in the Service Area and the Services are over and above what otherwise would be provided by the Program or any other agency.

This finding was confirmed in 2003 by the State Legislature:

> *"Mosquitoes and other vectors, including but not limited to ticks, Africanized Honey Bees, rats, fleas, and flies, continue to be a source of human suffering, illness, death and a public nuisance in California and around the world. Adequately funded mosquito and vector control, monitoring and public awareness programs are the best way to prevent outbreaks of West Nile Virus and other diseases borne by mosquitoes and other vectors."* [9]

Also, the Legislature, in Health and Safety Code Section 2001(b)(3), finds that:

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

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

[8] By reducing the risk of disease and increasing the safety of property, the Services will materially increase the usefulness and desirability of certain properties in the Assessment Area.

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

REDUCTIONS IN THE RISK OF NEW DISEASES AND INFECTIONS ON PROPERTY IN THE PROGRAM SERVICE AREA.

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

> *"Vector-borne diseases (including a number that are mosquito-borne) are a major public health problem internationally. In the United States, dengue and malaria are frequently brought back from tropical and subtropical countries by travelers or migrant laborers, and autochthonous transmission of malaria and dengue occasionally occurs. In 1998, 90 confirmed cases of dengue and 1,611 cases of malaria were reported in the USA and dengue transmission has occurred in Texas."*[10]

> *"During 2004, 40 states and the District of Columbia (DC) have reported 2,313 cases of human WNV illness to CDC through ArboNET. Of these, 737 (32%) cases were reported in California, 390 (17%) in Arizona, and 276 (12%) in Colorado. A total of 1,339 (59%) of the 2,282 cases for which such data were available occurred in males; the median age of patients was 52 years (range: 1 month--99 years). Date of illness onset ranged from April 23 to November 4; a total of 79 cases were fatal."* [11] *(According to the Centers for Disease Control and Prevention on January 19, 2004, a total of 2,470 human cases and 88 human fatalities from WNV have been confirmed).*

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

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

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

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

The Services funded by the assessments help prevent, on a year-round basis, the presence of new mosquito-borne diseases and on property in the Program Service Area. This is another tangible and direct special benefit to property in the Program Service Area that would not be received in absence of the assessments.

PROTECTION OF ECONOMIC ACTIVITY ON PROPERTY IN THE ASSESSMENT SERVICE AREA.

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

Prior to the commencement of the mosquito control services provided by the San Benito County Mosquito Abatement Program, mosquitoes hindered, annoyed and harmed residents, guests, visitors, farm workers, and business employees to a much greater degree. A mosquito-borne disease outbreak and other related public health threats would have a drastic negative effect on agriculture, business and residential activities in the Service Area.

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

[12] Carney, Ryan. (2008), Efficiency of Aerial Spraying of Mosquito Adulticide in Reducing the Incidence of West Nile Virus, California, 2005. Emerging Infectious Diseases, Vol 14(5)

> *The estimated cost of the Louisiana epidemic was $20.1 million from June 2002 to February 2003, including a $10.9 million cost of illness ($4.4 million medical and $6.5 million nonmedical costs) and a $9.2 million cost of public health response. These data indicate a substantial short-term cost of the WNV disease epidemic in Louisiana.* [13]

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 are funded by the assessments:

> *The socioeconomic burden resulting from LACE is substantial, which highlights the importance of the illness in western North Carolina, as well as the need for active surveillance, reporting, and prevention programs for the infection.* [14]

The services funded by the assessments help to prevent the likelihood of such outbreaks on property in the Service Area 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 Service Area that would not be received in absence of the assessments.

PROTECTION OF THE SERVICE AREA'S AGRICULTURE, TOURISM, AND BUSINESS INDUSTRIES.

The agriculture, tourism and business industries in the Service Area benefit from reduced levels of harmful or nuisance mosquitoes. Conversely, any outbreaks of emerging mosquito-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.

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[13] 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

[14] 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

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

Pesticides for mosquito control impart economic benefits to agriculture in general. Anecdotal reports from farmers and ranchers indicate that cattle, if left unprotected, can be exsanguinated by mosquitoes, especially in Florida and other southeast coastal areas. Dairy cattle produce less milk when bitten frequently by mosquitoes. Per the EPA Public Health Benefits Assessment 1, the Centers for Disease Control (CDC) states that fenthion is needed to counter malathion-resistant mosquitoes in Florida and play a role in the rotation of adulticides for resistance management, and otherwise for control of the very important Aedes spp. salt marsh mosquitoes and Culex nigripalpus. [16]

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 Service Area.

REDUCED RISK OF NUISANCE AND LIABILITY ON PROPERTY IN THE PROGRAM SERVICE AREA.

In addition to health related factors, uncontrolled mosquito populations create a nuisance for the occupants of property in the Program Service Area. Properties in the Program Service Area, 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 populations.

Agricultural, range, golf course, cemetery, open space and other such lands in the Service Area contain large areas of mosquito habitat and are therefore a significant source of mosquito populations in the Service Area. In addition, residential and business properties in the Service Area can also contain significant sources.[17] It is conceivable that known sources of mosquitoes could be held liable for the transmission of diseases or other harm.

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

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

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

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 Program Service Area. This is a direct advantage and a special benefit to property in the Program. However, the extent that property owners can be located and held responsible for nuisance existing on their property, the county may charge the property owner for mosquito abatement services necessary to abate and prevent a nuisance.

IMPROVED MARKETABILITY OF PROPERTY.

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

BENEFIT FINDING

In summary, the special benefits described in this report and the expansion of Services in the Assessment Service Area directly benefit and protect the real properties in the Abatement Program 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 or greater than the assessment of only Assessment per home and benefit unit.

GENERAL VS. 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 can fund the special benefits to property in the Assessment Area but cannot fund any general benefits. Accordingly, a separate estimate of the special and general benefit is given in this section.

In other words:

Total Benefit	=	General Benefit	+	Special Benefit

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

There is no widely-accepted or statutory formula for general benefit from mosquito and disease control services. General benefits are benefits from improvements or services that are not special in nature, are not "particular and distinct" and are not "over and above" benefits received by other properties. General benefits are conferred to properties located "in the district,[19]" but outside the narrowly-drawn Service Area and to "the public at large." SVTA vs. SCCOSA 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.

A formula to estimate the general benefit is listed below:

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

Special benefit, on the other hand, is defined in the state constitution as "a particular and distinct benefit over and above general benefits conferred on real property located in the district or to the public at large." The SVTA v. SCCOSA 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 Service Area and are only minimally received by property outside the Service Area 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 related services being provided to the Service Area. Consequently, there currently are some

[19] SVTA vs. SCCOSA 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 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.

mosquito control related benefits being provided to the Service Area and any new and extended service provided by the Program would be over and above this baseline. Arguably, all of the Services funded by the assessment therefore are a special benefit because the additional Services particularly and distinctly benefit and protect the Service Area over and above the previous baseline benefits and service.

Nevertheless, arguably some of the Services benefit the public at large and properties outside the Service Area. In this report, the general benefit is conservatively estimated and described, and then budgeted so that it is funded by sources other than the assessment.

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

CALCULATING GENERAL BENEFIT

Without this assessment the Program would lack the funds to extend the additional Services to the Program Service Area. Consistent with footnote 8 of SVTA v. SCCOSA, and for the reasons described above, the Program has determined that all parcels in the Program Service Area 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 concurrent with the annexation this concept means that all mosquito control services, which provide direct advantage to property in the Service Area, are over and above the baseline and therefore are special.

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

BENEFIT TO PROPERTY OUTSIDE THE PROGRAM SERVICE AREA

Properties within the Service Area receive almost all of the special benefits from the Services because the Services funded by the Assessments are provided directly to protect property within the Program Service Area from mosquitoes and mosquito-borne diseases. However, properties adjacent to, but just outside of, the program's boundaries may receive some benefit from the Services in the form of reduced mosquito populations on property outside the Program Service Area. Since this benefit, is conferred to properties outside the

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

The mosquito potential outside the Service Area 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 Service Area average concentration of mosquitoes from the Unprotected Areas on properties within two miles of the Service Area is calculated to be 6%.[20] This relative mosquito population reduction factor within the destination range is combined with the number of parcels outside the Service Area 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.
655 PARCELS WITHIN 2 MILES OF, BUT OUTSIDE OF THE PROGRAM SERVICE AREA, MAY RECEIVE SOME MOSQUITO AND DISEASE PROTECTION BENEFIT
6% PORTION OF RELATIVE BENEFIT THAT IS RECEIVED
22,135 PARCELS IN THE PROGRAM SERVICE AREA

CALCULATIONS:

TOTAL BENEFIT = 655 PARCELS * 6% = 39.3 PARCEL EQUIVALENTS
PERCENTAGE OF OVERALL PARCEL EQUIVALENTS = 39.3 / (22,135 + 655)= 0.17 %

Therefore, for the overall benefits provided by the Services to the Service Area, it is determined that 0.17% of the benefits would be received by the parcels within two miles of

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

the Program's boundaries. Recognizing that this calculation is an approximation, this benefit will be rounded up to 1.0%.

BENEFIT TO PROPERTY *INSIDE* THE PROGRAM SERVICE AREA THAT IS *INDIRECT AND DERIVATIVE*

The "indirect and derivative" benefit to property within the Service Area is particularly difficult to calculate. As explained above, all benefit within the Service Area is special because the mosquito and disease control services in the Service Area 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 Service Area boundaries and this Engineer's Report demonstrates the direct benefits received by individual properties from mosquito and disease control services.

In determining the Service Area area, the Program 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 Service Area in order to maintain the same improved level of protection against mosquitoes and reduced mosquito populations throughout the area. The surveillance and monitoring sites would be spread on a balanced basis throughout the area. Mosquito 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 mosquito-borne diseases - would be received on an equivalent basis by all parcels in the Service Area. Furthermore, all parcels in the Service Area would directly benefit from the ability to request service from the Program and to have a Program field technician promptly respond directly to the parcel and address the owner's or resident's service need. The SVTA vs. SCCOSA decision indicates that the fact that a benefit is conferred throughout the Service Area does not make the benefit general rather than special, so long as the Service Area 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 Program therefore concludes that, other than the small general benefit to properties outside the Service Area (discussed above) and to the public at large (discussed below), all of the benefits of the Services to the parcels within the Service Area are special benefits and it is not possible or appropriate to separate any general benefits from the benefits conferred on parcels in the Service Area.

BENEFIT TO THE PUBLIC AT LARGE

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

The public at large uses the public highways 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 area within the Assessment Area relative to the overall land area. An analysis of maps of the Assessment Area shows that approximately .5% of the land area in the Assessment Area is covered by highways, streets and sidewalks. This .5% 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 Service Area, we find that approximately 1.5% 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 Program Service Area)**
+ 0.0%	**(Inside the Program Service Area – Indirect and Derivative)**
+ 0.5%	**(Public at Large)**
= 1.5%	**(Total General Benefit)**

Although this analysis supports the findings that 1.5% of the assessment may provide general benefit only, this number is increased by the Assessment Engineer to 2% 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 Mosquito and Disease Control Assessment total budget for mosquito abatement, disease control, and capital improvement is $224,760. Of this total budget amount, the Program will contribute at least $4,495, or 2% of the total budget from sources other than the Mosquito, Vector and Disease Control Assessment. This contribution offsets any general benefits from the Mosquito and Disease Control Assessment Services.

ZONES OF BENEFIT

The County, with the approval of the Cities of Hollister and San Juan Bautista, has the authority to provide mosquito control and disease prevention services throughout the County. The San Benito County Mosquito Abatement Program's mosquito and disease control programs, projects and Services that are funded by the Mosquito and Disease Control Assessment are provided in all areas within the Service Area's boundaries. The Assessments are not and cannot be used to provide mosquito control and disease prevention services in areas in the County outside of the Service Area. Parcels of similar type in the Service Area receive similar mosquito abatement benefits on a per parcel and land area basis because the Services provided throughout the Service Area. Therefore,

parcels of similar type within the Service Area have the same assessment rates. Moreover, parcels in the County outside of the Service Area do not receive any Services funded by the Assessments, and, as a result, are not assessed.

The SVTA vs. SCCOSA 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 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. 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 boundary for the Service Area is narrowly drawn so the Service Area includes parcels that receive the similar levels of benefit from the Services. Therefore, the even spread of assessment for similar properties in the narrowly drawn Service Area within the Program is indeed consistent with the OSA decision.

METHOD OF ASSESSMENT

As previously discussed, the Assessments fund enhanced, comprehensive, year-round mosquito control, disease surveillance and control Services that will reduce mosquito populations on property and will clearly confer special benefits to properties in the Service Area. These benefits can also partially be measured by the occupants on property in the Program Service Area because such parcel population density is a measure of the relative benefit a parcel receives from the Improvements. Therefore, the apportionment of benefit is partially based the population density of parcels. It should be noted that many other types of "traditional" assessments also use parcel population densities to apportion the assessments. For example, the assessments for sewer systems, roads and water systems are typically allocated based on the population density of the parcels assessed.

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.[21]

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

Although some primary mosquito sources may be located outside of residential areas, residential properties can and do generate their own, often significant, populations of mosquitoes. For example, storm water catch basins 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 are provided throughout the Service Area with the same level of control objective in each zone, mosquitoes can rapidly and readily fly from their breeding locations to other properties over a large area, and because there are current or potential breeding sources literally everywhere in the Service Area, the Assessment Engineer determined that all similar properties in the Service Area 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

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

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 populations, as well as the reduced threat from diseases carried by mosquitoes. 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 and Disease Control Assessment are conferred on property and are not based on a specific property owner's occupancy of property or the property owner's demographic status, such as age or number of dependents. However, it is ultimately people who do or could use the property and who enjoy the special benefits described above. Therefore, the opportunity to use and enjoy the region within the Service Area without the excessive nuisance, diminished "livability" or the potential health hazards brought by mosquitoes and the diseases they carry is a special benefit to properties in the Service Area. This benefit can be in part measured by the number of people who potentially live on, work at, visit or otherwise use the property, because people ultimately determine the value of the benefits by choosing to live, work and/or recreate in the area, and by choosing to purchase property in the area.[22]

In order to apportion the cost of the Services to property, each property in the Program Service Area is assigned a relative special benefit factor. This process involves determining the relative benefit received by each property in relation to a single family home, or, in other words, on the basis of Single Family Equivalents (SFE). This SFE methodology is commonly used to distribute assessments in proportion to estimated special benefit. For the purposes of this Engineer's Report, all properties are designated a SFE value, which is each property's relative benefit in relation to a "benchmark" parcel in the Service Area. The "benchmark"

[22] 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.

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 Service Area from the Services is summarized in the following equation:

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

1. Such as use, property type, size, as well as vector-specific attributes such as destination potential and population potential.

RESIDENTIAL PROPERTIES

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

Single family residential properties in excess of one acre receive additional benefit relative to a single family home on up to one acre, because the larger parcels provide more area for mosquito sources and mosquito and disease control Services. Therefore, such larger parcels receive additional benefits relative to a single family home on less than one acre and are assigned 1.0 SFE for the residential unit and an additional rate equal to the agricultural rate described below of 0.0021 SFE per one-fourth acre of land area in excess of one acre. Mobile home parcels on a separate parcel and in excess of one acre also receive this additional acreage rate.

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

Properties with more than one residential unit are designated as multi-family residential properties. These properties, along with condominiums, benefit from the services in proportion to the number of dwelling units that occupy each property, the average number of people who reside in each property and the average size of each property in relation to a single family home in the Service Area. This report analyzed San Benito County population density factors from the 2000 US Census (the most recent data available when the Mosquito Abatement Program was established) as well as average dwelling unit size for each property type. After determining the Population Density Factor and Square Footage Factor for each property type, an SFE rate is generated for each residential property structure, as indicated in Figure 3 below.

The SFE factor of 0.55 per dwelling unit for multifamily residential properties with 5 or more units applies to such properties up to 20 units. Properties in excess of 20 units typically offer on-site management, monitoring and other control services that tend to offset some of the benefits provided by the Mosquito Abatement Program. Therefore the benefit for multifamily

properties in excess of 20 units is determined to be 0.55 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

	Total Population	*Occupied Households*	*Persons per Household*	*Pop. Density Equivalent*	*SqFt Factor*	*Proposed Rate*
Single Family Residential	40,744	12,218	3.33	1.00	1.00	1.00
Condominium	3,204	998	3.21	0.96	0.78	0.75
Duplex, Triplex, Fourplex	3,481	1,067	3.26	0.98	0.70	0.68
Multi-Family Residential (5+ Units)	2,762	818	3.38	1.01	0.55	0.55
Mobile Home on Separate Lot	2,503	770	3.25	0.97	0.48	0.46

Source: 2000 Census, San Benito County, and property dwelling size information from the San Benito 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 Service 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 4, the SFE factors for other types of businesses are determined relative to their typical employee density in relation to the average of 24 employees per acre of commercial property.

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

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

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

AGRICULTURAL, RANGELAND, AND CEMETERY PROPERTIES

Utilizing research and agricultural employment reports from UC Davis and the California Employment Development Department and other sources, this Report calculated an average usage density of 0.05 people per acre for agriculture property, 0.01 for rangelands and timber and 1.2 for cemeteries. Since these properties typically are a source of mosquitoes and/or are typically closest to other sources of mosquitoes and other vectors, it is reasonable to determine that the benefit to these properties is twice the usage density ratio of commercial and industrial properties. The SFE factors per 0.25 acres of land area are shown in the following Figure 4.

FIGURE 3 – COMMERCIAL/INDUSTRIAL BENEFIT ASSESSMENT FACTORS

Type of Commercial/Industrial Land Use	*Average Usage Per Acre* [1]	*SFE Units per Fraction Acre* [2]	*SFE Units per Acre After 5*
Commercial	24	0.500	0.50
Office	68	1.420	1.42
Shopping Center	24	0.500	0.50
Industrial	24	0.500	0.50
Self Storage or Parking Lot	1	0.021	
Wineries	12	0.250	
Golf Course	3.0	0.063	
Cemeteries	1.20	0.050	
Agriculture/Vineyard	0.050	0.0021	
Timber/Dry Rangelands	0.010	0.00042	

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

2. The SFE factors for commercial and industrial parcels indicated above are applied to each 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 San Benito County found that approximately 50% 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 0.50 to account for the current low use density and potential for harm or nuisance to the property owner or his residents, employees, customers and guests. The combination of these measures results in a 0.25 factor. It is reasonable to assume, therefore, that approximately 25% of the benefits are related to the underlying land and 75% are related to the day-to-day use of the property. Using this ratio, the SFE factor for vacant parcels is 0.25 per parcel.

OTHER PROPERTIES

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

Publicly owned property that is used for purposes similar to private residential, commercial, industrial or institutional uses is benefited and assessed at the same rate as such privately owned property. Other public properties such as watershed parcels, parks, open space parcels are determined to, on average, receive similar benefits as a single family home. Therefore such parcels are assessed an SFE benefit factor of 1.

Miscellaneous, small and other parcels such as roads, right-of-way parcels, and common areas typically do not generate significant numbers of employees, residents, customers or guests and have limited economic value. These miscellaneous parcels receive minimal benefit from the Services and are assessed an SFE benefit factor of 0.

DURATION OF ASSESSMENT

The benefit assessment balloting conducted in 2007 proposed that the Assessment be levied for fiscal year 2007-08 and continued every year thereafter, so long as mosquitoes and vectors remain in existence and the San Benito County Mosquito Abatement Program requires funding from the Assessment for its Services. As noted previously, the Assessment and the duration of the Assessment were approved by property owners in the assessment ballot proceeding in 2007; therefore, the Assessment can continue to be levied annually after the San Benito County Board of Supervisors approves an updated Engineer's Report if needed, an annual budget for the San Benito County Mosquito Abatement Program, a cost estimate including assessment rate, and other specifics of the Assessment. In addition, the County Board of Supervisors 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 San Benito County Mosquito Abatement Program 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 Program Manager or his or her designee will promptly review the appeal and any information provided by the property owner. If the Program 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 San Benito County for collection, the Program 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 Program Manager, or his or her designee, shall be referred to the San Benito County Board of Supervisors. The decision of the San Benito County Board of Supervisors shall be final.

ASSESSMENT

WHEREAS, the San Benito County Board of Supervisors 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 Service Area, an assessment of the estimated costs of Services, and the special and general benefits conferred thereby upon all assessable parcels within the San Benito County Mosquito Abatement Program, Mosquito and Disease Control Assessment;

NOW, THEREFORE, the undersigned, pursuant to Article XIIID of the California Constitution, the Government Code and the Health and Safety Code and the order of the San Benito County Board of Supervisors, hereby make the following determination of a continued 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 and Disease Control Assessment.

The Program has evaluated and estimated the costs of extending and providing the Services to the Service Area. The estimated costs are summarized in Figure 1 and detailed in Figure 5, below.

The amount to be paid for the Services and the expenses incidental thereto, to be paid by the San Benito County Mosquito Abatement Program for fiscal year 2019-20 is generally as follows:

FIGURE 4- SUMMARY COST ESTIMATE – FY 2019-20 BUDGET

Vector & Disease Control Services	$209,749
Fixed Asset & Capital Equipment	$0
Other Charges	$10,000
	$219,749
Incidentals	$5,011
TOTAL BUDGET	$224,760
Less:	
District Contribution for Special Benefit	($4,495)
Net Amount To Assessments	$220,265

An Assessment Diagram is hereto attached and made a part hereof showing the exterior boundaries of the Assessment Service Area. The distinctive number of each parcel or lot of

land in the Assessment Service Area is its Assessor Parcel Number appearing on the Assessment Roll.

I do hereby determine and apportion the net amount of the cost and expenses of the Services, including the costs and expenses incidental thereto, upon the parcels and lots of land within the Mosquito 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 Service Area in proportion to the special benefits to be received by the parcels or lots of land, from the Services.

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

Since property owners in the Service Area, in an assessment ballot proceeding, approved the initial fiscal year benefit assessment for special benefits to their property including the CPI adjustment schedule, the assessment may continue to be levied annually and may be adjusted by up to the maximum annual CPI adjustment without any additional assessment ballot proceeding. In the event that in future years the assessments are levied at a rate less than the maximum authorized assessment rate, the assessment rate in a subsequent year may be increased up to the maximum authorized assessment rate without any additional assessment ballot proceeding.

Based on the preceding annual adjustments, the maximum assessment rate for Fiscal Year 2018-19 was $12.83. The annual change in the CPI from December 2017 to December 2018 for All Urban Consumers in the San Francisco Bay Area as reported by the United States Department of Labor, Bureau of Labor and Statistics was 4.49%. Therefore, the maximum authorized assessment rate for Fiscal Year 2019-20 has been increased by 3.00%, from $12.83 to $13.22 per Single Family Equivalent unit (SFE). However, the estimate of cost and budget in this Engineer's Report proposes assessments for Fiscal Year 2019-20 at the rate of $13.22 per SFE unit, which is less than 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 San Benito for the fiscal year 2019-20. 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 San Benito.

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 2019-20 for each parcel or lot of land within the Mosquito and Disease Control Abatement Program.[23]

Dated: July 9, 2019

Engineer of Work

By _____

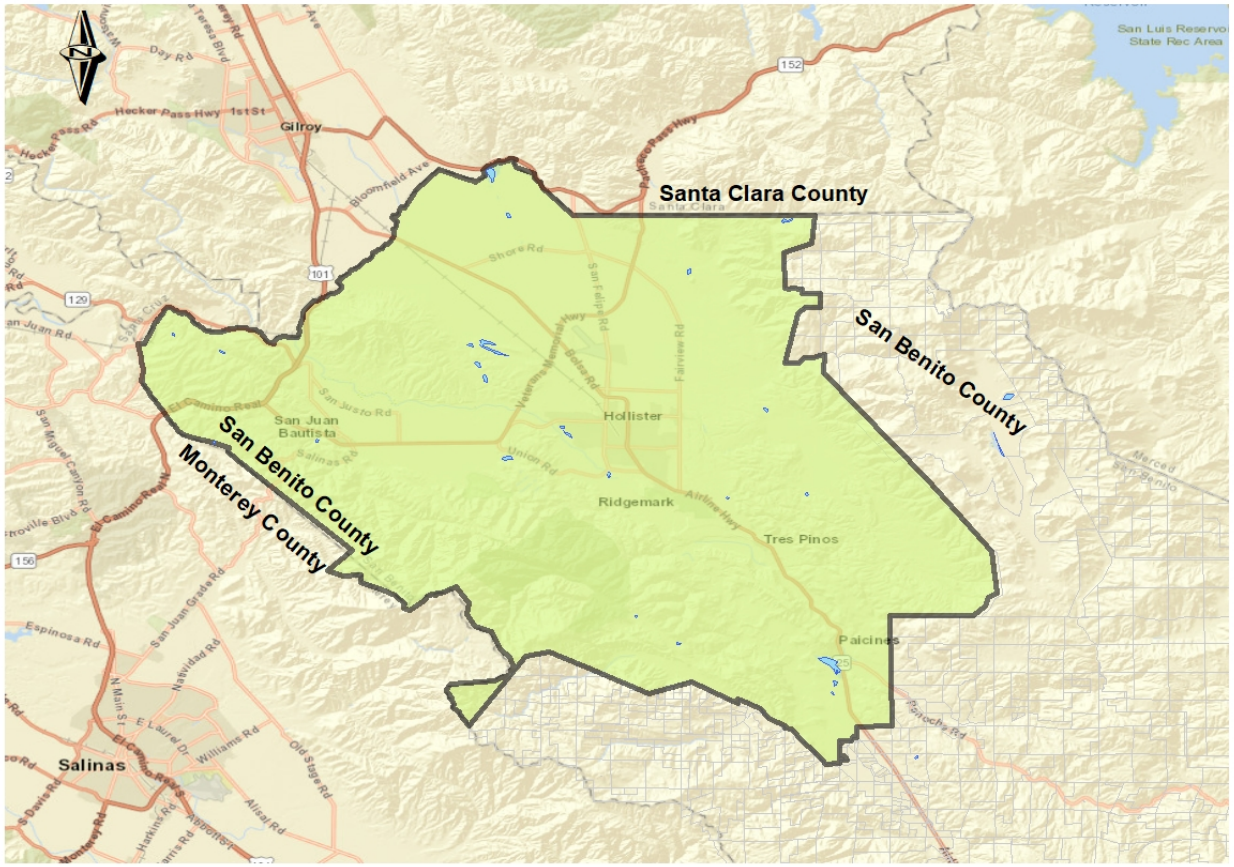
John W. Bliss, License No. C52091

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

ASSESSMENT DIAGRAM

The San Benito County Mosquito Abatement Program, Mosquito and Disease Control Assessment Service Area includes all properties within the boundaries of the Service Area.

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



FILED IN THE OFFICE OF THE PROGRAM MANAGER OF THE SAN BENITO COUNTY MOSQUITO ABATEMENT PROGRAM OF THE AGRICULTURAL COMMISSIONER'S OFFICE, COUNTY OF SAN BENITO, CALIFORNIA, THIS _____ DAY OF _____, 2019.

_____
CLERK OF THE BOARD OF SUPERVISORS

RECORDED IN THE OFFICE OF THE PROGRAM MANAGER OF THE SAN BENITO COUNTY MOSQUITO ABATEMENT PROGRAM OF THE AGRICULTURAL COMMISSIONER'S OFFICE, COUNTY OF SAN BENITO, CALIFORNIA, THIS _____ DAY OF _____, 2019.

_____
CLERK OF THE BOARD OF SUPERVISORS

AN ASSESSMENT WAS CONFIRMED AND LEVIED BY THE BOARD OF SUPERVISORS OF SAN BENITO COUNTY, ON THE LOTS, PIECES AND PARCELS OF LAND ON THIS ASSESSMENT DIAGRAM ON THE _____ DAY OF _____, 2019 FOR THE FISCAL YEAR 2019-20 AND SAID ASSESSMENT DIAGRAM AND THE ASSESSMENT ROLL FOR SAID FISCAL YEAR WERE FILED IN THE OFFICE OF THE PROGRAM MANAGER OF THE SAN BENITO COUNTY MOSQUITO ABATEMENT PROGRAM OF THE AGRICULTURAL COMMISSIONER'S OFFICE, COUNTY OF SAN BENITO, CALIFORNIA ON THE _____ DAY OF _____, 2019. REFERENCE IS HEREBY MADE TO SAID RECORDED ASSESSMENT ROLL FOR THE EXACT AMOUNT OF EACH ASSESSMENT LEVIED AGAINST EACH PARCEL OF LAND.

_____
CLERK OF THE BOARD OF SUPERVISORS

Legend

- Water Bodies
- Program Service Area

Note:
REFERENCE IS HEREBY MADE TO THE MAPS AND DEEDS OF RECORD IN THE OFFICE OF THE ASSESSOR OF THE COUNTY OF SAN BENITO 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.

SCI Consulting Group
4745 Mangels Blvd.
Fairfield, CA 94534

SAN BENITO COUNTY MOSQUITO ABATEMENT PROGRAM
MOSQUITO AND DISEASE CONTROL ASSESSMENT DIAGRAM

ASSESSMENT ROLL

Reference is hereby made to the Assessment Roll in and for the assessment proceedings on file in the office of the San Benito County Mosquito Abatement Program, as the Assessment Roll is too voluminous to be bound with this Report.