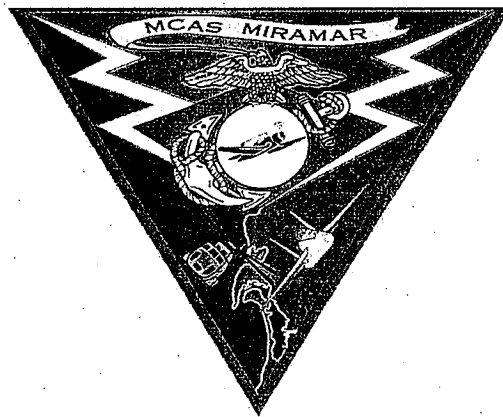


RECEIVED
FEB 24 2012
DIVISION OF WATER QUALITY

**MARINE CORPS AIR STATION MIRAMAR
ENVIRONMENTAL MANAGEMENT DEPARTMENT
ENGINEERING DIVISION**



2012 FEB 16 P 3:59

SAN DIEGO REGIONAL
WATER QUALITY
CONTROL BOARD

NOTICE OF INTENT
WATER QUALITY ORDER NO. 2011-0002-DWQ
GENERAL PERMIT NO. CAG 990004

**STATEWIDE NATIONAL POLLUTANT DISCHARGE
ELIMINATION SYSTEM (NPDES) PERMIT FOR BIOLOGICAL
AND RESIDUAL PESTICIDE DISCHARGES TO WATERS OF THE
UNITED STATES FROM VECTOR CONTROL APPLICATIONS**

FEBURARY 2012

P.O. BOX 452001
SAN DIEGO, CA 92145-2001

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A.Oliveira Time: 9:54 am



UNITED STATES MARINE CORPS

MARINE CORPS AIR STATION MIRAMAR

P.O. BOX 452001

SAN DIEGO CA 92145-2001

IN REPLY REFER TO:

5090 3652

16 FEB 2012

Mr. David Gibson
Executive Officer
California Regional Water Quality Control Board
San Diego Region
9174 Sky Park Court, Suite 100
San Diego, CA 92123-4340

Dear Mr. Gibson:

SUBJECT: NOTICE OF INTENT FOR WATER QUALITY ORDER NO. 2011-0002-DWQ, GENERAL PERMIT NO. CAG 99004, STATEWIDE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FOR BIOLOGICAL AND RESIDUAL PESTICIDE DISCHARGES TO WATERS OF THE UNITED STATES FROM VECTOR CONTROL APPLICATIONS

Please find as enclosure (1) our Notice of Intent (NOI) for Water Quality Order No. 2011-0002-DWQ, General Permit No. CAG 99004, Statewide NPDES Permit for Biological and Residual Pesticide Discharges to Waters of the United States from Vector Control Applications. Enclosure (2) is the Pesticide Application Plan as required by the subject permit. Enclosure (3) is a check in the amount of \$136.00 for the NOI application fee.

Our point of contact is Mr. Herb Baylon, Environmental Engineering Division Director, at (858) 577-6311.

Sincerely,

T. C. FRIES

Environmental Management Officer
By direction of the Commanding
Officer

Enclosure: (1) NOI, Water Quality Order No. 2011-0002-DWQ
(2) Pesticide Application Plan
(3) Check in the amount of \$136.00

ATTACHMENT G – NOTICE OF INTENT

**WATER QUALITY ORDER NO. 2011-0002-DWQ
GENERAL PERMIT NO. CAG 990004**

**STATEWIDE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT
FOR BIOLOGICAL AND RESIDUAL PESTICIDE DISCHARGES
TO WATERS OF THE UNITED STATES
FROM VECTOR CONTROL APPLICATIONS**

I. NOTICE OF INTENT STATUS (see Instructions)

Mark only one item <input checked="" type="checkbox"/> A. New Applicator <input type="checkbox"/> B. Change of Information: WDID# _____
<input type="checkbox"/> C. Change of ownership or responsibility: WDID# _____

II. DISCHARGER INFORMATION

A. Name Marine Corps Air Station Miramar			
B. Mailing Address Commanding Officer P.O. Box 4520001			
C. City San Diego	D. County San Diego	E. State CA	F. Zip Code 92145
G. Contact Person LtCol Thomas C Fries	H. Email address thomas.c.fries@usmc.mil	I. Title Env. Mgmt. Officer	J. Phone 858-577-1108

III. BILLING ADDRESS (Enter Information only if different from Section II above)

A. Name			
B. Mailing Address			
C. City	D. County	E. State	F. Zip Code
G. Email address	H. Title	I. Phone	

IV. RECEIVING WATER INFORMATION

A. Biological and residual pesticides discharge to (check all that apply)*:

1. Canals, ditches, or other constructed conveyance facilities owned and controlled by Discharger.
 Name of the conveyance system: Conveyances within the MCAS Miramar boundary

2. Canals, ditches, or other constructed conveyance facilities owned and controlled by an entity other than the Discharger.
 Owner's name: _____
Name of the conveyance system: _____

3. Directly to river, lake, creek, stream, bay, ocean, etc.
 Name of water body: _____

* A map showing the affected areas for items 1 to 3 above may be included.

B. Regional Water Quality Control Board(s) where application areas are located
(REGION 1, 2, 3, 4, 5, 6, 7, 8, or 9): Region 9
(List all regions where pesticide application is proposed.)

A map showing the locations of A1-A3 in each Regional Water Board shall be included.

V. PESTICIDE APPLICATION INFORMATION

A. Target Organisms: Vector Larvae Adult Vector

B. Pesticides Used: List name, active ingredients and, if known, degradation by-products
See the following tables in the MCAS Miramar PAP:
Table 3 planned pesticides for use by MCAS Miramar
Table 1 and Table 2 alternate pesticides for use by MCAS Miramar

C. Period of Application: Start Date January 1, 2012 End Date December 31, 2012

D. Types of Adjuvants Added by the Discharger: None

VI. PESTICIDES APPLICATION PLAN

A. Has a Pesticides Application Plan been prepared?*

Yes No

If not, when will it be prepared? _____

* A copy of the PAP shall be included with the NOI.

B. Is the applicator familiar with its contents?

Yes No

VII. NOTIFICATION

Have potentially affected governmental agencies been notified?

Yes No

* If yes, a copy of the notifications shall be attached to the NOI.

VIII. FEE

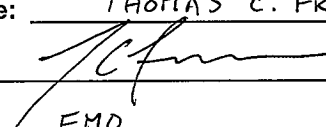
Have you included payment of the filing fee (for first-time enrollees only) with this submittal?

Yes NO NA

IX. CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment. Additionally, I certify that the provisions of the General Permit, including developing and implementing a monitoring program, will be complied with."

A. Printed Name: THOMAS C. FRIES

B. Signature: 

Date: 15 FEB 2012

C. Title: EMD

X. FOR STATE WATER BOARD USE ONLY

WDID:	Date NOI Received:	Date NOI Processed:
Case Handler's Initial:	Fee Amount Received: \$	Check #:

INSTRUCTIONS FOR COMPLETING THE NOI

**WATER QUALITY ORDER NO. 2011-0002-DWQ
GENERAL PERMIT NO. CAG 990004**

**STATEWIDE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT
FOR BIOLOGICAL AND RESIDUAL PESTICIDE DISCHARGES
TO WATERS OF THE UNITED STATES
FROM VECTOR CONTROL APPLICATIONS**

These instructions are intended to help you, the Discharger, to complete the Notice of Intent (NOI) form for the Statewide General National Pollutant Discharge Elimination System (NPDES) permit. **Please type or print clearly when completing the NOI form.** For any field, if more space is needed, submit a supplemental letter with the NOI.

Send the completed and signed form along with the filing fee and supporting documentation to the State Water Resources Control Board (State Water Board).

Section I – Notice of Intent Status

Indicate whether this request is for the first time coverage under this General Permit or a change of information for the discharge already covered under this General Permit. For a change of information or ownership, please supply the eleven-digit Waste Discharge Identification (WDID) number for the discharge.

Section II – Discharger Information

- A. Enter the name of the Discharger.
- B. Enter the street number and street name where correspondence should be sent (P.O. Box is acceptable).
- C. Enter the city that applies to the mailing address given.
- D. Enter the county that applies to the mailing address given.
- E. Enter the state that applies to the mailing address given.
- F. Enter the zip code that applies to the mailing address given.
- G. Enter the name (first and last) of the contact person.
- H. Enter the email address of the contact person.
- I. Enter the contact person's title.
- J. Enter the daytime telephone number of the contact person.

Section III – Billing Address

Enter the information **only** if it is different from Section II above.

- A. Enter the name (first and last) of the person who will be responsible for the billing.
- B. Enter the street number and street name where the billing should be sent (P.O. Box is acceptable).
- C. Enter the city that applies to the billing address.
- D. Enter the county that applies to the billing address.

- E. Enter the state that applies to the billing address.
- F. Enter the zip code that applies to the billing address.
- G. Enter the email address of the person responsible for billing.
- H. Enter the title of the person responsible for billing.
- I. Enter the daytime telephone number of the person responsible for billing.

Section IV – Receiving Water Information

- A. Check all boxes that apply. At least one box must be checked.
 - 1. Check this box if the application area is a canal, ditch, or other constructed conveyance system owned and controlled by the Discharger. Print the name of the conveyance system.
 - 2. Check this box if the application area is a canal, ditch, or other constructed conveyance system owned and controlled by an entity other than the Discharger. Print the name of the owner and the name of the conveyance system..
 - 3. Check this box if the application area is to the river, lake, creek, stream, bay, ocean, etc. Print the name of the water body.
- B. List all Regional Water Board numbers where pesticide application is proposed. Regional Water Board boundaries are defined in section 13200 of the California Water Code. The boundaries can also be found on our website at http://www.waterboards.ca.gov/waterboards_map.shtml. The numbers with corresponding Regional Water Board names are given below:

Regional Water Board Numbers	Regional Water Board Names
1	North Coast
2	San Francisco Bay
3	Central Coast
4	Los Angeles
5	Central Valley (Includes Sacramento, Fresno, Redding Offices)
6	Lahontan (South Lake Tahoe, Victorville offices)
7	Colorado River Basin
8	Santa Ana
9	San Diego

Section V – Pesticide Application Information

- A. Check the appropriate target organism.
- B. List the name and active ingredients of each pesticide to be used.
- C. List the start and end date of proposed pesticide application event.
- D. List the name(s) and type(s) of adjuvants added by the Discharger.

Section VI – Pesticides Application Plan

The Discharger must prepare and complete a Pesticides Application Plan (PAP). The minimum contents of PAP are specified in the permit under item VIII.C of the General Permit. The Discharger must ensure that its applicator is familiar with the PAP contents before pesticide application.

If a PAP is not complete at the time of application, enter the date by which it will be completed.

Section VII – Notification

Have you notified potentially affected governmental agencies, as required under item VIII.B of the General Permit?

If yes, a copy of the notifications shall be attached to the NOI.

Section VIII – Fee

The amount of fee shall be based on Section 2200(b)(6) of Title 23, California Code of Regulations. Fee information can be found at http://www.waterboards.ca.gov/resources/fees/docs/fy10_11_fee_schedule.pdf. Check the YES box if you have included payment of the fee. Check the NO box if you have not included this payment.

Section IX– Certification

- A. Print the name of the appropriate official. For a municipality, State, federal, or other public agency, this would be a principal executive officer, ranking elected official, or duly authorized representative. The principal executive officer of a federal agency includes the chief executive officer of the agency or the senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator of U.S. EPA).
- B. The person whose name is printed above must sign and date the NOI.
- C. Enter the title of the person signing the NOI.

Endangered Species Act

This General Permit does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 et. seq) or the Federal Endangered Species Act (16 U.S.C.A. sections 1531 et. seq). This General Permit requires compliance with effluent limitations, receiving water limitations, and other requirements to protect the beneficial uses of waters of the state. The Discharger is responsible for meeting all requirements of the applicable Endangered Species Act.

Additional information on federally-listed threatened or endangered species and federally-designated critical habitat is available from NMFS (www.nmfs.noaa.gov) for anadromous or marine species or FWS (www.fws.gov) for terrestrial or freshwater species.

Section 303(d) List

This General Permit does not authorize the discharge of biological and residual pesticides or their breakdown by-products to waters of the US that are impaired by the same pesticide active ingredient or any pesticide in the same chemical family included in permitted larvicides and adulticides listed in Attachments E and F. Impaired waters are those waters not meeting quality standards pursuant to Section 303(d) of the CWA. California impaired waters, as approved by the State Water Board, are listed on http://www.waterboards.ca.gov/water_issues/programs/tmdl/2010state_ir_reports/2010_combo303d.xls

PESTICIDE APPLICATION PLAN

For the Biological and Residual Pesticide Discharges to Surface Waters of the US by Marine Corps Air Station Miramar

**FOR WATER QUALITY ORDER NO. 2011-0002-DWQ STATEWIDE NATIONAL
POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FOR BIOLOGICAL
AND RESIDUAL PESTICIDE DISCHARGES TO WATERS OF THE OF THE UNITED STATES
FROM VECTOR CONTROL APPLICATIONS (GENERAL PERMIT) NO. CAG 990004**

January, 2012

Prepared for:

State Water Resources Control Board

San Diego Regional Water Quality Control Board (Region 9)

ENCLOSURE (2)

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1 INTRODUCTION

Marine Corps Air Station (MCAS) Miramar is a Department of Defense (DoD) installation with the mission to maintain and operate facilities, and provide services and material support to the 3rd Marine Aircraft Wing and other tenant organizations. The Station is within the jurisdiction of the San Diego Regional Water Quality Control Board (Region 9), and is seeking coverage under the General Permit No. CAG 990004 as "a public entity" that applies biological and residual pesticides for vector control in or near waters of the United States.

Pest, including vector, control is performed as a facilities maintenance function on MCAS Miramar. Mosquito surveillance and control may be performed by California State-licensed contract applicators or DoD-certified military or civilian applicators. DoD's pesticide applicator certification program is described in DoDM 4150.07, Volume 1, DoD Pest Management Training: The DoD Plan for the Certification of Pesticide Applicators. The Station utilizes Integrated Pest Management (IPM) in accordance with DoD policy in DoD Instruction (DoDI) 4150.07. The IPM program for mosquitoes on the installation consists of the following activities: 1) Surveillance for mosquitoes and mosquito habitats; 2) Source reduction to limit breeding by vectors, which includes management of vegetation, land, and water to minimize mosquito production; 3) Education and outreach efforts targeted toward installation personnel and residents; and 4) Application of pesticides to minimize mosquito populations and reduce the threat of vector-borne disease transmission to the human population on the Station as well as the surrounding communities.

The MCAS Miramar pest management program is organized and executed in accordance with Chief of Naval Operations Instruction (OPNAVINST) 6250.4B and Marine Corps Order (MCO) P5090.2A. An IPM Coordinator in the S-4 Installations and Logistics Directorate, Facilities Management coordinates and ensures regulatory compliance of all pest management activities. The coordinator ensures that pest management is performed in conformance with the installation Environmental Policy, under the guidelines of the installation pesticide SOP, and in compliance with all Federal, State, and local regulations. Performance assessment representatives (PAR) in Facilities Management ensure contract compliance of the Base Operating Service (BOS) pest control contract that includes mosquito control. The S-7 Environmental Management Division (EMD) ensures protection of the environment and manages endangered and threatened species and their habitats on the installation. S-4 and S-7 receive technical support from Naval Facilities Engineering Command (NAVFAC) Southwest (Code EV51) Regional Pest Management Consultant. The Naval Medical Center San Diego Branch Medical Clinic, Preventive Medicine on the Station is responsible for mosquito surveillance and coordinating surveillance activities with external public health agencies. Preventive Medicine personnel are also DoD-certified pesticide applicators and can conduct mosquito control if the need arises. They are supported by Navy Environmental and Preventive Medicine Unit FIVE at Naval Base San Diego which has emergency vector control capabilities. The pest management

program is described in detail in the MCAS Miramar Integrated Pest Management Plan (2005) that is currently under revision.

2 DESCRIPTION OF TARGET AREAS

2.1 LOCATION AND DESCRIPTION

Marine Corps Air Station (MCAS) Miramar is located approximately 13 miles north of downtown San Diego and 4 miles east of the Pacific Ocean (Figure 1). The MCAS Miramar property is about 12 miles long from east to west and about 4 miles from north to south encompassing 23,065 acres. State Route 52 and Interstate 805 (I-805) form the southern and western borders of the installation, respectively. I-15, State Route 163, and Kearny Villa Road bisect the Station into east and west. I-15 and Miramar Road are the main access roads to the Station. Parts of the installation are leased to other agencies and entities. This includes the following:

- Miramar Wholesale Nurseries on the west end of the Station at the end of Governor Drive which is leased to TrueGreen;

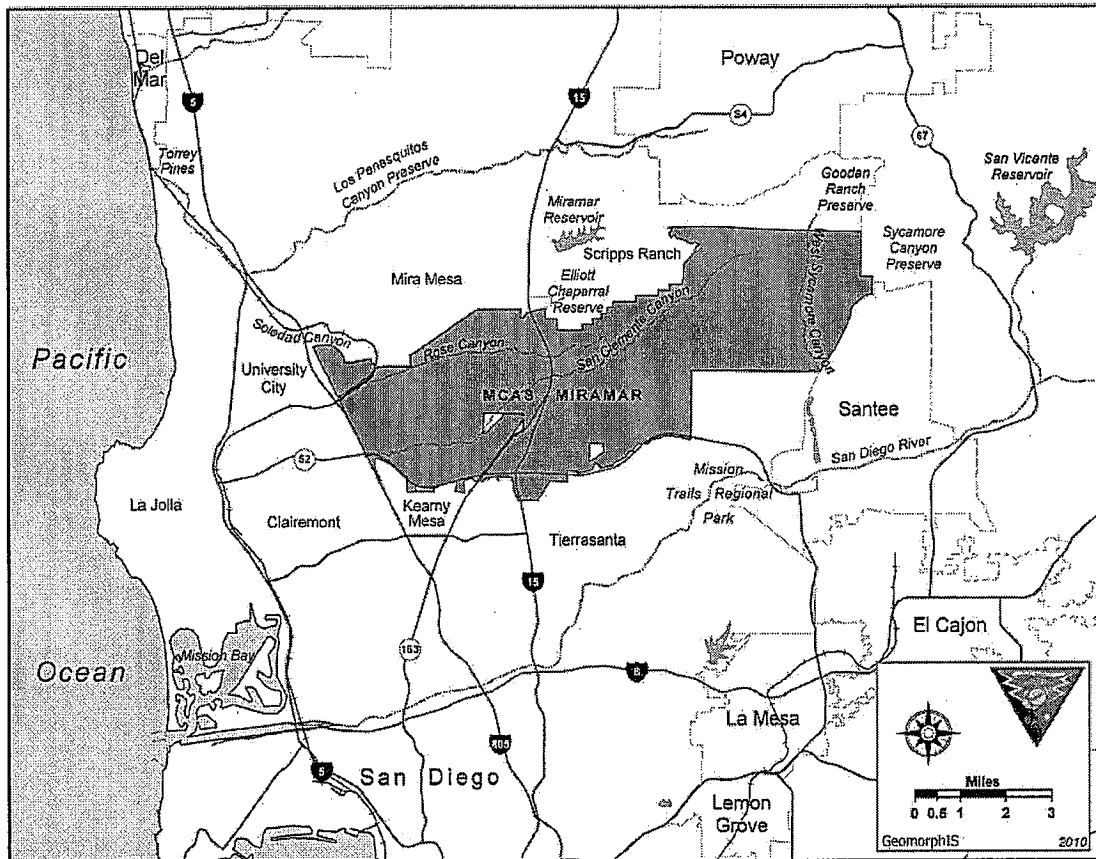


Figure 1. MCAS Miramar and surrounding area. (Reprinted from MCAS Miramar Integrated Natural Resources Management Plan, 2011-2015)

- The Miramar National Cemetery on the northwest corner that is under a land use agreement with the Veteran's Administration.
- The Kearny Villa Road and I-15 corridor that is a Cal Trans easement;
- The Miramar Landfill that is leased to the city of San Diego on the southwest corner north of Highway 52; and
- The San Diego Air National Guard Station south of Highway 52 on the southwest portion of the installation.
- The San Diego County Sheriff Training Facility east of I-15.

Communities in the vicinity of MCAS Miramar include the City of Poway, City of Santee, Mira Mesa, Scripps Ranch, Clairemont, and Kearny Mesa. The surrounding area receives mosquito control services from the County of San Diego Environmental Health Vector Control Program (VCP). The VCP also provides limited mosquito control on MCAS Miramar only at the Sheriff Training Facility.

2.2 APPLICATION SITES

MCAS Miramar lies within the jurisdiction of the San Diego Regional Water Quality Control Board, District 9. Pesticide treatments may occur in the Los Peñasquitos Watershed. The receiving water systems within MCAS Miramar subject to pesticide applications will include any navigable waters and adjoining tributaries and waters of the US contained within MCAS Miramar boundaries that breed mosquitoes to include flood control channels, basins, storm

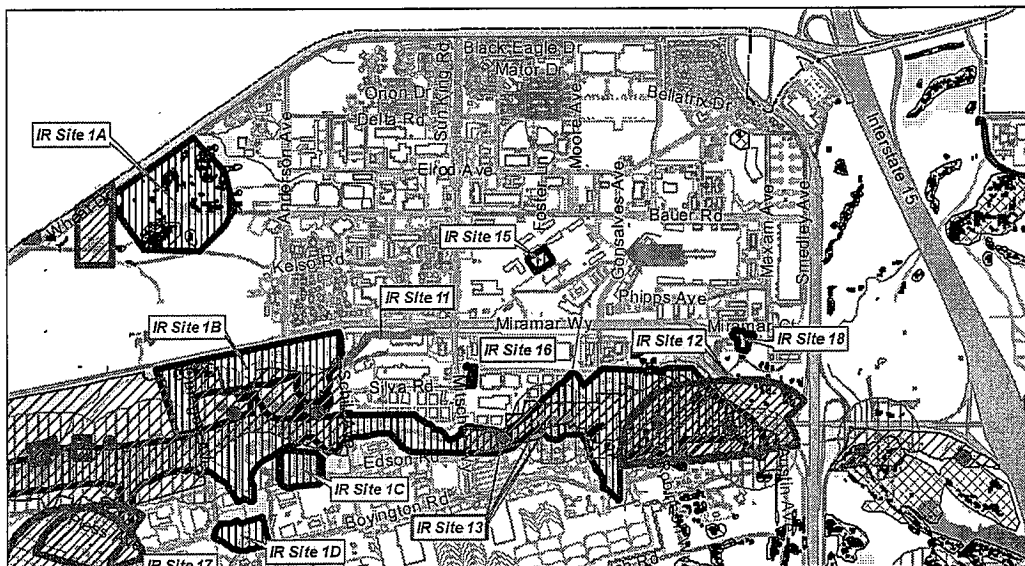


Figure 2. Potential "waters of the US" where pesticides may be applied are shown in blue. The orange arrow identifies the designated monitoring site. (Adapted from MCAS Miramar Sensitive Resources Map.)

drains, drainage ditches, ponds, wetlands, streams, and any other standing water. Surface waters flow into Rose Canyon and San Clemente Canyon. Waters of the US that will not be treated are vernal pools that serve as habitat for fairy shrimp that are endangered and threatened species.

2.3 ENVIRONMENTALLY-SENSITIVE AREAS

MCAS Miramar contains many environmentally-sensitive areas including endangered and threatened species habitats and waters of the US. These areas are shown on the installation's Sensitive Resources Map at http://www.miramar.usmc.mil/ems/environmental_programs/nat_resources/sensres_SEP_2010_96dpi_lowres_compressed.pdf. Federal endangered species habitats include: Willowy Monardella and Del Mar Manzanita (plants); California gnatcatcher and Least Bell's Vireo (birds); and San Diego Fairy Shrimp. Management and protection of these areas and other natural resources on MCAS Miramar are described in detail in the Station's Integrated Natural Resources Management Plan (INRMP).

3 PESTICIDE SELECTION FACTORS

West Nile virus (WNV) transmission occurs in San Diego County. In 2008, 35 human cases were reported from the County. Additionally, WNV was detected in 40 samples of mosquitoes collected in the County (http://www.westnile.ca.gov/case_counts.php?year=2008&option=print). Larval habitats for the primary WNV vectors, *Culex tarsalis* and *Culex pipiens quinquefasciatus*, occur on MCAS Miramar. Military personnel returning from countries where malaria is prevalent also pose a risk for local transmission of malaria if *Anopheles* spp. mosquitoes breed on the installation. Additionally, nuisance mosquitoes have an impact on military operations, morale, and quality of life for military personnel, families, employees, and visitors. Mosquitoes breeding on MCAS Miramar can also have a health and nuisance impact on the surrounding communities. Potential exposure to mosquito bites is high on the Station due to evening / night time recreational activities, military operations, and on-base housing. The primary means of preventing mosquitoes is by eliminating breeding sites and by controlling larvae in standing water. Although non-chemical control methods are available and considered first, the use of insecticides specific for the aquatic immature mosquito stages (larvae and pupae) may be the most effective and efficient means of control in permanent, semi-permanent and large breeding sources. Once mosquitoes become adults, the only methods to prevent mosquito biting are avoidance, personal protective measures, window and door screens, and mosquito adult insecticide (adulticide) applications. In the event of an outbreak of mosquito-borne disease, the use of insecticides is the only method available for reducing adult mosquito populations in order to reduce the risk of biting and disease transmission.

Treatment thresholds are based on the following criteria: mosquito species present, mosquito stage of development, nuisance or disease potential, mosquito abundance, flight range, proximity to populated areas, size of source, presence/absence of natural enemies or predators, and presence of sensitive/endangered species.

The selection of active ingredient and pesticide formulation for mosquito control is based on the following factors: 1) efficacy against the target species or life cycle stage, 2) pesticide resistance, 3) pesticide label requirements, 4) availability of pesticide and application equipment, 5) environmental conditions, 6) cost, and 7) toxicity to non-target species, including humans (California Mosquito-Borne Virus Surveillance and Response Plan, http://westnile.ca.gov/website/publications/2005_ca_mosq_response_plan.pdf).

4 TYPES OF PESTICIDE PRODUCTS

Tables 1 and 2 list the pesticides that may be used on MCAS Miramar for immature or adult mosquito control. This list is adapted from Attachments E and F of the NPDES General Permit No. CAG 990004.

Table 1. Pesticides for control of immature mosquitoes approved for use under the terms of General Permit No. CAG 990004 and methods of application.

Product Name	EPA Registration Number	Method of Application
Vectolex CG Biological Larvicide	73049-20	Conventional ground/hand
Vectolex WDG Biological Larvicide	73049-57	Conventional ground/hand
Vectolex WSP Biological Larvicide	73049-20	Conventional ground/hand
Vectobac-12 AS	73049-38	Conventional ground/hand
Aquabac 200G	62637-3	Conventional ground/hand
Teknar HP-D	73049-404	Conventional ground/hand/air
Vectobac-G Biological Mosquito Larvicide Granules	73049-10	Conventional ground/hand/air
Vectomax CG Biological Larvicide	73049-429	Conventional ground/hand/air
Vectomax WSP Biological Larvicide	73049-429	Conventional ground/hand/air
Vectomax G Biological Larvicide/Granules	73949-429	Conventional ground/hand
Zoecon Altosid Pellets	2724-448	Conventional ground/hand/air
Zoecon Altosid Pellets	2724-375	Conventional ground/hand/air
Zoecon Altosid Liquid Larvicide Mosquito Growth Regulator	2724-392	Conventional ground/hand/air
Zoecon Altosid XR Entended Residual Briquets	2724-421	Conventional ground/hand
Zoecon Altosid Liquid Larvicide Concentrate	2724-446	Conventional ground/hand

Product Name	EPA Registration Number	Method of Application
Zoecon Altosid XR-G	2724-451	Conventional ground/hand
Zoecon Altosid SBG Single Brood Granule	2724-489	Conventional ground/hand
Mosquito Larvicide GB-1111	8329-72	Conventional ground/hand
BVA 2 Mosquito Larvicide Oil	70589-1	Conventional ground/hand
BVA Spray 13	55206-2	Conventional ground/hand
Agnique MMF Mosquito Larvicide & Pupicide	53263-28	Conventional ground/hand
Agnique MMF G	53263-30	Conventional ground/hand

Table 2. Pesticides for control of adult mosquitoes approved for use under the terms of General Permit No. CAG 990004 and methods of application.

Product Name	EPA Registration Number	Method of Application
Pyroicide Mosquito Adulticiding Concentrate for ULV Fogging	7395 1021-1570	Ultra low volume (ULV), vehicle (ground), and aircraft (air)
Evergreen Crop Protection EC 60-6	1021-1770	ULV, ground, and air
Pyrenone Crop Spray	432-1033	ULV, ground, and air
Prentox Pyronyl Crop Spray	655-489	ULV, ground, and air
Pyroicide Mosquito Adulticiding Concentrate for ULV Fogging	7396 1021-1569	ULV, ground, and air
Aquahalt Water-Based Adulticide	1021-1803	ULV, ground, and air
Pyroicide Mosquito Adulticide	7453 1021-1803	ULV, ground, and air
Pyrenone 25-5 Public Health Insecticide	432-1050	ULV, ground, and air
Prentox Pyronyl Oil Concentrate #525	655-471	ULV, ground
Prentox Pyronyl Oil Concentrate or 3610A	655-501	ULV, ground, and air
Permanone 31-66	432-1250	ULV, ground, and air
Kontrol 30-30 Concentrate	73748-5	ULV, ground, and air
Aqualuer 20-20	769-985	ULV, ground, and air
Aqua-Reslin	432-796	ULV, ground, and air
Aqua-Kontrol Concentrate	73748-1	ULV, ground, and air
Kontrol 4-4	73748-4	ULV, ground, and air
Biomist 4+12 ULV	8329-34	ULV, ground, and air
Permanone RTU 4%	432-1277	ULV, ground, and air
Prentox Perm-X UL 4-4	655-898	ULV, ground, and air
Allpro Evoluer 4-4 ULV	769-982	ULV, ground, and air
Biomist 4+4	8329-35	ULV, ground, and air
Kontrol 2-2	73748-3	ULV, ground, and air
Scourge Insecticide with Resmethrin/Piperonyl Butoxide 18%+54% MF Formula II	432-667	ULV, ground, and air
Scourge Insecticide with Resmethrin/Piperonyl Butoxide 4%+12% MF Formula II	432-716	ULV, ground, and air
Anvil 10+10 ULV	1021-1688	ULV, ground, and air

Product Name	EPA Registration Number	Method of Application
AquaANVIL Water-based Adulticide	1021-1807	ULV, ground, and air
Duet Dual-Action Adulticide	1021-1795	ULV, ground, and air
Anvil 2+2 ULV	1021-1687	ULV, ground, and air
Zenivex E20	2724-791	ULV, ground, and air
Trumpet EC Insecticide	5481-481	ULV, ground, and air
Fyfanon ULV Mosquito	67760-34	ULV, ground, and air

MCAS Miramar plans to use the pesticide listed in Table 3 below and reserves the right to use any product approved under the terms of this General Permit (Tables 1 and 2).

Table 3. Planned pesticides for use by MCAS Miramar.

Active Ingredient (AI)	Trade Name	EPA Reg. No.	Manufacturer	Formulation	% AI	Application
<i>Bacillus thuringiensis</i> subsp. <i>israelensis</i>	Aquabac 200G	62637-3	Becker Microbial Products	Granule	2.86	Larvae

Per OPNAVINST 6250.4B, all pesticides used on the Station must be approved by the NAVFAC Southwest Regional Pest Management Consultant and the IPM Coordinator, and listed on the Station Pesticide Authorized Use List.

5 DESCRIPTION OF APPLICATION AREAS

Any site that holds water for more than 96 hours (4 days) can produce mosquitoes. Source reduction is MCAS Miramar's preferred solution. Mosquito breeding sources and areas that require adult mosquito control are difficult to predict from year to year based on the weather and variations in local environmental conditions. Preventive Medicine conducts mosquito larval and adult surveillance at the beginning and throughout the mosquito breeding season to identify breeding areas in which to target control. The targets for application projects are primarily the immature aquatic stage mosquitoes which predominantly breed in standing or slow-moving water. Elimination of these potential disease vectors are required to prevent disease and the impacts of nuisance biting. MCAS Miramar uses pesticides as a last resort to treat water features that contain mosquitoes exceeding threshold levels. Larvicides / pupacides are applied to immature mosquito development sites which can include drainage channels, riparian areas, wetlands, roadside ditches, ornamental ponds, catch basins, detention/retention basins, and potentially, any aquatic site or low lying area in which water stands for more than 96 hours. Priority areas

for insecticide application are the industrial, administrative and residential areas on MCAS Miramar north of the airfield. Additional areas include around buildings in remote areas where mosquitoes may impact the operational mission and areas of the installation where mosquitoes may impact the surrounding communities. Areas requiring larvicide / pupacide applications are treated, as necessary, primarily from spring to late fall during the warmest months (approximately March – November). However, if vectors are a persistent problem at some locations, applications may be made year-round. Pesticides are applied only to water that will persist for at least 96 hours when a vector is present at threshold levels and when alternative measures are infeasible and/or unsuitable for the given conditions. Directing efforts at controlling mosquito larvae allows the Station to localize treatments and use the least toxic pesticides and reduce the need for using more toxic mosquito adulticides. Adult mosquitoes may occasionally be targeted for control, especially in emergencies where adult mosquitoes pose a high risk for disease transmission or significant operational impact. Occasional adulticiding has consisted of residual insecticide applications to walls of buildings or vegetation where mosquitoes are resting. These locations have been located away from waters of the US and there is no risk of pesticides entering these waters. The Station has not used ultra low volume (ULV) / fogging to apply adulticides and will avoid routine application of these insecticides because they must be applied over large areas, are less selective, and many are highly toxic to aquatic organisms and non-target terrestrial arthropods. If used in a public health emergency, ULV applications over water will be avoided whenever possible.

Vernal pools will not be treated with larvicides / pupacides for the following reasons:

- They are critical habitat for endangered and threatened species.
- The pools only occur during the cooler months of the year and are dry before summer.
- Most are located away from populated areas.
- Many contain aquatic predators that provide control of mosquito larvae.

6 OTHER CONTROL METHODS USED

Per DoD policy, MCAS Miramar uses IPM to control mosquitoes. Judicious use of pesticides is part of an IPM program, however, the following non-chemical methods are used:

- **EDUCATION.** The installation provides education and awareness of mosquitoes and mosquito-borne disease to personnel and residents. This focuses on eliminating standing water around buildings and residences.
- **SOURCE REDUCTION.** DoD-mandated water conservation and cost reduction measures on the Station have reduced mosquito breeding areas.
 - The use of xeriscaping, reduction of turf areas, and landscape irrigation management has reduced standing water on the installation.
 - Unlined drainage ditches are cleared of vegetation to prevent mosquito breeding.
 - The recreational Fish Pond northwest of the airfield was cleared of vegetation to prevent mosquitoes from breeding and impacting users of the Pond.

- The ponds on the Miramar Memorial Golf Course have been cleared of vegetation and the ponds are treated regularly to prevent algae.
- BUILDING MAINTENANCE. Maintain and repair window and door screens to exclude mosquitoes from the interior of buildings.
- PERSONAL PROTECTIVE MEASURES. Mosquitoes are generally not controlled in the East Miramar training areas. Military units using these areas are advised to use personal protective measures that include use of insect repellent, wearing repellent-treated uniforms and proper wear of uniforms.
- BIOLOGICAL. Mosquito fish will be used in permanent water sources where practical.

7 ANTICIPATED PRODUCT USE

The need to apply a pesticide is determined by surveillance. Actual use varies annually depending on mosquito abundance. From 01 January to 01 December 2011 twenty pounds of Aquabac 200G (0.6 pounds of active ingredient) was applied on the installation for control of mosquito larvae. This amount serves as an approximation of the amount of product anticipated for use in subsequent years. No adulticides were used during this period. MCAS Miramar anticipates using only larvicides / pupicides for mosquito control; adulticides will only be used in an emergency. In addition to the product used the previous year, other pesticides listed in Tables 1 and 2 may be used. Factors influencing the amount of pesticide applied include rainfall, weather patterns, disease outbreak, and availability of product.

8 MONITORING LOCATIONS

One urban monitoring location has been selected. It is an unlined drainage ditch southeast of the intersection of Gonsalves Ave. and Shields Drive and is at 488478.53, 3638545.48 (UTM Zone 11N). This ditch receives stormwater and irrigation runoff. The ditch enters a culvert under Gonsalves Road and water flows into a wetland paralleling the west side of Gonsalves Road. The ditch water can potentially flow into Rose Canyon. This location was chosen because of its potential to breed mosquitoes, it is most likely to be treated with pesticide due to its location within the populated area of Mainside, and is similar in environmental setting to the other locations on the installation that would need mosquito control.

Larvicides listed in Table 1 for possible use on the Station contain the active ingredients *Bacillus thuringiensis* subsp. *israelensis*, *Bacillus sphaericus*, methoprene and monomolecular films which are described in the General Permit as being nearly non-toxic or low-toxicity. The General Permit does not contain a Receiving Water Monitoring Trigger for these active ingredients. One other larvicide on the list contains petroleum distillates which can be toxic

to aquatic organisms, but the EPA label directions include risk reduction methods. The General Permit also does not contain a Monitoring Trigger for products containing petroleum distillates. For application of these pesticides to the designated monitoring location, only visual and physical monitoring of samples is required. The IPM Coordinator will coordinate monitoring when this location is treated. The pesticide applicator will record in the application log and report types and amounts of pesticide used at each application event to the IPM coordinator. The IPM Coordinator will inform EMD S-7 when an application will be made so that EMD S-7 can provide a contractor to conduct Background (within 24 hours prior to application), Event (within 24 hours following application) and Post-event (within one week following application) visual monitoring and collect samples.

Visual observations will include presence or absence of:

1. Floating or suspended matter;
2. Discoloration;
3. Bottom deposits;
4. Aquatic life;
5. Visible films, sheens, or coatings;
6. Fungi, slimes, or objectionable growths; and
7. Potential nuisance conditions.

Samples will be tested for the following physical parameters: temperature, pH, turbidity, electrical conductivity measurements. Chemical analysis will be added for active ingredient and dissolved oxygen if larvicide is changed to a pesticide containing temephos or an adulticide is used. All results will be reported in the pesticide application records that will be maintained by the IPM Coordinator.

9 EVALUATION OF AVAILABLE BMPs

Specific BMPs to prevent mosquito breeding or the impact of mosquitoes are described in Section 6 of this PAP. If immature mosquitoes are found in a water body then the use of biorational larvicides will have the least environmental impact on those waters and will be used for control. Additional BMPs are found in the Best Management Practices for Mosquito Control in California. Best management practices are continually evaluated through ongoing inspection and surveillance, review or reassessment of alternative control options prior to each pesticide application, treatment efficacy evaluations, pursuit of long-term or preventive source reduction, and educational or biological solutions.

10 DESCRIPTION OF BMPs

10.1 MEASURES TO PREVENT PESTICIDE SPILL

The use of granular and solid formulations of larvicides reduce the risk of spills and mixing of liquid pesticides is performed away from water bodies. Pesticide application equipment is inspected prior to all pesticide applications to ensure they are in proper working order. All safety, handling, and use requirements and instructions are followed per pesticide product labels and Material and Safety Data Sheets (MSDS). All pesticides are kept in a storage locker that provides containment at the pest control shop on the installation until ready to use. As part of their core pesticide applicator training applicators are taught how to prevent and respond to pesticide spills and maintain and carry spill kits on their vehicles. MCAS Miramar Spill Prevention, Control & Countermeasure plan (SPCC) and the Station Oil and Hazardous Substance Spill Contingency Plan are found at (<http://www.miramar.usmc.mil/ems/ems/default.htm>; scroll down to "11. Emergency Preparedness and Response").

10.2 MEASURES TO ENSURE MINIMUM AND CONSISTENT AMOUNT USED

Pesticide application equipment is calibrated to ensure that pesticides are applied at the rate(s) shown on the pesticide product labels. Pesticides are applied in a manner consistent with the pesticide label directions.

10.3 APPLICATOR EDUCATION ON ADVERSE EFFECTS OF PESTICIDE APPLICATION

State-licensed applicators that are licensed by the Structural Pest Control Board receive training on topics listed at <http://www.pestboard.ca.gov/exam/studyapp.shtml>. Study materials for applicators licensed or certified by the Department of Pesticide Regulation are listed at <http://www.cdpr.ca.gov/docs/license/studymat/qal.pdf>. DoD-certified pesticide applicators receive training during the core phase of the initial and recertification training as described in DoDM 4150.07, Volume 1, DoD Pest Management Training: The DoD Plan for the Certification of Pesticide Applicators. State licensed applicators maintain their licenses / certificates through continuing education. DoD-certified applicators attend recertification training every three years, but also receive training between recertification cycles.

10.4 DESCRIPTIONS OF SPECIFIC BMPs FOR EACH APPLICATION MODE

The mosquito control contractor calibrates handheld larviciding equipment each year to meet application specifications. Supervisors, the IPM Coordinator, and contract performance assessment representatives review application records to ensure appropriate amounts of material are used. Although ULV / fogging is not currently used on the Station, contract specifications require that the contractor calibrate output and droplet size of

ground-based ULV equipment to meet label requirements annually. Aerial larviciding and adulticiding equipment, if needed, would be calibrated by the Contractor per contract specifications.

10.5 **BMPs FOR PESTICIDE PRODUCTS USED**

Surveillance for immature mosquitoes is conducted to detect mosquitoes in water at the earliest stages possible. Mosquitoes in the larval stage, when they are actively feeding, are effectively controlled by products containing Bti and Bs which are the least toxic. Once in the pupal stage, Bti and Bs are no longer effective, since this stage does not feed. Products containing petroleum distillates or monomolecular surface films must be used. Although the surface films are very low toxicity, the petroleum distillates can be toxic to aquatic organisms. Use of these products will be avoided. ULV application of adulticides will also be avoided for routine mosquito control and will only be used in an emergency. If needed adult control will consist of insecticide applications applied to building and structure surfaces away from water where mosquitoes rest. Specific BMPs regarding the products used and that may be used are found in Best Management Practices for Mosquito Control in California.

10.6 **BMPs FOR ENVIRONMENTAL SETTING**

10.6.1 SETTINGS

Urban, wetland, and agricultural settings for mosquito breeding are found on MCAS Miramar. Urban areas are located in west Miramar, north of the airfield. Mosquito breeding can occur in catch basins, artificial containers, drainage ditches, ornamental ponds, and puddles. Additionally, wetlands are found in and around the urban areas in the form of vernal pools and drainage ditches. Waterways, ponds, and wetlands are identified on the MCAS Miramar Sensitive Resources Map ([http://www.miramar.usmc.mil/ems/environmental_programs/nat_resources/sensres SE P2010_96dpi_lowres_compressed.pdf](http://www.miramar.usmc.mil/ems/environmental_programs/nat_resources/sensres_SE_P2010_96dpi_lowres_compressed.pdf)). The agricultural setting is found at the Miramar Nurseries property. Specific BMPs for these areas are described in Section 6. General BMPs are found in Best Management Practices for Mosquito Control in California.

10.6.2 PROTECTION OF ENDANGERED AND SENSITIVE SPECIES

The following Endangered or Threatened species occur on MCAS Miramar and can potentially be impacted by aquatic pesticide applications for mosquito control:

- San Diego Fairy Shrimp (*Branchinecta sandiegonensis*)
- Riverside Fairy Shrimp (*Streptocephalus woottoni*)

Critical habitat for these species are vernal pools and other temporary water bodies on the Station. As stated in Paragraph 5 above, vernal pools will not be treated. Additionally, other

temporary water bodies that are designated and shown on the Sensitive Resources Map to be habitat or potential habitat for San Diego and Riverside Fairy Shrimp.

11 IDENTIFICATION OF THE PROBLEM

Control of mosquitoes will be based on a risk assessment of the problem. The risk assessment will include:

- Mosquito developmental stage
- Detection of pathogen in mosquitoes or reservoir hosts
- Proximity to humans and human habitation
- Mosquito identification

11.1 ESTABLISHMENT OF VECTOR POPULATIONS

Only those mosquito sources that MCAS Miramar determines to represent imminent threats to public health or quality of life are treated. The presence of any mosquito may necessitate treatment, however higher thresholds may be applied depending on the Station's resources, disease activity, or local needs. Treatment thresholds are based on a combination of one or more of the following criteria: mosquito species present, mosquito stage of development, pest, nuisance, or disease potential, disease activity, mosquito abundance, flight range, proximity to populated areas, size of source, presence/absence of natural enemies or predators, and presence of sensitive/endangered species or habitats.

Preventive Medicine is responsible for determining whether vector mosquitoes occur on the installation. Surveillance data from the County of San Diego VCP show that vector mosquitoes and transmission of mosquito-borne diseases occur in the vicinity of MCAS Miramar. Mosquito breeding areas similar to those in the surrounding community occur on the Station and vector mosquitoes are presumed to exist on the installation. Preventive Medicine will conduct mosquito surveillance monthly throughout the mosquito breeding season to determine where vectors occur. This will include larval/pupal collection in standing water and adult mosquito collections at sites where mosquitoes would pose an increased health risk. Additionally, the installation, with the support of Preventive Medicine, will survey for introduced mosquito species that may be transported on military materials returning from overseas military operations.

11.2 IDENTIFICATION OF TARGET VECTOR SPECIES

On MCAS Miramar, mosquito control is often requested through service requests from employees or residents. Upon responding to the service request the pest control contractor will verify the presence of mosquitoes through identification and differentiating from other insects (i.e. midges, crane flies) before initiating control. Preventive Medicine will identify larval and adult mosquitoes collected during monthly surveillance and those collected by

the pest control contractor. Mosquitoes will be identified to genus and to species whenever possible.

11.3 IDENTIFICATION OF KNOWN BREEDING AREAS

Preventive Medicine will conduct an initial survey of all standing water on the installation and identify areas by GPS coordinates and assign identification numbers to them. On at least a monthly basis and between one week and two weeks after substantial rain, preventive medicine and the IPM Coordinator / PCPAR will look for additional standing water that might serve as breeding sites. These locations will be added to the list of sites and assigned identification numbers. Upon responding to a service request for mosquitoes, the contractor will inspect the area of the complaint for possible breeding areas.

11.4 ANALYSIS OF SURVEILLANCE DATA

Preventive Medicine will compile and analyze surveillance data. This will include on-base larval and adult surveillance and mosquito collection and disease testing data from surrounding communities provided by the County of San Diego VCP. Based on the analysis, Preventive Medicine will make recommendations for prevention and control to appropriate installation departments.

12 EXAMINATION OF ALTERNATIVES TO TREATMENT

Preventive Medicine personnel conducting surveys and surveillance will determine whether mosquitoes may be controlled by non-chemical means. For example, if a mosquito breeding source is the result of overwatering of a landscaped area, then Preventive Medicine will report the problem to Public Works so that they can have the grounds maintenance contractor take corrective action. Additionally, when responding to a service request the mosquito control contractor will determine whether non-chemical control can be used to alleviate the problem rather than pesticide treatment.

13 CORRECT USE OF PESTICIDES

Per DoDI 4150.07, only State-licensed or DoD-certified pesticide applicators may apply pesticides on DoD property. Thus, all pesticide applicators on MCAS Miramar are trained and qualified to use pesticides in a manner consistent with the pesticide label and in accordance with State and DoD regulations. All applicators receive annual training in pesticide safety and pesticide spill response. The IPM Coordinator is responsible for ensuring pesticide use compliance on the installation. PCPARs will assess the contractor's compliance with pesticide safety and environmental regulations.

14 PUBLIC NOTICES

Public Notices will be posted on the MCAS Miramar Public Environmental Web (<http://www.miramar.usmc.mil/ems/index.html>). The installation IPM Coordinator will be the primary point of contact for this PAP and can be contacted at (858) 577-8633.

15 REFERENCES

1. California Department of Public Health . 2010. Best Management Practices for Mosquito Control in California. Available by download from the California Department of Public Health—Vector-Borne Disease Section at <http://www.westnile.ca.gov/resources.php> under the heading *Mosquito Control and Repellent Information*.
2. California Department of Public Health. 2008. The Biology and Control of Mosquitoes in California. Available by download from the California Department of Public Health—Vector-Borne Disease Section at <http://www.cdph.ca.gov/certlic/occupations/Documents/BioandControlofMosquitoesinCA.pdf>.
3. California Department of Public Health. California Mosquito-borne Virus Surveillance and Response Plan, 2010. [Note: this document is updated annually by CDPH]. . Available by download from the California Department of Public Health—Vector-Borne Disease Section at <http://www.westnile.ca.gov/resources.php> under the heading *Response Plans and Guidelines*.
4. DoDI 4150.07: DoD Pest Management Program, May 29, 2008. http://www.afpmb.org/sites/default/files/pubs/directives_mous/DOI4150.07.pdf
5. DoDM 4150.07, Volume 1, DoD Pest Management Training: The DoD Plan for the Certification of Pesticide Applicators. http://www.afpmb.org/sites/default/files/pubs/directives_mous/DOI4150.07.pdf
6. Eder, E and Schonbrunner, I. 2010. Toxicity of *Bacillus thuringiensis israelensis* on the Nontarget Organisms *Triops cancriformis*, *Branchipus schaefferi*, *Leptestheria dahalacensis* (Crustacea: Branchiopoda: Notostraca, Anostraca, Spinicaudata). The Open Environmental Pollution & Toxicology Journal, Volume 2, pp. 16-20
7. State Water Resources Control Board (SWRCB), 2011, Water Quality Order No. 2011-0002-DWQ, Statewide General National Pollutant Discharge Elimination System Permit For Biological and Residual Pesticide Discharges to Waters of Waters Of The United States From Vector Control Vector Control Applications (General Permit No. CAG 990004).
8. MCAS Miramar Environmental Web. <http://www.miramar.usmc.mil/ems/index.html>. Notifications and contact information will be posted on this site.

9. MCAS Miramar Integrated Natural Resources Management Plan. 2011-2015.
http://www.miramar.usmc.mil/ems/environmental_programs/nat_resources/managementplan.htm
10. MCAS Miramar Integrated Pest Management Plan. Call the IPM Coordinator at (858) 577-6053 to obtain a copy.
11. Marine Corps Air Station Miramar Public Website.
<http://www.marines.mil/unit/mcasmiramar/pages/default.aspx>
12. MCAS Miramar Sensitive Resources Map.
http://www.miramar.usmc.mil/ems/environmental_programs/nat_resources/sensres_SEP_2010_96dpi_lowres_compressed.pdf
13. MCO P5090.2A: Environmental Compliance and Protection Manual (Chapter 14: Pesticide Pollution Prevention).
<http://www.marines.mil/news/publications/Documents/MCO%20P5090.2A%20W%20CH%201-2.pdf>
14. OPNAVINST 6250.4B: Pest Management Program.
http://www.nmcphc.med.navy.mil/downloads/prevmed/6250_4b.pdf