

Table of Contents

Summary	S-1
S.1 Background	S-1
S.1.1 Mosquito-Borne Diseases in Program Areas.....	S-1
S.1.2 Authority to Implement Vector Control	S-1
S.2 Program Objectives and Purpose	S-2
S.3 Public Involvement Summary.....	S-3
S.4 Areas of Known Public Environmental Concerns.....	S-3
S.5 Proposed Program Alternatives	S-4
S.5.1 Proposed Program.....	S-4
S.5.2 Alternatives Eliminated From Further Consideration	S-8
S.5.3 Environmentally Superior Alternative.....	S-8
S.6 Summary of Environmental Impacts and Mitigation Measures.....	S-9
1 Introduction	1-1
1.1 History and Background	1-1
1.1.1 Vector-Borne Diseases in Program Area.....	1-1
1.1.2 Potential for Human and Animal Illness	1-5
1.1.3 Legislative and Regulatory Actions.....	1-5
1.2 Program Objectives/Purpose and Need.....	1-7
1.2.1 Program Objectives.....	1-7
1.2.2 Purpose and Need	1-8
1.3 Alternatives Considered in this Programmatic Environmental Impact Report	1-8
1.4 Public Involvement	1-10
1.4.1 CEQA Public Scoping	1-10
1.4.2 Public Scoping for Programmatic Environmental Impact Report.....	1-10
1.4.3 Areas of Known Public Concern	1-11
1.4.4 Distribution of the Programmatic Environmental Impact Report.....	1-11
1.5 Environmental Concerns	1-14
1.5.1 Urban and Rural Land Uses	1-14
1.5.2 Biological Resources-Aquatic	1-14
1.5.3 Biological Resources-Terrestrial	1-15
1.5.4 Ecological Health Hazards.....	1-16
1.5.5 Human Health Hazards.....	1-17
1.5.6 Public Services and Hazard Response.....	1-17
1.5.7 Water Quality	1-17
1.5.8 Air Quality and Climate Change.....	1-18
1.5.9 Noise	1-18
1.6 Impacts Not Given in-Depth Evaluation in this Programmatic Environmental Impact Report.....	1-18
1.7 Report Organization and Significance Terminology.....	1-19
1.8 Use of This PEIR for Future CEQA Compliance	1-21
1.8.1 Future Activities.....	1-22

1.8.2	Future Nonchemical Treatments.....	1-24
2	Program Description.....	2-1
2.1	Program Area and Vicinity.....	2-1
2.2	Program Objectives	2-1
2.2.1	Purpose and Need	2-1
2.2.2	Program Objectives.....	2-2
2.3	Proposed Program	2-5
2.3.1	Surveillance Alternative	2-6
2.3.2	Physical Control Alternative	2-9
2.3.3	Vegetation Management Alternative.....	2-14
2.3.4	Biological Control Alternative	2-20
2.3.5	Chemical Control Alternative	2-21
2.4	Public Education.....	2-41
2.5	Emergency Activities	2-41
2.6	Vehicles and Equipment Used to implement the Program	2-41
2.6.1	Vehicles and Equipment for Ground Surveillance and Chemical Application.....	2-43
2.6.2	Boats for Water Surveillance and Application.....	2-44
2.6.3	Aerial Application	2-44
2.7	Program Alternatives	2-44
2.7.1	No Program Alternative	2-44
2.7.2	Alternatives Eliminated from Further Consideration	2-44
2.7.3	Other Alternatives	2-45
2.8	Other Required Permits and Agency Coordination	2-46
2.8.1	Required Permits	2-46
2.8.2	Agency Coordination.....	2-48
2.9	Best Management Practices	2-48
2.9.1	District Program BMPs.....	2-48
2.9.2	Other BMPs for Mosquito Control.....	2-50
3	Urban and Rural Land Uses.....	3-1
3.1	Environmental Setting	3-1
3.1.1	Overview of Urban and Rural Land Use	3-1
3.1.2	Public Lands.....	3-2
3.1.3	Regulatory Setting.....	3-3
3.2	Environmental Impacts and Mitigation Measures	3-4
3.2.1	Evaluation Concerns and Criteria	3-4
3.2.2	Evaluation Methods and Assumptions.....	3-5
3.2.3	Surveillance Alternative	3-5
3.2.4	Physical Control Alternative	3-6
3.2.5	Vegetation Management Alternative.....	3-6
3.2.6	Biological Control Alternative	3-7
3.2.7	Chemical Control Alternative	3-7
3.2.8	Cumulative Impacts.....	3-8
3.2.9	Environmental Impacts Summary.....	3-8

3.2.10	Mitigation and Monitoring	3-10
4	Biological Resources – Aquatic	4-1
4.1	Environmental Setting	4-1
4.1.1	Aquatic Resources within the Program Area	4-1
4.1.2	Special Status Species	4-5
4.1.3	Regulatory Setting.....	4-26
4.1.4	Habitat Conservation Plans and Natural Community Conservation Plans	4-31
4.2	Environmental Impacts and Mitigation Measures	4-36
4.2.1	Evaluation Concerns and Criteria	4-37
4.2.2	Evaluation Methods and Assumptions.....	4-38
4.2.3	Surveillance Alternative	4-52
4.2.4	Physical Control Alternative	4-55
4.2.5	Vegetation Management Alternative.....	4-60
4.2.6	Biological Control Alternative	4-65
4.2.7	Chemical Control Alternative	4-66
4.2.8	Cumulative Impacts.....	4-73
4.2.9	Environmental Impacts Summary.....	4-75
4.2.10	Mitigation and Monitoring.....	4-82
5	Biological Resources – Terrestrial.....	5-1
5.1	Environmental Setting	5-1
5.1.1	Terrestrial Resources within the Program Area.....	5-1
5.1.2	Special Status Species	5-5
5.1.3	Regulatory Environment	5-5
5.1.4	Habitat Conservation Plans and Natural Community Conservation Plans	5-10
5.2	Environmental Impacts and Mitigation Measures	5-10
5.2.1	Evaluation Concerns and Criteria	5-11
5.2.2	Evaluation Methods and Assumptions.....	5-13
5.2.3	Surveillance Alternative	5-29
5.2.4	Physical Control Alternative	5-31
5.2.5	Vegetation Management Alternative.....	5-37
5.2.6	Biological Control Alternative	5-45
5.2.7	Chemical Control Alternative	5-46
5.2.8	Cumulative Impacts.....	5-55
5.2.9	Environmental Impacts Summary.....	5-56
5.2.10	Mitigation and Monitoring.....	5-62
6	Ecological Health	6-1
6.1	Environmental Setting	6-1
6.1.1	Hazards, Toxicity, and Exposure in the Environmental Setting.....	6-1
6.1.2	Pesticides and the Environment	6-3
6.1.3	Regulatory Setting.....	6-4
6.2	Environmental Impacts and Mitigation Measures	6-7
6.2.1	Evaluation Concerns and Criteria	6-7
6.2.2	Evaluation Methods and Assumptions.....	6-10
6.2.3	Surveillance Alternative	6-14

6.2.4	Physical Control Alternative	6-15
6.2.5	Vegetation Management Alternative.....	6-16
6.2.6	Biological Control Alternative	6-19
6.2.7	Chemical Control Alternative	6-20
6.2.8	Cumulative Impacts.....	6-28
6.2.9	Environmental Impacts Summary.....	6-28
6.2.10	Mitigation and Monitoring.....	6-31
7	Human Health	7-1
7.1	Environmental Setting	7-1
7.1.1	Population Characteristics of the Program Area.....	7-1
7.1.2	Hazards, Toxicity, and Exposure in the Environmental Setting.....	7-2
7.1.3	Pesticides and the Environment	7-3
7.1.4	Regulatory Environment	7-4
7.2	Environmental Impacts and Mitigation Measures	7-7
7.2.1	Evaluation Concerns and Criteria	7-7
7.2.2	Evaluation Methods and Assumptions	7-9
7.2.3	Surveillance Alternative	7-12
7.2.4	Physical Control Alternative	7-12
7.2.5	Vegetation Management Alternative.....	7-12
7.2.6	Biological Control Alternative	7-15
7.2.7	Chemical Control Alternative	7-15
7.2.8	Cumulative Impacts.....	7-22
7.2.9	Environmental Impacts Summary.....	7-22
7.2.10	Mitigation and Monitoring.....	7-25
8	Public Services and Hazard Response	8-1
8.1	Environmental Setting	8-1
8.1.1	Overview of Public Services and Hazard Response	8-1
8.1.2	Regulatory Setting.....	8-2
8.2	Environmental Impacts and Mitigation Measures	8-3
8.2.1	Evaluation Concerns and Criteria	8-3
8.2.2	Evaluation Methods and Assumptions	8-5
8.2.3	Surveillance Alternative	8-6
8.2.4	Physical Control Alternative	8-7
8.2.5	Vegetation Management Alternative.....	8-8
8.2.6	Biological Control Alternative	8-9
8.2.7	Chemical Control Alternative	8-10
8.2.8	Cumulative Impacts.....	8-17
8.2.9	Environmental Impacts Summary.....	8-17
8.2.10	Mitigation and Monitoring.....	8-21
9	Water Resources	9-1
9.1	Environmental Setting	9-1
9.1.1	California's Hydrologic and Geomorphic Regions	9-1
9.1.2	Regulatory Setting.....	9-10
9.2	Environmental Impacts and Mitigation Measures	9-18

9.2.1	Evaluation Concerns and Criteria	9-18
9.2.2	Evaluation Methods and Assumptions.....	9-20
9.2.3	Surveillance Alternative	9-26
9.2.4	Physical Control Alternative	9-27
9.2.5	Vegetation Management Alternative.....	9-28
9.2.6	Biological Control Alternative	9-32
9.2.7	Chemical Control Alternative	9-32
9.2.8	Cumulative Impacts.....	9-40
9.2.9	Environmental Impacts Summary.....	9-40
9.2.10	Mitigation and Monitoring.....	9-44
10	Air Quality	10-1
10.1	Environmental Setting	10-1
10.1.1	Program Location.....	10-1
10.1.2	Meteorology and Climate	10-1
10.1.3	Criteria Air Pollutants and Potential Health Impacts	10-2
10.1.4	Relationship of Air Pollution to Asthma.....	10-4
10.1.5	Existing Air Quality	10-4
10.1.6	Regulatory Framework.....	10-7
10.2	Environmental Impacts and Mitigation Measures	10-13
10.2.1	Evaluation Concerns and Criteria	10-13
10.2.2	Evaluation Methods and Assumptions.....	10-16
10.2.3	Surveillance Alternative	10-18
10.2.4	Physical Control Alternative	10-20
10.2.5	Vegetation Management Alternative.....	10-22
10.2.6	Biological Control Alternative	10-23
10.2.7	Chemical Control Alternative	10-25
10.2.8	Cumulative Impacts.....	10-28
10.2.9	Environmental Impacts Summary.....	10-29
10.2.10	Mitigation and Monitoring.....	10-35
11	Greenhouse Gases and Climate Change.....	11-1
11.1	Environmental Setting	11-1
11.1.1	Global Climate Change	11-1
11.1.2	The Greenhouse Effect.....	11-1
11.1.3	Greenhouse Gases and Their Emissions	11-3
11.1.4	California Climate Impacts	11-7
11.1.5	Emissions Inventories	11-7
11.1.6	Potential for Mitigation	11-10
11.1.7	Regulatory Setting.....	11-10
11.2	Environmental Impacts and Mitigations Measures.....	11-24
11.2.1	Evaluation Concerns and Criteria	11-24
11.2.2	Evaluation Methods and Assumptions.....	11-24
11.2.3	Surveillance Alternative	11-26
11.2.4	Physical Control Alternative	11-26
11.2.5	Vegetation Management Alternative.....	11-27

11.2.6	Biological Control Alternative	11-28
11.2.7	Chemical Control Alternative	11-29
11.2.8	Other Activities	11-29
11.2.9	Cumulative Impacts.....	11-30
11.2.10	Environmental Impacts Summary.....	11-30
11.2.11	Mitigation and Monitoring.....	11-33
12	Noise	12-1
12.1	Environmental Setting	12-1
12.1.1	Overview of Environmental Sound.....	12-1
12.1.2	Community Noise Levels	12-2
12.1.3	Noise Level Acceptance Criteria.....	12-3
12.1.4	Sensitive Receptors	12-3
12.1.5	Regulatory Setting.....	12-3
12.2	Environmental Impacts and Mitigation Measures	12-8
12.2.1	Evaluation Concerns and Criteria	12-8
12.2.2	Evaluation Methods and Assumptions.....	12-21
12.2.3	Surveillance Alternative	12-22
12.2.4	Physical Control Alternative	12-24
12.2.5	Vegetation Management Alternative.....	12-25
12.2.6	Biological Control Alternative	12-26
12.2.7	Chemical Control Alternative	12-27
12.2.8	Other Activities	12-29
12.2.9	Cumulative Impacts.....	12-30
12.2.10	Environmental Impacts Summary.....	12-30
12.2.11	Mitigation and Monitoring.....	12-32
13	Cumulative Impacts	13-1
13.1	Urban and Rural Land Uses.....	13-3
13.2	Biological Resources – Aquatic.....	13-3
13.2.1	Regional Fisheries Trends	13-3
13.2.2	Program Alternatives.....	13-5
13.3	Biological Resources – Terrestrial.....	13-7
13.3.1	Effects on Pollinators	13-8
13.3.2	Vegetation Management.....	13-8
13.3.3	Chemical Control Alternative	13-9
13.4	Ecological Health.....	13-9
13.5	Human Health.....	13-13
13.6	Public Services and Hazard Response	13-15
13.7	Water Resources.....	13-15
13.8	Air Quality	13-16
13.9	Greenhouse Gases and Climate Change	13-16
13.10	Noise	13-17
13.11	Summary of Cumulative Impacts	13-17
14	Other Required Disclosures	14-1
14.1	Significant Unavoidable Impacts	14-1

14.1.1	No Program.....	14-1
14.1.2	Proposed Program Alternatives	14-1
14.2	Irreversible and Irretrievable Commitments of Resources	14-2
14.2.1	Energy Resources.....	14-2
14.2.2	Environmental Accidents	14-2
14.3	Growth-Inducing Impacts	14-3
14.4	Energy Requirements and Conservation Measures	14-3
15	Alternatives.....	15-1
15.1	Alternatives Analysis and Screening Process	15-1
15.2	Alternatives Considered but Eliminated	15-2
15.3	No Program	15-2
15.4	Alternatives to Reduce Significant Impacts.....	15-5
15.4.1	Reduced Chemical Control Alternative	15-5
15.4.2	No Chemical Control Alternative.....	15-6
15.4	Comparison of Alternatives	15-8
16	List of Preparers.....	16-1
16.1	Consultant Team	16-1
17	References.....	17-1

Appendices

- Appendix A Biological Resources Technical Report
- Appendix B Ecological and Human Health Risk Assessment
- Appendix C Air Quality and GHG Technical Report
- Appendix D Noise Analysis Technical Report
- Appendix E Alternatives Analysis Report

Tables

Table S-1	Summary Comparison of Impacts of Alternatives.....	S-9
Table S-2	Significant Impacts and Mitigation for Physical Control Alternative.....	S-12
Table S-3	Significant Impacts and Mitigation for Vegetation Management Alternative.....	S-14
Table S-4	Significant Impacts and Mitigation for Chemical Control Alternative	S-17
Table 1-1	Human West Nile Virus Case Summary, California 2003-2014	1-4
Table 1-2	Total Malaria Cases Reported in California, 2001-2011.....	1-4
Table 1-3	USEPA Toxicity Categories	1-23
Table 2-1	Herbicides and Adjuvants Potentially Used by the Alameda County Mosquito Abatement District for Weed Control	2-16
Table 2-2	Pathogens and Other Larvicides Alameda County Mosquito Abatement District Uses for Mosquito Abatement.....	2-25
Table 2-3	Adulticides Alameda County Mosquito Abatement District Uses for Mosquito Abatement*	2-35
Table 2-4	Pesticides Alameda County Mosquito Abatement District May Use for Yellow Jacket Wasp Abatement	2-40
Table 2-5	Alameda County Mosquito Abatement District Vehicles and Equipment	2-42
Table 3-1	Federal Lands in the Program Area, FY-2012 (acres).....	3-2
Table 3-2	Summary of Alternative Land Uses Impacts.....	3-9
Table 4-1	Aquatic and Wetland Habitat Types.....	4-4
Table 4-3	California Natural Diversity Database Occurrences for Plant Species in Alameda County Mosquito Abatement District and its Adjacent Program Area	4-6
Table 4-4	California Natural Diversity Database Occurrences for Special Status Wildlife Species in Alameda County Moquito Abatement District and its Adjacent Program Area.....	4-18
Table 4-5	Habitat Conservation Plans and Natural Community Conservation Plans in the Program Area.....	4-32
Table 4-6	Alameda County Mosquito Abatement District BMPs to Avoid / Minimize Environmental Impacts by Alternative.....	4-41
Table 4-7	Herbicide Toxicity ^{1,2} to Fish and Aquatic Invertebrates	4-61
Table 4-8	Chemical Classes and their Toxicity ¹ to fish and Nontarget Aquatic Invertebrates.....	4-67

Table 4-9	Summary of Alternative Biological Aquatic Impacts	4-76
Table 5-1	Terrestrial Habitat Types.....	4-76
Table 5-2	Terrestrial Habitat Types Potentially Affected by Each Program Alternative.....	5-2
Table 5-3	Alameda County Mosquito Abatement District BMPs to Avoid / Minimize Environmental Impacts by Alternative.....	5-16
Table 5-4	Herbicide Control Options for Mosquito Abatement as Discussed in Appendix B	5-38
Table 5-5	Adjuvants for Weed Abatement as Discussed in Appendix B	5-39
Table 5-6	Biological Control Options for Larval Mosquito Abatement as Discussed in Appendix B.....	5-45
Table 5-7	Chemical Control Active Ingredients and Adjuvants Identified in Appendix B.....	5-47
Table 5-8	Chemical Control Options for Larval Mosquito Abatement as Discussed in Appendix B.....	5-48
Table 5-9	Chemical Control Options for Adult Insect Abatement as Discussed in Appendix B.....	5-50
Table 5-10	Summary of Alternative Biological Resources – Terrestrial Impacts.....	5-57
Table 6-1	Pesticide Options for Insect Abatement.....	6-3
Table 6-2	Herbicide Options for Weed Abatement	6-4
Table 6-3	Herbicide Options for Mosquito/Weed Abatement.....	6-16
Table 6-4	Adjuvant Options for Insect Abatement/Weed Control	6-18
Table 6-5	Biological Control Agents Employed for Mosquito Larvae Abatement	6-19
Table 6-6	Chemicals Identified for Further Evaluation in Appendix B	6-20
Table 6-7	Chemical Options for Larval Mosquito Abatement	6-21
Table 6-8	Chemical Options for Adult Insect Abatement	6-24
Table 6-9	Summary of Alternative Ecological Health Impacts	6-29
Table 7-1	Population and Growth in the Program Area (1990–2010).....	7-1
Table 7-2	Pesticide Options for Insect Abatement.....	7-3
Table 7-3	Herbicide and Adjuvant Options for Weed Control	7-4
Table 7-4	Herbicides Potentially Used for Mosquito Abatement.....	7-13
Table 7-5	Adjuvants Potentially Used for Insect Abatement.....	7-14
Table 7-6	Active Ingredients Identified for Further Evaluation in Appendix B.....	7-16
Table 7-7	Chemical Options for Larval Mosquito Abatement	7-16
Table 7-8	Chemical Options for Adult Insect Abatement	7-18
Table 7-9	Summary of Alternative Human Health Impacts	7-23
Table 8-1	Summary of Alternative Public Services and Hazard Response Impacts	8-18
Table 9-1	Pesticide Concentrations in Surface Water and Sediment throughout the Program Area and Vicinity (1993 to 2012).....	9-9
Table 9-2	Section 303(d) Pesticide and Sediment Toxicity Limited Surface Waters.....	9-11
Table 9-3	List of County General Plan Pesticide and Water Quality Policies.....	9-18
Table 9-4	Summary of Alternative Water Resources Impacts	9-41

Table 10-1	Ambient Air Quality Standards.....	10-7
Table 10-2	Attainment Status Summary - Bay Area Region.....	10-9
Table 10-3	CEQA Significance Thresholds - BAAQMD (2010/2011) ¹	10-15
Table 10-4	ACMAD Selected Alternatives Applicability	10-17
Table 10-5	ACMAD Land Uses Associated with Selected Alternatives	10-17
Table 10-6	Estimated Annual Criteria Emissions for Selected Alternatives	10-18
Table 10-7	Estimated Peak Daily Criteria Emissions for Applicable Alternatives - Simultaneous Operations.....	10-18
Table 10-8	Estimated Highest Quarterly Criteria Emissions for Applicable Alternatives - Concurrent Operations.....	10-18
Table 10-9	Summary of Alternative Air Quality Impacts	10-30
Table 11-1	Standard Composition of Dry Air	11-3
Table 11-2	Typical GHG Contents of Common Fuels	11-6
Table 11-3	Greenhouse Gas Emissions Inventories - Gross Basis.....	11-8
Table 11-4	Bay Area GHG Emissions by Sector	11-8
Table 11-5	Bay Area GHG Emissions by County	11-9
Table 11-6	Mobile Sectors GHG Emissions by County	11-9
Table 11-7	Offroad Subsectors GHG Emissions by County	11-10
Table 11-8	Alameda County Mosquito Abatement District's Selected Alternatives Applicability	11-25
Table 11-9	Land Uses Associated with Selected Alternatives for Alameda County Mosquito Abatement District.....	11-25
Table 11-10	Estimated Annual GHG Emissions for Selected Alternatives for Alameda County Mosquito Abatement District	11-25
Table 11-11	Summary of Alternative Greenhouse Gas Impacts	11-31
Table 12-1	Typical Stationary and Mobile Noise Source Sound Levels in dBA	12-2
Table 12-2	USEPA-Designated Long-Term Noise Safety Levels.....	12-4
Table 12-3	Land Use Compatibility for Community Noise Environment.....	12-7
Table 12-4	Relevant Local Noise Standards in the Alameda County Mosquito Abatement District Service Area.....	12-10
Table 12-5	Surveillance Alternative—Primary Equipment Use, Noise Levels, and Land Use Types	12-22
Table 12-6	Physical Control Alternative—Primary Equipment Use, Noise Levels, and Land Use Types	12-24
Table 12-7	Biological Control –Primary Equipment Use, Noise Levels, and Land Use Types.....	12-26
Table 12-8	Chemical Control Alternative—Primary Equipment Use, Noise Levels, and Land Use Types	12-28
Table 12-9	Other Activities—Primary Equipment Use, Noise Levels, and Land Use Types.....	12-29
Table 12-10	Summary of Alternative Noise Impacts.....	12-31
Table 13-1	Historical Pesticide Use within the ACMAD Program Area	13-12

Table 13-2	Pesticide Use within the ACMAD Service Area, 2006, 2008, 2010.....	13-13
Table 15-1	Summary of Program Alternative Impacts	15-9
Table 16-1	Technical and Support Personnel.....	16-1

Figures

Figure 1-1	Western Equine Encephalitis Virus Neuroinvasive Disease Cases Reported by State, 1964-2010.....	1-3
Figure 1-2	St. Louis Encephalitis Virus Neuroinvasive Disease Cases Reported by State, 1964-2010	1-4
Figure 2-1	Alameda County Mosquito Abatement District	2-3
Figure 4-1	Aquatic Zoogeographic Provinces	4-2
Figure 4-2	Ecological Food Web Concept.....	4-52
Figure 5-1	Terrestrial Ecoregion Provinces.....	5-3
Figure 5-2	Ecological Food Web Concept.....	5-29
Figure 6-1	Ecological Food Web Concept.....	6-14
Figure 9-1	Program Area and California Hydrologic Regions with Major Waterbodies Alameda County Mosquito Abatement District	9-3

Acronyms

°C	degrees Celsius
°F	degrees Fahrenheit
µg/kg	microgram(s) per kilogram
µg/L	microgram(s) per liter
2,4-D	2,4-dichlorophenoxyacetic acid
AB	Assembly Bill
ACCPP	Alameda County Climate Protection Project
AGO	Autocidal Gravid Ovitrap
AHM	acutely hazardous materials
AMMs	Avoidance and Minimization Measures
APAP	Aquatic Pesticide Application Plan
APEs	alkylphenol ethoxylates
ATSB	attractive toxic sugar bait
ATCM	Airborne Toxic Control Measure
ATV	all-terrain vehicle
BAAQMD	Bay Area Air Quality Management District
Basin Plan	Water Quality Control Plan
BCDC	San Francisco Bay Conservation and Development Commission
BMP	best management practice
BP	boiling point
Bs	<i>Bacillus sphaericus</i>
BTEX	benzene, toluene, ethylbenzene, xylenes
Bti	<i>Bacillus thuringiensis israelensis</i>
BTU	British Thermal Units
C ₂ H ₃ Cl	vinyl chloride
CAA	Clean Air Act of 1970
CAAQS	California Ambient Air Quality Standards
CAL FIRE	California Department of Forestry and Fire Protection
Cal-EPA	California Environmental Protection Agency
CAP	Climate Action Plan
CARB	California Air Resources Board
cc	cubic centimeter(s)
CCD	colony collapse disorder
CCG	Contra Costa Goldfields

CCR	California Code of Regulations
CDC	Centers for Disease Control and Prevention
CDFA	California Department of Food and Agriculture
CDFW	California Department of Fish and Wildlife (formerly Fish and Game [CDFG])
CDPH	California Department of Public Health (formerly Health Services [CDHS])
CDPR	California Department of Pesticide Regulation
CDR	Chemical Data Reporting
CDWR	California Department of Water Resources
CEC	California Energy Commission
CEDEN	California Environmental Data Exchange Network
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CH ₄	methane
CLT	California Least Tern
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CO	carbon monoxide
CO ₂	carbon dioxide
CO _{2e}	carbon dioxide equivalent(s)
CTS	California Tiger Salamander
CVEC	Center for Vectorborne Diseases
CWA	Clean Water Act
dB	decibel(s)
dBA	A-weighted sound level/decibel(s)
DPM	diesel particulate matter
EBMUD	East Bay Municipal Utility District
EBRPD	East Bay Regional Parks District
ECAP	Energy and Climate Action Plan
ESA	Endangered Species Act
EVS	Encephalitis Vector Survey
FAA	Federal Aviation Administration
FFDCA	Federal Food, Drug, and Cosmetic Act
FHSZ	Fire Hazard Severity Zone
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
GHG	greenhouse gas
GPS	global positioning system

GWP	global warming potential
H ₂ S	hydrogen sulfide
HCP	Habitat Conservation Plan
ICLEI	International Council for Local Environmental Initiatives
IMM	Integrated Mosquito Management
IMMP	Integrated Mosquito Management Program
IPCC	Intergovernmental Panel on Climate Change
IPM	Integrated Pest Management
LC ₅₀	50 percent lethal concentration
LCFS	Low Carbon Fuel Standard
LD ₅₀	50 percent lethal dose
L _{dn}	day/night average sound level
L _{eq}	energy-equivalent sound/noise descriptor
LOAEL	lowest observed adverse effect level
LS	less than significant
MCLs	Maximum Contaminant Levels
MEI	Maximally Exposed Individual
mg/L	milligram(s) per liter
MLLW	Mean Lower Low Water
MMT	million metric tonne(s)
MRP	Monitoring and Reporting Program
MSDS	material safety data sheet
MT	metric tonne(s)
MTL	Mean Tide Level
MVCAC	Mosquito Vector Control Association of California
N	no impact
N ₂ O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NCCP	Natural Community Conservation Plan
ng/L	nanogram(s) per liter
NGVD	National Geodetic Vertical Datum
NMFS	National Marine Fisheries Service
NO	nitric oxide
NO ₂	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NOAEL	no observed adverse effect level
NOP	Notice of Preparation

NO _x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NWR	National Wildlife Refuges
O ₃	ozone
OP	organophosphate
PAH	polycyclic aromatic hydrocarbons
PAP	Pesticide Application Plan (NPDES)
Pb	lead
PBBB	Palmate-Bracted Bird's Beak
PBO	piperonyl butoxide
PCBs	polychlorinated biphenyls
PEIR	Programmatic Environmental Impact Report
PERP	Portable Equipment Registration Program
PHG	Public Health Goal
PM ₁₀	respirable particulate matter
PM _{2.5}	fine particulate matter
POD	pelagic organism decline
POM	particulate organic matter
ppb	part(s) per billion
ppm	part(s) per million
ppmv	part per million by volume
ppt	part(s) per trillion
PUP	Pesticide Use Proposal (USFWS)
RAMP	Rapid Analyte Measurement Platform
RHA	Rivers and Harbors Act
RIM	rotational impoundment management
ROC	reactive organic compound
ROG	reactive organic gas
RR	Ridgway's Rail
RT-PCR	reverse transcription polymerase chain reaction
RWQCBs	Regional Water Quality Control Boards
SB	Senate Bill
SBSPRP	South Bay Salt Pond Restoration Project
SF ₆	sulfur hexafluoride
SFBAAB	San Francisco Bay Area Air Basin
SFBRWQCB	San Francisco Bay Regional Water Quality Control Board
SIP	State Implementation Plan

SJVAPCD	San Joaquin Valley Air Pollution Control District
SLE	Saint Louis encephalitis
SM	potentially significant but mitigable
SMHM	Salt Marsh Harvest Mouse
SO ₂	sulfur dioxide
SO ₄	sulfates
SP	service population
SU	significant and unavoidable
SUP	Supplemental Use Proposal (USFWS)
SVOC	semivolatile organic compounds
SWRCB	California State Water Resources Control Board
TMDL	total maximum daily load
ULV	ultralow volume
USACE	US Army Corps of Engineers
USDA	US Department of Agriculture
USEPA	US Environmental Protection Agency
USFS	USDA Forest Service
USFWS	US Fish and Wildlife Service
VCMS	Vector Control Management System
VOC	volatile organic compound
VPTS	Vernal Pool Tadpole Shrimp
VVOC	very volatile organic compounds
WEE	western equine encephalomyelitis
WNV	West Nile virus
WSnPI	Western Snowy Plover