Table of Contents

Tables

Figures

1 Introduction

The Alameda County Mosquito Abatement District, as Lead Agency under the California Environmental Quality Act (CEQA), has prepared this Programmatic Environmental Impact Report (PEIR) for their ongoing program of surveillance and control of mosquitoes, vectors of human disease and discomfort.

1.1 History and Background

This section presents the history of why the District was established in 1930 to control the mosquitoes which were a pest with serious economic consequences to humans and their domesticated animals within the District's Service Area, as well as a potential vector of diseases. It begins with a description of the diseases of concern, the potential for human and animal illness to occur, and the legislative and regulatory actions leading to the District's establishment of an Integrated Mosquito Management Program (IMMP or Program). Additionally, the introduction and potential establishment of exotic mosquitoes (e.g., the yellow fever mosquito [*Aedes aegypti*] or the Asian tiger mosquito [*Aedes albopictus*]) and diseases (e.g., dengue, chikungunya), or the potential reestablishment of mosquito-borne diseases that are no longer endemically present (malaria), are a serious concern to the District and California public health authorities. The highly mobile nature of people, import and export of large amounts of goods, and immigration pose significant challenges requiring continuous proactive surveillance and timely implementation of effective management strategies to minimize risks associated with both endemic and exotic mosquitoes and mosquito-borne diseases.

1.1.1 Vector-Borne Diseases in Program Area

The District's IMMP is designed to protect the public health from the following potential diseases transmitted by mosquitoes (also referred to as vectors). A *vector is* an insect or other organism that transmits a pathogenic fungus, virus, bacterium, etc. such as a mosquito, tick, or rat. According to the California Health and Safety Code [Section 2002(k)], "vector" means any animal capable of transmitting the causative agent of human disease or capable of producing human discomfort or injury, including, but not limited to, mosquitoes, flies, mites, ticks, other arthropods, and rodents and other vertebrates.

1.1.1.1 Mosquitoes

Diseases of concern within the District's Service Area that are spread by mosquitoes include the following at present: West Nile virus (WNV), Western equine encephalomyelitis (WEE), St. Louis encephalitis (SLE), malaria, dog heartworm disease, and myxomatosis. The potential for the introduction of new diseases exists at any time.

1.1.1.1.1 West Nile Virus

WNV is transmitted during blood-meal feeding by mosquitoes that have previously fed on the blood of infected birds. Humans, horses, and most other mammals are all potential incidental hosts (CDC 2004a). Approximately 80 percent of people who become infected with WNV develop no clinical illnesses or symptoms and, of those who do develop symptoms, most develop what has been termed West Nile fever. Depending on the degree to which the central nervous system is affected, other more severe diseases could develop including West Nile meningitis, West Nile encephalitis, and West Nile poliomyelitis (CDC 2004b). Table 1-1 (http://www.westnile.ca.gov/reports.php) summarizes the total number of WNV human cases reported to the California Department of Public Health (CDPH), the type of infection, and the fatalities since WNV was first detected in California in 2003.

Table 1-1 Human West Nile Virus Case Summary, California 2003-2014

		Symptomatic Cases				
Year	Total # of Cases	West Nile Neuroinvasive Disease	West Nile Fever	Other/ Unknown	Asymptomatic Infections	WNV-related Fatalities
Total (2003-2014)	4756	2444	2154	158	440	172
2014*	752	511	241	0	80	27
2013	379	241	138	0	54	15
2012	479	313	158	8	48	20
2011	158	111	47	0	18	9
2010	111	73	38	0	20	6
2009	112	67	45	0	17	4
2008	445	293	148	4	53	15
2007	380	156	220	4	30	21
2006	278	83	190	5	14	7
2005	880	305	534	41	55	19
2004	779	289	395	95	51	29
2003	3	2	0	1	0	0

* Reported as of Nov 17, 2014

1.1.1.1.2 Western Equine Encephalomyelitis

WEE virus primarily cycles between birds and mosquitoes infecting humans and horses. Horses infected with WEE do not develop a significant viremia[1] and are true dead-end hosts, meaning the horse is a host from which infectious agents are not transmitted to other susceptible hosts.

WEE can also cycle between mosquitoes and blacktail jackrabbits. WEE usually shows no symptoms or is mild in adults, with nonspecific signs of illness and few deaths. The disease is most severe in children, particularly infants under 1 year of age. Infants under 3 months most often experience permanent, severe neurological damage. Horses can also experience asymptomatic infections or mild symptoms; however, more severe infections can occur. Horses that recover from encephalitis have a high incidence of residual symptoms (Iowa State University 2008). Figure 1-1 (http://www.cdc.gov/ncidod/dvbid/arbor/arbocase.htm, CDC 2014a) summarizes the total number of confirmed and probable human WEE cases for California (1964–2010), with the last case having been detected in 1986.

[1] Viremia is a medical condition where viruses enter the bloodstream and, hence, have access to the rest of the body.

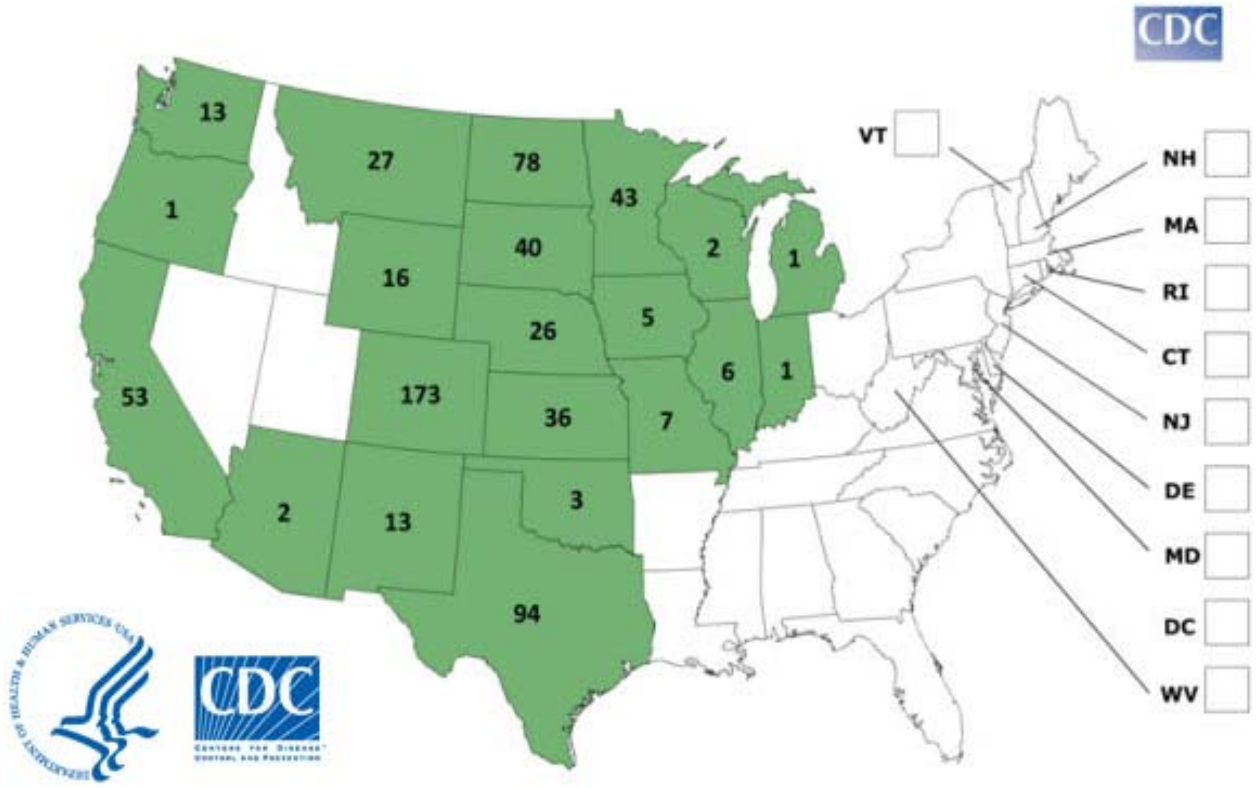

Figure 1-1 Western Equine Encephalitis Virus Neuroinvasive Disease Cases Reported by State, 1964-2010

1.1.1.1.3 St. Louis Encephalitis

The SLE virus is transmitted to mosquitoes while feeding on the blood of infected birds. Humans and domestic mammals can acquire SLE infection, but are dead-end hosts, hosts that do not develop a significant viremia to be passed on (CDC 2009a). Most SLE infections show no signs, with clinical infections resulting in less than 1 percent of infections that can range from mild nonspecific fever to meningitis or encephalitis. Older age increases the risk of severe disease and fatality. According to the Centers for Disease Control and Prevention (CDC 2009b), almost 90 percent of elderly persons with SLE develop encephalitis. Figure 1-2 (http://www.cdc.gov/sle/resources/SLEmap.pdf, CDC 2014a) summarizes the total number of confirmed and probable human SLE cases for California (1964–2010), with the last case having been detected in 1997.

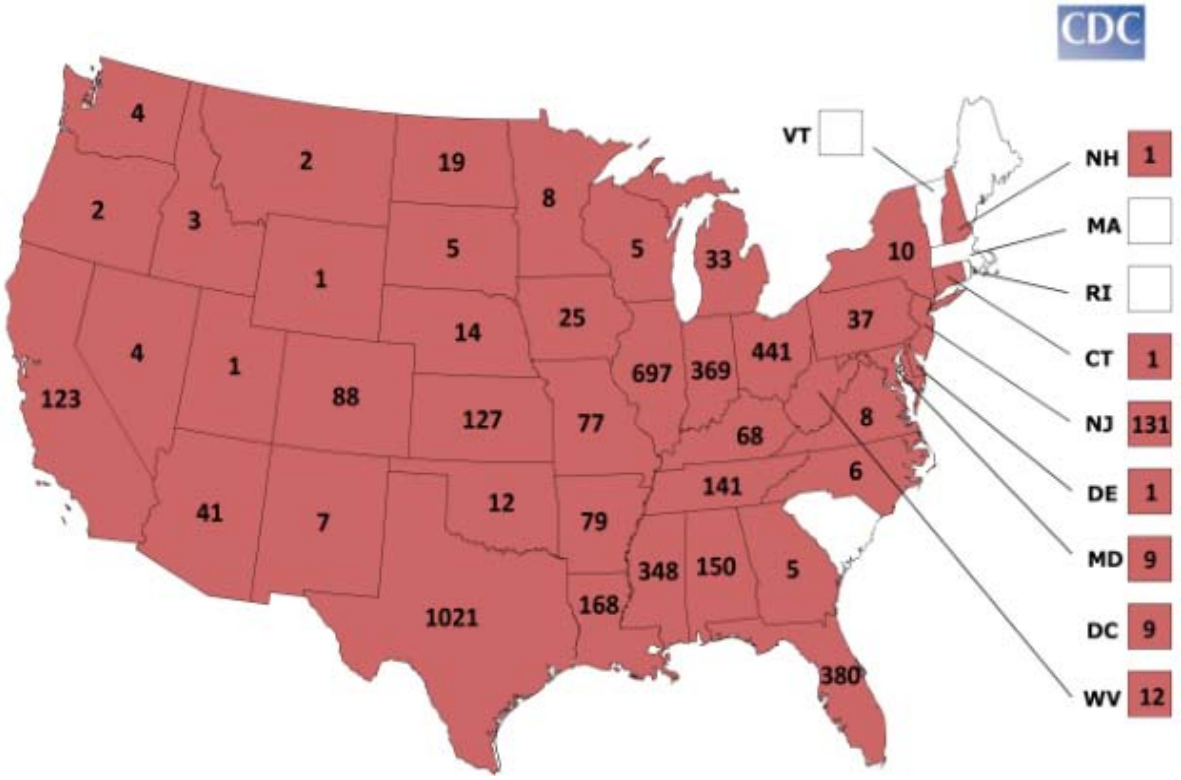

Figure 1-2 St. Louis Encephalitis Virus Neuroinvasive Disease Cases Reported by State, 1964-2010

1.1.1.1.4 Malaria

Malaria parasites are transmitted to humans after being bitten by an infected female Anopheles mosquito. It is endemic to tropical and subtropical parts of the world where climatic factors favor mosquito and parasite development. The mosquito must have been infected by previously feeding on the blood of an infected person. Uncomplicated malaria manifests in patients as flu-like symptoms while severe malaria can cause neurologic abnormalities, anemia, kidney failure, acute respiratory distress syndrome, and hypoglycemia (CDC 2012a). The parasite is most often seen in travelers and immigrants from countries where malaria is endemic; however, outbreaks of locally transmitted cases have been observed; and due to the existence of suitable vectors, the potential risk for the disease to reemerge is present, especially in the southern states (CDC 2010a). The following data (Table 1-2) from CDPH summarizes the total number of malaria cases for California from 2001 through 2011 (http://www.cdph.ca.gov/data/statistics/Pages/CD-YearlyTables.aspx). Almost all of the cases were the result of individuals that had returned from malaria-infested areas and, subsequently, exhibited symptoms and received medical treatment for malaria.

Table 1-2 Total Malaria Cases Reported in California, 2001-2011

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
# of cases	178	177	170	159	168	146	135	126	127	123	136

1.1.1.1.5 Dog Heartworm Disease

Heartworm disease is caused by a parasitic worm and results in severe lung disease, heart failure, organ damage, and death in domesticated mammals, mainly dogs and cats. Worms are spread through blood-meal feeding of mosquitoes, with adults maturing in the heart, lungs, and associated blood vessels. The severity of heartworm disease is correlated to how many worms are living inside the animal, how long the animal has been infected, and the animal's response to the heartworms' presence. Signs of the disease can range from no symptoms to tiredness, coughing, and heart failure. The most severe cases are known as caval syndrome in which blood flow to the heart is blocked by a large worm mass. If left untreated, heartworm disease will progress and damage to internal organs will eventually cause death. In some rare cases, humans have contracted heartworms after being bitten by an infected mosquito; however, larvae usually die before they can migrate to the heart or lungs (United States Food and Drug Administration 2010).

1.1.1.1.6 Myxomatosis

Myxomatosis is a fatal disease of domesticated rabbits caused by the myxoma virus, characterized by mucinous skin lesions. In the United States, the disease is restricted to coastal areas of California and Oregon. Outbreaks occur infrequently but sporadic cases are common. Transmission occurs through the biting of blood-sucking insects, such as mosquitoes, fleas, and biting flies, as well as direct contact. Initial signs of the disease are conjunctivitis and milky discharge from the eyes, progressing to swelling of the face with discharge coming from the nasal cavity. Eventually breathing becomes labored and the rabbit will go into coma just before dying (McClure 2011).

1.1.2 Potential for Human and Animal Illness

To avoid or manage the risk to human and animal health from the diseases listed above requires effective mosquito-borne disease surveillance and control strategies that may fluctuate temporally and regionally. Such factors include mosquito and pathogen biology, environmental factors, land use patterns, and resource availability to support production of the mosquitoes in quantities that threaten human and animal health. For example, detecting and monitoring WNV activity is accomplished by testing mosquitoes, dead birds, sentinel chickens, horses, and humans. The District identifies the mosquito species present, its locations and densities within the Service Area, and then the disease potential.

The District engages in activities and management practices to control mosquitoes and to address the specific situations within its Service Area. These management practices emphasize the fundamentals of integrated pest management (IPM) wherein source reduction, habitat modification, and biological control are used when appropriate before resorting to pesticides. When pesticides are used, they are applied in a manner that minimizes risk to human health and ecological health.

1.1.3 Legislative and Regulatory Actions

A number of legislative and regulatory actions form the basis for the District's authority to engage in mosquito control. The District is a regulatory agency formed pursuant to California Health and Safety Code Section 2000 et seq (Mosquito Abatement and Vector Control District Law). State law charges the District with the authority and responsibility to take all necessary or proper steps for the control of mosquitoes and other vectors in the District.

Section 2001 clearly states 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.

As such, 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.

Pursuant to Sections 2040-2045, the District may conduct all of the following activities (Alameda County Mosquito Abatement District 2011a):

(a) Conduct surveillance programs and other appropriate studies of vectors and vector-borne diseases.

(b) Take any and all necessary or proper actions to prevent the occurrence of vectors and vector-borne diseases.

(c) Take any and all necessary or proper actions to abate or control vectors and vector-borne diseases.

(d) To purchase the supplies and materials, employ the personnel, and contract for the services that may be necessary or proper to carry out the purposes and intent of this chapter.

(e) To build, repair, and maintain on any land the dikes, levees, cuts, canals, or ditches that may be necessary or proper to carry out the purpose and intent of this chapter.

(f) To engage necessary personnel, to define their qualifications and duties, and to provide a schedule of compensation for the performance of their duties.

(g) To participate in, review, comment, and make recommendations regarding local, state, or federal land use planning and environmental quality processes, documents, permits, licenses, and entitlements for projects and their potential effects on the purposes and intent of this chapter.

(h) A district may contract with other public agencies and federal agencies to provide any service, project, or program authorized by this chapter within the district's boundaries. A district may contract with other public agencies to provide any service, project, or program authorized by this chapter within the boundaries of the other public agencies and federal agencies.

In accordance with California Health and Safety Code Section 2053 (Alameda County Mosquito Abatement District 2011a):

(a) A district may request an inspection and abatement warrant pursuant to Title 13 (commencing with Section 1822.50) of Part 3 of the Code of Civil Procedure. A warrant issued pursuant to this section shall apply only to the exterior of places, dwellings, structures, and premises. The warrant shall state the geographic area which it covers and shall state its purposes. A warrant may authorize district employees to enter property only to do the following:

(1) Inspect to determine the presence of vectors or public nuisances.

(2) Abate public nuisances, either directly or by giving notice to the property owner to abate the public nuisance.

(3) Determine if a notice to abate a public nuisance has been complied with.

(4) Control vectors and treat property with appropriate physical, chemical, or biological control measures.

(b) Subject to the limitations of the United States Constitution and the California Constitution, employees of a district may enter any property, either within the district or property that is located outside the district from which vectors may enter the district, without hindrance or notice for any of the following purposes:

(1) Inspect the property to determine the presence of vectors or public nuisances.

(2) Abate public nuisances pursuant to this chapter, either directly or by giving notice to the property owner to abate the public nuisance.

(3) Determine if a notice to abate public nuisance has been complied with.

(4) Control vectors and treat property with appropriate physical, chemical, or biological control measures.

1.1.3.1.1 Cooperative Agreement between the California Department of Public Health and Local Vector Control Agencies

Due to their public health mission, the California Department of Pesticide Regulation's (CDPR's) Pesticide Regulatory Program provides special procedures for vector control agencies that operate under a Cooperative Agreement with the CDPH. The application of pesticides by vector control agencies is regulated by a special and unique arrangement among the CDPH, CDPR, and County Agricultural Commissioners. CDPR does not directly regulate vector control agencies. CDPH provides regulatory oversight for vector control agencies that are signatory to the Cooperative Agreement. This relationship includes consultation, technical assistance, and the certification of vector control technicians. The Cooperative Agreement governs routine surveillance, prevention, and control activities for vectors and vector-borne diseases. Signatories to the agreement use only pesticides listed by CDPH, maintain pesticide use reports, and ensure that pesticide use does not result in harmful residues on agricultural products (http://www.cdph.ca.gov/programs/vbds/Documents/BenefitsCooperativeAgreement08.pdf).

The District maintains a cooperative agreement with CDPH. Its employees are certified by CDPH as vector control technicians, which help to ensure that employees are adequately trained regarding safe and proper vector control techniques including the handling and use of pesticides and compliance with laws and regulations relating to vector control and environmental protection (Alameda County Mosquito Abatement District. 2011). CDPH conducts regular on-site reviews of the District and this agreement is renewed on an annual basis.

1.1.3.1.2 California Pesticide Regulatory Program

CDPR regulates the sale and use of pesticides in California. CDPR is responsible for reviewing the toxic effects of pesticide formulations and determining whether a pesticide is suitable for use in California through a registration process. Although CDPR cannot require manufacturers to make changes in labels, it can refuse to register products in California unless manufacturers address unmitigated hazards by amending the pesticide label. Consequently, many pesticide labels that are already approved by the United States Environmental Protection Agency (USEPA) also contain California-specific requirements. Pesticide labels defining the registered applications and uses of a chemical are mandated by USEPA as a condition of registration. The label includes instructions telling users how to make sure the product is applied only to intended target pests, and includes precautions the applicator should take to protect human health and the environment. For example, product labels may contain such measures as restrictions in certain land uses and weather (i.e., wind speed) parameters.

1.2 Program Objectives/Purpose and Need

1.2.1 Program Objectives

The District undertakes mosquito control activities through its Program to control all mosquitoes that may be vectors of disease and/ or discomfort in the Program Area. In order to effectively control those mosquitoes, the District may potentially undertake control measures for yellow jacket wasps and noxious/invasive weeds.

The Proposed Program's specific objectives are as follows:

> Reduce the potential for human and animal disease caused by mosquitoes

> Reduce the potential for human and animal discomfort or injury from mosquitoes

> Accomplish effective and environmentally sound mosquito management by means of:

- Surveying for mosquito abundance/human contact
- Establishing treatment criteria
- Appropriately selecting from a wide range of Program tools or components

Most of the relevant mosquito species are quite mobile and cause the greatest hazard or discomfort at a distance from where they breed. Each mosquito species has a unique life cycle, and most of them occupy several types of habitats. To effectively control them, an IMMP must be employed. District policy is to identify those species that are currently vectors, to recommend techniques for their prevention and control, and to anticipate and minimize any new interactions between mosquitoes and humans.

1.2.2 Purpose and Need

The District was established in 1930 to reduce the risk of mosquito-borne disease and discomfort to the residents of its Service Area. In addition to being nuisances by disrupting human activities and enjoyment of public and private areas, certain mosquito species can transmit a number of diseases. A vector is defined by the State of California as "any animal capable of transmitting the causative agent of human disease or capable of producing human discomfort or injury, including, but not limited to, mosquitoes, flies, other insects, ticks, mites, and rats, but not including any domesticated animal…" [California Health and Safety Code Section 2200(f)]. The diseases of most concern in the Program Area are WNV, WEE, SLE, dog heartworm, malaria, and myxomatosis.

Depending on the disease, both human and domestic animal health can be at risk of disability, illness, and/or death. Furthermore, potential exists for the introduction of new mosquito species and mosquito-borne diseases into the District's Service Area. Examples include the discovery of populations of *Aedes albopictus* (Asian tiger mosquito) and *Aedes aegypti* (yellow fever mosquito) in central and southern California. These mosquito species are effective vectors of diseases such as chickungunya, dengue fever, and yellow fever.

Yellow jacket wasps and several mosquito species within the Program Area are not commonly known to transmit disease pathogens but are still considered vectors [California Health and Safety Code Section 2200(f)] because they can inflict significant discomfort and injury (e.g., secondary infections and severe reactions including anaphylaxis) to residents, pets, and livestock. For example, employing the District's IMMP to conduct surveillance and control for mosquito species such as *Aedes dorsalis* (summer salt marsh mosquito), *Aedes sierrensis* (western treehole mosquito), *Aedes squamiger* (California salt marsh mosquito), and *Aedes washinoi* (woodland pond mosquito) is important to minimize populations of these mosquitoes that would otherwise cause discomfort and injury-related issues with citizens, businesses, schools, agricultural operations, etc.

1.3 Alternatives Considered in this Programmatic Environmental Impact Report

The District's Program is an ongoing series of related actions for control of mosquitoes, vectors of human disease and discomfort. The District's activities involve the identification of mosquito problems; responsive actions to control existing populations of mosquitoes, prevent new sources of mosquitoes from developing, and manage habitat to minimize mosquito production; education of landowners and others on measures to minimize mosquito production or interaction with mosquitoes; and provision and administration of funding and institutional support necessary to accomplish District objectives.

The District takes an integrated systems approach to mosquito control utilizing a suite of tools that consist of:

> Surveillance

> Physical Control

> Vegetation Management

> Biological Control

> Chemical Controls

  - Larvicides

  - Adulticides

> Public Education

These first five tools are called "alternatives," are part of the present Program, and all would continue and be combined as the overall Proposed Program along with public education. These alternative Program "tools" or components are described in the subsequent subsection as "Program alternatives" for the CEQA process (except for public education, which is exempt from CEQA). Program implementation is weighted heavily towards vegetation management and physical and biological control, in part, to reduce the potential for environmental impacts. To realize effective and environmentally sound mosquito management, mosquito control must be based on several factors:

> Carefully monitoring or surveying mosquito abundance and/or potential contact with people

> Establishing treatment criteria (thresholds)

> Selecting appropriate tools from a wide range of control methods

This Program consists of a dynamic combination of surveillance, treatment criteria, and use of multiple control activities in a coordinated program with public education that is generally known as integrated pest management (IPM) or specifically for the District as Integrated Mosquito Management (IMM).

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

Three core tenets are essential to the success of a sound IMMP.

> *First*, a proactive approach is necessary to minimize impacts and maximize successful mosquito management. Elements such as thorough surveillance and a strong public education program make all the difference in reducing potential human-mosquito interactions.

> *Second*, long-term environmentally based solutions (e.g., water management, reduction of harborage, exclusion, and enhancement of predators and parasites) are optimal as they reduce the potential pesticide load in the environment as well as other potential long- and short-term impacts.

> *Lastly*, utilizing the full array of options and tools (public education, surveillance, physical control, biological control, and when necessary chemical control) in an informed and coordinated approach supports the overall goal of an environmentally sensitive mosquito management program.

The No Program Alternative is defined as the District not engaging in any of the control strategies and tools for mosquito control. Past practices would not continue into the future. The District would not continue to operate and would close. In the absence of the District, CDPH would provide mosquito "oversight" to local jurisdictions commensurate with their budget constraints.

1.4 Public Involvement

Public involvement for this PEIR includes the following actions.

1.4.1 CEQA Public Scoping

The Alameda County Mosquito Abatement District (District) distributed a Notice of Preparation (NOP) of a Draft Programmatic Environmental Impact Report (PEIR) for the Integrated Mosquito Management Program (Program) pursuant to the California Environmental Quality Act (CEQA) Guidelines (Section 15082) on May 11, 2012. The NOP was sent to 165 agencies, organizations, and individuals, including the following state responsible and trustee agencies:

> California Coastal Commission

> California Department of Fish and Wildlife, Region 3

> California Department of Parks and Recreation

> California Department of Pesticide Regulation

> California Department of Toxic Substances Control

> California Department of Water Resources

> California Highway Patrol

> California Natural Resources Agency

> Caltrans, District 4

> Delta Stewardship Council

> Native American Heritage Commission

> San Francisco Bay Conservation and Development Commission

> San Francisco Bay Regional Water Quality Control Board (Region 2)

The NOP provided a description of the Program, the location of Program activities, and the resources and environmental concerns planned for analysis in the PEIR. The NOP announced a public scoping meeting and requested that comments on the content of the PEIR and the Program alternatives be submitted within 30 days of receipt. The public scoping meeting was held at the following location and time:

- Alameda County Department of Environmental Health, Alameda, on June 6, 2012 from 5:30 p.m. - 7:30 p.m.

1.4.2 Public Scoping for Programmatic Environmental Impact Report

Public scoping resulted in the following comments that are focused on additional public notification during Program implementation.

> U.S. Fish and Wildlife Service (USFWS) would like Best Management Practices (BMPs) from the Don Edwards San Francisco Bay National Wildlife Refuge Mosquito Management Plan to be incorporated into the EIR.

> East Bay Regional Parks District (EBRPD) would like the EIR to analyze the District's impact on the recreational experience of park visitors, park worker safety, park operations, and park natural resources.

> EBRPD may require an Encroachment Permit and notification of Park Supervisors for activities such as surveillance, physical control or vegetation management where access to parkland is needed.

> Evaluate the project's impact on special status species.

These comments are addressed under Section 2.8.1, Required Permits, Section 2.8.2, Agency Coordination, and Section 2.9 Best Management Practices.

1.4.3 Areas of Known Public Concern

CEQA Guidelines Section 15123 requires that the Summary "shall identify areas of controversy known to the lead agency." The areas of greatest public concern and debate are based on comments from public scoping, comments made during other District activities, and historical questions raised by individuals in the Program Area. These areas of controversy are explained here and then incorporated into the preceding Summary chapter:

> Use of Pesticides for Mosquito Control: Members of the public are distrustful of pesticide use for mosquito control. They prefer other methods to eliminate suitable habitat to deal with mosquito problems rather than spraying pesticides. If adulticides must be used, ensure use is justified with documented, mosquito-borne disease activity within or within flight range of the tidal marsh. Concern exists about pesticide applications drifting into backyards where the property owner wants to ensure their area is pesticide-free. The concern is not only with impacts to humans and "sensitive populations" but also to domestic animals and wildlife including nontarget insects.

> Use of Herbicides for Vegetation Management: Request for specific vegetation management information about the proposed chemical vegetation control agents (herbicides), the types, amounts and locations of chemical stored, application methods and rates, and their effects on the environment.

> Use of Biological Control Agents: Controversy exists over the use of some proposed biological control agents, in particular the use of mosquitofish and potential for them to impact sensitive species such as the California red-legged frog.

> District's Authority to Enter Public and Private Property for Control Activities: Some public agencies want the District to obtain an Encroachment Permit with notification of Park Supervisors for activities such as surveillance, physical control, or vegetation management where access to parkland is needed. Water districts insist that mosquito abatement materials and practices proposed for use on watershed lands must be thoroughly vetted and approved by CDPH.

Section 1.5, Environmental Concerns, presents a summary of the environmental concerns by resource or issue area for analysis in the PEIR.

1.4.4 Distribution of the Programmatic Environmental Impact Report

The District has distributed the Notice of Availability of the Draft PEIR to the following agencies, organizations, and individuals.

- Alameda Chamber of Commerce
- Alameda City Clerk
- Alameda City Manager
- Alameda County Ag Commissioner
- Alameda County Board of Supervisors Clerk
- Alameda County Clerk-Recorder's Office
- Alameda County Department of Environmental Health
- Alameda County Fire Department
- Alameda County Library
- Alameda County Planning Department
- Alameda County Public Health Department
- Alameda County Public Works Agency
- Alameda County Resource Conservation District
- Alameda County Water District
- Alameda Countywide Clean Water Program
- Alameda Fire Department
- Alameda Free Library
- Alameda Planning & Development Department
- Alameda Public Works Department
- Alameda Recreation and Parks
- Alameda Unified School District
- Association of Bay Area Governments
- Bay Area Air Quality Management District
- Bay Area Water Supply and Conservation Agency
- Berkeley Chamber of Commerce
- Berkeley City Clerk
- Berkeley City Manager
- Berkeley Department of Health Services, Environmental Health Division
- Berkeley Fire Department
- Berkeley Parks, Recreation, and Waterfront District
- Berkeley Planning & Development Department
- Berkeley Public Library
- Berkeley Public Works Department
- Berkeley Unified School District
- CA Bay-Delta Authority c/o CALFED Bay-Delta Program
- CA Department of Fish and Game
- CA Department of Forestry and Fire Protection
- CA Department of Pesticide Regulation
- CA Department of Public Health
- CA Department of Transportation
- CA Department of Water Resources
- CA Environmental Resources Evaluation System (CERES)
- CA State Coastal Conservancy
- CA State Lands Commission
- CA Stormwater Quality Association
- Castro Valley Sanitary District
- Castro Valley Unified School District
- Citizens Committee to Complete the Refuge
- CA Dept. of Parks and Recreation
- Don Edwards San Francisco Bay National Wildlife Refuge
- Dublin Fire Prevention Bureau
- Dublin Chamber of Commerce
- Dublin City Clerk
- Dublin City Manager
- Dublin Parks and Community Services
- Dublin Planning Department
- Dublin Public Library
- Dublin Public Works Department
- Dublin San Ramon Services District

- Dublin Unified School District
- East Bay Municipal Utilities District
- East Bay Regional Park District
- Emeryville Chamber of Commerce
- Emeryville City Clerk
- Emeryville City Manager
- Emeryville Fire Department
- Emeryville Planning Division
- Emeryville Public Works Department
- Emeryville Unified School District
- Fremont Chamber of Commerce
- Fremont City Clerk
- Fremont City Manager
- Fremont Fire Department
- Fremont Main Public Library
- Fremont Planning Division
- Fremont Public Works Department
- Fremont Unified School District
- Hayward Area Recreation and Park District
- Hayward Area Shoreline Citizens Advisory Committee
- Hayward Area Shoreline Planning Agency
- Hayward Chamber of Commerce
- Hayward City Clerk
- Hayward City Manager
- Hayward Executive Airport
- Hayward Fire Department
- Hayward Planning Commission
- Hayward Public Library
- Hayward Public Works Department
- Hayward Unified School District
- Livermore Area Recreation and Park District
- Livermore City Clerk
- Livermore City Manager
- Livermore Planning Division
- Livermore Public Library
- Livermore Public Works Department
- Livermore Valley Chamber of Commerce
- Livermore Valley Charter School
- Livermore Valley Joint Unified School District
- Livermore-Amador Valley Water Management Agency
- Livermore-Pleasanton Fire Department
- Local Agency Formation Commissions
- New Haven Unified School District
- Newark Chamber of Commerce
- Newark City Clerk
- Newark City Manager
- Newark Planning Division
- Newark Public Library
- Newark Public Works Department
- Newark Unified School District
- Newark Fire Prevention Bureau
- Oakland City Administrator
- Oakland City Clerk
- Oakland Fire Department
- Oakland Metropolitan Chamber of Commerce
- Oakland Office of Parks and Recreation
- Oakland Planning Department
- Oakland Public Library
- Oakland Public Works Department
- Oakland Unified School District
- Ohlone Audubon Society
- Oro Loma Sanitary District
- Piedmont City Clerk
- Piedmont Fire Department
- Piedmont Park Commission
- Piedmont Planning Commission

- Piedmont Public Works Department
- Piedmont Unified School District
- Pleasanton Chamber of Commerce
- Pleasanton City Clerk
- Pleasanton City Manager
- Pleasanton Operations Services Department
- Pleasanton Planning Department
- Pleasanton Public Library
- Pleasanton Unified School District
- Point Reyes Bird Observatory
- San Leandro Chamber of Commerce
- San Leandro City Clerk
- San Leandro City Manager
- San Leandro Community Development Department
- San Leandro Public Library
- San Leandro Public Works Department
- San Leandro Recreation and Human Services
- San Leandro Unified School District
- San Lorenzo Unified School District
- SF Bay Chapter Sierra Club
- SF Bay Conservation Development Commission
- SF Bay National Wildlife Refuge Complex
- SF Baykeeper
- SF Regional Water Quality Control Board
- State Clearinghouse
- State Water Resources Control Board
- Sunol Glen Unified School District
- Union City Chamber of Commerce
- Union City City Clerk
- Union City City Manager
- Union City Planning Division
- Union City Public Library
- Union City Public Works Department
- Union Sanitary District
- US Army Corps of Engineers
- Zone 7 Water Agency

1.5 Environmental Concerns

Below is a listing of environmental concerns by resource (i.e., by PEIR section), including but not limited to issues raised by agencies and the public. These concerns are those most appropriate to the environmental impact analysis rather than questions concerning Program implementation or future coordination activities between the District and other agencies and individuals. Additional environmental concerns can be addressed through responses to public comments on the Draft PEIR.

1.5.1 Urban and Rural Land Uses

The following concerns are associated with land uses, both urban/developed lands and rural/open space/undeveloped lands. They are addressed primarily in Chapter 3, Urban and Rural Land Uses:

- Need to analyze and minimize aspects of the Program that diminish recreational experience of park visitors of the regional parks and trails within the Program Area.
- Discuss the population density (age, health, disabilities, etc.) within the designated residential developments and list the effects of pesticides on their health and daily activity.
- Expressed concern on impacts at school sites.
- Address local community regulations regarding pesticides. For example, the City of Berkeley adopted Resolution 54,319 a Pest Management Policy on June 21, 1988. The resolution seeks to implement effective and appropriate pest management programs throughout the community which minimize

and/or eliminate the use of pesticides. All are encouraged to voluntarily follow the City's Pesticide Management Policy when engaged in pest control and pesticide use within the City.

1.5.2 Biological Resources-Aquatic

The following concerns are associated with biological resources in aquatic environments and are addressed in Chapter 4 of this PEIR or in Appendix A, Biological Resources Technical Report:

> Employ techniques associated with the physical control of vectors and their habitat that conform to Habitat Conservation Plan (HCP) avoidance, minimization, and mitigation measures.

> Consider direct/indirect effects of using mosquitofish as control. Do not stock mosquitofish (*Gambusia affinis*) in ponds, creeks, or reservoirs. As the mosquitofish used (*Gambusia affinis)* are nonnative predatory fish, describe how their impact on native fish populations is considered.

> The PEIR should include a detailed description and complete assessment of the surveillance impacts (current and future, direct and indirect) on habitats (including endangered, threatened, and locally unique species and sensitive habitats) and on species (sensitive fish, wildlife, or plants) and ensure CEQA requirements are met.

> The PEIR should include a detailed description and complete assessment of the biological control impacts (current and future, direct and indirect) on habitats (including endangered, threatened, and locally unique species and sensitive habitats) and on species (sensitive fish, wildlife, or plants) and ensure CEQA requirements are met.

> The PEIR should include a detailed description and complete assessment of the chemical control impacts (current and future, direct and indirect) on habitats (including endangered, threatened, and locally unique species and sensitive habitats) and on species (sensitive fish, wildlife, or plants) and ensure CEQA requirements are met.

> Ensure the Draft PEIR includes appropriate measures to ensure complete take avoidance of protected species while coordinating with USFWS, United States Department of Agriculture (USDA), Forest Service (USFS), and California Department of Fish and Wildlife (CDFW).

1.5.3 Biological Resources-Terrestrial

The following concerns are associated with biological resources in terrestrial environments and are addressed in Chapter 5 of this PEIR or in Appendix A, Biological Resources Technical Report:

> Discuss potential impacts on insect pollinators/bees from chemicals in treatment applications.

> Describe the effects of all chemicals that are used and/or proposed for use on wildlife and natural ecosystems, including insect prey, birds, mammals, fish, vegetation and site topography. The loss of prey for birds is a particular concern. Also, consider unwanted effects of the "inactive" portion of the pesticides. What effects will the carrier portion of the chemicals have on the environment?

> Discuss the potential impact of *Bacillus sphaericus* (Bs)/*Bacillus thuringiensis israelensis* (Bti) products on native species.

> Describe the role of mosquitoes within the food chain, and subsequent impacts if they were removed in terms of amphibians, birds, reptiles, fish and insects. This issue is also addressed in Section 6.2.

> Discuss the effects of pesticides on the natural predators of mosquitoes and their ability to recover from pesticides.

> Pesticide efficacy attenuation and possible long-term resistance is an issue for all chemically based mosquito control programs. It is addressed by the use of different control methods and different agents over time where possible (BMP and IMM techniques are designed to identify these issues early and modify applications as appropriate and feasible).

> Note that the Program Area includes potential habitat for several California and federally threatened and other sensitive plant and wildlife species including, but not limited to, California tiger salamander and Red-legged frog and, as such, comprehensive biological studies should be implemented.

> Coordinate with CDFW, California Natural Diversity Database (CNDDB), USFWS, and USFWS' Information, Planning, and Conservation planning tool to identify special status plant or wildlife species. If impacts are found to be significant, the PEIR should identify adequate mitigation measure to reduce impacts to lower levels.

> A primary concern is the environmental impact on natural resources in terms of vegetation removal, soil erosion, and possible wildlife impact.

> Ensure mosquito abatement staff minimizes impact to tidal marsh and vernal pool habitats (especially during breeding season). Restrict operation of vehicles to levees and existing roads, and avoid vernal pool plants during blooming season (March–June).

> Concern for spread of invasive weeds, erosion, and sedimentation.

> The PEIR should include a detailed description and complete assessment of the biological control impacts (current and future, direct and indirect) on habitats (including endangered, threatened, and locally unique species and sensitive habitats) and on species (sensitive fish, wildlife, or plants).

> The PEIR should include a detailed description and complete assessment of the chemical control impacts (current and future, direct and indirect) on habitats (including endangered, threatened, and locally unique species and sensitive habitats) and on species (sensitive fish, wildlife, or plants).

> Ensure the Draft PEIR includes all appropriate measures to ensure complete take avoidance of protected species while coordinating with USFWS, USFS, and CDFW.

1.5.4 Ecological Health Hazards

The following concerns are associated with ecological health and are addressed in Chapter 6 of this PEIR or in Appendix B, Human and Ecological Health Assessment Report:

> What are the impacts associated with the Surveillance Alternative?

> Describe the effects of all chemicals that are used and/or proposed for use on wildlife and natural ecosystems, including insect prey, birds, mammals, fish, vegetation, and site topography. The loss of prey for birds is a particular concern.

> Discuss the potential impact of Bs on native species. What would justify its use? What native species would be impacted?

> Discuss impacts on bees from chemicals in treatment applications.

> Concern over the "inactive" portion of the pesticides. What effects will the carrier portion of the chemicals have on the environment?

> Address the effect of pesticides on the natural predators of mosquitoes.

> Concern that the continued spray program leads to survival of mosquitoes resistant to pesticides – "the pest mill".

> Describe the role of mosquitoes within the food chain, and subsequent impacts if they were removed in terms of amphibians, birds, reptiles, fish, and insects.

> Upon application and broadcast of pesticides, what is the fate and transport of these chemicals? Look at droplet size, dispersal patterns given wind, conversion products (both in storage and environment), and impacts of conversion products. Discuss the persistence of proposed treatment substances in the environment as well as the potential for bioaccumulation.

> The PEIR should include monitoring programs that are designed to validate assumptions regarding the environmental fate and transport of materials.

> The PEIR should include a detailed description and complete assessment of the chemical control impacts (current and future, direct and indirect) on habitats (including endangered, threatened, and locally unique species and sensitive habitats) and on species (sensitive fish, wildlife, or plants) and ensure CEQA requirements are met.

> The PEIR should include a detailed description and complete assessment of the biological control impacts (current and future, direct and indirect) on habitats (including endangered, threatened, and locally unique species and sensitive habitats) and on species (sensitive fish, wildlife, or plants) and ensure CEQA requirements are met.

1.5.5 Human Health Hazards

The following concerns are associated with human health and are addressed in Chapter 7 of the PEIR or in Appendix B, Human and Ecological Health Assessment Report.

> Address Program impacts on people and pets through ingestion and absorption pathways and proposed mitigation. Address impacts on chemically sensitive people and sensitive populations such as children, the elderly, and pregnant women. Exposure to pesticides can result in compromised immune system, which would allow for development of allergies or autoimmune disorders.

> The PEIR must list any and all biological or chemical agents proposed for use.

> Require additional information regarding chemical agents in sanitary sewers concerning components and effects. Could pose a significant impact on the operation of wastewater treatment plant.

> Concern over public safety and health with regards to existing vegetable gardens and fruit trees within the Program Area. Local swimming holes could be a potential habitat for breeding mosquitoes, and chemical treatment could impact humans.

> Concern with use of Zenivex; it mimes chrysanthemums but is a neurotoxin.

> Concern that adulticides may present danger to humans, as many pesticides are known carcinogens and endocrine disruptors.

> Concern that pyrethrins may disrupt the normal functioning of sex hormones while piperonyl butoxide (PBO) may affect the functioning of hormone-related organs.

> In addition to short-term effects, what are the long-term effects of repeated exposure to these chemicals?

1.5.6 Public Services and Hazard Response

While no scoping comments directly dealt with public services and hazard responses, the following issues are addressed in Chapter 8 of the PEIR:

> Risk of spill of hazardous materials from equipment or applications of pesticides and/or herbicides.

> Risk of aerial equipment failure during applications of pesticides.

> Safe storage and disposal of chemical-related materials.

1.5.7 Water Quality

Chapter 9, Water Resources, addresses concerns related to the following potential impacts to surface water and groundwater resources:

> Concern for spread of invasive weeds, erosion, and sedimentation.

> Discuss CDPH review and approval of mosquito abatement materials and practices proposed for use on watershed lands.

> Describe, quantify, and evaluate impacts of dredge or fill activities.

> Discuss the potential for drift from aerial and ground applications on waterbodies.

> Identify watershed impacts from aerial and ground applications including the potential to impact drinking water supplies.

1.5.8 Air Quality and Climate Change

The following environmental concerns are addressed in Chapter 10, Air Quality, and Chapter 11, Greenhouse Gases and Climate Change, in this PEIR and in Appendix C, Air Quality and GHG Technical Report:

> Concern that spraying/fogging will adversely affect air quality for humans and pets alike.

> Address impacts of emissions of air pollutants from control and treatment methods and combustion of fuels.

> Discuss impacts on greenhouse gases and climate change.

1.5.9 Noise

The following environmental concerns are addressed in Chapter 11, Noise, in this PEIR and in Appendix D, Noise Analysis Technical Report:

> Evaluate noise-related impacts on humans, in particular consistency with local noise regulations.

> Evaluate noise-related impacts on wildlife, i.e. describe the impact of using motorized vehicles in marshes.

1.6 Impacts Not Given In-Depth Evaluation in this Programmatic Environmental Impact Report

The Proposed Program's surveillance, physical control, vegetation management, biological control, and chemical and nonchemical treatment alternatives were determined to have no impacts or less-than-significant impacts on the resources listed below; therefore, further analysis of these resources was not necessary for the reasons identified below. The resources not considered thereafter in the PEIR, or those partially considered (and how they are considered), include:

> Aesthetics. In general the implementation of the mosquito control strategies and methods would not impact the aesthetics of the Program Area. No new construction of facilities would occur, the application of materials from the ground or the air would not have a visual impact because the Program alternatives are too small in scale to be noticeable in the open areas, and they would blend in with the habitat where they would be applied, including physical control and vegetation removal for mosquito control. None of the materials to be applied would change the appearance of existing structures or visual features of the landscape. The applied materials would not harm painted surfaces of structures, signs, and roadways.

> Cultural Resources. The activities associated with mosquito control would not include any construction of facilities or subsurface ground disturbance beyond drainage control, including sediment and vegetation removal to improve water circulation in aquatic habitats. Material application would not occur on existing historical resources; therefore, cultural resources would not be impacted. However, if during the application of material in either developed or undeveloped areas human remains are encountered, the applicable county coroner would be contacted and appropriate measures

implemented, consistent with State Health and Safety Code Section 7050.5, which prohibits unauthorized disinterring, disturbing, or removing of human remains from any location.

> Geology and Soils. The activities associated with mosquito control would not include any facilities construction or significant ground disturbance nor induce erosion or loss of topsoil; therefore, geology and soils would not be impacted in this manner. Program activities would not be affected by landslides or ground failure, because aerial application would be used primarily in difficult to access areas if needed. The issue of impacts to soil microbes is addressed in the fate and transport analysis of the chemical treatments.

> Mineral Resources. The activities associated with mosquito control would not include any new construction or alteration of subsurface resources beyond drainage control; therefore, the Program would not result in the loss of availability of a known mineral resource.

> Population and Housing. The Program would not add new housing or increase the resident population within the Program Area; therefore, the Program is not expected to impact population and housing growth. Because the Program would not result in new development, it would not place a substantial demand on most public services including public facilities. However, the Program's potential to impact public health and emergency response services is addressed in Chapter 8, Public Services and Hazard Response.

> Transportation and Traffic. The Program would not include the use of a substantial amount of new vehicles or block existing roadways for mosquito control efforts. Light truck and automobile trips would be required to transport workers, materials, and equipment for the surveillance, monitoring, and physical control activities, and ground and aerial applications of pesticides and/or herbicides. These trips would be consistent with present trips and not result in a substantial change in vehicle use over existing conditions. Therefore, no impacts would be associated with Program transportation or traffic.

> Utilities and Service Systems. The Program would not include any new construction or the addition of housing or new workers to a community that would result in a substantial increase in demand for new utilities and service systems. Therefore, the Program is not expected to impact the utilities, including electricity, cable, water, and wastewater, in the Program Area. Water resources are addressed in Chapter 9, Water Resources.

1.7 Report Organization and Significance Terminology

The PEIR evaluates potential environmental impacts (direct, indirect, and cumulative) on the following environmental resources and concerns: human health, ecological health, agricultural economics and land use, nonagricultural land uses, public services/hazard response, water quality (surface water and groundwater), air quality, climate change (greenhouse gas production), noise, and biological resources, including cumulative impacts. The human and ecological risk assessments are technical appendices to the PEIR with important results summarized in the appropriate sections of the PEIR.

> Chapter 1, Introduction, provides the Program's history and authority, Program objectives, a summary of public involvement activity and the public's concerns, impacts not further evaluated, and the PEIR's organization.

> Chapter 2, Program Description, presents the Program objectives, chemical treatment and nonchemical treatment alternatives, and BMPs to minimize environmental impacts. It also describes equipment use, public education, and required permits and agency coordination.

> Chapter 3, Urban and Rural Land Uses, explains the environmental setting and potential environmental impacts for each alternative.

> Chapter 4, Biological Resources – Aquatic, explains the environmental setting and potential environmental impacts for each alternative.

- Chapter 5, Biological Resources – Terrestrial, explains the environmental setting and potential environmental impacts for each alternative.
- Chapter 6, Ecological Health, explains the environmental setting and potential environmental impacts for each alternative.
- Chapter 7, Human Health, explains the environmental setting and potential environmental impacts for each alternative.
- Chapter 8, Public Services and Hazard Response, explains the environmental setting and potential environmental impacts for each alternative.
- Chapter 9, Water Resources, explains the environmental setting and potential environmental impacts for each alternative.
- Chapter 10, Air Quality, explains the environmental setting and potential environmental impacts for each alternative.
- Chapter 11, Greenhouse Gases and Climate Change, explains the environmental setting and potential environmental impacts for each alternative.
- Chapter 12, Noise, explains the environmental setting and potential environmental impacts for each alternative.
- Chapter 13, Cumulative Impacts, is a comprehensive assessment of all of the cumulative impacts to each of the resources contained in Chapters 3 through 12.
- Chapter 14, Other Required Disclosures, is comprised of other analyses required by CEQA including growth-inducing impacts and irreversible or irretrievable commitments of resources.
- Chapter 15, Alternatives, presents the District's consideration of a reasonable range of alternatives and the screening of those alternatives to the ones included in the Proposed Program. It evaluates the No Program Alternative for impacts, and identifies alternative tools or options for reducing potentially significant impacts from alternatives under the Proposed Program.
- Chapter 16, Report Preparers, lists the persons and organizations involved in the preparation of this PEIR.
- Chapter 17, References, identifies the organizations and persons consulted and references cited in this PEIR.
- Appendix A, Biological Resources Technical Report
- Appendix B, Ecological and Human Health Risk Assessment
- Appendix C, Air Quality and Greenhouse Gas Emissions Technical Report
- Appendix D, Noise Analysis Technical Report
- Appendix E, Alternatives Analysis

For each resource evaluated, the key environmental issues and criteria, for determining whether an adverse impact is significant under CEQA, are discussed first. A "significant impact" is defined as:

> *"a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment, but may be considered in determining whether the physical change is significant"* (CEQA Guidelines Section 15382).

The environmental impact analysis section for each resource defines the criteria used to judge whether an impact is significant. These criteria include the "Mandatory Findings of Significance" set forth in CEQA Guidelines Section 15065. These criteria also include the criteria set forth in the Initial Study checklist (CEQA Guidelines, Appendix G), agency regulatory standards, or other criteria relevant to the specific project.

In describing the significance of adverse impacts, **the following categories of significance** are applied, based on the best professional judgment of the PEIR preparers:

> **Significant and Unavoidable (SU):** An impact that cannot be avoided or reduced to below the threshold level, even with the imposition of all feasible mitigation measures. "Significant" also covers the concept of potentially significant, which may be used when substantial uncertainty exists. This PEIR does not distinguish between "significant" or "potentially significant" in impact conclusion statements; both result in a determination that the impact is significant. All significant impacts from No Program are unavoidable.

> **Potentially Significant but Mitigable (SM):** An impact that can be reduced to below the threshold level (i.e., to less than significant) given feasible mitigation measures. For example, the statement is made that the Chemical Control Alternative could subject people to objectionable odors and could be potentially significant but mitigable. With the application of mitigation measures to avoid drift, the impact can be reduced to less than significant.

> **Less than Significant (LS):** An impact that may be adverse but does not exceed the threshold levels or covers an effect that is small or minimal, and does not require mitigation measures.

> **No Impact (N):** Where an impact is neutral or is clearly deemed "no effect." it is stated to have "no impact."

Mitigation measures for one resource may have environmental impacts on other resources or not be sufficient to reduce the target impact to less than significant. Where a mitigation measure could have a significant environmental impact, this impact is discussed.

1.8 Use of This PEIR for Future CEQA Compliance

This PEIR evaluates the potential environmental impacts associated with the District's current Program and its future Program when the activities and materials can be identified at present. For activities and materials not within the current Program that could be proposed at a future date to be included in the District's IMMP ("future activities"), the District will evaluate whether the proposed action or material was within the scope of the Program evaluated within the PEIR and whether additional environmental documentation is required. In making this determination, the District will first determine whether the activity would result in environmental effects that were not considered in the PEIR. If the subsequent activity involved site-specific operations, the District will evaluate the site and the activity to determine whether the environmental effects were covered in the PEIR and document its findings. Second, the District will evaluate the proposed activity or material to determine whether any new environmental effects could occur, or new mitigation measures would be required, due to changes in the activity or changes in the circumstances under which it is undertaken. If the District determines that the future activity is within the scope of the Program examined in the PEIR, that no new effects that were not examined in the PEIR could occur, and that no new information shows that new mitigation measures or alternatives are required, the District may approve the activity as being within the scope of the PEIR, and no new environmental documentation is required. (CEQA Guidelines Section 15168(c)(1)-(2))

If the District determines that the future activity was not within the scope of the Program evaluated in the PEIR, the action will be considered a "new action." The district will determine whether the new action would result in environmental effects that were not examined in the PEIR by preparing an initial study. The initial study will be the basis for determining whether the effects of the new action require an EIR or a

negative declaration. (CEQA Guidelines Section 15168(c)(1). A subsequent or supplemental EIR could be required if any of the following occur (CEQA Guidelines Section 15162[c]):

> Substantial changes proposed for the District's IMMP would require major revisions to this PEIR because of new significant environmental impacts that cannot be mitigated below a level of significance or a substantial increase in the severity of the previously identified significant impacts in this PEIR.

> Substantial changes to the circumstances under which the District's IMMP is undertaken would require major revisions to this PEIR because of new significant environmental impacts that could not be mitigated below a level of significance or a substantial increase in the severity of the identified significant impacts in this PEIR.

> New information of substantial importance that could not have been known at the time the PEIR was certified showing significant effects not discussed in this PEIR that cannot be mitigated below a level of significance; significant effects would be substantially more severe; mitigation measures found to be infeasible in this PEIR would, in fact, be feasible and substantially reduce one or more significant effects, but the District decides not to adopt them; or mitigation measures or alternatives are identified that are considerably different from those analyzed in this PEIR that would substantially reduce one or more significant effects, but the District decides not to adopt them.

The specific process the District will follow to ensure CEQA compliance as it moves forward implementing its Program is explained in greater detail below.

1.8.1 Future Activities

As discussed above, this PEIR evaluates the potential environmental impacts associated with the District's current Program and its future Program when the activities and materials can be identified at present. For activities and materials not within the current Program that are proposed at a future date to be included in the District's IMMP, the District will evaluate whether the proposed activity or material was within the scope of the Program evaluated within the PEIR and whether additional environmental documentation is required. Future activities not within the scope of the Program evaluated in the PEIR are considered "new actions" and may be subject to future environmental review under CEQA. All new actions will be subject to the District's BMPs and may be subject to mitigation measures identified in the PEIR, as appropriate, including new mitigation measures that may be identified as being necessary through potential future CEQA review. This section provides more information about the process by which the District will determine whether future activities are within the scope of the Program and the PEIR. The evaluation process for future activities is organized under two categories: chemical treatment and nonchemical treatment.

1.8.1.1 Future Chemical Treatments

All pesticides in current use have been evaluated in the PEIR (mostly under the Chemical Control Alternative), including the supporting Appendix B, Ecological and Human Health Assessment Report, along with a number of pesticides not currently in use but with the potential for use in the foreseeable future. A similar scenario occurs for herbicides. The herbicides most likely to be used are addressed under the Vegetation Management Alternative in this PEIR. Future formulations are likely to include ingredients already evaluated in this PEIR, as summarized below following the summary of the contents of Appendix B and materials that are exempt from USEPA reporting and use requirements.

1.8.1.2 Appendix B Summary and Exempt Materials

The PEIR's Appendix B reports on the evaluation of 42 pesticide (insecticides and herbicides) active ingredients and 4 adjuvants, for a total of 46 chemical ingredients used in 57 insecticides and 36 herbicides. An adjuvant is any compound that is added to an herbicide formulation or tank mix to facilitate the mixing,

application, or effectiveness of that herbicide. The actual pesticide formulations used by the District are listed by active ingredient in Table 6-1 (insecticides) and Table 6-2 (herbicides). The PEIR also considers materials such as PBO, which acts as a synergist. Synergists are chemicals that primarily enhance the pesticidal properties of other active ingredients, such as pyrethrins and synthetic pyrethroids. No pesticide products contain only PBO.

Most chemicals produced for general or specialized uses are subject to a rigorous suite of dozens of laboratory and field tests to evaluate the relative toxicity of the ingredient(s) in the product proposed for use. As a result of the testing, the chemical is given one of four USEPA toxicity categories ranging from highly toxic to practically nontoxic (Category I - *highly toxic and severely irritating*; Category II - *moderately toxic and moderately irritating;* Category III - *slightly toxic and slightly irritating*; and Category IV - *practically nontoxic and not an irritant*). The tests used to develop these categories are designed to address potential toxicity to humans, but also to address the potential toxicity to nontarget aquatic and terrestrial species. Table 1-3 presents the USEPA toxicity categories for human health risk assessments.

Table 1-3 USEPA Toxicity Categories

Toxicity Study	Category I High Toxicity	Category II Moderate Toxicity	Category III Low Toxicity	Category IV Very Low Toxicity
Acute Oral	Up to and including 50 mg/kg	> 50 thru 500 mg/kg	> 500 thru 5,000 mg/kg	> 5,000 mg/kg
Acute Dermal	Up to and including 200 mg/kg	> 200 thru 2,000 mg/kg	> 2,000 thru 5,000 mg/kg	> 5,000 mg/kg
Acute Inhalation	Up to and including 0.05 mg/L	> 0.05 thru 0.5 mg/L	> 0.5 thru 2 mg/L	> 2 mg/L
Eye Irritation	Corrosive (Irreversible destruction of ocular tissue) or corneal involvement or irritation persisting for more than 21 days	Corneal involvement or irritation clearing in 8 to 21 days	Corneal involvement or irritation clearing in 7 days or less	Minimal effects clearing in less than 24 hours
Skin Irritation	Corrosive (tissue destruction into the dermis and/or scarring)	Severe irritation at 72 hours (severe erythema or edema)	Moderate irritation at 72 hours (moderate erythema)	Mild or Slight irritation (no irritation or slight erythema)

Note:

kg" is the body weight in kilograms as a universal metric for a reference. The toxicity is a function of the milligrams per kilogram (mg/kg) of body weight that elicits the noted response.

mg/L = milligram(s) per liter

USEPA also maintains a list of exempt and partially exempt chemicals for which the Chemical Data Reporting (CDR) processing and use information is of "low current interest" and are listed in the USEPA CDR website and in the Federal Register at 40 Code of Federal Regulations [CFR] 711.6[b][2][iv]). Manufacturers of the chemicals in this category are exempt from reporting the processing and use information required and as defined by 40 CFR 711.15(b)(4).

The general category of exempt chemicals includes many culinary oils, specialized uses of common extracts of plants, and some chemicals consumed as food items, to name only a few. USEPA, at any time however, may amend the list of partially exempt chemicals on its own initiative or in response to a request from the public. The public may submit a petition to request that a chemical be added to or removed from the partial exemption.

1.8.1.3 Future Formulations

Future formulations are likely to be based on the existing active ingredients, adjuvants, surfactants, and synergists, and would be expected to have toxicity and potential effects similar to those reported in this PEIR. When considering a new pesticide formulation for use, the District will implement the following procedures to determine whether the information in this PEIR is applicable and sufficient to support the same conclusions on potential environmental impacts to human and ecological health or whether sufficiently different information identified that would mean additional evaluation and analysis under CEQA would be appropriate, prior to its inclusion in the District's IMMP.

1. Obtain the materials safety data sheets and laboratory test information on the new formulation or material from the company producing the product or from the appropriate federal or state regulatory agencies.
2. For the new formulation review, consider whether it is in the same toxicity hazard category as the active ingredients, adjuvants, and synergists addressed in this PEIR, or whether it has been classified as exempt by USEPA. The general toxicity hazard categories for humans, mammals, birds, fish, aquatic invertebrates, honeybees, and other receptors are found in Appendix B, Table 4-1 of the PEIR:
    a. Very Low
    b. Low
    c. Moderate
    d. High
    e. Nontoxic
3. If reported toxicity is similar to, or less than, the related formulation or material addressed in Appendix B, and the District does not have any evidence that the formulation or material would result in new significant impacts, or substantially more severe impacts, on human health and on ecological health that were not disclosed in the PEIR, then the District can reasonably proceed to make the finding that the information contained in the PEIR is sufficient to support a finding that no additional analysis under CEQA is required.
4. If the ingredients in the formulation have been classified as *Exempt* by USEPA, the District will independently review and evaluate the ingredients and product for efficacy and potential nontarget effects. If after this review, the evidence supports a finding that the new formulation or material will not have a new or substantially more severe significant effect than those included in the PEIR, the District can reasonably proceed to make the finding that no additional analysis under CEQA is required.
5. If the reported toxicity of the new formulation is greater than the reported toxicity in the PEIR for the similar formulation or material, leading to a conclusion that the use of the formulation by the District would result in new or substantially more severe significant impacts than those disclosed in the PEIR, then a subsequent PEIR would be prepared addressing the major revisions needed, or a supplemental PEIR would be prepared addressing any minor revisions needed, to adequately evaluate the new product for incorporation into the District's IMMP.
6. If the new formulation contains ingredients that were not addressed in Appendix B, then an analysis of toxicity hazard will be conducted. If reported toxicity is similar to, or less than, the materials addressed in Appendix B, then the process under Step 3 above would apply. If the new formulation's toxicity is greater than the reported toxicity in the PEIR for similar formulation or material, then Step 5 would apply.

1.8.2 Future Nonchemical Treatments

1.8.2.1 Future Nonchemical Treatments by the District

Activities that are not a continuation of present operations and maintenance activities and that are not within the scope of the activities specifically addressed in the PEIR, and that involve physical modification

of the environment or where special status plant and animal species could potentially be affected, ("future activities"), would be subject to the following evaluation procedures to determine whether CEQA compliance has been achieved through this PEIR. The steps outlined below would be contained in a "checklist" for use by District staff to document its evaluation of the future activity.

Prior to initiating treatment, the District will conduct the following review to:

> Determine size and location of area to be physically modified or treated to ensure it is within scope of the District's USACE, San Francisco Bay Conservation and Development Commission (BCDC), and California State Water Resources Control Board (SWRCB) permits. These permits require the preparation of annual work plans, and the USACE permit requires maps of the affected areas. The permits are issued after consultation with the appropriate resource agencies (such as CDFW and USFWS) and contain special conditions that address site-specific or species-specific considerations.

> Review request of another agency (e.g., flood control district, public works or sewerage agency) for physical control and/or vegetation management for coverage under existing permits of the agency or of the District.

> If the activity is outside of any of the District (or agency) work plans for that year, then is it considered an emergency action exempt from CEQA compliance. Emergency actions are not subject to CEQA requirements (CEQA Guidelines Section 15269), so no further CEQA analysis is required. A written evaluation/rationale will be provided in a staff report to District Board of Trustees.

> If an action is being carried out by a landowner or entity other than the District, and such entity requests that the District conduct such activities on their behalf, then the District will only consider doing so if the entity has satisfied all applicable legal requirements.[2]

> If action is not within the scope of the Program evaluated in the PEIR or exempt, then the landowner/land manager would prepare a CEQA Initial Study to determine what type of further environmental review is appropriate (e.g., PEIR addendum, negative declaration, mitigated negative declaration, or supplemental EIR).

As part of any further environmental review (Initial Study, EIR, etc.), the landowner/land manager will be required to identify any potential impacts to special status species, through the following steps:

> Check CNDDB, USFWS, and other databases and studies for the area to determine if special status species or their habitat is present.

> If suitable habitat is present, do surveys for special status species, as required.

> If a special status species is (are) present, evaluate whether the proposed mosquito management activity can be scheduled around the species' critical life-stage periods to avoid disturbance.

> If the proposed mosquito management activity cannot be scheduled around a special status species' critical life-stage periods and must be performed because of imminent threat to public or animal health from the mosquito species, confirm that the lowest impact effective mosquito management option is proposed for use.

> Engage in consultation with resource agencies.

[2] In these circumstances, the District's decision whether to act may be the only public agency decision if the requesting entity is a private party. In that event, if the District decides to act, it must comply with CEQA. The District may require landowners who request District assistance to pay for any necessary additional environmental work.

1.8.2.2 Future Nonchemical Treatments by Landowners/Managers

As part of its mission to protect public health, the District advises landowners and land management agencies about the need for mosquito abatement with regard to their projects or when mosquito issues become an issue on their lands. The District does not manage land directly, as a park district or a property owner would; rather, it provides advice to the land manager/property owner on how to minimize the production of mosquitoes, vectors of human disease and discomfort. The District derives its authority to proactively manage mosquito populations and protect public health from the Mosquito and Vector Control District Law (Health and Safety Code Sections 2000 et seq.). In enacting that law, the California Legislature recognized the importance to public health and the economy of active management of mosquitoes.

Notwithstanding this grant of power, the law does not mandate action by the District and provides that landowners and land managers ultimately are responsible for the abatement of mosquito populations that breed on their properties and affect public health. (Health & Safety Code, Section 2060.) The District may provide guidance for mosquito abatement activities to landowners. However, it will be the landowner's responsibility to determine and comply with all legal requirements necessary to perform the activity.[3] For nonchemical actions that could be taken by landowners/managers at the recommendation of the District, District staff will advise the landowner/manager to consult further with the appropriate city or county planning agency on whether the activity is within the scope of the Program and PEIR, or whether there is a need for further CEQA analysis. If the activity is outside the scope of the Program, it may be necessary for the landowner/manager to conduct a site-specific survey of special status species. Consultations with appropriate resource agencies on survey protocols and any necessary permits would be initiated by the landowner/manager prior to conducting the surveys. Because the District's Service Area contains both urban and nonurban properties adjacent to or in close proximity with wildlife management areas, the need for close coordination with the refuge managers/resource agencies is paramount for such future activities.

The landowner/land manager is responsible for environmental review of physical control/vegetation management site-specific activities such as those proposed for recent marsh restoration and enhancement projects.

In cases outside of the federal wildlife refuges, and where the landowner does not address the mosquito problem, the District is authorized to manage mosquito populations (Health and Safety Code Section 2040). The District can request inspection and abatement warrants, if needed, to access and inspect properties that may be breeding/have the potential to produce mosquitoes (Health and Safety Code Section 2053). Otherwise landowner permission to enter is sufficient for the District to enter the property to conduct abatement activity. For example, abandoned swimming pools require immediate attention; if the landowner fails to abate the problem, the District may act. Mosquito abatement activities are often located on private property in urbanized areas that are not expected to provide habitat for special status species. The District would conduct only the activities addressed in this PEIR. Abatement actions by the District on private property are subject to the BMPs and PEIR mitigation measures, as appropriate. For those activities that are on public property, including parks and open-space areas, or on nonurbanized/undeveloped or "open" private property, where potential exists to encounter habitat for special status species, the District will follow the BMPs and mitigation measures identified in the PEIR, with the assistance of the landowner and resource agencies wherever possible. The District engages in public education and outreach to advise the landowner on reduction and prevention of mosquito habitats (see Section 2.4 of this PEIR). For discussion of required permits to perform abatement activity (in riparian habitats for vegetation removal and dirt work, discharges of pesticides into waters of the United States), whether the site is on or off a refuge, see Section 2.8.1 of this PEIR.

[3] CEQA applies where there is a discretionary approval of a project by a public agency. If the District is merely advising, and not authorizing an action, its action is not subject to CEQA. However, projects requiring approval by another public agency would be subject to CEQA.

This Page Intentionally Left Blank