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15 Alternatives

CEQA Guidelines Section 15126.6(a) requires that a draft EIR must describe a reasonable range of alternatives to the project or project location that could feasibly attain most of the basic project objectives and would avoid or substantially lessen any of the significant environmental impacts of the proposed project. This chapter summarizes the analysis of alternatives for the Alameda County Mosquito Abatement District's IMMP. It is based on Appendix E, Alternatives Analysis Report.

15.1 Alternatives Analysis and Screening Process

The District undertakes mosquito control activities throughout its Program Area. As a part of the effort to control mosquitoes, vectors of disease and/or discomfort, the District may also engage in control for yellow jackets and noxious/invasive weeds (primarily to facilitate access to mosquito habitat and as a mosquito habitat source reduction measure).

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

The District has a well-defined process for selecting tools to be used in mosquito control. The District has evaluated a variety of tools for their effectiveness in meeting the objectives listed above. The criteria used for determining the feasibility or viability and ranking of reasonable tools are listed below:

> **Criterion 1.** The District uses known effective tools to manage mosquito species that have developed breeding populations in the state.

> **Criterion 2.** The District does not use experimental or hypothetically effective tools except on an experimental basis to compare with existing tools and to look for feasible tools with less impact or greater effectiveness than current Program alternatives.

> **Criterion 3.** Given equal efficacy and operational constraints, the District will use the least environmentally disruptive tool in its control Program.

15.2 Alternatives Considered but Eliminated

CEQA Guidelines Section 15126.6(c) requires that the draft EIR explain briefly why other alternatives were rejected. Appendix E describes the tools that were considered and then, subsequently, eliminated from further consideration for inclusion in the Proposed Program.

In summary, the District determined that of the 19 potential tools, the following 8 methods were not immediately available or viable for use in its IMMP: biological control pathogens (viruses), biological control (parasites), biological control plants, mass trapping, attract and kill, inundative releases, regulatory control, and repellents.

- *Biological Control Pathogens (viruses)* is deemed infeasible for mosquito and yellow jacket wasp control at present. This method is not commercially available in California, and currently has many efficacy-related issues.
- *Biological Control (parasites)* is deemed infeasible, as this method is not commercially available in California. Research on the use of parasites for mosquito control has also shown several limitations related to efficacy. Although the use of parasites as a means for managing vector populations shows promise, much work concerning their biology, cultivation, mass production, transport, and release remains to be done.
- *Biological Control Plants,* or carnivorous plants, whether terrestrial or aquatic, use a wide range of invertebrate prey and are not specific predators of mosquitoes. What little data exist indicates that carnivorous plants, especially terrestrial species, are inefficient for the control of mosquitoes and other invertebrate vectors.
- *Mass Trapping* is not considered by the District to be a practical, effective, reliable method of controlling mosquito populations. Operational difficulties exist in placing out and retrieving large numbers of traps for mosquitoes, the least of which are the volume of traps required, numbers of staff, amount of staff time, access, and travel necessary for this tool to be effective. Mass trapping of mosquitoes has proven to be both costly and, in most instances, ineffective. Mass trapping of yellow jackets also has a limited effect on the abatement of yellow jackets, with the traps sometimes becoming an attractive nuisance.
- *Attract and Kill* is not considered by the District to be a practical, effective, reliable, method of controlling vector populations. The technology for both mosquitoes and yellow jackets is limited, and effectiveness is either not obtained or is inconsistent. Nontarget insects can be impacted. The District is aware of one commercially available Attractive Toxic Sugar Bait (ATSB) product, Terminix® AllClear. The District still needs to operationally test this material, as well as other potential ATSBs, to determine those circumstances where their use may be effective while also having little or no nontarget species impacts.
- *Inundative Releases* of either sterilized or genetically altered mosquitoes, is not considered by the District to be a practical or a currently feasible method of controlling mosquito populations. Genetically modified vectors are still experimental. They are also not commercially available at this time. The use of any genetically altered organisms, even mosquitoes, may not be acceptable to the public.
- *Regulatory Control* is not considered feasible because adoption of regulations is lengthy, time intensive, expensive, and uncertain as to the regulatory outcome. This approach is not focused sufficiently on control of existing populations. Moreover, regulatory controls are dependent upon state and federal agencies to initiate and implement and, thus, this approach cannot assure that any project objectives would be achieved. Additionally, regulatory actions have the potential to create as well as eliminate additional mosquito habitats.
- *Repellents*, although effective for small-scale use by humans and animals, are not part of the overall Program control strategy because they merely displace the problem and do not reduce the mosquito population in an area. Repellents also require proper application, timely use, and discipline concerning their use to achieve optimal effectiveness. Unfortunately, the use of repellents does not guarantee the elimination of human-mosquito interactions and potential mosquito-borne disease transmission.

15.3 No Program

CEQA Guidelines Section 15126.6(a) requires analysis of a no project alternative in the draft EIR. No Project is defined as what would reasonably be expected to occur in the foreseeable future, based on current plans and consistent with available infrastructure and community services, if the project was not approved and implemented. For the District, the Proposed Program is to continue current nonchemical

and chemical treatment activities and to introduce similar pesticides to those currently in use if needed. The No Project/No Program condition assumes that the current activities would cease and result in a "do nothing" alternative going forward. Key assumptions for the future No Project Alternative are:

> Current regulatory controls would continue and expand as needed; however, the District would not engage in implementing any of these regulations concerning public health and management of vectors carrying potential diseases. For all practical purposes, the District's office would close. Public education and other outreach activities would cease along with the control activities.

> Private landowners would manage mosquito problems on private land without any state or federal oversight with pesticides approved for use. Households would use pesticides commonly available from retail outlets where permethrin and pyrethroids are common ingredients.

> In the absence of the District's IMMP, CDPH would not provide mosquito/vector "oversight" to local jurisdictions given lack of personnel, equipment, or funding.

The District would perform no surveillance, physical control, vegetation management, biological control, or chemical control activities within its Service Area or in adjacent jurisdictions. "Do nothing" means the District would cease to exist and not provide the services funded by local property taxes. It is assumed that CDPH would not be able to provide even limited mosquito management services at the local level. As a result, the vectors of human and animal disease and discomfort would be more numerous than under existing conditions, and proliferate such that outbreaks of disease and illness would occur more frequently. See Appendix E, (Section 4.2) for a more extensive discussion of No Program than presented herein with historical information going back to 1772. In comparison to existing conditions with the current Program fully implemented, the No Program Alternative would have the following environmental impacts:

> **Urban and Rural Land Uses:** No conflicts with local land regulations and no disruption to recreationists from temporary closures of trails or other park features would occur during chemical treatments. However, the increase in mosquitoes would impact the quality of the recreational experience and homeowners due to an increase in discomfort from biting mosquitoes. Biting insects can cause severe allergic reactions in sensitive individuals. Without control of saltmarsh mosquitoes, all land uses could be affected in nearby areas. These impacts are **potentially significant**.

> **Biological Resources – Aquatic:** In the absence of physical controls, including the draining of aquatic habitats, no impact would occur to aquatic special status species using those habitats if present. No conflicts with existing provisions of an HCP/NCCP would occur. It is assumed CDPH would not be able to employ chemical treatments to the same extent as the District. The mosquito adulticide naled would not be used for mosquito control. However, lack of IPM-based larval surveillance and control may lead to increased, non-IPM based use of adulticides by individuals and private contractors that could affect aquatic habitats. Ad-hoc larviciding by individuals using unregistered materials (e.g., bleach, oil) would cause substantial harm to biological resources including aquatic habitats. In short, **potentially significant** impacts to aquatic resources would occur under No Program.

> **Biological Resources – Terrestrial:** Under No Program, terrestrial resources in general would not be impacted significantly. The draining of aquatic habitats would not occur, resulting in creation of less terrestrial habitat. However, in the absence of organized mosquito control, unlicensed individuals may apply over-the-counter pesticides on their own, without training and potentially without adhering to label requirements. Furthermore, wildlife including birds would be subject to greater incidence of disease including WNV. The overall impact is **potentially significant** especially if sensitive species are affected.

> **Ecological Health:** Fewer herbicide and pesticide treatments by organized mosquito control agencies would be used to control mosquitoes under No Program. Indiscriminant use of aerosol foggers by the public may lead to increased pesticide resistance issues. In the absence of physical controls and

nonchemical vegetation management, it is possible that the habitat conditions would result in greater rates of infection of species involved in the transmission of the disease. Domesticated animals would suffer greater incidence of disease and discomfort. The potential exists for increased use of inappropriate or unregistered materials such as bleach, oil, gasoline, diesel fuel, etc., in an effort to deal with mosquitoes. Their use can cause significant environmental harm compared to materials applied in accordance with label requirements by trained, licensed professionals. Greater incidence of diseases, possible pesticide resistance, and environmental harm from inappropriate/unregistered materials would be **potentially significant** impacts.

> **Human Health:** In the absence of the District's IMMP, greater incidence of mosquito-borne disease and discomfort to people would occur in the Program Area.

- First, risk of human cases of mosquito-borne disease and mosquito interaction issues for humans, pets, and wildlife would increase. The San Francisco Bay Area has a well-documented history concerning human-mosquito interactions.
- Second, the lack of any form of coordinated surveillance reduces the ability of any agency to perform disease risk assessments and, therefore, predict potential outbreaks. Although mosquito-borne disease is not as prevalent as in other areas of the world, mosquito-borne pathogens are still present.
- Third, lack of coordinated surveillance increases the risk of emerging infectious diseases or invasive mosquito species going undetected until they have become established.
- Fourth, lack of public outreach results in less current information being available about mosquitoes and mosquito-borne disease risk reduction. This lack can lead to increased production of mosquitoes on private property as well as increased cases of mosquito-borne disease in humans, their pets, and livestock. Additionally, the increase in mosquito-human interactions would result in an increased risk of severe reactions to the bites of mosquitoes in sensitive and immunocompromised individuals.
- Fifth, in the absence of an organized mosquito control program, unlicensed individuals could begin applying over-the-counter pesticides on their own. Most of these individuals have little or no training in the proper and effective use of these materials, meaning a reasonable possibility exists of over-or under-application as well as the potential for creation of unrecognized resistance issues. This possibility is especially true for the indiscriminate use of aerosol foggers as well as concentrated pesticides that require mixing with water prior to application. Additionally, the health and well-being of sensitive individuals (e.g., asthmatics and chemically sensitive people) and their pets (especially birds and fish) could be affected by the unexpected drift of these pesticides into their yards, open windows, and neighborhood parks.

CDPH would not be able to replace all of the services the District currently provides or would provide under the Proposed Program. Lack of coordinated surveillance increases risk of emerging diseases or mosquitoes going undetected until already established in an area; it reduces disease risk assessments an outbreak predictions at the local level. Lack of public outreach leads to increased mosquito production on private property and less information being available to people about mosquito-borne disease reduction. Homeowners would resort to use of pesticides available to them, many of which are more toxic than the ones used by the District. This impact on human health is **potentially significant**.

> **Public Services and Hazard Response:** The greater use of over-the-counter pesticides could lead to greater improper disposal of the containers. There could also be a greater demand on emergency services due to improper use of pesticides resulting in accidental poisonings, exposures of asthmatics and chemically sensitive individuals, etc. A greater incidence of disease and discomfort would potentially increase the demand for emergency services in the Program Area, a **potentially significant** impact.

> **Water Resources:** Under No Program, use of chemical treatments, including the use of naled, would be reduced compared to existing conditions. **No impact** on surface and groundwater resources would occur.

> **Air Quality:** The District would cease mosquito control activities, resulting in no use of vehicles, equipment, or pesticides and herbicides. **No impact** on air quality would occur.

> **Greenhouse Gases and Climate Change:** The District would cease mosquito control activities, resulting in no use of vehicles, equipment, or pesticides and herbicides. However, increased mosquito populations may lead to reduced outdoor recreation, especially non-motorized recreation such as hiking and bicycling, and increased indoor recreation involving greater electricity usage for air conditioning and entertainment. A **less-than-significant** impact on GHG emissions would occur.

> **Noise:** The District would cease mosquito control activities, resulting in no use of vehicles, equipment, or pesticides and herbicides. **No impact** on noise would occur.

> **Economic Conditions:** A number of economic issues are associated with the No Program Alternative. Appendix E cites several sources of information on the cost of not having effective mosquito control in an area with key findings presented below:

- First, with increased human-mosquito interactions comes an increase in the number of cases of mosquito-borne disease. The short-term medical and lost workplace, school, and home time associated with illness can cost governments, businesses, families, and individuals upwards of many thousands of dollars.
- Second, increased mosquito populations can lead to reduced outdoor recreation activities by the public, resulting in increased usage of electricity for air conditioning and indoor entertainment. These increases could also lead to a reduction in revenues for recreational areas such as parks, campgrounds, marinas, golf courses, and other areas that depend on usage fees to help with their maintenance and staffing, not to mention the impacts on other aspects of tourism (food, lodging, gear purchases, and equipment rentals).
- Third, increased mosquito populations not only lead to increased levels of mosquito-borne disease but can also result in decreased property values. Property values form an essential part of the revenue stream for government services such as schools, police, fire, libraries, parks, and health and welfare programs.
- Fourth, the cost of hiring private contractors to provide mosquito control services on a site-specific basis can end up more costly than the costs associated with the current program (with economies of scale).

15.4 Alternatives to Reduce Significant Impacts

CEQA Guidelines Section 15126.6(b) also requires that a draft EIR identify alternatives that are capable of avoiding or substantially lessening the significant environmental effects of the proposed project, even if the alternative would impede to some degree the attainment of all of the project objectives or would be more costly.

Modifications to the Proposed Program could include the following “Reduced Program Alternatives” which would avoid some or most of the potentially significant impacts associated with the Proposed Program, depending on how reliance on the other alternatives (i.e., exclusion of some options) to achieve a similar level of control would be implemented.

15.4.1 Reduced Chemical Control Alternative

One potentially significant impact associated with the Proposed Program is an air quality impact associated with the Chemical Control Alternative. The Chemical Control Alternative could subject people

to objectionable odors. Impacts even with BMPs implemented could be **potentially significant but mitigable** (Impact AQ-25)**.** Certain VOCs found in some pesticides emit characteristic odors when they evaporate (volatilize) into air, even at very low concentrations well within safety limits. Pesticides currently used or proposed for future use emit phenols (e.g., lambda-cyhalothrin, deltamethrin, etofenprox, permethrin, or resmethrin). Materials such as Bti and the adulticides pyrethrin and permethrin have an odor. Due to limited applicability, small quantities of these types of substances are typically used. Nevertheless, the human sense of smell (olfactory system) is sensitive to these types of compounds as a warning mechanism, and some individuals are more sensitive than others. The Chemical Control Alternative as proposed would apply certain types of odorous treatments using hydraulic spraying and atomizing (fogging), which could result in drift of small droplets and gaseous vapors. Depending on atmospheric conditions (i.e., wind direction, wind speed, stability class), this drift could subject people to objectionable odors near a treatment area. Without site-specific information, it cannot be determined whether an objectionable odor may persist downwind of a particular treatment area; therefore, an application containing an odorous compound may impact an undefined number people for an undefined period of time. Several of the materials have been used in the current Program, and people have not complained about odors. However, it is possible that complaints could occur in the future despite public notification procedures about large-scale treatments.

One significant and unavoidable impact is the effect of naled on water resources. To reduce this impact the use of naled would have to be eliminated.

The Reduced Chemical Alternative Program would eliminate the options under the Chemical Control Alternative of using one or more of the pesticides with the greatest potential to subject people to objectionable odors: lambda-cyhalothrin, pyrethrin, permethrin, resmethrin, deltamethrin, etofenprox , naled, and Bti for control of mosquitoes and for control of yellow jacket wasps and it would eliminate the use of naled. The first option could result in greater use of other, less odorous chemicals and in greater amounts, and both options could have impacts on public health if these other chemical methods are not as effective for the specific treatment area due to mosquito resistance problems (see No Chemical Alternative below). All of these odorous pesticides can be used without significant impacts to public health or to other air quality parameters; but where people are located close to or within a chemical treatment area, the odor could be a problem for some persons even when the application is within product label specifications for wind speed and consistent with District BMPs.

The Reduced Chemical Control Alternative could be implemented consistent with the Program objectives as long as the area affected is not large scale and as long as other, less odorous chemical options are available for use and the mosquito population is not resistant to the remaining chemical options. Limiting the choices of materials that can be used to a few chemicals significantly increases the risks of mosquito resistance to the few products that are available for use. Sound IMM involves many tools, with many materials that being used, and using the most effective and least environmentally harmful.

For the other land use, biological, ecological health, human health, public services, air quality, GHGs, and noise environmental resources and issues, the impacts of the Reduced Chemical Control would be “no impact” or “less-than-significant impact,” consistent with the environmental impact evaluations provided in Chapters 3 through 12 for the Surveillance, Physical Control, Vegetation Management, and Chemical Control Alternatives. See Table 15-1 for the specific impact statements by resource and issue for all of these alternatives which would be applicable to a Reduced Chemical Control Alternative with the exception of Impact AQ-25 and WR-25 which would be less than significant. However, if the less odorous pesticides and the elimination of naled result in a less effective Program due to mosquito resistance issues, then the public health impacts from a less effective Program would be a greater incidence of mosquito-borne disease and discomfort to people in the Program Area than under the Proposed Program but not as much as would occur under No Program or the reduced Program with a No Chemical Control Alternative.

15.4.2 No Chemical Control Alternative

This alternative would exclude all of the pesticide and herbicide products associated with the Chemical Control and Vegetation Management Alternatives from the Proposed Program. It would rely solely on Surveillance, Physical Control, the nonchemical physical component of the Vegetation Management Alternative, and the Biological Control (mosquitofish) Alternative, along with ongoing public education. The issue is whether a Program made up only of these remaining alternatives would be effective and meet Program objectives and IMM principles.

An example of reliance on only nonchemical tools with public education is the approach the State of Texas took in 2012 to deal with a WNV outbreak.

> In Summer 2012, the Dallas-Fort Worth Metroplex experienced a severe WNV outbreak in which more than 1,868 confirmed cases of West Nile disease and 89 WNV-related deaths were reported. The analysis of mitigation efforts for the WNV outbreak in Texas suggested two lessons for improving public health system in preparation for future events: the need for (1) clear, comprehensive, uniform data systems that include mosquito data and (2) science-based triggers for spraying, as well as mutual assistance plans with spraying companies and among jurisdictions for times when spraying is necessary. (Harris County Public Health & Environmental Services 2012)

> Spraying larvicides and/or adulticides for mosquitoes was not part of Texas' routine protocol. Texas had not sprayed for mosquitoes in 43 years before the WNV outbreak. The WNV outbreak in Texas demonstrated the capacity for an epidemic to spread from one state to the entire country. Once the spraying was completed (2 applications), a 93 percent reduction in disease-carrying mosquitoes occurred, while areas that were not sprayed reported an increase. (Zhang 2012)

> In 2010, 2011, and 2012, Dallas County's health department did not purchase mosquito larvicides until July 30, 2012, following the CDC telling the department that Dallas was already at the highest possible risk level for WNV. To avoid outbreaks such as what occurred in Dallas, aggressive larviciding is an effective tool along with surveillance of dead birds. (Friedman 2012)

> Bandon Marsh National Wildlife Refuge (889 acres) protects the largest remaining tidal salt marsh within the Coquille River estuary in Oregon. The USFWS had restored an old hayfield back to tidal marsh by September 2011, with resultant mosquito production that resulted in an angry public with the mayor and a congressman getting involved. The USFWS now sprays for mosquitoes using Bti larvicides, methoprene and oil as a last resort.

These reports and others indicate that chemical control was required to combat an outbreak of mosquitoes (Oregon) and mosquitoes infected with WNV (Texas). Not letting mosquito populations get out of control due to inadequate surveillance and control measures is critical to avoidance of a large outbreak such as the one experienced in Texas in 2012. Consequently, a No Chemical Control Alternative would not be effective and not meet the District's Proposed Program objectives stated in Section 2.2.2. The No Chemical Control Alternative would not meet the principles of successful IVM. The impacts to public health would be as follows:

> **Human Health:** In the absence of the chemical control tools being included in the District's IMMP, greater incidence of mosquito-borne disease and discomfort to people would occur in the Program Area. A wide range of public health issues would occur with the No Chemical Control Alternative,

  - First, risk of human cases of mosquito-borne disease and mosquito interaction issues for humans, pets, and wildlife would increase. The San Francisco Bay Area has a well-documented history concerning human-mosquito interaction.

  - Second, increased production of mosquitoes would occur on private property adjacent to areas that previously were treated with pesticide (and herbicide) products as well as increased cases of mosquito-borne disease in humans, their pets, and livestock would. Additionally, the increase in mosquito-human

interactions would result in an increased risk of severe reactions to the bites and stings of mosquitoes, in sensitive and immunocompromised individuals.

- Third, in the absence of organized mosquito control programs using chemical controls and reduced effectiveness in controlling mosquitoes, unlicensed individuals could begin applying over-the-counter pesticides on their own. Most of these individuals have little or no training in the proper and effective use of these materials, meaning a reasonable possibility exists of over-or under-application as well as the potential for creation of unrecognized resistance issues. This possibility is especially true for the indiscriminate use of aerosol foggers as well as concentrated pesticides that require mixing with water prior to application. Additionally, the health and well-being of sensitive individuals (e.g., asthmatics and chemically sensitive people) and their pets (especially birds and fish) could be affected by the unexpected drift of these pesticides into their yards, open windows, and neighborhood parks.

This impact on human health is **potentially significant**.

15.5 Comparison of Alternatives

Table 15-1 presents a summary of all of the impacts associated with each Program Alternative and, therefore, the overall Program of all of the alternatives combined and the potential for objectionable odors to people where potentially significant impacts could occur.

> The Surveillance Alternative has the potential for less-than-significant impacts to recreational land uses, biological resources (aquatic and terrestrial), ecological health, air quality, GHGs, and noise. It has no impacts to land use regulations, human health, public services, and water resources.

> The Physical Control Alternative has the potential for less-than-significant impacts to recreational land uses, biological resources (aquatic and terrestrial), ecological health, human health, water resources, air quality, GHGs, and noise. It has no impacts to land use regulations and public services.

> The Vegetation Management Alternative has the potential for less-than-significant impacts to recreational land uses, aquatic and terrestrial biological resources, ecological health, human health, water resources, air quality, GHGs, and noise. It would have no impact to land use regulations and public services.

> The Biological Control Alternative has the potential for less-than-significant impacts to ecological health, water resources, air quality, GHGs, and noise. It has no impacts to land use, biological resources (aquatic and terrestrial), human health, public services.

> The Chemical Control Alternative has potentially significant impacts to surface water resources from the application of naled as an adulticide. Use of naled to combat potential pesticide resistance of adult mosquitoes to other adulticides is significant and unavoidable. Furthermore, there is the potential for subjecting people to objectionable odors depending on the formulation used and proximity of treatment locations to human activities, a significant impact that can be mitigated to less than significant.

Table 15-1 Summary of Program Alternative Impacts

Impact Statement	Surveillance	Physical Control	Vegetation Management	Biological Control	Chemical Control	Other Activities
3. Urban and Rural Land Uses						
Impact LU-1: Surveillance of mosquitoes would not appreciably impact the quantity and/or quality of recreational opportunities in the Program Area. This impact is **less than significant** and no mitigation is required.	LS	na	na	na	na	na
Impact LU-2: Surveillance of mosquitoes would not conflict with applicable land use regulations. **No impact** would occur.	N	na	na	na	na	na
Impact LU-3: Physical control of mosquito habitat would not appreciably impact the quantity and/or quality of recreational opportunities in the Program Area. This impact is **less than significant** and no mitigation is required.	na	LS	na	na	na	na
Impact LU-4: Physical control of mosquitoes would not conflict with applicable land use regulations. **No impact** would occur.	na	N	na	na	na	na
Impact LU-5: Vegetation management would not appreciably impact the quantity and/or quality of recreational opportunities in the Program Area. This impact is **less than significant** and no mitigation is required.	na	na	LS	na	na	na
Impact LU-6: Vegetation management would not conflict with applicable land use regulations. **No impact** would occur.	na	na	N	na	na	na
Impact LU-7: Biological control of mosquitoes would not appreciably impact the quantity and/or quality of recreational opportunities in the Program Area. **No impact** would occur**.**	na	na	na	N	na	na
Impact LU-8: Biological control of mosquitoes would not conflict with applicable land use regulations. **No impact** would occur.	na	na	na	N	na	na
Impact LU-9: Chemical application to control mosquitoes would impact recreational access and the quality of recreational opportunities in the Program Area. However, because these impacts would be isolated and short term, they are considered **less than significant** and no mitigation is required.	na	na	na	na	LS	na
Impact LU-10: The Chemical Control Alternative would not conflict with applicable land use regulations because state law preempts local ordinances. **No impact** would occur.	na	na	na	na	N	na

Table 15-1 Summary of Program Alternative Impacts

Impact Statement	Surveillance	Physical Control	Vegetation Management	Biological Control	Chemical Control	Other Activities
4. Biological Resources – Aquatic						
Impact AR-1. The Surveillance Alternative would have a **less-than-significant** impact either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW, NOAA Fisheries, or USFWS. This alternative would not directly affect these species, as described above. Most surveillance occurs along access routes that are already established, and would only be cleared periodically to maintain access, as necessary. Where new access routes are required they would have only a very small effect on habitat in areas where surveillance occurs. No mitigation is required.	LS	na	na	na	na	na
Impact AR-2. The Surveillance Alternative would have a **less-than-significant** impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS. Most surveillance occurs along access routes that are already established, and would only be cleared periodically to maintain access, as necessary. Where new access routes are required they would have only a very small effect on habitat in areas where surveillance occurs. No mitigation is required.	LS	na	na	na	na	na
Impact AR-3. The Surveillance Alternative would have a **less-than-significant** impact on federally protected wetlands as defined by Section 404 of the Clean Water Act, (including but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. Most surveillance occurs along access routes that are already established, and would only be cleared periodically to maintain access, as necessary. Where new access routes are required they would have only a very small effect on habitat in areas where surveillance occurs. No mitigation is required.	LS	na	na	na	na	na
Impact AR-4. The Surveillance Alternative would have **no impact** on the movement of any native resident or migratory fish or wildlife species. Nor would it impact any native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.	N	na	na	na	na	na
Impact AR-5. The Surveillance Alternative would have **no impact** on local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, as none have been identified.	N	na	na	na	na	na

Table 15-1 Summary of Program Alternative Impacts

Impact Statement	Surveillance	Physical Control	Vegetation Management	Biological Control	Chemical Control	Other Activities
Impact AR-6. The Surveillance Alternative have **no impact** on HCPs or NCCPs as **it** would not conflict with the provisions of any adopted HCP, NCCP, or other approved local, regional or state habitat conservation plan.	N	na	na	na	na	na
Impact AR-7. The Physical Control Alternative, with the BMPs identified in Table 4-6, would have a **less-than-significant** impact either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. Regular coordination with resource agencies, worker environmental awareness training, disturbance minimization measures, and application of habitat and species-specific BMPs as appropriate make it unlikely that this alternative would result in adverse effects to special status species. No mitigation is required.	na	LS	na	na	na	na
Impact AR-8. The Physical Control Alternative, with the BMPs identified in Table 4-6, would have a **less-than-significant** impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS. Very little physical control work would be conducted in riparian habitats or other sensitive natural communities. No mitigation is required.	na	LS	na	na	na	na
Impact AR-9. The Physical Control Alternative would have a **less-than-significant** impact on federally protected wetlands as defined by Section 404 of the Clean Water Act, (including but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. The Physical Control alternative would not reduce the quantity of this habitat, but simply improve circulation within the marsh. Only inactive channels would be filled to eliminate ponding. All work in wetlands would be subject to additional permitting by the U.S. Army Corps of Engineers, CDFW, BCDC, and the Regional Water Quality Control Board. No mitigation is required.	na	LS	na	na	na	na
Impact AR-10. The Physical Control Alternative would have **no impact** on the movement of any native resident or migratory fish or wildlife species. Nor would it impact any native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites. This alternative would likely benefit the movement of fish and other aquatic species, as it would deepen channels and improve flow.	na	N	na	na	na	na

Table 15-1 Summary of Program Alternative Impacts

Impact Statement	Surveillance	Physical Control	Vegetation Management	Biological Control	Chemical Control	Other Activities
Impact AR-11. The Physical Control Alternative would have **no impact** on local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, as none have been identified.	na	N	na	na	na	na
Impact AR-12. The Physical Control Alternative would have **no impact** on HCPs or NCCPs as it would not conflict with the provisions of any adopted HCP, NCCP, or other approved local, regional or state habitat conservation plan.	na	N	na	na	na	na
Impact AR-13. Physical control measures for other vectors would have **no impact** on aquatic habitats, native fish or aquatic invertebrates, or special status fish species.	na	N	na	na	na	na
Impact AR-14. The Vegetation Management Alternative, with the BMPs identified in Table 4-6, would have a **less-than-significant** impact either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW, NOAA Fisheries, or USFWS. This work would be conducted in coordination with land owners or land managers and resource agencies, and all necessary permits would be acquired before work was implemented. BMPs relating to worker environmental awareness training, disturbance minimization measures, and application of habitat and species-specific BMPs, as appropriate, make it unlikely that this alternative would result in adverse effects to special status species. No mitigation is required.	na	na	LS	na	na	na
Impact AR-15. The Vegetation Management Alternative, with the BMPs identified in Table 4-6, would have a **less-than-significant** impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS. Very little Vegetation Management work would be conducted in riparian habitats or other sensitive natural communities. No mitigation is required.	na	na	LS	na	na	na
Impact AR-16. The Vegetation Management Alternative would not result **in** the direct removal, filling, or hydrological interruption of federally protected wetlands as defined by Section 404 of the Clean Water Act, (including but not limited to, marsh, vernal pool, coastal, etc.). It may result in the removal of minor amounts of vegetation in these areas. As such, this alternative would have a have a **less-than-significant** impact on these resources. No mitigation is required.	na	na	LS	na	na	na

Table 15-1 Summary of Program Alternative Impacts

Impact Statement	Surveillance	Physical Control	Vegetation Management	Biological Control	Chemical Control	Other Activities
Impact AR-17. The Vegetation Management Alternative would have **no impact** on the movement of any native resident or migratory fish or wildlife species. Nor would it impact any native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.	na	na	N	na	na	na
Impact AR-18. The Vegetation Management Alternative would have **no impact** on local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, as none have been identified.	na	na	N	na	na	na
Impact AR-19. The Vegetation Management Alternative would have **no impact** on HCPs and NCCPs as it would not conflict with the provisions of any adopted HCP, NCCP, or other approved local, regional or state habitat conservation plan.	na	na	N	na	na	na
Impact AR-20. The Biological Control Alternative would have **no impact** either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS, as the use of this alternative would be confined to artificial environments that are not connected to natural environments where special status species occur.	na	na	na	N	na	na
Impact AR-21. The Biological Control Alternative, with the BMPs identified in Table 4-6, would have **no impact** on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS.	na	na	na	N	na	na
Impact AR-22. The Biological Control Alternative would have **no impact** on federally protected wetlands as defined by Section 404 of the Clean Water Act, (including but not limited to, marsh, vernal pool, coastal, etc.).	na	na	na	N	na	na
Impact AR-23. The Biological Control Alternative would have **no impact** on the movement of any native resident or migratory fish or wildlife species. Nor would it impact any native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.	na	na	na	N	na	na
Impact AR-24. The Biological Control Alternative would have **no impact** on local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, as none have been identified.	na	na	na	N	na	na

Table 15-1 Summary of Program Alternative Impacts

Impact Statement	Surveillance	Physical Control	Vegetation Management	Biological Control	Chemical Control	Other Activities
Impact AR-25. The Biological Control Alternative would have **no impact** on HCPs or NCCPs as it would not conflict with the provisions of any adopted HCP, NCCP, or other approved local, regional or state habitat conservation plan.	na	na	na	N	na	na
Impact AR-26. The Chemical Control Alternative, with the BMPs identified in Table 4-6, would have a **less-than-significant** impact either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. Non-persistent, chemicals proven to have low toxicity to non-target organisms would be applied in strict accordance with label directions, and BMPs, including those relating to worker environmental awareness training, disturbance minimization measures, and Applications of Pesticides, Surfactants, and/or Herbicides would be applied, as would appropriate habitat and species-specific BMPs. These practices make it highly unlikely that this alternative would result in adverse effects to special status species.	na	na	na	na	LS	na
Impact AR-27. The Chemical Control Alternative, with the BMPs identified in Table 4-6, would have a **no impact** on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS. The chemicals considered under the Chemical Control Alternative would not affect riparian habitats or other sensitive natural communities.	na	na	na	na	N	na
Impact AR-28. The Chemical Control Alternative would not result in the direct removal, filling, or hydrological interruption of federally protected wetlands as defined by Section 404 of the Clean Water Act, (including but not limited to, marsh, vernal pool, coastal, etc.). This alternative would have a have **no impact** on these resources.	na	na	na	na	N	na
Impact AR-29. The Chemical Control Alternative would have **no impact** on the movement of any native resident or migratory fish or wildlife species. Nor would it impact any native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.	na	na	na	na	N	na
Impact AR-30. The Chemical Control Alternative would have **no impact** on local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, as none have been identified.	na	na	na	na	N	na

Table 15-1 Summary of Program Alternative Impacts

Impact Statement	Surveillance	Physical Control	Vegetation Management	Biological Control	Chemical Control	Other Activities
Impact AR-31. The Chemical Control Alternative has **no impact** on HCPs or NCCPs as it would not conflict with the provisions of any adopted HCP, NCCP, or other approved local, regional or state habitat conservation plan.	na	na	na	na	N	na
5. Biological Resources – Terrestrial						
Impact TR-1. The Surveillance Alternative would have a **less-than-significant** impact either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. This alternative would not directly affect these species, as described above. Most surveillance occurs along access routes that are already established, and would only be cleared periodically to maintain access, as necessary. Where new access routes are required they would have only a very small effect on habitat in areas where surveillance occurs. No mitigation is required.	LS	na	na	na	na	na
Impact TR-2. The Surveillance Alternative would have a **less-than-significant** impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS. Most surveillance occurs along access routes that are already established, and would only be cleared periodically, during the fall to minimize impacts, to maintain access, as necessary. Where new access routes are required they would have only a very small effect on habitat in areas where surveillance occurs. No mitigation is required.	LS	na	na	na	na	na
Impact TR-3. The Surveillance Alternative would have a **less-than-significant** impact on federally protected wetlands as defined by CWA Section 404, (including but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. Most surveillance occurs along access routes that are already established, and would only be cleared periodically, during the fall to minimize impacts, to maintain access, as necessary. Where new access routes are required they would have only a very small effect on habitat in areas where surveillance occurs. No mitigation is required.	LS	na	na	na	na	na

Table 15-1 Summary of Program Alternative Impacts

Impact Statement	Surveillance	Physical Control	Vegetation Management	Biological Control	Chemical Control	Other Activities
Impact TR-4. The Surveillance Alternative would have **no impact** on the movement of any native resident or migratory fish or wildlife species. Nor would it impact any native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.	N	na	na	na	na	na
Impact TR-5. The Surveillance Alternative would have **no impact** on local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, as none have been identified.	N	na	na	na	na	na
Impact TR-6. The Surveillance Alternative would not conflict with the provisions of any adopted HCP, NCCP, or other approved local, regional or state habitat conservation plan. Therefore, **no impact** would occur.	N	na	na	na	na	na
Impact TR-7. The Physical Control Alternative, with the BMPs identified in Table 5-3, would have a **less-than-significant** impact either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. Regular coordination with resource agencies, worker environmental awareness training, disturbance minimization measures, and application of habitat and species-specific BMPs as appropriate make it unlikely that this alternative would result in adverse effects to special status species. No mitigation is required.	na	LS	na	na	na	na
Impact TR-8. The Physical Control Alternative, with the BMPs identified in Table 5-3, would have a **less-than-significant** impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS. Very little physical control work would be conducted in riparian habitats or other sensitive natural communities. No mitigation is required.	na	LS	na	na	na	na

Table 15-1 Summary of Program Alternative Impacts

Impact Statement	Surveillance	Physical Control	Vegetation Management	Biological Control	Chemical Control	Other Activities
Impact TR-9. The Physical Control Alternative would have a **less-than-significant** impact on federally protected wetlands as defined by CWA Section 404, (including but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. The Physical Control alternative would not reduce the quantity of this habitat, but simply improve circulation within the marsh. Only inactive channels would be filled to eliminate ponding. All work in wetlands would be subject to additional permitting by the USACE, CDFW, and RWQCB. No mitigation is required.	na	LS	na	na	na	na
Impact TR-10. The Physical Control Alternative would have **no impact** on the movement of any native resident or migratory fish or wildlife species. Nor would it impact any native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites. This alternative would likely benefit the movement of fish and other aquatic species, as it would deepen channels and improve flow.	na	N	na	na	na	na
Impact TR-11. The Physical Control Alternative would have **no impact** on local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, as none have been identified.	na	N	na	na	na	na
Impact TR-12. The Physical Control Alternative would not conflict with the provisions of any adopted HCP, NCCP, or other approved local, regional or state habitat conservation plan. Therefore, **no impact** would occur.	na	N	na	na	na	na
Impact TR-13. The Vegetation Management Alternative, with the BMPs identified in Table 5-3, would have a **less-than-significant** impact either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. This work would be conducted in coordination with landowners or land managers and resource agencies, and all necessary permits would be acquired before work was implemented. BMPs relating to worker environmental awareness training, disturbance minimization measures, and application of habitat and species-specific BMPs, as appropriate, make it unlikely that this alternative would result in adverse effects to special status species. No mitigation is required.	na	na	LS	na	na	na

Table 15-1 Summary of Program Alternative Impacts

Impact Statement	Surveillance	Physical Control	Vegetation Management	Biological Control	Chemical Control	Other Activities
Impact TR-14. The Vegetation Management Alternative, with the BMPs identified in Table 5-3, would have a **less-than-significant** impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS. Very little Vegetation Management work would be conducted in riparian habitats or other sensitive natural communities. No mitigation is required.	na	na	LS	na	na	na
Impact TR-15. The Vegetation Management Alternative would not result in the direct removal, filling, or hydrological interruption of federally protected wetlands as defined by CWA Section 404, (including but not limited to, marsh, vernal pool, coastal, etc.). It may result in the removal of minor amounts of vegetation in these areas. As such, this alternative would have a **less-than-significant** impact on these resources. No mitigation is required.	na	na	LS	na	na	na
Impact TR-16. The Vegetation Management Alternative would have **no impact** on the movement of any native resident or migratory fish or wildlife species. Nor would it impact any native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.	na	na	N	na	na	na
Impact TR-17. The Vegetation Management Alternative would have **no impact** on local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, as none have been identified.	na	na	N	na	na	na
Impact TR-18. The Vegetation Management Alternative would not conflict with the provisions of any adopted HCP, NCCP, or other approved local, regional or state habitat conservation plan. Therefore, **no impact** would occur.	na	na	N	na	na	na
Impact TR-19. The Biological Control Alternative would have **no impact** either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS, as the use of this alternative would be confined to artificial environments that are not connected to natural environments where special status species occur.	na	na	na	N	LS	na

Table 15-1 Summary of Program Alternative Impacts

Impact Statement	Surveillance	Physical Control	Vegetation Management	Biological Control	Chemical Control	Other Activities
Impact TR-20. The Biological Control Alternative, with the BMPs identified in Table 5-3, would have **no impact** on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS.	na	na	na	N	LS	na
Impact TR-21. The Biological Control Alternative would have **no impact** on federally protected wetlands as defined by CWA Section 404, (including but not limited to, marsh, vernal pool, coastal, etc.).	na	na	na	N	na	LS
Impact TR-22. The Biological Control Alternative would have **no impact** on the movement of any native resident or migratory fish or wildlife species. Nor would it impact any native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.	na	na	na	N	na	na
Impact TR-23. The Biological Control Alternative would have **no impact** on local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, as none have been identified.	na	na	na	N	na	na
Impact TR-24. The Biological Control Alternative would not conflict with the provisions of any adopted HCP, NCCP, or other approved local, regional or state habitat conservation plan. Therefore, **no impact** would occur.	na	na	na	N	na	na
Impact TR-25. The Chemical Control Alternative, with the BMPs identified in Table 5-3, would have a **less-than-significant** impact either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. Nonpersistent, chemicals proven to have low toxicity to nontarget organisms would be applied in strict accordance with label directions, and BMPs, including those relating to worker environmental awareness training, disturbance minimization measures, and Applications of Pesticides, Surfactants, and/or Herbicides would be applied, as would appropriate habitat and species-specific BMPs. These practices make it highly unlikely that this alternative would result in adverse effects to special status species. No mitigation is required.	na	na	na	na	LS	na

Table 15-1 Summary of Program Alternative Impacts

Impact Statement	Surveillance	Physical Control	Vegetation Management	Biological Control	Chemical Control	Other Activities
Impact TR-26. The Chemical Control Alternative, with the BMPs identified in Table 5-3, would have a **no impact** on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS. The chemicals considered under the Chemical Control alternative would not affect riparian habitats or other sensitive natural communities.	na	na	na	na	N	na
Impact TR-27. The Chemical Control Alternative would not result in the direct removal, filling, or hydrological interruption of federally protected wetlands as defined by CWA Section 404, (including but not limited to, marsh, vernal pool, coastal, etc.). This alternative would have **no impact** on these resources.	na	na	na	na	N	na
Impact TR-28. The Chemical Control Alternative would have **no impact** on the movement of any native resident or migratory fish or wildlife species. Nor would it impact any native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.	na	na	na	na	N	na
Impact TR-29. The Chemical Control Alternative would have **no impact** on local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, as none have been identified.	na	na	na	na	N	na
Impact TR-30. The Chemical Control Alternative would not conflict with the provisions of any adopted HCP, NCCP, or other approved local, regional or state habitat conservation plan. Therefore, **no impact** would occur.	na	na	na	na	N	na
6. Ecological Health						
Impact ECO-1: The Surveillance Alternative would have a **less-than-significant** impact on nontarget ecological receptors, including native or special-status plants and animals and mitigation is not required.	LS	na	na	na	na	na
Impact ECO-2: The Physical Control Alternative would have a **less-than-significant** impact to nontarget ecological receptors and mitigation is not required.	na	LS	na	na	na	na
Impact ECO-3: The employment of a nonherbicide Vegetation Management Alternative in the form of physical removal would result in a **less-than-significant** impact to nontarget ecological receptors and mitigation is not required.	na	na	LS	na	na	na

Table 15-1 Summary of Program Alternative Impacts

Impact Statement	Surveillance	Physical Control	Vegetation Management	Biological Control	Chemical Control	Other Activities
Impact ECO-4: The use of several of the herbicides would be result in a **less-than-significant** impact to nontarget ecological receptors and mitigation is not required.	na	na	LS	na	na	na
Impact ECO-5: The use of glyphosate would result in a **less-than-significant impact** to nontarget ecological receptors and mitigation is not required.	na	na	LS	na	na	na
Impact ECO-6: The use of adjuvants would result in a **less-than-significant** impact to nontarget ecological receptors and mitigation is not required.	na	na	LS	na	na	na
Impact ECO-7: The use of mosquitofish as a Biological Control Alternative would result in a **less-than-significant** impact to nontarget ecological receptors and mitigation is not required.	na	na	na	LS	na	na
Impact ECO-8: The use of the organophosphate temephos would result in a **less-than-significant** impact to nontarget ecological receptors and mitigation is not required.	na	na	na	na	LS	na
Impact ECO-9: The use of bacterial larvicides would result in a **less-than-significant** impact **to** nontarget ecological receptors and mitigation is not required.	na	na	na	na	LS	na
Impact ECO-10: The use of methoprene for mosquito larvae would result in a **less-than-significant** impact to nontarget ecological receptors and mitigation is not required.	na	na	na	na	LS	na
Impact ECO-11: The use of surfactants for the control of mosquito larvae would result in a **less-than-significant** impact to nontarget ecological receptors and mitigation is not required.	na	na	na	na	LS	na
Impact ECO-12: The use of pyrethrins for adult mosquitoes and yellow jacket wasps would result in a **less-than-significant** impact to nontarget ecological receptors including aquatic organisms and mitigation is not required.	na	na	na	na	LS	na
Impact ECO-13: The use of pyrethroids and pyrethroid-like compounds (e.g., resmethrin, permethrin, and etofenprox) for mosquitoes and yellow jacket wasps would result in a **less-than-significant** impact to nontarget ecological receptors and mitigation is not required.	na	na	na	na	LS	na

Table 15-1 Summary of Program Alternative Impacts

Impact Statement	Surveillance	Physical Control	Vegetation Management	Biological Control	Chemical Control	Other Activities
Impact ECO-14: The use of synergists (PBO) for mosquitoes and yellow jacket wasps would result in a **less-than-significant** impact to nontarget ecological receptors and mitigation is not required.	na	na	na	na	LS	na
Impact ECO-15: The use of the organophosphate naled would result in a **less-than-significant** impact to nontarget ecological receptors and mitigation is not required.	na	na	na	na	LS	na
Impact ECO-16: The use of lambda-cyhalothrin for yellow jacket wasps would result in a **less-than-significant** impact to nontarget ecological receptors and mitigation is not required.	na	na	na	na	LS	na
7. Human Health						
Impact HH-1: No impact would occur to human health from the use of the Surveillance Alternative.	N	na	na	na	Na	na
Impact HH-2: Impacts to human health from use of the Physical Control Alternative would be **less than significant** and mitigation is not required.	na	LS	na	na	Na	na
Impact HH-3: No impact would occur to human health from the nonherbicide Vegetation Management Alternative.	na	na	N	na	Na	na
Impact HH-4: Impacts to human health from the herbicides imazapyr, sulfometuron methyl, and triclopyr would be **less than significant** because the actual use and human exposure in the field is far less than tested in the laboratory and much higher volumes (exposure) would be needed to result in toxicity. Mitigation is not required.	na	na	LS	na	Na	na
Impact HH-5: Impacts to human health from the use of glyphosate would be **less than significant** and mitigation is not required.	na	na	LS	na	Na	na
Impact HH-6: Impacts to human health from the use of pesticide adjuvants would be **less than significant** and mitigation is not required.	na	na	LS	na	na	na
Impact HH-7: No impact would occur to human health from the use of mosquitofish.	na	na	na	N	na	na
Impact HH-8: No impact would occur to human health from the use of bacterial larvicides.	na	na	na	na	N	na

Table 15-1 Summary of Program Alternative Impacts

Impact Statement	Surveillance	Physical Control	Vegetation Management	Biological Control	Chemical Control	Other Activities
Impact HH-9: No impact would occur to human health from the use of the mosquito larvicide methoprene.	na	na	na	na	N	na
Impact HH-10: No impact would occur to human health from the use of surfactant larvicide.	na	na	na	na	N	na
Impact HH-11: Impacts to human health from the use of temephos would be **less than significant** and mitigation is not required.	na	na	na	na	LS	na
Impact HH-12: Impacts to human health from the use of pyrethrins would be **less than significant** and mitigation is not required**.**	na	na	na	na	LS	na
Impact HH-13: Impacts to human health from the use of pyrethroids and pyrethroid-like compounds as mosquito adulticides would be **less than significant** and mitigation is not required.	na	na	na	na	LS	na
Impact HH-14: Impacts to human health from the use of the synergist PBO in mosquito adulticides would be **less than significant** and mitigation is not required.	na	na	na	na	LS	na
Impact HH-15: Impacts to human health from the use of naled would be **less than significant** and mitigation is not required.	na	na	na	na	LS	na
Impact HH-16: Impacts to human health from the use of lambda-cyhalothrin would be **less than significant** and mitigation is not required.	na	na	na	na	LS	na
8. Public Services and Hazard Response						
Impact PSH-1: Surveillance activities would not increase demand for police, fire, or health-care services. Therefore, **no impact** would occur.	N	na	na	na	na	na
Impact PSH-2: Surveillance activities would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Therefore, **no impact** would occur.	N	na	na	na	na	na
Impact PSH-3: Surveillance activities would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires. Therefore, **no impact** would occur.	N	na	na	na	na	na

Table 15-1 Summary of Program Alternative Impacts

Impact Statement	Surveillance	Physical Control	Vegetation Management	Biological Control	Chemical Control	Other Activities
Impact PSH-4: Physical control activities would not increase demand for police, fire, or health-care services. Therefore, **no impact** would occur.	na	N	na	na	na	na
Impact PSH-5: Physical control activities do not include the use of pesticides or herbicides; therefore, these activities would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Therefore, **no impact** would occur.	na	N	na	na	na	na
Impact PSH-6: Physical control activities would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires. Therefore, **no impact** would occur.	na	N	na	na	na	na
Impact PSH-7: Vegetation management activities would not increase demand for police, fire, or health-care services. Therefore, **no impact** would occur.	na	na	N	na	na	na
Impact PSH-8: Vegetation management activities would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Therefore, **no impact** would occur.	na	na	N	na	na	na
Impact PSH-9: Vegetation management activities would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires. Therefore, **no impact** would occur.	na	na	N	na	na	na
Impact PSH-10: Biological control activities would not increase demand for police, fire, or health-care services. Therefore, **no impact** would occur.	na	na	na	N	na	na
Impact PSH-11: Biological control activities would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Therefore, **no impact** would occur.	na	na	na	N	na	na

Table 15-1 Summary of Program Alternative Impacts

Impact Statement	Surveillance	Physical Control	Vegetation Management	Biological Control	Chemical Control	Other Activities
Impact PSH-12: Biological control activities would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires. Therefore, **no impact** would occur.	na	na	na	N	na	na
Impact PSH-13: Chemical control activities would not increase demand for police, fire, or health-care services. Therefore, **no impact** would occur.	na	na	na	na	N	na
Impact PSH-14: Chemical control ground larviciding and adulticiding activities would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Therefore, **no impact** would occur.	na	na	na	na	N	na
Impact PSH-15: Chemical control ground larviciding and adulticiding activities would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires. Therefore, **no impact** would occur.	na	na	na	na	N	na
Impact PSH-16: Chemical control (aerial application) activities would not increase demand for police, fire, or health-care services. Therefore, **no impact** would occur.	na	na	na	na	N	na
Impact PSH-17: Chemical control (aerial application) activities would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Therefore, **no impact** would occur.	na	na	na	na	N	na
Impact PSH-18: Chemical control (aerial application) activities would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires. Therefore, **no impact** would occur.	na	na	na	na	N	na
Impact PSH-19: Chemical control for yellow jackets would not increase demand for police, fire, or health-care services. Therefore, **no impact** would occur.	na	na	na	na	N	na

Table 15-1 Summary of Program Alternative Impacts

Impact Statement	Surveillance	Physical Control	Vegetation Management	Biological Control	Chemical Control	Other Activities
Impact PSH-20: Chemical control of yellow jackets would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Therefore, **no impact** would occur.	na	na	na	na	N	na
Impact PSH-21: Chemical control for yellow jackets would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires. Therefore, **no impact** would occur.	na	na	na	na	N	na
9. Water Resources						
Impact WR-1: The Surveillance Alternative collection devices would not contact nor interact with the environment. **No impact** would occur to surface water or groundwater.	N	na	na	na	na	na
Impact WR-2: The Physical Control Alternative's activities to modify water circulation, remove sediment, and maintain water control facilities to reduce habitat conditions for mosquito production would have a **less-than-significant** impact on water resources and no mitigation is required.	na	LS	na	na	na	na
Impact WR-3: Mechanical removal of vegetation from aquatic habitats would have a **less-than-significant** impact to surface water, **no impact** to groundwater resources and no mitigation is required.	na	na	LS, N	na	na	na
Impact WR-4: Application of the herbicides imazapyr, glyphosate, and sulfometuron methyl, would have a **less-than-significant** impact to surface water and groundwater resources and no mitigation is required.	na	na	LS	na	na	na
Impact WR-5: Application of the herbicide triclopyr would have a **less-than-significant** impact to surface water and groundwater resources and no mitigation is required.	na	na	LS	na	na	na
Impact WR-6: For APEs, application of these herbicides would have a **less-than-significant** impact to surface water and groundwater resources and no mitigation is required.	na	na	LS	na	na	na

Table 15-1 Summary of Program Alternative Impacts

Impact Statement	Surveillance	Physical Control	Vegetation Management	Biological Control	Chemical Control	Other Activities
Impact WR-7: Application of polydimethylsiloxanes, modified vegetable oils, and methylated seed oils would have a **less-than-significant** impact to surface water and groundwater resources and no mitigation is required.	na	na	LS	na	na	na
Impact WR-8: The Biological Control Alternative's production of mosquitofish limits wastewater discharges to the sanitary sewer or upland areas. Therefore, the production of mosquitofish would have a **less-than-significant** impact on surface water and groundwater resources and no mitigation is required.	na	na	na	LS	na	na
Impact WR-9: The Biological Control Alternative's use of mosquitofish is limited to man-made water features that are hydrologically-isolated from receiving waters. Therefore, the use of mosquitofish would have a **less-than-significant** impact on surface water and groundwater resources and no mitigation is required.	na	na	na	LS	na	na
Impact WR-10: Application of the biological agents Bs, Bti, and spinosad would have a **less-than-significant** impact to surface water and groundwater resources and no mitigation is required.	na	na	na	na	LS	na
Impact WR-11: Application of methoprene would have a **less-than-significant** impact to surface water and groundwater resources and no mitigation is required**.**	na	na	na	na	LS	na
Impact WR-12: Application of surfactant larvicides would have a **less-than-significant** impact to surface water and groundwater resources and no mitigation is required.	na	na	na	na	LS	na
Impact WR-13: Application of temephos would have a **less-than-significant** impact to surface water and groundwater resources and no mitigation is required.	na	na	na	na	LS	na
Impact WR-14: Application of the synergist PBO would have a **less-than-significant** impact to surface water and groundwater resources and no mitigation is required.	na	na	na	na	LS	na
Impact WR-15: Application of pyrethrins would have a **less-than-significant** impact to surface water and groundwater resources and no mitigation is required.	na	na	na	na	LS	na

Table 15-1 Summary of Program Alternative Impacts

Impact Statement	Surveillance	Physical Control	Vegetation Management	Biological Control	Chemical Control	Other Activities
Impact WR-16: Application of allethrins would have a **less-than-significant** impact to surface water and groundwater resources and no mitigation is required.	na	na	na	na	LS	na
Impact WR-17: Application of permethrin would have a **less-than-significant** impact to surface-water and groundwater resources and no mitigation is required**.**	na	na	na	na	LS	na
Impact WR-18: Application of phenothrin would have a **less-than-significant** impact to surface water and groundwater resources and no mitigation is required.	na	na	na	na	LS	na
Impact WR-19: Application of prallethrin would have a **less-than-significant** impact to surface water and groundwater resources and no mitigation is required.	na	na	na	na	LS	na
Impact WR-20: Application of resmethrin would have a **less-than-significant** impact to groundwater resources and no mitigation is required**.**	na	na	na	na	LS	na
Impact WR-21: Application of tetramethrin would have a **less-than-significant** impact to surface water and groundwater resources and no mitigation is required.	na	na	na	na	LS	na
Impact WR-22: Application of deltamethrin would have a **less-than-significant** impact to surface water and groundwater resources and no mitigation is required.	na	na	na	na	LS	na
Impact WR-23: Application of lambda-cyhalothrin would have a **less-than-significant** impact to surface water and groundwater resources and no mitigation is required.	na	na	na	na	LS	na
Impact WR-24: Application of etofenprox would have a **less-than-significant** impact to surface water and groundwater resources and no mitigation is required.	na	na	na	na	LS	na
Impact WR-25: Due to the toxicity of its breakdown product but its importance in the District's IMMP, the application of naled is considered a **significant and unavoidable** impact to surface and groundwater resources.	na	na	na	na	SU	na

Table 15-1 Summary of Program Alternative Impacts

Impact Statement	Surveillance	Physical Control	Vegetation Management	Biological Control	Chemical Control	Other Activities
10. Effects on Air Quality						
Impact AQ-1: Based on the general inclusion of Surveillance Alternative emissions in the SIP emission inventory and the compliance with applicable air regulations, the Surveillance Alternative would not conflict with applicable air quality plans. Impacts would be **less than significant** and no mitigation is required**.**	LS	na	na	na	na	na
Impact AQ-2: Based on estimated daily emissions for each criteria pollutant, the Surveillance Alternative would not violate an ambient air quality standard. Impacts would be **less than significant** and no mitigation is required.	LS	na	na	na	na	na
Impact AQ-3: Based on estimated daily emissions for each criteria pollutant, the Surveillance Alternative would not result in a cumulatively considerable increase of nonattainment pollutants. Impacts would be **less than significant** and no mitigation is required.	LS	na	na	na	na	na
Impact AQ-4: Based on the estimated daily emissions for each criteria pollutant, the Surveillance Alternative would not expose sensitive receptors to substantial pollutant concentrations. Impacts would be **less than significant** and no mitigation is required.	LS	na	na	na	na	na
Impact AQ-5: The Surveillance Alternative would not subject people to objectionable odors. **No impact** would occur.	N	na	na	na	na	na
Impact AQ-6: Based on the general inclusion of Physical Control Alternative emissions in the SIP emission inventory and the compliance with applicable air regulations, the Physical Control Alternative would not conflict with applicable air quality plans. Impacts would be **less than significant** and no mitigation is required.	na	LS	na	na	na	na
Impact AQ-7: Based on estimated daily emissions for each criteria pollutant, the Physical Control Alternative would not violate an ambient air quality standard. Impacts would be **less than significant** and no mitigation is required.	na	LS	na	na	na	na
Impact AQ-8: Based on estimated daily emissions for each criteria pollutant, the Physical Control Alternative would not result in a cumulatively considerable increase of nonattainment pollutants. Impacts would be **less than significant** and no mitigation is required.	na	LS	na	na	na	na

Table 15-1 Summary of Program Alternative Impacts

Impact Statement	Surveillance	Physical Control	Vegetation Management	Biological Control	Chemical Control	Other Activities
Impact AQ-9: Based on the estimated daily emissions for each criteria pollutant, the Physical Control Alternative would not expose sensitive receptors to substantial pollutant concentrations. Impacts would be **less than significant** and no mitigation is required.	na	LS	na	na	na	na
Impact AQ-10: The Physical Control Alternative would not subject people to objectionable odors. **No impact** would occur.	na	N	na	na	na	na
Impact AQ-11: Based on the general inclusion of Vegetation Management Alternative emissions in the SIP emission inventory and the compliance with applicable air regulations, the Vegetation Management would not conflict with applicable air quality plans. Impacts would be **less than significant** and no mitigation is required.	na	na	LS	na	na	na
Impact AQ-12: Based on estimated daily emissions for each criteria pollutant, the Vegetation Management Alternative would not violate an ambient air quality standard. Impacts would be **less than significant** and no mitigation is required.	na	na	LS	na	na	na
Impact AQ-13: Based on estimated daily emissions for each criteria pollutant, the Vegetation Management Alternative would not result in a cumulatively considerable increase of nonattainment pollutants. Impacts would be **less than significant** and no mitigation is required.	na	na	LS	na	na	na
Impact AQ-14: Based on the estimated daily emissions for each criteria pollutant, the Vegetation Management Alternative would not expose sensitive receptors to substantial pollutant concentrations. Impacts would be **less than significant** and no mitigation is required.	na	na	LS	na	na	na
Impact AQ-15: The Vegetation Management Alternative would not subject people to objectionable odors. **No impact** would occur.	na	na	N	na	na	na
Impact AQ-16: Based on the general inclusion of Biological Control Alternative emissions in the SIP emission inventory and the compliance with applicable air regulations, the Biological Control Alternative would not conflict with applicable air quality plans. Impacts would be **less than significant** and no mitigation is required.	na	na	na	LS	na	na
Impact AQ-17: Based on estimated daily emissions for each criteria pollutant, the Biological Control Alternative would not violate an ambient air quality standard. Impacts would be **less than significant** and no mitigation is required.	na	na	na	LS	na	na

Table 15-1 Summary of Program Alternative Impacts

Impact Statement	Surveillance	Physical Control	Vegetation Management	Biological Control	Chemical Control	Other Activities
Impact AQ-18: Based on estimated daily emissions for each criteria pollutant, the Biological Control Alternative would not result in a cumulatively considerable increase of nonattainment pollutants**.** Impacts would be **less than significant** and no mitigation is required.	na	na	na	LS	na	na
Impact AQ-19: Based on the estimated daily emissions for each criteria pollutant, the Biological Control Alternative would not expose sensitive receptors to substantial pollutant concentrations. Impacts would be **less than significant** and no mitigation is required.	na	na	na	LS	na	na
Impact AQ-20: The Biological Control Alternative would not subject people to objectionable odors. **No impact** would occur.	na	na	na	N	na	na
Impact AQ-21: Based on the general inclusion of Chemical Control Alternative emissions in the SIP emission inventory and the compliance with applicable air regulations, the Chemical Control Alternative would not conflict with applicable air quality plans. Impacts would be **less than significant** and no mitigation is required.	na	na	na	na	LS	na
Impact AQ-22: Based on estimated daily emissions for each criteria pollutant, the Chemical Control Alternative would not violate an ambient air quality standard. Impacts would be **less than significant** and no mitigation is required.	na	na	na	na	LS	na
Impact AQ-23: Based on estimated daily emissions for each criteria pollutant, the Chemical Control Alternative would not result in a cumulatively considerable increase of nonattainment pollutants**.** Impacts would be **less than significant** and no mitigation is required.	na	na	na	na	LS	na
Impact AQ-24: Based on the estimated daily emissions for each criteria pollutant, the Chemical Control Alternative would not expose sensitive receptors to substantial pollutant concentrations**.** Impacts would be **less than significant** and no mitigation is required.	na	na	na	na	LS	na
Impact AQ-25: The Chemical Control Alternative could subject people to objectionable odors. Impacts could be **potentially significant but mitigable.**	na	na	na	na	SM	na

Table 15-1 Summary of Program Alternative Impacts

Impact Statement	Surveillance	Physical Control	Vegetation Management	Biological Control	Chemical Control	Other Activities
Impact AQ-26: Based on the general inclusion of Other Activities emissions in the SIP emission inventory and the compliance with applicable air regulations, the Other Activities would not conflict with applicable air quality plans. Impacts would be **less than significant** and no mitigation is required.	na	na	na	na	na	LS
Impact AQ-27: Based on estimated daily emissions for each criteria pollutant, the Other Activities would not violate an ambient air quality standard. Impacts would be **less than significant** and no mitigation is required.	na	na	na	na	na	LS
Impact AQ-28: Based on estimated daily emissions for each criteria pollutant, the Other Activities would not result in a cumulatively considerable increase of nonattainment pollutants. Impacts would be **less than significant** and no mitigation is required.	na	na	na	na	na	LS
Impact AQ-29: Based on the estimated daily emissions for each criteria pollutant, the Other Activities would not expose sensitive receptors to substantial pollutant concentrations. Impacts would be **less than significant** and no mitigation is required.	na	na	na	na	na	LS
Impact AQ-30: The Other Activities would not subject people to objectionable odors. **No impact** would occur.	na	na	na	na	na	N
11. Effects on GHG						
Impact GHG-1: Based on estimated annual CO_2e emissions, the Surveillance Alternative would not result in a considerable amount of GHGs. Impacts would be **less than significant** and no mitigation is required.	LS	na	na	na	na	na
Impact GHG-2: Based on the general inclusion of Surveillance Alternative emissions in the local and statewide GHG emission inventories, the Surveillance Alternative would not conflict with applicable plans, policies, or regulations for reducing GHG emissions. Impacts would be **less than significant** and no mitigation is required.	LS	na	na	na	na	na
Impact GHG-3: Based on estimated annual CO_{2e} emissions, the Physical Control Alternative would not result in a considerable amount of GHGs. Impacts would be **less than significant** and no mitigation is required.	na	LS	na	na	na	na

Table 15-1 Summary of Program Alternative Impacts

Impact Statement	Surveillance	Physical Control	Vegetation Management	Biological Control	Chemical Control	Other Activities
Impact GHG-4: Based on the general inclusion of Physical Control Alternative emissions in the local and statewide GHG emission inventories, the Physical Control Alternative would not conflict with applicable plans, policies, or regulations for reducing GHG emissions. Impacts would be **less than significant** and no mitigation is required.	na	LS	na	na	na	na
Impact GHG-5: Based on estimated annual CO_{2e} emissions, the Vegetation Management Alternative would not result in a considerable amount of GHGs. Impacts would be **less than significant** and no mitigation is required.	na	na	LS	na	na	na
Impact GHG-6: Based on the general inclusion of Vegetation Management Alternative emissions in the local and statewide GHG emission inventories, the Vegetation Management Alternative would not conflict with applicable plans, policies, or regulations for reducing GHG emissions. Impacts would be **less than significant** and no mitigation is required.	na	na	LS	na	na	na
Impact GHG-7: Based on estimated annual CO_{2e} emissions, the Biological Control Alternative would not result in a considerable amount of GHGs. Impacts would be **less than significant** and no mitigation is required.	na	na	na	LS	na	na
Impact GHG-8: Based on the general inclusion of Biological Control Alternative emissions in the local and statewide GHG emission inventories, the Biological Control Alternative would not conflict with applicable plans, policies, or regulations for reducing GHG emissions. Impacts would be **less than significant** and no mitigation is required.	na	na	na	LS	na	na
Impact GHG-9: Based on estimated annual CO_{2e} emissions, the Chemical Control Alternative would not result in a considerable amount of GHGs. Impacts would be **less than significant** and no mitigation is required.	na	na	na	na	LS	na
Impact GHG-10: Based on the general inclusion of Chemical Control Alternative emissions in the local and statewide GHG emission inventories, the Chemical Control Alternative would not conflict with applicable plans, policies, or regulations for reducing GHG emissions. Impacts would be **less than significant** and no mitigation is required.	na	na	na	na	LS	na

Table 15-1 Summary of Program Alternative Impacts

Impact Statement	Surveillance	Physical Control	Vegetation Management	Biological Control	Chemical Control	Other Activities
Impact GHG-11: Based on estimated annual CO_{2e} emissions, the Other Activities would not result in a considerable amount of GHGs. Impacts would be **less than significant** and no mitigation is required.	na	na	na	na	na	LS
Impact GHG-12: Based on the general inclusion of Other Activities emissions in the local and statewide GHG emission inventories, the Other Activities would not conflict with applicable plans, policies, or regulations for reducing GHG emissions. Impacts would be **less than significant** and no mitigation is required.	na	na	na	na	na	LS
12. Effects on Noise						
Impact N-1: Use of equipment and vehicles would increase noise levels during operations, but this increase would not exceed regulatory thresholds. This impact is **less than significant** based on the frequency and duration of the activity, resulting noise levels, and compliance with BMPs. No mitigation is required.	LS	LS	LS	LS	LS	LS
Impact N-2: Use of equipment and vehicles would cause a temporary increase in noise levels during operations. This increase would not be substantial and, therefore, is **less than significant** based on the frequency and duration of the activity, resulting noise levels, comparability to noise resulting from existing activities, and implementation of BMPs. No mitigation is required.	LS	LS	LS	LS	LS	LS
Impact N-3: Aircraft use would temporarily increase noise levels during operations, but would not exceed regulatory thresholds. This impact is **less than significant** based on the frequency and duration of the activity and resulting noise levels. No mitigation is required.	na	na	na	na	LS	na
Impact N-4: Aircraft use would temporarily increase noise levels during operations, but this increase would not be substantial. This impact is **less than significant** based on the frequency and duration of the activity, resulting noise levels, and implementation of BMPs. No mitigation is required.	na	na	na	na	LS	na

LS = Less-than-significant impact
N = No impact
na = Not applicable
SM = Potentially significant but mitigable impact
SU = Significant and unavoidable impact

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