

STATE WATER RESOURCES CONTROL BOARD

1001 I Street, Sacramento, California 95814

http://www.waterboards.ca.gov/water_issues/programs/npdes/aquatic.shtml

**WATER QUALITY ORDER NO. 2011-XXXX-DWQ
GENERAL PERMIT NO. CAG XXXXXX**

**STATEWIDE GENERAL NATIONAL POLLUTANT DISCHARGE ELIMINATION
SYSTEM (NPDES) PERMIT FOR RESIDUAL PESTICIDE DISCHARGES TO WATERS
OF THE UNITED STATES FROM SPRAY APPLICATIONS**

The following Dischargers may apply for coverage under this General Permit in compliance with the waste discharge requirements as set forth in this General Permit:

Table 1. Discharger Information

Dischargers	<ul style="list-style-type: none">• California Department of Food and Agriculture (CDFA) for full coverage and• United States Department of Forest Services (USFS) for specified biological controls only.
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Table 2. Administrative Information

This General Permit was adopted by the State Water Resources Control Board (hereinafter State Water Board) on:	<Adoption Date>
This General Permit shall become effective on:	<Effective Date>
This General Permit shall expire on:	<Expiration Date>
The U.S. Environmental Protection Agency (USEPA) and the State Water Board have classified this discharge as a minor discharge.	

I, Jeanine Townsend, Clerk to the Board, do hereby certify that this General Permit with all attachments is a full, true, and correct copy of the General Permit adopted by the State Water Board on **<Adoption Date>**.

AYE: _____

NO: _____

ABSENT: _____

ABSTAIN: _____

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I. DISCHARGE INFORMATION

Pesticide formulations may include “active ingredients”¹ and “inert ingredients”². Adjuvants³ or surfactants may be added to the ingredients in the application equipment that is used in the delivery of the pesticide. As part of the registration process of pesticides for use in California, USEPA and the California Department of Pesticide Regulation (DPR) evaluate data submitted by registrants to ensure that a product used according to label instructions will cause no harm or adverse impact on non-target organisms that cannot be reduced or mitigated with protective measures or use restrictions. The Clean Water Act (CWA), at section 301(a), broadly prohibits the discharge of any pollutant to waters of the United States, except in compliance with an NPDES permit. Residual pesticides* discharged into surface waters constitute pollutants within the meaning of the CWA even if the discharge is in compliance with the registration requirements of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). Therefore, coverage under an NPDES permit is required.

The discharge of residual pesticides to surface waters from spray applications for pest control throughout the State of California may pose a threat to existing and potential beneficial uses of waters of the United States if not properly controlled and regulated.

II. PERMIT COVERAGE AND APPLICATION REQUIREMENTS

A. General Permit Coverage

This General Permit covers the point source discharge of pesticide residues resulting from spray applications using 1) larvicides* containing *Bacillus thuringiensis kurstaki* (Btk), nuclear polyhedrosis virus (NPV), and Spinosad A and D; 2) adulticides* containing acetamiprid, bifenthrin, carbaryl, esfenvalerate, lambda cyhalothrin, malathion, naled, pheromone, piperonyl butoxide (PBO), and pyrethrins; 3) larvicides/adulticides containing cyfluthrin and imidacloprid; and 4) herbicides* containing aminopyralid, chlorsulfuron, clopyralid, glyphosate, imazapyr, triclopyr butoxyethyl ester and triclopyr triethylamine salt.

Users of products containing these active ingredients are required to obtain coverage under this General Permit prior to application. Attachment E, which is a part of this General Permit, lists products containing these active ingredients.

¹ Active ingredients are manufacturer disclosed ingredients that yield toxic effects on target organisms.

² Inert ingredients are additional ingredients and are often trade secrets; therefore, they are not always disclosed by the manufacturer.

³ Adjuvants are ingredients that are added to pesticides during an application event and are whose exact formulation is often a trade secret. These ingredients are chosen by the Discharger, based on site characteristics, and typically increase the effectiveness of pesticides on target organisms.

* Defined in Attachment A – Definitions.

B. Discharger

1. Dischargers under this General Permit are CDFA and USFS. However USFS use of pesticides only includes those for biological control.

C. General Permit Application

To obtain authorization under this General Permit, Dischargers must submit a complete application as described below to the State Water Board:

1. A Notice of Intent (NOI) shown as Attachment F signed in accordance with the signatory requirements of the Standard Provisions in Attachment B;
2. An application fee; and
3. A Pesticide Application Plan (PAP)

State and Regional Water Board staff will review the application package for completeness and applicability to this General Permit. Additionally, the State Water Board may issue a Notice of Exclusion (NOE)⁴, which either terminates the permit coverage or requires submittal of an application for an individual permit or alternative general permit.

Permit coverage will be effective when all of the following have occurred:

1. The Discharger has submitted a complete permit application;
2. The PAP has been accepted by the State Water Board Deputy Director of the Division of Water Quality; and
3. The State Water Board Deputy Director of the Division of Water Quality has issued a Notice of Applicability (NOA). The NOA will specify the type(s) of pesticides that may be used and any specific conditions and requirements not stated in this General Permit. Any such specific conditions and requirements shall be enforceable. The Discharger is authorized to discharge starting on the date of the NOA.

D. Fees

Under this General Permit, pesticide discharges require minimal or no treatment systems to meet the limits and pose no significant threat to water quality. As such, they are eligible for Category 3 in section 2200(b)(8) of Title 23, California Code of Regulations (CCR). This category is appropriate because pesticide applications incorporate best management practices (BMPs) to control potential impacts to beneficial uses, and this General Permit prohibits residual pesticides from causing

⁴ An NOE is a one-page notice that indicates that the Discharger or proposed Discharger is not eligible for coverage under this General Permit and states the reason why. This justification can include, but is not limited to, necessity to comply with a total maximum daily load or to protect sensitive water bodies. The NOE can also indicate that the coverage is denied if feasible alternatives to the selected pesticide application project are not analyzed.

exceedance of water quality objectives. The annual fee associated with this rating can be found in section 2200(b)(8) of Title 23, CCR, which is available at <http://www.waterboards.ca.gov/resources/fees/>.

E. Terminating Coverage

To terminate permit coverage, a Discharger must submit a complete and accurate Notice of Termination (NOT) provided in Attachment G. The Discharger's authorization to discharge under this General Permit terminates on the day of the coverage termination letter issued by the State Water Board. Prior to the termination effective date, the Discharger is subject to the terms and conditions of this General Permit and is responsible for submitting the annual fee and all reports associated with this General Permit.

A Discharger must submit an NOT when one of the following conditions occurs:

1. A new operator has taken over responsibility of the Discharger's pesticide control activities covered under an existing NOI;
2. The Discharger has ceased all discharges from the application of pesticides for which it obtained General Permit coverage and does not expect to discharge during the remainder of this General Permit term; or
3. The Discharger has obtained coverage under an individual permit or an alternative general permit for all discharges required to be covered by an NPDES permit.

III. FINDINGS

The State Water Board finds:

A. Background

1. An NPDES Permit is required for applications of pesticides that result in a discharge of pollutants to waters of the US. Courts have determined that pesticides may constitute chemical wastes or biological materials within the meaning of the CWA.⁵ Under current case law, whether a permit is required depends upon whether it is a biological or chemical pesticide and, for chemical pesticides, whether there is any residue or unintended effect from its application.
2. USEPA's 2006 regulation attempting to exempt certain FIFRA-compliant applications of pesticides was invalidated and vacated by the Sixth Circuit Court of Appeals in 2009.⁶ A two-year stay of the effect of that decision was granted, such that the invalidated regulation will remain in effect until April 9, 2011.

⁵ *Headwaters, Inc. v. Talent Irrigation District*, (9th Cir. 2001) 243 F.3d 526; *League of Wilderness Defenders v. Forsgren* (9th Cir. 2002) 309 F.3d 526; *Fairhurst v. Hagener* (9th Cir. 2005) 422 F.3d 1146.

⁶ *National Cotton Council v. U.S. EPA* (6th Cir. 2009) 553 F.3d 927.

3. Although the point at which a pesticide becomes a pollutant may not be known, a permit is required if a pollutant will be deposited into waters of the US. This General Permit is intended to regulate applications of pesticides that result in a discharge of pollutants to waters of the US, consistent with the Clean Water Act (CWA).
4. In 2001, the State Water Board adopted Water Quality Order No. 2001-12-DWQ, Statewide General National Pollutant Discharge Elimination System (NPDES) Permit for Discharges of Aquatic Pesticides to Waters of the US. Issued in response to a Ninth Circuit decision⁷. Order No. 2001-12-DWQ covered broad categories of aquatic pesticide use in California. When that permit expired in 2004, it was replaced by Order Nos. 2004-0008-DWQ (larvicide discharges for vector control) and 2004-0009-DWQ (aquatic herbicide discharges for weed control).

B. Legal Authorities

This General Permit is issued pursuant to section 402 of the federal CWA and implementing regulations adopted by the USEPA and chapter 5.5, division 7 of the California Water Code (commencing with section 13370). Section 122.28(a)(1) of Title 40 of the Code of Federal Regulations [40 C.F.R. §122.28(a)(1)] allows NPDES permits to be written to cover a category of discharges within the State political boundaries as a general NPDES permit. USEPA Region 9 has granted the State Water Board the authority to issue general NPDES permits.

This General Permit shall serve as a General NPDES permit for point source discharges of residual pesticides from spray applications for pest control. Pest control covered by this General Permit includes invasive species of both insects and weeds. This General Permit also serves as general Waste Discharge Requirements pursuant to article 4, chapter 4, and division 7 of the California Water Code (commencing with section 13260).

C. Background and Rationale for requirements

The State Water Board developed the requirements in this General Permit based on information submitted by CDFA and USFS and other available information and studies. The Fact Sheet (Attachment D), which contains background information and rationale for General Permit requirements, is hereby incorporated into this General Permit and constitutes part of the Findings for this General Permit. All other attachments (A, B, C, and E through G) are also incorporated into this General Permit.

D. California Environmental Quality Act (CEQA)

Pursuant to California Water Code section 13389, State and Regional Water Boards are exempt from the requirement to comply with Chapter 3, Division 13 of the Public Resources Code when adopting NPDES permits.

⁷ *Headwaters, Inc. v. Talent Irrigation District* (9th Cir. 2001) 243F.3d 526.

E. Related Pesticide Regulations

USEPA, DPR, and County Agricultural Commissioners regulate pesticides uses in California. The responsibility of each agency is discussed in detailed below:

1. USEPA

USEPA has the sole jurisdiction of pesticide label language according to the FIFRA. Label language and any changes thereto must be approved by USEPA before the product can be sold in this country.

As part of the labeling process, USEPA evaluates data submitted by registrants to ensure that a product, if it is used in accordance with label instructions, will cause no harm (or “adverse impact”) on non-target organism. Pesticide registrants are required to submit data on the effects of pesticides on target pests (efficacy) as well as effects on non-target pests. Data on non-target effects include plant effects (phytotoxicity), fish and wildlife hazards (ecotoxicity), impacts on endangered species, effects on the environment, environmental fate, breakdown products, leach ability, and persistence. However, FIFRA is not necessarily as protective of water quality as the CWA.

2. DPR

DPR is responsible for reviewing the toxic effects of pesticide formulations and determining whether a pesticide is suitable for use in California through a registration process. DPR also reviews data submitted by the registrants. Although DPR cannot require manufacturers to make changes in labels, it can refuse to register products in California unless manufacturers address unmitigated hazards by amending the pesticide label. Consequently, requirements that are specific for use in California are included in many pesticide labels that are already approved by USEPA.

DPR also issues licenses to applicators who apply those pesticides that are designated as a “restricted material”⁸. To legally apply these pesticides, the applicator must hold a Qualified Applicator Certificate from DPR or work under the supervision of someone who is certified.

3. County Agricultural Commissioners

County Agricultural Commissioners regulate sale and use of pesticides in California. County Agricultural Commissioners also issue Use Permits for applications of pesticides that are deemed as restricted materials by DPR.

During the Use Permit permitting process, County Agricultural Commissioners determine if the pesticide use will result in substantial adverse environmental impact, whether appropriate alternatives were considered, and if any potential

⁸ CDPR designates a pesticide as a restricted material in California if it poses hazards to public health, farm workers, domestic animals, honeybees, the environment, wildlife, or crops other than those being treated (“Regulating Pesticides: A Guide to Pesticide Regulation in California,” October 2001, CDPR).

adverse effects are mitigated. The Use Permit conditions contain minimum measures necessary to protect people and the environment.

The County Agricultural Commissioners also conduct pre-project inspections on at least five percent of projects.

F. Technology-Based Effluent Limitations

Section 301(b) of the CWA and implementing USEPA permit regulations at section 122.44, title 40 of the Code of Federal Regulations (40 C.F.R. §122.44), require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards.

G. Water Quality-Based Effluent Limitations (WQBELs)

Section 301(b) of the CWA and 40 C.F.R § 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards. The federal regulation mandates that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an excursion of a water quality standard, including numeric and narrative objectives within a standard. Section 122.44(k)(3) of 40 C.F.R. allows the use of other requirements such as BMPs in lieu of numeric effluent limits if the latter are infeasible. The State Water Board finds that numeric effluent limits for pollutant discharges associated with the application of pesticides are infeasible because:

1. This General Permit regulates discharges of residual pesticides which are pesticide ingredients or breakdown products that are present after the use of the pesticide for pest control. Therefore, the exact effluent is unknown; and
2. It would be impractical to provide effective treatment, given the numerous short duration intermittent pesticide releases to surface waters from many different locations.

The effluent limitations contained in this General Permit are narrative and include requirements to develop and implement a PAP that describes appropriate BMPs, including compliance with all pesticide label instructions, as well as requirements to comply with receiving water limitations.

The BMPs required herein constitute Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT) and are intended to: 1) minimize the area and duration of impacts caused by the discharge of pesticides in the target area* and 2) allow for restoration of water quality and protection of beneficial uses of the receiving waters to pre-application quality following completion of an application event*.

H. Receiving Water Monitoring Triggers

Following pesticide applications in or near surface waters, residual pesticides may cause both acute and chronic toxicity to aquatic life. Regional Water Boards in their

Water Quality Control Plans (Basin Plans) include a narrative toxicity objective (“no toxics in toxic amounts), which specifically prevents the presence of toxic substances, individually or in combination, in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. Since information regarding residual pesticides deposited in the receiving water as a result of spray applications is not adequate to develop receiving water limitations for individual and combinations of pesticides, this General Permit only contains receiving water monitoring triggers for residual pesticides of concern. The monitoring triggers will be used to assess compliance with the narrative toxicity receiving water limitation and to initiate additional investigations for the toxicity caused by the larvicides, adulticides, and herbicides used and their additive or synergistic effects. If monitoring data for residual pesticides of concern indicate that concentrations of these residual pesticides exceed the monitoring trigger, this General Permit may be re-opened and Receiving Water Limitations for these pesticide ingredients could be added. This General Permit includes an Instantaneous Maximum Receiving Water Monitoring Trigger for residual pesticides of concern. Receiving Water Monitoring Triggers for residual pesticides of concern are summarized in Section VII, Table 3 (Receiving Water Monitoring Triggers) of this General Permit.

I. Beneficial Uses in Basin Plans

The typical relevant beneficial uses identified in the Regional Water Boards’ Basin Plans include: municipal and domestic supply, agricultural irrigation, stock watering, process supply, service supply, hydropower supply, water contact recreation, canoeing and rafting recreation, other non-contact water recreation, warm freshwater aquatic habitat, cold freshwater habitat, warm fish migration habitat, cold fish migration habitat, warm and cold spawning habitat, wildlife habitat, navigation, rare, threatened, or endangered species habitat, groundwater recharge, and freshwater replenishment. Requirements of this General Permit implement the applicable Basin Plans.

J. National Toxics Rule (NTR) and California Toxics Rule (CTR)

USEPA adopted the NTR on December 22, 1992, and later amended it on May 4, 1995 and November 9, 1999. About 40 criteria in the NTR were applicable in California. On May 18, 2000, USEPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that were applicable in the state. The CTR was amended on February 13, 2001. These rules contain water quality standards for priority pollutants.

K. State Implementation Policy (SIP)

The State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters*, Enclosed Bays*, and Estuaries* of California* (State Implementation Policy or SIP) in March 2000 and amended it in February 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. This General Permit includes a narrative Receiving Water Limitation for toxicity and acute and chronic toxicity testing

requirements for residual pesticides of concern. Therefore, this General Permit is consistent with the SIP.

L. Antidegradation Policy

Section 131.12 of 40 C.F.R. requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing quality of waters be maintained unless degradation is justified based on specific findings. The Regional Water Board's Basin Plans implement, and incorporate by reference, both the state and federal antidegradation policies. The conditions of this General Permit require pesticide discharges to meet applicable water quality objectives. Waters of exceptional quality may be degraded during and immediately after the pesticide application; however, this is temporary and for the best interest of the people of the State. Therefore, this General Permit is consistent with State and federal antidegradation policies.

M. 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.

N. Monitoring and Reporting

Section 122.48 of Title 40 C.F.R. requires that all NPDES permits specify requirements for recording and reporting monitoring results. California Water Code sections 13267 and 13383 authorize the State and Regional Water Board to require technical and monitoring reports. The Monitoring and Reporting Program establishes monitoring and reporting requirements to implement federal and State requirements. The Monitoring and Reporting Program is provided in Attachment C.

O. Standard and Special Provisions

Attachment B provides the Standard Provisions which apply to all NPDES permits in accordance with 40 C.F.R. § 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 C.F.R. § 122.42. The Discharger must comply with all standard provisions and with those additional conditions that are applicable under 40 C.F.R. § 122.42. In addition, the Discharger must comply with all the Special Provisions which are provided in Section IX.C of this General Permit.

P. Notification of Interested Parties

The State Water Board has notified interested agencies and persons of its intent to prescribe WDRs and has provided them with an opportunity to submit comments. Details of the notifications are provided in the Fact Sheet of this General Permit.

Q. Consideration of Public Comment

The State Water Board, in a public meeting, heard and considered all comments pertaining to discharges to be regulated by this General Permit. Details of the Public Hearing are provided in the Fact Sheet of this General Permit.

THEREFORE, IT IS HEREBY ORDERED, that in order to meet the provisions contained in Division 7 of the California Water Code (commencing with section 13000) and regulations adopted there under, and the provisions of the federal CWA and regulations and guidelines adopted there under, the Dischargers shall comply with the requirements in this General Permit.

IV. DISCHARGE PROHIBITIONS

- A. The discharge of residual pesticides at a location or in a manner different from that described in this General Permit is prohibited.
- B. The discharge of residual pesticides shall not create a nuisance as defined in section 13050 of the California Water Code.
- C. The discharge shall not cause, have a reasonable potential to cause, or contribute to an in-stream excursion above any applicable standard or criterion promulgated by USEPA pursuant to Section 303 of the CWA, or water quality objective adopted by the State or Regional Water Boards.

V. EFFLUENT LIMITATIONS

- A. The discharge of residual pesticides must meet applicable water quality standards; and
- B. Dischargers shall implement BMPs when applying pesticides. The BMPs must be provided in the PAP which is described in Section VIII.C below.

VI. RECEIVING WATER LIMITATIONS

The discharges shall not result in any of the following:

- A. **Floating Material.** Floating material to be present in the amounts that cause nuisance or adversely affect beneficial uses.
- B. **Settleable Substances.** Substances to be present in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.

- C. Suspended Material.** Suspended material to be present in concentrations that cause nuisance or adversely affect beneficial uses.
- D. Taste and Odors.** Taste- or odor-producing substances to be present in concentrations that impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses or domestic or municipal water supplies.
- E. Toxic Pollutants.** Toxic pollutants to be present in the water column, sediments, or biota in concentrations that adversely affect beneficial uses; that produce detrimental response in human, plant, animal, or aquatic life; or that bioaccumulate in aquatic resources at levels which are harmful to human health.
- F. Temperature.** The ambient temperature to increase more than 5°F.
- G. Color.** Esthetically undesirable discoloration.
- H. Aquatic Communities.** Aquatic communities and populations, including vertebrates, invertebrates, and plant species to be degraded.

VII. RECEIVING WATER MONITORING TRIGGERS

The Receiving Water Monitoring Triggers shown in Table 3 below will be used to assess compliance with the narrative receiving water toxicity limitation and initiate additional investigations for the toxicity caused by the residual pesticides used and their additive or synergistic effects.

Table 3. Receiving Water Monitoring Triggers

Ingredient	Unit	Instantaneous Maximum Monitoring Trigger	Basis
Adulticide Active Ingredients			
Acetamiprid	µg/L	6.6	USEPA Office of Pesticides <i>Ecotoxicity Database</i>
Bifenthrin	µg/L	0.0004	USEPA Office of Pesticides <i>Ecotoxicity Database</i>
Carbaryl	µg/L	2.53	California Department Fish and Game Criterion
Esfenvalerate	µg/L	0.007	USEPA Office of Pesticides <i>Ecotoxicity Database</i>
Lambda Cyhalothrin	µg/L	0.00041	USEPA Office of Pesticides <i>Ecotoxicity Database</i>
Malathion	µg/L	0.1	USEPA National Recommended Water Quality Criteria for Fresh Water Aquatic Life Protection
Naled	µg/L	0.014	USEPA Office of Pesticides <i>Ecotoxicity Database</i>
PBO (in PBO/Pyrethrin Mixture)	µg/L	49	USEPA Office of Pesticides <i>Ecotoxicity Database</i>
Piperonyl Butoxide (PBO)	µg/L	30	USEPA Office of Pesticides <i>Ecotoxicity Database</i>
Pyrethrins	µg/L	0.14	USEPA Office of Pesticides <i>Ecotoxicity Database</i>

Ingredient	Unit	Instantaneous Maximum Monitoring Trigger	Basis
			<i>Database</i>
Lavicide/Adulticide Active Ingredients			
Cyfluthrin	µg/L	0.00022	USEPA Office of Pesticides <i>Ecotoxicity Database</i>
Imidacloprid	µg/L	3.8	USEPA Office of Pesticides <i>Ecotoxicity Database</i>
Herbicide Active Ingredients			
Aminopyralid	µg/L	1,360	USEPA Office of Pesticides <i>Ecotoxicity Database</i>
Clopyralid	µg/L	2,874	USEPA Office of Pesticides <i>Ecotoxicity Database</i>
Glyphosate	µg/L	700	USEPA primary MCL for protection of drinking water quality
Triclopyr Butoxyethyl Ester	µg/L	26	USEPA Office of Pesticides <i>Ecotoxicity Database</i>

VIII. PESTICIDE USE REQUIREMENTS

A. Application Schedule

The Discharger shall provide a phone number or other specific contact information to all persons who request the Discharger’s application schedule. The Discharger shall provide the requester with the most current application schedule and inform the requester if the schedule is subject to change. Information may be made available by electronic means, including posting prominently on a well-known web page.

B. Public Notice Requirements

Every calendar year, prior to the first application of pesticides, the Discharger shall notify potentially affected governmental agencies. The notification shall include the following information:

1. A statement of the Discharger’s intent to apply pesticide(s);
2. Name of pesticide(s);
3. Purpose of use;
4. General time period and locations of expected use;
5. Any water use restrictions or precautions during treatment; and
6. A phone number that interested persons may call to obtain additional information from the Discharger.

C. Pesticides Application Plan (PAP)

The Discharger shall develop a PAP that contains the following elements:

1. Description of the nearby surface water to an area in which pesticides are being applied to an area;

2. Discussion of the factors influencing the decision to select pesticide spray applications for pest control;
3. Type(s) of pesticides used, the method in which they are applied, and if applicable, the adjuvants and surfactants used;
4. Description of the application area* and the target area in the system;
5. Other control methods used (alternatives) and their limitations;
6. How much product is needed and how this amount was determined;
7. Monitoring and Reporting Program (see Attachment C), including the location of representative area(s) ;
8. Off-target Drift Management Plan, including the following:
 - a. Procedures used when applying pesticides;
 - b. Procedures used when off-target drift is anticipated due to the nature of the application and environmental conditions;
 - c. Procedures used when off-target drift is not anticipated, but does occur; and
 - d. Site record sheet.
9. If applicable, describe details of the buffer zone that will be used to prevent off-target spray drift* ;
10. Description of implementation of all reasonable alternatives to limit amount of residual pesticide discharge;
11. Evaluation of available BMPs to determine if there are feasible alternatives to the selected pesticide application project that could reduce potential water quality impacts;
12. Description of the BMPs to be implemented;
13. Identify the Problem

Prior to the first pesticide application covered under this General Permit that will result in a discharge of residual pesticides to waters of the US, and at least once each calendar year thereafter prior to the first pesticide application for that calendar year, the Discharger must do the following for each pest management area:

 - a. If applicable, establish densities for pest populations to serve as action threshold(s) for implementing pest management strategies;
 - b. Identify each target pest species to develop species-specific pest management strategies based on developmental and behavioral considerations for each species;
 - c. Identify known breeding areas for source reduction, larval control program, and habitat management; and
 - d. Analyze existing surveillance data to identify new or unidentified sources of each pest problem as well as areas that have recurring pest problems.
14. Examine the Possibility of Alternatives

Dischargers should continue to examine the possibility of alternatives to reduce the need for applying pesticides. Such methods include:

- a. Evaluating the following management options, in which the impact to water quality, impact to non-target organisms, pesticide resistance, feasibility, and cost effectiveness should be considered:
 - No action
 - Prevention
 - Mechanical or physical methods
 - Cultural methods
 - Biological control agents
 - Pesticides
- b. Using the least intrusive method of pesticide application.
- c. Public education efforts to reduce potential insect breeding habitat.
- d. Applying a decision matrix concept to the choice of the most appropriate formulation.

15. Correct Use of Pesticides

Users of pesticides must ensure that all reasonable precautions are taken to prevent off-target spray drift. Reasonable precautions include using the right spraying techniques and equipment, taking account of weather conditions and the need to protect the environment.

a. Consider Buffer Zone

When spraying near water with certain pesticides, it might be necessary to leave an unsprayed area at the margin to prevent spray drifting out of the target area. This unsprayed area is called a buffer zone. The size of the margin is dependent upon the type of sprayer used, e.g. aerial application will require a larger buffer zone than ground application.

b. Prevent Off-Target Spray Drift

Users of pesticides must ensure that all reasonable precautions are taken to prevent off-target spray drift. A combination of factors may affect off-target spray drift, including wind velocity at spray nozzle height, stability of the local atmospheric conditions, wrong nozzles or pressure choice affecting spray quality, vehicle speed, boom height, poor equipment maintenance, and incorrect equipment setting.

It is important that the appropriate environmental or conservation agency is contacted before spraying, in case there are particularly susceptible areas that the spray operator is not aware of. The following should be considered to avoid off-target spray drift:

- i. Check the weather forecast before starting the spray application;
- ii. Do not spray if the wind direction and speed would cause spray to drift onto sensitive areas;
- iii. If applicable, release the pesticide as close as possible to the target;

- iv. Check spray angles and adjust height accordingly; and
- v. Use the lowest effective rates of application.
- c. All errors in application and spills are reported to the proper authority.
- d. Staff training in the proper application of pesticides and handling of spills.

D. Pesticide Application Log

The Discharger shall maintain a log for each pesticide application. The application log shall contain, at a minimum, the following information:

- 1. Date of application;
- 2. Location of application;
- 3. Name of applicator;
- 4. Application details, such as time application started and stopped, pesticide application rate and concentration, wind speed and direction, vehicle speed, temperature, pH, turbidity, and electrical conductivity;
- 5. Visual monitoring assessment; and
- 6. Certification that applicator(s) followed the PAP.

IX. PROVISIONS

A. Standard Provisions

- 1. All Dischargers authorized to discharge under this General Permit shall comply with the Federal Standard Provisions included in Attachment B of this General Permit.
- 2. This General Permit does not authorize the discharge of residual pesticides or their breakdown by-products to waters of the US that are impaired by the pesticides used. Impaired waters are those waters not meeting quality standards pursuant to Section 303(d) of the CWA. California impaired waters are listed on http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.
- 3. The State Water Board may use this General Permit to regulate the discharge of residual pesticides to a surface water classified as Outstanding National Resource Waters or as a water body impaired by unknown toxicity only after the following conditions are satisfied: (1) a project-specific antidegradation analysis was completed and found that the proposed pesticide spray application is consistent with State and federal antidegradation policies; (2) the proposed project will comply with the limitations and discharge requirements specified in the General Permit; and (3) if required, the proposed pesticide application qualifies for and has been granted a Basin Plan prohibition exception prior to discharge. The two bodies of water that are classified as Outstanding National Resource Waters in California are Lake Tahoe and Mono Lake.
- 4. The Discharger must follow all FIFRA pesticide label instructions and any Use Permits issued by a County Agricultural Commissioner.

5. The Discharger must be licensed by DPR if such licensing is required for the pesticide application project.
6. The Discharger must comply with effluent limitations and must develop and implement a PAP.
7. In accordance with the PAP, Section VIII.C.10, the Discharger shall implement the identified alternative measures to the selected pesticide application project that could reduce potential water quality impacts.
8. This General Permit incorporates discharge prohibitions contained in water quality control plans, as implemented by the State and the nine Regional Water Boards.
9. All Dischargers authorized to discharge under this General Permit shall comply with the following provisions:
 - a. After notice and opportunity for a hearing, this General Permit may be terminated or modified for cause, including, but not limited to:
 - i. violation of any term or condition contained in this General Permit;
 - ii. obtaining this General Permit by misrepresentation or by failing to disclose fully all relevant facts;
 - iii. a change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge; and
 - iv. a material change in the character, location, or volume of discharge (if applicable).
 - b. The provisions of this General Permit are severable. If any provision of this General Permit is found invalid, the remainder of this General Permit shall not be affected.
 - c. The Discharger shall maintain a copy of this General Permit and make it available at all times to operating personnel. Key operating personnel shall be familiar with its content.
 - d. To demonstrate compliance with Title 16, CCR, sections 415 and 3065, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.
 - e. Laboratories that perform sample analyses must be identified in all monitoring reports submitted to the State and Regional Water Board.
 - f. All monitoring and analysis instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary, at least yearly, to ensure their continued accuracy.
 - g. Each Discharger shall file with the State Water Board technical reports on self-monitoring performed according to the detailed specifications contained in the MRP attached to this General Permit.

- h. The State and Regional Water Board are authorized to enforce the terms of this General Permit under several provisions of the California Water Code, including, but not limited to, sections 13385, 13386, and 13387.

B. Monitoring and Reporting Program Requirements

1. The Discharger shall comply with the Monitoring and Reporting Program, and future revisions thereto, in Attachment C of this General Permit.
2. The State Water Board Deputy Director of the Division of Water Quality may add monitoring and reporting requirements to the PAP.
3. The State Water Board Deputy Director of the Division of Water Quality may approve reductions in monitoring frequencies if the Discharger makes a request and the request is backed by statistical trends of monitoring data submitted.

C. Special Provisions

1. Reopener Provisions

- a. This General Permit may be reopened for modification, or revocation and reissuance in accordance with the provisions contained in 40 C.F.R. §122.62. This General Permit may also be re-opened if additional pesticides for spray applications are registered by DPR.
- b. Conditions that necessitate a major modification of a permit are described in 40 C.F.R. §122.62, including:
 - i. If new or amended applicable water quality standards are promulgated or approved pursuant to section 303 of the CWA, or amendments thereto, this General Permit may be reopened and modified in accordance with the new or amended standards.
 - ii. When new information, that was not available at the time of permit issuance, would have justified different permit conditions at the time of issuance.
- c. **Acute and Chronic Toxicity.** If the State Water Board revises its toxicity control provisions that would require the establishment of numeric chronic toxicity limitations, this General Permit may be reopened to include numeric acute and chronic toxicity receiving limitations based on the new provisions.
- d. **Receiving Water Limitations.** This General Permit may be reopened to add receiving water limitations if the monitoring result for residual pesticides specified in the Table 3 (Receiving Water Monitoring Triggers) exceeded the associated monitoring trigger.

2. Special Studies, Technical Reports, and Additional Monitoring Requirements

This General Permit requires the Discharger to conduct additional investigations for compliance with the narrative toxicity Receiving Water Limitation when the monitoring results for residual pesticides listed in Table 3 exceeded their monitoring triggers.

3. Reporting

a. Twenty-Four Hour Report

The Discharger shall report to the State Water Board and the appropriate Regional Water Board any noncompliance, including any effect of a pesticide's use that is unexpected or unintended, that may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Discharger becomes aware of the circumstances and must include the following information:

- i. The caller's name and telephone number;
- ii. Applicator name and mailing address;
- iii. Waste Discharge Identification (WDID) number;
- iv. The name and telephone number of a contact person, if different than the person providing the 24-hour notice;
- v. How and when the Discharger become aware of the noncompliance;
- vi. Description of the location of the noncompliance;
- vii. Description of the noncompliance identified and the USEPA pesticide registration number for each product the Discharger applied in the area of the noncompliance; and
- viii. Description of any steps that the Discharger has taken or will take to correct, repair, remedy, cleanup, or otherwise address any adverse effects.

If the Discharger is unable to notify the State Water board and the appropriate Regional Water Board within 24 hours, the Discharger must do so as soon as possible and also provide the rationale for why the Discharger was unable to provide such notification within 24 hours.

b. Five-Day Written Report

The Discharger shall also provide a written submission within five (5) days of the time the Discharger becomes aware of the noncompliance. The written submission shall contain the following information:

- i. Date and time the Discharger contacted the State Water Board and the appropriate Regional Water Board notifying of the noncompliance and any instructions received from the State and/or Regional Water Board ;
- ii. Information required to be provided in Section C.3.a above;
- iii. A description of the noncompliance and its cause, including exact date and time and species affected, estimated number of individual and approximate size of dead or distressed organisms (other than the pests to be eliminated);
- iv. Location of incident, including the names of any waters affected and appearance of those waters (sheen, color, clarity, etc);

- v. Magnitude and scope of the affected area (e.g. aquatic square area or total stream distance affected);
- vi. Pesticide application rate, intended use site (e.g., banks, above, or direct to water), method of application, and name of pesticide product, description of pesticide ingredients, and USEPA registration number;
- vii. Description of the habitat and the circumstances under which the noncompliance activity occurred (including any available ambient water data for pesticides applied);
- viii. Laboratory tests performed, if any, and timing of tests. Provide a summary of the test results within five days after they become available;
- ix. If applicable, explain why the Discharger believes the noncompliance could not have been caused by exposure to the pesticide from the Discharger's application; and
- x. Actions to be taken to prevent recurrence of adverse incidents.

The State Water Board may waive the above-required written report under this provision on a case-by-case basis if an oral report has been received within 24 hours.

4. Corrective Action

- a. **Situations Requiring Revision of Control Measures.** If any of the following situations occur, the Discharger must review and, as necessary, revise the evaluation and selection of the control measures to ensure that the situation is eliminated and will not be repeated in the future:
 - i. An unauthorized release or discharge associated with the application of pesticides (e.g., spill, leak, or discharge not authorized by this or another NPDES permit) occurs;
 - ii. The Discharger becomes aware, or the State Water Board concludes, that the control measures are not adequate/sufficient for the discharge to meet applicable water quality standards;
 - iii. Any monitoring activities indicate that the Discharger failed to:
 - a. Use the lowest amount of pesticide produce per application and optimum frequency of pesticide applications necessary to control pests, consistent with reducing the potential for development of pest resistance;
 - b. Perform regular maintenance activities to reduce leaks, spills, or other unintended discharges of pesticides associated with the application of pesticides covered under this General Permit; or
 - c. Maintain pesticide application equipment in proper operating condition by adhering to any manufacturer's conditions and industry practices, and by calibrating, cleaning, and repairing such equipment on a regular basis to ensure effective pesticide application and pest control. The Discharger must ensure that the equipment's rate of pesticide

application is calibrated to deliver the precise minimum quantity of pesticide needed to achieve greatest efficacy against pests.

- b. **Corrective Action Deadlines.** If the Discharger determines that changes to the control measures are necessary to eliminate any situation identified in Section C.4 above, such changes must be made before the next pesticide application that results in a discharge if practicable, or if not, as soon as possible thereafter.
- c. **Effect of Corrective Action.** The occurrence of a situation identified in Section C.4 above may constitute a violation of this General Permit. Correcting the situation according to Section C.4 does not absolve the Discharger of liability for any original violation. However, failure to comply with Section C.4 constitutes an additional permit violation. The State Water Board will consider the appropriateness and promptness of corrective action in determining enforcement responses to permit violations.

The State Water Board and the appropriate Regional Water Board may impose additional requirements and schedules of compliance, including requirements to submit additional information concerning the condition(s) triggering corrective action or schedules and requirements more stringent than specified in this General Permit. Those requirements and schedules will supersede those of Section C.4 if such requirements conflict.

5. **Adverse Incident to Threatened or Endangered Species or Critical Habitat**

If the Discharger becomes aware of an adverse incident* to a federally-listed threatened or endangered species or its federally-designated critical habitat, that may have resulted from the Discharger's pesticide application, the Discharger must immediately notify the National Marine Fisheries Service (NMFS) in the case of an anadromous or marine species, or the U.S. Fish and Wildlife Service (FWS) in the case of a terrestrial or freshwater species. This notification must be made by telephone or email immediately when the Discharger becomes aware of the adverse incident and must include at least the following information:

- a. The caller's name, telephone number, and email address;
- b. Applicator name and mailing address;
- c. The name of the affected species;
- d. How and when the Discharger became aware of the adverse incident;
- e. Description of the location of the adverse incident;
- f. Description of the adverse incident, including the USEPA pesticide registration number for each product applied in the area of the adverse incident; and
- g. Description of any steps that have been taken or will be taken to alleviate the adverse impact to the species.

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.

6. Other Special Provisions (If Applicable)

In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding Discharger of the existence of this General Permit by letter, a copy of which shall be immediately forwarded to the State and the appropriate Regional Water Board.

To assume operation under this General Permit, the succeeding Discharger must apply in writing to the State Water Board Deputy Director of the Division of Water Quality requesting transfer of coverage of the General Permit. The request must contain the requesting entity's full legal name, the State of incorporation if a corporation, address and telephone number of the persons responsible for contacting with the State Water Board and a statement. The statement shall comply with the signatory and certification requirements in the federal Standard Provisions (Attachment B) and state that the new Discharger assumes full responsibility for compliance with this General Permit. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code.

ATTACHMENT A – DEFINITIONS

Adverse Incident

Adverse Incident means a situation where the Discharger observes upon inspection or becomes aware of in which:

- A person or non-target organism may have been exposed to a pesticide residue, and
- The person or non-target organism suffered an adverse or toxic effect.

Adverse or Toxic Effect

An “adverse or toxic effect” includes any impact that occur within US waters on non-target plants, fish, or wildlife that is unusual or unexpected (e.g., effects are to organisms not otherwise described on the pesticide product label or otherwise not expected to be present) as a result of exposure to a pesticide residue, and may include:

- Distressed or dead juvenile and small fishes
- Washed up or floating fish
- Fish swimming abnormally or erratically
- Fish lying lethargically at water surface or in shallow water
- Fish that are listless or nonresponsive to disturbance
- Stunting, wilting, or desiccation of non-target submerged or emergent aquatic plants
- Other dead or visibly distressed non-target aquatic organisms (amphibians, turtles, invertebrates, etc.)

An “adverse or toxic effect” also includes any adverse effects to humans (e.g., skin rashes) or domesticated animals that occur either directly or indirectly from a discharge to waters of the U.S. that are temporally and spatially related to exposure to a pesticide residue (e.g., vomiting, lethargy).

Adulticides

Insecticides used to kill adult insects.

Agricultural Supply

Uses of water for farming, horticulture, or ranching including, but not limited to, irrigation (including leaching of salts), stock watering, or support of vegetation for range grazing.

Application Area

The application area is the area to which pesticides are directly applied. It is the responsibility of the Discharger to determine the application area. The application area may be synonymous with the target area.

Application Event

The application event is the time that introduction of the pesticide to the application area takes place, not the length of time that the environment is exposed to the pesticide.

Cold Freshwater Habitat

Uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

Enclosed Bays

Enclosed Bays means indentations along the coast that enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays include all bays where the narrowest distance between the headlands or outermost harbor works is less than 75 percent of the greatest dimension of the enclosed portion of the bay. Enclosed bays do not include inland surface waters or ocean waters.

Estuaries

Estuaries means waters, including coastal lagoons, located at the mouths of streams that serve as areas of mixing for fresh and ocean waters. Coastal lagoons and mouths of streams that are temporarily separated from the ocean by sandbars shall be considered estuaries. Estuarine waters shall be considered to extend from a bay or the open ocean to a point upstream where there is no significant mixing of fresh water and seawater. Estuaries do not include inland surface waters or ocean waters.

Freshwater Replenishment

Uses of water for natural or artificial maintenance of surface water quantity or quality.

Groundwater Recharge

Uses of water for natural or artificial recharge of ground water for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers.

Half-Life

Half-life is the time required for half of the compound introduced into an ecosystem to be eliminated or disintegrated by natural processes.

Herbicide

Herbicide is a chemical agent that destroys unwanted plants or inhibits their growth. Selective herbicides kill specific targets while leaving the desired crop relatively unharmed

Hydropower Supply

Uses of water for hydropower supply.

Industrial Process Supply

Uses of water for industrial activities that depend primarily on water quality.

Inland Surface Waters

All surface waters of the State that do not include the ocean, enclosed bays, or estuaries.

Larvicides

Insecticides used to control insect larvae. Larvicides include biological insecticides such as the microbial larvicides *Bacillus thuringiensis kurstaki* and nuclear polyhedrosis virus (NPV), and other pesticides such as spinosad.

Migration of Aquatic Organisms

Uses of water that support habitats necessary for migration or other temporary activities by aquatic organisms, such as anadromous fish.

Municipal and Domestic Supply (MUN)

Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.

Navigation

Uses of water for shipping, travel, or other transportation by private, military, or commercial vessels.

Non-Contact Water Recreation

Uses of water for recreational activities involving proximity to water, but where there is generally no body contact with water, nor any likelihood of ingestion of water. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, etc.

Off-target Area

The off-target area is the area adjacent to the target area where off-target spray drift may occur.

Off-target Spray Drift

Off-target spray drift is the physical movement of a pesticide through air at the time of application or soon thereafter, to any area other than that intended for application. Pesticide applications for pest control are generally intended to drift through the application and target areas.

Priority Pollutants

Priority pollutants are listed within the California Toxics Rule in 40 Code of Federal Regulations, section 131.38(b)(1). Criteria to protect aquatic life and human health are set for priority pollutants in the California Toxics Rule.

Rare, Threatened, or Endangered Species Habitat

Uses of water that support aquatic habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened or endangered.

Representative Area

The representative area is an area within and near the application area that is typical of the hydrologic and vegetative conditions present at the application area.

Residual Pesticides

Residual pesticides are pesticide ingredients or breakdown products that are present after the use of the pesticide for pest control.

Source of Drinking Water

Any water designated as municipal or domestic supply (MUN) in a Regional Water Board Basin Plan and/or as defined in SWRCB Resolution No. 88-63.

Spawning, Reproduction, and/or Early Development

Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish.

Target Area

The target area is the area designated for pest control. This may be synonymous with the application area.

Warm Freshwater Habitat

Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

Water Contact Recreation

Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, or use of natural hot springs.

Wildlife Habitat

Uses of water that support terrestrial or wetland ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats or wetlands, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

ATTACHMENT B – STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE (IF APPLICABLE)

A. Duty to Comply

1. The Discharger must comply with all of the conditions of this General Permit. Any noncompliance constitutes a violation of the CWA and the California Water Code and is grounds for enforcement action, for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. (40 C.F.R. §122.41(a).)
2. The Discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if this General Permit has not yet been modified to incorporate the requirement. (40 C.F.R. §122.41(a)(1).)

B. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a Discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this General Permit. (40 C.F.R. §122.41(c).)

C. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge in violation of this General Permit that has a reasonable likelihood of adversely affecting human health or the environment. (40 C.F.R. §122.41(d).)

D. Proper Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with the conditions of this General Permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. (40 C.F.R. §122.41(e).)

E. Property Rights

1. This General Permit does not convey any property rights of any sort or any exclusive privileges. (40 C.F.R. §122.41(g).)
2. The issuance of this General Permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of state or local law or regulations. (40 C.F.R. §122.5(c).)

F. Inspection and Entry

The Discharger shall allow the Regional Water Board, State Water Board, United States Environmental Protection Agency (USEPA), and/or their authorized

representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to (40 C.F.R. §122.41(i); Water Code, §13383) to:

1. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this General Permit (40 C.F.R. §122.41(i)(1));
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this General Permit (40 C.F.R. §122.41(i)(2));
3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this General Permit (40 C.F.R. §122.41(i)(3)); and
4. Sample or monitor, at reasonable times, for the purposes of assuring General Permit compliance or as otherwise authorized by the CWA or the Water Code, any substances or parameters at any location. (40 C.F.R. §122.41(i)(4).)

II. STANDARD PROVISIONS – PERMIT ACTION

A. General

This General Permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any General Permit condition. (40 C.F.R. §122.41(f).)

B. Duty to Reapply

If the Discharger wishes to continue an activity regulated by this General Permit after the expiration date of this General Permit, the Discharger must apply for and obtain a new permit. (40 C.F.R. §122.41(b).)

C. Transfers

This General Permit is not transferable to any person except after notice to the State Water Board. The State Water Board may require modification or revocation and reissuance of the General Permit to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA and the Water Code. (40 C.F.R. §122.41(l)(3); §122.61.)

III. STANDARD PROVISIONS – MONITORING

- A.** Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. (40 C.F.R. §122.41(j)(1).)
- B.** Monitoring results must be conducted according to test procedures under Part 136 unless other test procedures have been specified in this General Permit. (40 C.F.R. §122.41(j)(4); §122.44(i)(1)(iv).)

IV. STANDARD PROVISIONS – RECORDS

A. The Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this General Permit, and records of all data used to complete the application for this General Permit, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the State Water Board Deputy Director of the Division of Water Quality at any time. (40 C.F.R. §122.41(j)(2).)

B. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements (40 C.F.R. §122.41(j)(3)(i));
2. The individual(s) who performed the sampling or measurements (40 C.F.R. §122.41(j)(3)(ii));
3. The date(s) analyses were performed (40 C.F.R. §122.41(j)(3)(iii));
4. The individual(s) who performed the analyses (40 C.F.R. §122.41(j)(3)(iv));
5. The analytical techniques or methods used (40 C.F.R. §122.41(j)(3)(v)); and
6. The results of such analyses. (40 C.F.R. §122.41(j)(3)(vi).)

C. Claims of confidentiality for the following information will be denied (40 C.F.R. §122.7(b)):

1. The name and address of any permit applicant or Discharger (40 C.F.R. §122.7(b)(1)); and
2. Permit applications and attachments, permits and effluent data. (40 C.F.R. §122.7(b)(2).)

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

The Discharger shall furnish to the Regional Water Board, State Water Board, or USEPA within a reasonable time, any information which the Regional Water Board, State Water Board, or USEPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this General Permit or to determine compliance with this General Permit. Upon request, the Discharger shall also furnish to the Regional Water Board, State Water Board, or USEPA copies of records required to be kept by this General Permit. (40 C.F.R. §122.41(h); Water Code, §13267.)

B. Signatory and Certification Requirements

All applications, reports, or information submitted to the Regional Water Board, State Water Board, and/or USEPA shall be signed and certified in accordance with

Standard Provisions – Reporting V.B.2, V.B.3, V.B.4, and V.B.5 below. (40 C.F.R. §122.41(k).)

1. **For a municipality, State, federal, or other public agency:** All permit applications shall be signed by either a principal executive officer or ranking elected official. For purposes of this provision, a principal executive officer of a federal agency includes: (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of USEPA). (40 C.F.R. §122.22(a)(3).)
2. All reports required by this General Permit and other information requested by the Regional Water Board, State Water Board, or USEPA shall be signed by a person described in Standard Provisions – Reporting V.B.1 above, or by a duly authorized representative of that person. A person is a duly authorized representative only if:
 - a. The authorization is made in writing by a person described in Standard Provisions – Reporting V.B.1 above (40 C.F.R. §122.22(b)(1));
 - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) (40 C.F.R. §122.22(b)(2)); and
 - c. The written authorization is submitted to the Regional Water Board and State Water Board. (40 C.F.R. §122.22(b)(3).)
3. If an authorization under Standard Provisions – Reporting V.B.1 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Standard Provisions – Reporting V.B.1 above must be submitted to the Regional Water Board and State Water Board prior to or together with any reports, information, or applications, to be signed by an authorized representative. (40 C.F.R. §122.22(c).)
4. Any person signing a document under Standard Provisions – Reporting V.B.1 or V.B.3 above shall make the following certification:

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure 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 and imprisonment for knowing violations.” (40 C.F.R. §122.22(d).)

C. Monitoring Reports

1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program (Attachment C) in this General Permit. (40 C.F.R. §122.22(l)(4).)
2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Regional Water Board or State Water Board for reporting results of monitoring of sludge use or disposal practices. (40 C.F.R. §122.41(l)(4)(i).)
3. If the Discharger monitors any pollutant more frequently than required by this General Permit using test procedures approved under Part 136 or as specified in this General Permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the State Water Board. (40 C.F.R. §122.41(l)(4)(ii).)
4. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this General Permit. (40 C.F.R. §122.41(l)(4)(iii).)

D. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this General Permit, shall be submitted no later than 14 days following each schedule date. (40 C.F.R. §122.41(l)(5).)

E. Planned Changes

The Discharger shall give notice to the State and the Regional Water Board as soon as possible of any planned physical alterations or additions to the permitted activity or discharge. Notice is required under this provision (40 C.F.R. §122.41(l)(1)) only when the alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are subject neither to effluent limitations in this General Permit nor to notification requirements under section 122.42(a)(1) (see Additional Provisions—Notification Levels VII.A.1). (40 C.F.R. §122.41(l)(1)(ii).)

F. Anticipated Noncompliance

The Discharger shall give advance notice to the Regional Water Board and the State Water Board of any planned changes in the permitted discharge or activity that may result in noncompliance with General Permit requirements. (40 C.F.R. §122.41(l)(2).)

G. Other Noncompliance

The Discharger shall report all instances of noncompliance not reported under Standard Provisions – Reporting V.C, V.D, and V.E above at the time monitoring

reports are submitted. The reports shall contain the information listed in Standard Provision – Reporting V.F above. (40 C.F.R. §122.41(l)(7).)

H. Other Information

When the Discharger becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Water Board, State Water Board, or USEPA, the Discharger shall promptly submit such facts or information. (40 C.F.R. §122.41(l)(8).)

VI. STANDARD PROVISIONS – ENFORCEMENT

The State and the Regional Water Board are authorized to enforce the terms of this General Permit under several provisions of the Water Code, including, but not limited to, sections 13385, 13386, and 13387.

ATTACHMENT C – MONITORING AND REPORTING PROGRAM

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ATTACHMENT C – MONITORING AND REPORTING PROGRAM

Section 122.8 of Title 40 of the Code of Federal Regulations (40 C.F.R., §122.48) requires that all NPDES permits specify monitoring and reporting requirements. California Water Code sections 13267 and 13383 also authorize the State Water Quality Control Board (the State Water Board) and the Regional Water Quality Control Board (Regional Water Board) to require technical and monitoring reports. This Monitoring and Reporting Program establishes monitoring and reporting requirements which implement federal and California laws and regulations.

This Monitoring and Reporting Program is designed to address the two key questions shown below. It also encourages Dischargers to form monitoring coalitions with others doing similar applications within a given watershed or doing applications of similar use patterns (urban/suburban, agricultural, wetlands, recreational, and wildlife refuges).

Question No. 1: Does the pesticide residue from applications cause an exceedance of receiving water limitations or monitoring triggers?

Question No. 2: Does the pesticide residue, including active ingredients, inert ingredients, and degradates, in any combination cause or contribute to an exceedance of the “no toxics in toxic amount” narrative toxicity objective?

Each Coalition’s or individual Discharger’s Pesticide Application Plan (PAP) must demonstrate how this will be accomplished by including the following information:

- Evaluation of the Coalition’s or Discharger’s ability to answer the two key questions listed above with the information presently available, with the understanding that the ability to answer may vary from waterbody to waterbody.
- Identification of critical gaps in knowledge (e.g., inability to document impacts, lack of knowledge about potential sources, absence of trend monitoring components) relevant to the coalition’s circumstances.
- Description of how the PAP will be used as a framework for filling in the data gaps and for developing monitoring components suited to the coalition’s circumstances, documenting how the two key questions will be answered.

I. GENERAL MONITORING PROVISIONS

- A.** Samples and measurements taken as required herein shall be representative of the nature of the monitored discharge. All samples shall be taken at the monitoring locations specified in the PAP submitted by the Discharger, unless otherwise specified. Monitoring locations shall not be changed without notification to and approval of the appropriate State Water Board Deputy Director of the Division of Water Quality.

- B.** All analyses shall be conducted at a laboratory certified for such analyses by the California Department of Public Health (CDPH), formerly Department of Health Services). Laboratories that perform sample analyses shall be identified in all monitoring reports. A manual containing the steps followed in this program must be kept in the laboratory and shall be available for inspection by the State Water Board and the appropriate Regional Water Board staff. The Quality Assurance-Quality Control Program must conform to USEPA guidelines or to procedures approved by the State Water Board.
- C.** All analyses shall be conducted in accordance with the latest edition of “Guidelines Establishing Test Procedures for Analysis of Pollutants” (Guidelines), promulgated by the USEPA (40 C.F.R. Part 136). If a test method for any of active ingredients is not available, the Coalition or Individual Discharger may use alternative analytical methods. The alternative analytical methods must be capable of achieving the method detection limits below the Receiving Water Monitoring Triggers for the active ingredients and approved by the State Water Board’s Deputy Director of the Division of Water Quality. Any procedures to prevent the contamination of samples as described by the PAP shall be implemented.
- D.** Records of monitoring information shall include the following:

 - 1. The date, exact place, and time of sampling or measurements;
 - 2. The individuals who performed the sampling or measurements;
 - 3. The dates analysis were performed;
 - 4. The individuals who performed the analyses;
 - 5. The analytical techniques or methods uses; and
 - 6. The results of such analyses.
- E.** All monitoring instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their accuracy.
- F.** Monitoring results, including noncompliance, shall be reported at intervals and in a manner specified in this Monitoring and Reporting Program.
- G.** Laboratories analyzing monitoring samples shall be certified by CDPH, in accordance with the provision of California Water Code section 13176, and must include quality assurance/quality control data with their reports.

II. MONITORING LOCATIONS

Each Discharger or Coalition shall establish monitoring locations specified in the PAP to demonstrate compliance with the receiving water limitations, discharge specifications, and other requirements in this General Permit.

III. TOXICITY TESTING REQUIREMENTS

A. Toxicity Testing

Each Coalition or Discharger shall conduct toxicity testing to determine whether residual pesticides are contributing toxicity to the receiving water. The Coalition or Discharger shall meet the following toxicity testing requirements:

1. Monitoring Frequency – Each Coalition or Discharger shall perform the toxicity testing in conjunction with the Background and Event Monitoring for active ingredients and at the testing frequency specified in Table C-1 (Coalition or Individual Monitoring Requirements).
2. Sample Types – Receiving water samples shall be grab samples and shall be taken at receiving water monitoring locations specified in the PAP submitted by the Coalition or Discharger. The receiving water control shall be a grab sample taken from a receiving water sampling location (outside of the application influence) as specified in the PAP or within the application area 24 hours before application.
3. Sample Volumes – The sample volume is determined by the specific test methods to be used. Sufficient sample volume shall be collected to perform the required toxicity tests.
4. Test Species – Each Coalition or Discharger shall conduct chronic toxicity tests with *Ceriodaphnia dubia* to measure survival and reproduction endpoints to *C. dubia* exposed to the receiving water that contains residual pesticides from the application of malathion and piperonyl butoxide (PBO).

Each Coalition or Discharger shall conduct acute toxicity tests with *Hyaella aztec* exposed to the receiving water that contains residual pesticides from the application of pyrethrin and pyrethroid products compared to that of the control organisms.

Each Coalition or Discharger shall conduct chronic toxicity tests using species specified in the Short-term Method for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA/821-R-02-013 for receiving waters containing residual pesticides from spray applications using pesticide products with all other active ingredients.

5. Methods – The presence of chronic toxicity shall be estimated as specified in Short-term Method for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA/821-R-02-013, October 2002; Table IA, 40 C.F.R. Part 136 and its subsequent amendments or revisions. The test endpoint data are analyzed using a t-test approach as described in USEPA test method manuals (see EPA/821/R-02/012, page 86), or in USEPA's NPDES Test of Significant Toxicity Implementation Document June 2010.

The presence of acute toxicity shall be estimated as specified in Methods for Measuring the Acute Toxicity of Effluent and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition, EPA/821-R-02-012, October 2002, Table 1A, 40

C.F.R. Part 136 and its subsequent amendments or revisions. The test endpoint data are analyzed using a standard t-test approach. Statistical analysis methods shall be consistent with USEPA test method manuals (see EPA/821/R-02/012, page 86).

6. Quality Assurance – The toxicity test must meet all test acceptability criteria as specified in the Short-term Method for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA/821-R-02-013, October 2002.
7. Dilution Series – None. The tested sample must be 100% receiving water of the representative areas.

B. Toxicity Testing Notification Requirements

Each Coalition or Discharger shall notify the State Water Board and the appropriate Regional Water Board within 24-hours after the receipt of any test result indicating a “fail” result.

1. **Acute and Chronic Toxicity Reporting.** Acute and Chronic toxicity monitoring results shall be reported to the State Water Board and the appropriate Regional Water Board within 30 days following completion of the test, and shall contain, at minimum:
 - a. The results expressed as either pass or fail using the standard t-test statistics;
 - b. The dates of sample collection and initiation of each toxicity test;
 - c. The results compared to the numeric toxicity monitoring trigger, in which the numeric monitoring trigger is any sample that shows a statistically significant difference compared to the control.
 - d. Any toxicity test result indicating toxicity within the receiving stream must be immediately reported to the State Water Board and the appropriate Regional Water Board as a potential violation of this General Permit.

Additionally, the annual discharger self-monitoring reports shall contain the following:

- a. A full laboratory report for all toxicity testing and monitoring frequency;
 - b. The dates of sample collection and initiation of each toxicity test; and
 - c. All results for receiving water parameters monitored concurrently with the toxicity test(s).
2. **Quality Assurance (QA).** The Coalition or Discharger must provide the following information for QA purposes:
 - a. Toxicity data with the statistical output page giving the species, statistical endpoints, dilution water used, and dates tested.
 - b. Any information on deviations or problems encountered and how they were dealt with.

IV. RECEIVING WATER MONITORING REQUIREMENTS – SURFACE WATER

A. Watershed Monitoring

The State Water Board and Regional Water Boards have been implementing a Watershed Management Approach (WMA) to address water quality protection in the state following USEPA's guidance in *Watershed Protection: A Project Focus* (EPA841-R-95-003, August 1995). The objective of the WMA is to provide a more comprehensive and integrated strategy resulting in water resource protection, enhancement, and restoration while balancing economic and environmental impacts within a hydrologically-defined drainage basin or watershed. The WMA emphasizes cooperative relationships between regulatory agencies, the regulated community, environmental groups, and other stakeholders in the watershed to achieve the greatest environmental improvements with the resources available.

To foster the implementation of the WMA approach, this General Permit encourages Dischargers to participate in the development and implementation of a watershed-wide monitoring program to determine the water quality impacts of their pest control activities. Whether conducting monitoring through the Coalition approach or individually, Dischargers must submit a PAP to the State Water Board and the appropriate Regional Water Boards. The PAP must be approved by the State Water Board Deputy Director of the Division of Water Quality before they can proceed with their application activities.

B. Monitoring Requirements

The PAP shall be designed to answer the two key questions stated above. The PAP shall describe the tasks and time schedule in which these two key questions will be addressed. Selection of monitoring areas must be scientifically based and sufficiently representative to characterize water quality for all surface waters of the US that may be affected by applications within coalition or individual Discharger boundaries.

The PAP must consider watershed specific attributes and waste constituents, based on the natural characteristics of applications within the coalition's or Discharger's area, as well as the receiving water quality conditions. Watershed specific requirements will include follow-up sampling and analyses on exceedances that may be unique for specific pesticides.

Monitoring area information shall include a description of the study area, GPS coordinates, and pesticides being applied. The numbers and locations of the monitoring areas must be sufficient to characterize water quality, based on specific watershed characteristics, and be supported by a detailed discussion of these characteristics.

Monitoring areas shall be selected for water bodies affected by the discharge in order to answer the two key questions. Water bodies that carry residual pesticides as a result of applications must be represented in selection of monitoring areas.

The following monitoring is required for each sampling:

1. **Background Monitoring.** Background samples shall be collected at the application area or target area, just prior (up to 24-hours in advance of application) to the application event.
2. **Event Monitoring.** Event monitoring samples shall be collected in the application area or the target area immediately after the application event but shall not exceed 24 hours after the application event.
3. **Post-Event Monitoring.** Post-event samples shall be collected within the application area or the target area within one week after the application event . The Coalition or Discharger is responsible for calculating the distance from the path (or point) of application in which off-target spray drift may occur. Post-Event monitoring shall be conducted accordingly.

Developing the details of a monitoring design requires clearly defining several inputs to the design and then organizing these in a logical framework that supports effective decision making about indicators, monitoring area locations, and monitoring frequency. The logical framework should describe:

1. The basic geographic and hydrographic features of the area, particularly application points and the pathways(s) of residue flows;
2. Pesticide application practices and how they are distributed in space and time;
3. Relevant knowledge about the transport, fates, and effects of pesticides, including best- and worst-case scenarios;
4. Description of the designated uses in each water body;
5. Relevant knowledge about the action of cumulative and indirect effects, and of other sources of impact;
6. Mechanisms through which pesticide applications could lead to designated use impacts, given the basic features of the area;
7. Known and potential impacts of pesticide applications on water quality, ranked in terms of relative risk, based on factors such as magnitude, frequency and duration;
8. Sufficient number of sampling areas to assess the entire Coalition's area of influence; and
9. The approach, including a schedule, to sample monitoring areas.

Monitoring shall also be used to provide supporting data that may allow considerations of the use of monitoring areas to be representative of other locations within the Coalition's boundaries. In order to be considered "representative," each Coalition or Discharger must provide technically valid justification for the representative nature of the monitoring locations to include similarities in hydrology, pesticide use, and other factors that affect the discharge of residual pesticides to surface waters as a result of applications. Each Coalition or Discharger must provide technical justification and identify which areas are to be considered representative in the PAP.

In conducting the receiving water sampling, a log shall be kept of the receiving water conditions throughout the reach bounded by the treatment area. Attention shall be given to the 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.

Notes on receiving water conditions shall be summarized in the monitoring report.

C. Coalition or Individual Monitoring Requirements

Monitoring shall take place at locations that are described and scheduled in the Coalition’s or Discharger’s PAP. Monitoring for all active ingredients must include frequent and routine monitoring on a pre-determined schedule, as summarized in the Table C-1 below:

Table C-1. Coalition or Individual Monitoring Requirements

Sample Type	Constituent/Parameter	Units	Sample Method	Minimum Sampling Frequency	Sample Type Requirement	Required Analytical Test Method
Visual	1. Monitoring area description (pond, lake, open waterway, channel, etc.) 2. Appearance of waterway (sheen, color, clarity, etc.) 3. Weather conditions (fog, rain, wind, etc.)	Not applicable	Visual Observation	All applications at all application areas	Background, Event, and Post-Event Monitoring	Not applicable
Physical	1. Temperature ¹	°F	Grab ³	4	Background, Event, and Post-Event Monitoring	5
	2. pH ²	Number				
	3. Turbidity ²	NTU				
	4. Electrical Conductivity ² @ 25°C	µmhos/cm				
Chemical	1. Active Ingredient ⁶	µg/L	Grab ³	4	Background, Event, and Post-Event Monitoring	5
	2. Dissolved Oxygen ²	mg/L				
Toxicity ⁷	Toxicity	Pass/Fail	Grab ³	4	Background and Event Monitoring	5

Sample Type	Constituent/Parameter	Units	Sample Method	Minimum Sampling Frequency	Sample Type Requirement	Required Analytical Test Method
1	Field testing.					
2	Field or laboratory testing.					
3	Samples shall be collected at the surface of the water body.					
4	A minimum of six samples per application season shall be required for each type of representative sites (urban, agricultural, and wetlands) as specified in the Coalition's or Individual Discharger's PAP. However, toxicity monitoring can be reduced to one sample every other application season when it is demonstrated based on six previous toxicity results that there is no toxicity.					
5	Pollutants shall be analyzed using the analytical methods described in 40 C.F.R. Part 136. If a test method for any of active ingredients is not available, the Coalition or Individual Discharger may use alternative analytical methods. The alternative analytical methods must be capable of achieving the method detection limits below the Receiving Water Monitoring Triggers for the active ingredients and approved by the State Water Board Deputy Director of the Division of Water Quality.					
6	1) adulticides containing acetamiprid, bifenthrin, carbaryl, , esfenvalerate, i, lambda cyhalothrin, malathion, naled, piperonyl butoxide (PBO), and pyrethrins; 2) laticide/adulticide containing cyfluthrin and midacloprid, and 3) Herbicides containing aminopyralid, clorsulfuron, clopyralid, glyphosate, imazapyr and triclopyr butoxyethyl ester.					
7	Toxicity testing shall be taken in conjunction with the Background and Event Monitoring for active ingredients specified in Footnote 6.					

V. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

1. The Discharger shall inform the State Water Board and the appropriate Regional Water Board 24 hours before the start of the application.
2. The Discharger shall comply with all Standard Provisions (Attachment B) related to monitoring, reporting, and recordkeeping.
3. Upon written request of the State and/or the appropriate Regional Water Board, the Discharger shall submit a summary monitoring report.
4. The Discharger shall report to the State Water Board and the appropriate Regional Water Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "Emergency Planning and Community Right to Know Act" of 1986 (42 U.S.C. §11001 et. seq.)
5. Monitoring frequencies may be adjusted by the State Water Board Deputy Director of the Division of Water Quality to a less frequent basis if the Discharger makes a request and the request is backed by statistical trends of monitoring data submitted.
6. Additional monitoring and reporting requirements may be added to the PAP by the State Water Board Deputy Director of the Division of Water Quality.

B. Annual Reports

1. Annual reports shall contain the following information:
 - a. An Executive Summary discussing compliance or violation of this General Permit and the effectiveness of the PAP to reduce or prevent the discharge of pollutants associated with pesticide applications;

- b. A summary of monitoring data, including the identification of water quality improvements or degradation, and recommendations for improvements to the PAP (including proposed BMPs) and monitoring program based on the monitoring results. All receiving water monitoring data shall be compared to applicable water quality standards;
 - c. Identification of BMPs currently in use and a discussion of their effectiveness in meeting the requirements in this General Permit;
 - d. A discussion of BMP modifications addressing violations of this General Permit;
 - e. A map showing the location of each application area, the target area, and the off-target area where off-target spray drift may occur;
 - f. Types and amounts of pesticides used at each application event during each application;
 - g. Information on surface area and/or volume of application and target areas and any other information used to calculate dosage, concentration, and quantity of each pesticide used;
 - h. Sampling results shall indicate the name of the sampling agency or organization, detailed sampling location information (including latitude and longitude or township/range/section if available), detailed map or description of each sampling area (i.e., address, cross roads, etc.), collection date, name of constituent/parameter and its concentration detected, minimum levels, method detection limits for each constituent analysis, name or description of water body sampled, and a comparison with applicable water quality standards, description of analytical QA/quality control plan. Sampling results shall be tabulated so that they are readily discernible; and
 - i. Recommendations to improve the monitoring program, BMPs, and PAP to ascertain compliance with this General Permit.
2. At any time during the term of this General Permit, the State Water Board or the appropriate Regional Water Board may notify Dischargers of the requirement to electronically submit Self-Monitoring Reports (SMRs) using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (<http://www.waterboards.ca.gov/ciwqs/index.html>). Until such notification is given, each Coalition or Discharger shall submit hard copy SMRs. The CIWQS Web site will provide additional directions for SMR submittal in the event there will be service interruption for electronic submittal.
3. Dischargers shall report the results for all monitoring specified in this Monitoring and Reporting Program in the SMR. Dischargers shall submit annual SMRs including the results of all required monitoring using USEPA-approved test methods or other test methods specified in this General Permit. If a Discharger monitors any pollutant more frequently than required by this General Permit, the results of this monitoring shall be included in the calculations and reporting of the data submitted in the SMR.

4. Monitoring reports shall be submitted to the State Water Board Deputy Director of the Division of Water Quality and the appropriate Regional Water Board Executive Officer in accordance with the following schedule:

Table C-2. Reporting Schedule

Reporting Frequency	Reporting Period	Annual Report Due
Annual	1 January through 31 December	1 March

C. Reporting Protocols

Dischargers shall report with each sample result the applicable reported Minimum Level (ML) and the current Minimum Detection Limit, as determined by the procedure in 40 C.F.R. Part 136.

The Discharger shall report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

1. Sample results greater than or equal to the reported ML shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).
2. Sample results less than the Report Limit, but greater than or equal to the laboratory’s MDL, shall be reported as “Detected, but Not Quantified,” or DNQ. The estimated chemical concentration of the sample shall also be reported.

For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words “Estimated Concentration” (may be shortened to “Est. Conc.”). The laboratory may, if such information is available, include numerical estimates of the data quality for the reported result. Numerical estimates of data quality may be percent accuracy (plus a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

3. Sample results less than the laboratory’s MDL shall be reported as “<” followed by the MDL.
4. Dischargers are to instruct laboratories to establish calibration standards so that the ML value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the Discharger to use analytical data derived from extrapolation beyond the lowest point of the calibration curve.
5. Multiple Sample Data: If two or more sample results are available, each Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of “Detected, but Not Quantified” (DNQ) or “Not Detected” (ND). In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:
 - a. The data set shall be ranked from low to high, ranking the reported ND determinations lowest, DNQ determinations next, followed by quantified

- values (if any). The order of the individual ND or DNQ determinations is unimportant.
- b. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.
6. Dischargers shall submit the Annual Report in accordance with the following requirements:
- a. The Discharger shall arrange all reported data in a tabular format. The data shall be summarized to clearly illustrate whether the facility is operating in compliance with effluent and receiving water limitations. The Discharger is not required to duplicate the submittal of data that is entered in a tabular format within CIWQS. When electronic submittal of data is required and CIWQS does not provide for entry into a tabular format within the system, the Discharger shall electronically submit the data in a tabular format as an attachment.
 - b. Each Discharger shall attach a cover letter to the Annual Report. The information contained in the cover letter shall clearly identify violations of the permit; discuss corrective actions taken or planned; and the proposed time schedule for corrective actions. Identified violations must include a description of the requirement that was violated and a description of the violation.
 - c. Annual Report must be submitted to the State Water Board and the appropriate Regional Water Board, signed and certified as required by the Standard Provisions (Attachment B).

ATTACHMENT D – FACT SHEET

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ATTACHMENT D – FACT SHEET

As described in the Findings in section III of this General Permit, this Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this General Permit.

This General Permit has been prepared under a standardized format to accommodate a broad range of discharge requirements for Dischargers in California.

I. PERMIT INFORMATION

A. Background

1. The Regulatory Background

In 1972, the Federal Water Pollution Control Act (also referred to as the Clean Water Act) was amended to provide that the discharge of pollutants to waters of the US from any point source is effectively prohibited unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) Permit.

On September 22, 1989, the USEPA granted the State of California, through the State Water Resources Control Board (State Water Board) and the Regional Water Quality Control Boards (Regional Water Boards), the authority to issue general NPDES permits pursuant to 40 Code of Federal Regulations (CFR) Parts 122 and 123.

Section 122.28 of 40 C.F.R. provides for issuance of general permits to regulate a category of point sources if the sources involve the same or substantially similar types of operations; discharge the same type of waste; require the same type of effluent limitations or operating conditions; require similar monitoring; and are more appropriately regulated under a general permit rather than individual permits.

On March 12, 2001, the Ninth Circuit Court of Appeals held that discharges of pollutants from the use of aquatic pesticides in waters of the United States require coverage under an NPDES permit. (*Headwaters, Inc. v. Talent Irrigation District*)¹. The *Talent* decision was issued just prior to the major season for applying aquatic pesticides.

Because of the serious public health, safety, and economic implications of delaying pesticide applications, in 2001 the State Water Board adopted Water Quality Order (Order) No. 2001-12-DWQ, Statewide General NPDES Permit for Discharges of Aquatic Pesticides to Waters of the US on

¹ 243 F.3d 526 (9th Cir 2001).

an emergency basis to provide immediate NPDES permit coverage for broad categories of aquatic pesticide use in California.

Order No. 2001-12-DWQ imposed requirements on any discharge of aquatic pesticides by public entities to waters of the US in accordance with the State Water Board's *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (Policy). The Policy establishes procedures for implementing water quality standards for priority pollutants in NPDES permits.

Section 5.3 of the Policy allows for short-term or seasonal exceptions from its requirements for resource or pest management conducted by public entities. In order to qualify for an exception from meeting priority pollutant standards, a public entity must fulfill the requirements listed in section 5.3 and the State Water Board must decide to grant the exception. Among other requirements, entities seeking an exception to complying with water quality standards for priority pollutants must submit documents in compliance with California Environmental Quality Act (CEQA)². Because of the emergency adoption of Order No. 2001-12-DWQ, the State Water Board invoked an exemption to the requirements of section 5.3 of the SIP and issued the permit incorporating a categorical exception to water quality standards for priority pollutants.

Order No. 2001-12-DWQ required that Dischargers develop a best management practices (BMPs) plan that minimizes adverse impacts to receiving waters and a monitoring and reporting plan that is representative of each type of aquatic pesticide application.

In August 2001, Waterkeepers Northern California (Waterkeepers) filed a lawsuit against the State Water Board challenging several aspects of Order No. 2001-12-DWQ. Major aspects of the challenge included the emergency adoption of the Order without compliance with CEQA and other exception requirements of the State Water Board's *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (SIP); failure to address cumulative impacts; and failure to comply with the California Toxics Rule (CTR)³.

In a settlement of the Waterkeepers' lawsuit, the State Water Board agreed to fund a comprehensive aquatic pesticide monitoring program that would assess receiving water toxicity caused by aquatic pesticide residues. Pesticide formulations may include "active ingredients" and "inert ingredients". Adjuvants or surfactants may be added to the active ingredients in the application equipment that is used in the delivery of the pesticide. In November 2002, the Ninth Circuit issued another opinion concerning the need for an NPDES permit for pesticide application.

² Cal. Pub. Resources Code §§ 21000 et. seq.

³ § 131.38.

(*League of Wilderness Defenders v. Forsgren*⁴.) In this case, the court held that the U.S. Forest Service must obtain an NPDES permit before it sprays insecticides from an aircraft directly into or over rivers as part of silviculture activities. The court found that the insecticides are pollutants under the CWA. The court also defined the exemption for silvicultural pest control from the definition of “point source” in USEPA’s regulations to be limited to pest control activities from which there is natural runoff.

Also in 2002, the Second Circuit issued an unpublished decision regarding the need for an NPDES permit for application of pesticides for mosquito control in federal wetland areas. (*Altman v. Town of Amherst*.) The lower court had dismissed a citizens’ suit, holding that pesticides, when used for their intended purpose, do not constitute a “pollutant” for purposes of the CWA, and are more appropriately regulated under Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). The appeals court vacated the trial court’s decision and remanded the matter. In its unpublished decision, the Second Circuit expressed concern that: [u]ntil the EPA articulates a clear interpretation of current law - among other things, whether properly used pesticides released into or over waters of the United States can trigger the requirements for NPDES permits - the question of whether properly used pesticides can become pollutants that violate the [Clean Water Act] will remain open.

Order No. 2001-12-DWQ expired on January 31, 2004. In May 2004, it was replaced by two general permits: a vector control permit for larvicides (Order No. 2004-0008-DWQ) and a weed control permit (Order No. 2004-0009-DWQ). The vector control permit does not cover spray applications of pesticides to control adult mosquitoes. The State Water Board determined that adoption of these two permits was consistent with the Ninth Circuit decisions.

In 2005, the Ninth Circuit held that a pesticide that is applied consistent with FIFRA is not a “chemical waste” (*Fairhurst v. Hagen*⁵), but also stated that it would not change its decision in *Headwaters*. The court stated that whether an NPDES permit was required depends on whether there was any “residue or unintended effect” from application of the pesticide. In *Fairhurst*, the court found neither residue nor unintended effect was present. Therefore, the pesticide application at issue did not require an NPDES permit.

USEPA’s Final Rule: On November 20, 2006, USEPA adopted a final regulation providing that NPDES permits are not required for pesticide applications as long as the discharger follows FIFRA label instructions. According to this new regulation, pesticides applied under the following two

⁴ 309 F.3d 1181 (9th Cir., 2002).

⁵ 422 F.3d 1146 (9th Cir. 2005).

circumstances are not pollutants and, therefore, are not subject to NPDES permitting requirements:

(1) The application of pesticides directly to waters of the United States in order to control pests. Examples of such applications include applications to control mosquito larvae, aquatic weeds, or other pests that are present in waters of the United States.

(2) The application of pesticides to control pests that are present over waters of the United States, including near such waters, where a portion of the pesticides will unavoidably be deposited to waters of the United States in order to target the pests effectively; for example, when insecticides are aerially applied to a forest canopy where waters of the United States may be present below the canopy or when pesticides are applied over or near water for control of adult mosquitoes or other pests.

Lawsuits Against USEPA's Final Rule: After USEPA's new regulation was adopted in 2006, lawsuits were filed by both the pesticide industry and environmental groups in 11 of the 13 Circuits, including the Ninth Circuit Court, challenging USEPA's Final Rule.

The National Cotton Council of America v. USEPA⁶: The petitions for review were consolidated in the Sixth Circuit Court by an order of the Judicial Panel on Multidistrict Litigation.

On January 7, 2009, the Sixth Circuit Court of Appeals determined that USEPA's Final Rule is not a reasonable interpretation of the CWA and vacated the Final Rule. USEPA did not request reconsideration of the decision, but did file a motion for a two-year stay of the effect of the decision in order to provide agencies time to develop, propose, and issue NPDES general permits for pesticide applications covered by the ruling. On June 8, 2009, the Sixth Circuit granted the motion, such that the USEPA exemption will remain in place until April 9, 2011.

2. Related Aquatic Pesticide Regulation

Pesticide formulations may include "active ingredients" and "inert ingredients". Adjuvants or surfactants may be added to the ingredients in the application equipment that is used in the delivery of the pesticide.

As part of the registration process of pesticides for use in California, USEPA and California Department of Pesticide Regulation (DPR) evaluate data submitted by registrants to ensure that a product used according to label instructions will cause no harm or adverse impact on non-target organisms that cannot be reduced or mitigated with protective measures or use restrictions. Registrants are required to submit data on the effects of pesticides on target pests (efficacy) as well as non-target effects. Data on non-target effects include plant effects (phytotoxicity), fish and wildlife

⁶ 553 F.3d 927 (6th Cir. 2009).

hazards (ecotoxicity), impacts on endangered species, effects on the environment, environmental fate, breakdown products, leachability, and persistence. Requirements that are specific to use in California are included in many pesticide labels that are approved by USEPA. Use must be reported to the County Agricultural Commissioner where required by law or by agreement with DPR.

The Clean Water Act (CWA), at section 301(a), broadly prohibits the discharge of any pollutant to waters of the US, except in compliance with an NPDES permit. Pesticides discharged into surface waters may constitute pollutants within the meaning of the CWA even if the discharge is in compliance with the registration requirements of FIFRA, thus, requiring coverage under a valid NPDES permit.

DPR and the County Agricultural Commissioners regulate the sale and use of pesticides in California. Pesticide applications subject to this General Permit must be consistent with permits issued by County Agricultural Commissioners and the pesticide label instructions approved by USEPA under FIFRA. According to federal law, pesticide label language is under the sole jurisdiction of USEPA. Label language and any changes thereto must be approved by USEPA before the product can be sold in this country. DPR cannot require manufacturers to make changes on labels; however, DPR can refuse to register products unless manufacturers address unmitigated hazards by amending the pesticide label.

State regulations require that the County Agricultural Commissioners determine if a substantial adverse environmental impact will result from the proposed use of a restricted material. If the County Agricultural Commissioner determines that this is likely, the commissioner may deny the Use Permit or may issue it under the condition that site-specific use practices be followed (beyond the label and applicable regulations) to mitigate potentially adverse effects. DPR conducts scientific evaluations of potential health and environmental impacts and provides commissioners with information in the form of suggested permit conditions. DPR's suggested permit conditions reflect minimum measures necessary to protect people and the environment. County Agricultural Commissioners use this information and its evaluation of local conditions to set site-specific limits in permits.

3. **Pesticide Program Descriptions**

California Department of Food and Agriculture (CDFA) Programs

In February and April 2010, State Water Board staff met with CDFA representatives to discuss CDFA's eradication programs and the need for a pesticide spray application permit as a result of the Sixth Circuit Court's ruling. CDFA staff provided State Water Board staff with information on its pest control (eradication) programs for invasive insects and terrestrial weeds. CDFA also provided State Water Board staff with information

about the pesticides used in each program. These programs are described below.

a. Invasive Insect Control

i. Beetle Program

CDFA's beetle program uses both foliar and systemic insecticides, which are applied depending on insect population models.

The foliar treatment method kills adult beetles in order to reduce the adult beetle populations. Ground sprays are applied to all host foliage on all properties in a treatment area at pre-specified day intervals using hydraulic (tank) spray or hand spray equipment. Foliar insecticides are useful for immediate reduction of the adult population in order to eliminate dispersal.

Systemic insecticides are necessary to kill other life stages including sedentary and active stages. The frequency of the treatment is dependent on the insecticide applied and severity of the infestation.

CDFA's beetle program uses pesticide products such as Sevin® SL (active ingredient: carbaryl) and Merit® 75 WSP (active ingredient: imidacloprid).

ii. Beet Curly Top Virus Control Program (BCTVCP)

The BCTVCP is an overall strategy for the statewide control of the sugar beet leafhopper (BLH), *Circulifer tenellus* (Baker), the only known vector of beet curly top virus (BCTV). BCTV is a viral disease of sugar beets, tomatoes, melons, peppers, beans, cucumbers, squash, pumpkins, spinach, vine seed and ornamentals. On an annual basis, the BCTVCP surveys for and monitors the development and movement of the BLH from historical breeding grounds on the west side of the San Joaquin Valley, and portions of the Salinas, Cuyama, Imperial and Palo Verde Valleys. Sweep net surveys determine the size and location of BLH populations during the winter, spring and fall. Control is a year-round effort linked to disrupting the continuity of the BLH's life cycle. Aerial treatments (fixed-wing) are employed to control BLH populations in rangeland habitat, oil fields and large cultivated fallow fields. Ground-rigs are utilized to spot treat BLH populations host plants developing on roadsides and right-a-ways within intensive agriculture adjacent to BCTV susceptible crops.

The Program uses Fyfanon ULV AG (67760-35) in both aerial and ground-rig spot applications. The Malathion product is diluted with water at a rate of 7.7 ounces per gallon of mix. The mix is applied

by aircraft, or ground-rig, to BLH host plants at a rate of one gallon mix per acre.

iii. Moth Program

CDFA's moth program uses foliar and mating disruption treatment methods. For foliar treatment, it uses spinosad products such as Naturallyte® for control or suppression of many foliage feeding pests. *Bacillus thuringiensis kurstaki* (Btk) products such as DiPel®Pro DF and DiPel® DF are used specifically for control of caterpillars of many species of moths and butterflies. They do not have significant risk to healthy humans, wildlife, and the environment. Ground sprays will be applied to all host foliage on all infected properties using hydraulic spray or hand spray equipment.

An example of CDFA's Moth Program is the light brown apple moth (LBAM) *Epiphyas postvittana* (*Lepidoptera: Tortricidae*), which is originally from Australia. LBAM is an invasive species and is reported to attack more than 120 plant genera in over 50 families, including many economically important species. LBAM feeding "destroys, stunts, or deforms young seedlings, spoils the appearance of ornamental plants, and injures deciduous fruit-tree crops, citrus, and grapes (USEPA 2007a⁷). "Because the LBAM is a new pest to the North American Continent that affects a broad range of plants (as many as 2,042 plants, including native plants, forest species, agronomically important crops and ornamentals), both the U.S. Department of Agriculture and CDFA have taken immediate action to eradicate LBAM from California to prevent its spread to susceptible host plants throughout the United States and neighboring Mexico and Canada.

The CDFA eradication strategy is to delimit and contain LBAM populations and is expected to take 3-5 years to achieve. The strategy will require ongoing monitoring of the infestation, suppression at the edges of the populations, and population reduction in areas with a higher LBAM population density. The eradication strategy will require both ground and aerial application of several control techniques: mating disruption (using pheromones), insecticide treatments, sterile insects, and other techniques such as biological control (biocontrol) (USDA 2008a⁸).

⁷ United States Environmental Protection Agency (USEPA). 2007a. EPA Quarantine Exemptions for Light Brown Apple Moth Pheromones. Accessed on August 20, 2008. Website: <http://www.epa.gov/region09/pesticides/light-brown-moth.html>.

⁸ United States Department of Agriculture (USDA). 2008a. Treatment program for light brown apple moth in California. Environmental Assessment, February 2008. 46 pp.

Products containing the following active ingredients are used in the LBAM eradication program: malathion, spinosad A and D, and Btk.

iv. Fruit Fly Program

This program controls Mediterranean fruit fly (Medfly), Mexican fruit fly, oriental fruit fly, and all other target flies that are deemed harmful to agriculture may at some time be included in this program. This program uses foliar treatment, aerial bait spray, male attractant technique, and sterile insect technique.

For foliar treatment, CDFA uses the product GF-120® NR Naturalyte® [active ingredient: spinosad, and Sevin® SL (active ingredient carbaryl)]. If a mated female, immature life stages, or multiple flies are detected on a property, the foliage of host shrubs and trees on the infested and adjacent properties is treated using hand spray equipment.

For aerial bait spray, CDFA uses Entrust® and Success® (active ingredient: Spinosad). Aerial spray is only used for extremely large infestations in cropland areas. In 15 years, CDFA has used this method only twice in 2002.

In the male attractant technique, CDFA uses Dibrom® Concentrate (active ingredient: naled). The male attractant technique uses small amounts of attractant (methyl eugenol) and pesticide (naled) to lure the male flies to bait stations. The flies are killed when they feed at the stations. The naled/lure mixture is applied to utility poles, street trees, and other unpainted surfaces using pressurized tree marking guns. Application is made to at least 600 evenly distributed sites in each square mile. Treatment is repeated every two weeks and continues for two fly life cycles beyond the date of the last fly find or for a minimum of four applications.

The sterile insect technique relies on flooding the infested area with sterile Medflies. When the sterile males mate with wild females, no offspring are produced. Gradually, the wild fly population decreases, while the sterile fly population increases through continued release. When wild flies can find only sterile flies with which to mate, the wild population will become extinct. This technique is used after bait sprays have been used to kill existing fertile wild Medflies. In order for the technique to succeed, a minimum over-flooding ratio of 100:1 must be maintained. The release area will be nine square miles around each infested site. Release of sterile flies will be continued for at least two life cycles past the last fly find.

v. Asian Citrus Psyllid

CDFA's Asian Citrus Psyllid uses both foliar and systemic insecticides. Foliar insecticides are useful for immediate reduction of the adult population in order to eliminate dispersal, while systemic insecticides are necessary to kill the sedentary nymphs.

Foliar treatment uses Tempo® SC Ultra (active ingredient: cyfluthrin) and, Sevin® SL (active ingredient: carbaryl). Pesticides are applied with hydraulic spray or hand spray equipment at least once to the foliage of host plants at designated residential properties. This insecticide may be applied to all host plants within a 200 - 800 meter radius of the detection sites depending on funding and insect flight dispersal patterns.

A second contact insecticide may be used due to yearly label use restrictions or Scientific Advisory Panel recommendations.

For soil treatment, a systemic insecticide will be applied to soil beneath the drip line of host plants to kill developing nymphs and adult psyllids. Systemic insecticides, such as Merit 75 WSP (active ingredient: imidacloprid), are applied to the soil below the host plant and are absorbed by the plant roots and then move (or translocated) to the above-ground parts (leaves, twigs, and branches). Insects ingest the insecticide while feeding on the plants. The most common application method of systemic insecticides is soil drenching around the host plants. The pesticides will be applied at least once to the soil of host plants at designated residential properties.

vi. Pierce's Disease Control Program

CDFA's Pierce's Disease Control Program uses both foliar and systemic insecticides to control or eradicate populations of the glassy-winged sharpshooter (GWSS), a leafhopper-type insect which spreads Pierce's disease. Foliar insecticides are used to achieve immediate control of GWSS adults and nymphs present on host plants at the time of treatment, while systemic insecticides are used to control GWSS adults and nymphs which arrive later on the host plants.

For foliar treatments, products containing cyfluthrin, imidacloprid, acetamiprid, or carbaryl are used. For systemic treatments, products containing imidacloprid are used. Foliar treatments are applied from the ground using hydraulic spray or hand spray equipment. Systemic treatments are applied from the ground as either soil drenches or soil injections.

b. Noxious Weeds Control

The objective of the Noxious Weeds Program is the early detection, containment, and eradication of A-rated noxious weeds. A-rated noxious weeds are those weeds with potential great economic or environmental importance, and with the current limited distribution in the State and for which eradication efforts will likely be successful. Noxious Weed Eradication projects are a cooperative effort between the CDFA, County Agricultural Commissioners, US Department of Agriculture (USDA), US Forest Service (USFS), and Weed Management Areas (WMAs) across the State. The program mainly uses herbicide products with aminopyralid, clopyralid, and glyphosate as active ingredients. The herbicides are applied by backpack spray.

USFS Program Description

USFS conducts both area wide and individual tree insect controls. Following is a detailed description of these control programs:

a. Area-Wide Insect Control

In area-wide insect control, insecticides are applied over large forest acreages, usually by fixed-wing planes. In California, the area-wide control applications in forestry are used primarily for two insects: Douglas Fir Tussock Moth (DFTM) and the gypsy moth. DFTM is a native insect that can have localized population increases (several hundred to hundreds of thousands of acres). DFTM treatments would involve TM-Biocontrol, which is a bio-insecticide specifically for DFTM control. TM-Biocontrol is preferred than Btk because it is more host specific than Btk. Population outbreaks requiring treatment are not common in California, perhaps occurring to outbreak stage somewhere in the state every 3-5 years. Gypsy moth is a non-native insect that rarely shows up, but when it does, it is aggressively treated. There are two species of concern, one from existing infestations in the eastern US (typically European gypsy moth) and one from new infestations from the Far East (Siberian gypsy moth).

Area-wide control using a fixed wing aircraft covers an entire infested area, and the acreage is very large; therefore, it is difficult to avoid most streams within the control area, although larger lakes and rivers can be avoided. With smaller infestations, or where specific areas are of concern, such as campgrounds, either a helicopter or treatments from the ground can be used.

b. Individual Tree Treatments

There are mainly two situations that require individual treatments: 1) for bark beetle prevention; and 2) for seed orchard treatments of trees for seed or cone insects, mostly in an agricultural setting.

The bark beetle prevention treatments involve the application of insecticides with active ingredients of bifenthrin (good for one season) and carbaryl (usually good for two seasons) to the tree trunk surface to provide a chemical barrier for incoming beetles. It is a preventative treatment not a treatment for infested trees. Typically, these treatments are only used where trees of high value exist, such as in a campground or administrative area, because of the expense.

Treatment areas are normally buffered from nearby watercourses by some untreated zone, typically at least 100 feet. Applications use high-pressure ground-based spray guns.

The seed orchard treatments are more of agricultural type application, with treatments by air blast sprayers or high pressure ground-based spray guns. Seed orchard treatments may occur on numerous times in a growing season. These applications are also typically buffered against nearby watercourses.

B. General Criteria

1. This General Permit serves as a general NPDES Permit for the discharge of residual pesticides to surface waters as a result of spray applications for pest control.
2. Dischargers who submit a complete application under this General Permit are not required to submit an individual permit application. The State Water Board may request additional information and determine that a Discharger is not eligible for coverage under this General Permit and would be better regulated under an individual permit or other general NPDES permit adopted by the appropriate Regional Water Board. If the Regional Water Board adopts an individual or a general NPDES permit, the applicability of this General Permit to the specified discharge will be immediately terminated on the effective date of the Regional Water Board's individual or general NPDES permit.

II. NOTIFICATION REQUIREMENTS

A. General Permit Application

To obtain authorization under this General Permit, Dischargers must submit to the State Water Boards a complete application as described below:

1. A Notice of Intent (NOI shown as Attachment G) signed in accordance with the signatory requirements of the Standard Provisions in Attachment B;
2. An application fee; and
3. A Pesticide Application Plan (PAP).

State Water Board staff will review the application package for completeness and applicability to this General Permit. Additionally, the State Water Board may issue a Notice of Exclusion, which either terminates permit coverage or

requires submittal of an application for an individual permit or alternative general permit.

Permit coverage will be effective when all of the following have occurred:

1. The Discharger has submitted a complete permit application;
2. The PAP has been approved by the State Water Board Deputy Director of the Division of Water Quality; and
3. The State Water Board Deputy Director of the Division of Water Quality has issued a Notice of Applicability (NOA). The NOA will specify the type(s) of pesticides that may be used and any specific conditions and requirements not stated in this General Permit. Any such specific conditions and requirements shall be enforceable. The Discharger is authorized to discharge starting on the date of the NOA.

B. Fees

Under this General Permit, pesticide residue discharges require minimal or no treatment systems to meet limits and pose no significant threat to water quality. As such, they are eligible for Category 3 in section 2200(b)(8) of Title 23, California Code of Regulations (CCR). This category is appropriate because pesticide applications incorporate BMPs to control potential impacts to beneficial uses, and this General Permit prohibits pollutant discharge associated with pesticide applications from causing exceedance of CTR criteria or water quality objectives. Information concerning the applicable fees can be found at <http://www.waterboards.ca.gov/resources/fees/>.

C. Public Notification

The public comment period is generally limited to 30 days upon notice of the Discharger's proposed action. The State Water Board has notified interested agencies and persons of its intent to prescribe waste discharge requirements in this General Permit and provided them with an opportunity to submit their written comments and recommendations.

III. DISCHARGE DESCRIPTION

A. Discharge Description

This General Permit covers the point source discharge of pesticide residues resulting from spray applications using 1) larvicides* containing Btk, nuclear polyhedrosis virus (NPV), and Spinosad A and D; 2) adulticides* containing acetamiprid, bifenthrin, carbaryl, , esfenvalerate, lambda cyhalothrin, malathion, naled, pheromone, piperonyl butoxide (PBO), and pyrethrins; 3) larvicide/adulticide products containing cyfluthrin and imidacloprid; and 4) herbicides* containing aminopyralid, chlorsulfuron, clopyralid, glyphosate, imazapyr, triclopyr butoxyethyl ester and triclopyr triethylamine.

The pesticide products permitted by this General Permit are labeled for land use only. The residual pesticide discharges regulated by this General Permit are from accidental pesticide drifts during spray applications occur near surface waters. The discharge is necessary only when no feasible alternative to the discharge (alternative application techniques, buffer zones, etc) is available; and the discharge is limited to that increment of waste that remains after implementation of all reasonable alternatives for avoidance are employed.

B. Pesticide Applications

1. Larviciding

Larviciding involves applying pesticides to breeding habitats to kill larvae. Larviciding can reduce overall pesticide usage in a control program.

Application areas may vary in size from a fraction of an acre to several thousand acres. Types of locations, frequency, and size of application areas vary by regions. The following are main techniques and equipment used to apply larvicides:

a. Ground Application Equipment

Larvicides can be applied with pickup trucks or all terrain vehicles (ATVs). A chemical-container tank, high-pressure, low-volume electric or gas pump, and spray nozzle are mounted in the back of the truck bed, with a switch and extension hose allowing the driver to operate the equipment and apply the larvicide from the truck's cab. The ATVs have a chemical container mounted on the vehicle, a 12-volt electric pump supplying high-pressure, low-volume flow, and booms and/or hoses and spray tips allowing for application while steering the vehicle. ATVs are ideal for treating areas such as agricultural fields, pastures, and other off-road sites. Additional training in ATV safety and handling is provided to employees before operating these machines.

Additional equipment used in ground applications includes high-pressure spray guns, hand-held sprayers and backpack blowers. High-pressure spray guns are normally attached to a spray tank equipped with a high-pressure pump that allows the larvicides to be sprayed into the tree-canopy. Hand-held sprayers (hand cans) are standard 1- or 2-gallon garden-style pump-up sprayers used to treat small, isolated areas. Backpack sprayers are gas-powered blowers with a chemical tank and calibrated proportioning slot. Generally, a pellet or small granular material is applied with a backpack sprayer or "belly grinder" machine designed to distribute pellets or granules.

There are several advantages of using ground application equipment, both when on foot and when conveyed by vehicles. Ground larvicide application allows applications while in proximity to the actual treatment area, and consequently treatments to only those microhabitats where larvae are actually present. This also reduces

both the unnecessary pesticide load on the environment and the financial cost of the amount of material used, as well as its application. Both the initial and maintenance costs of ground equipment are generally less than those for aerial equipment. Ground larvicide applications are less affected by weather conditions than are aerial applications.

Ground larvicide application is impractical for large or densely wooded areas. There is also a greater risk of chemical exposure to applicators than there is during aerial larvicide operations. Damage may occur from the use of a ground vehicle in some areas. Ruts and vegetation damage may occur, although both conditions are reversible and generally short-lived. Technicians are trained to recognize sensitive areas and to use good judgment to avoid significant impacts.

b. **Aerial Application Equipment**

Aerial applications use helicopters or other aircraft to apply the larvicides. CDFA and USFS contract with independent flying services. There are three advantages to using fixed- or rotary-wing (helicopter) aerial larvicide application equipment compared to ground application. First, it can be more economical for large target areas with extensive pest production. Second, by covering large areas quickly, it can free staff to conduct other needed surveillance or control. Third, it can be more practical for remote or inaccessible areas, such as islands and large forest, than ground larvicide application. However, maintaining aircraft or contracting for aerial applications is expensive; and, in addition to the timing constraints inherent in most larvicide use, the potential application window can be very narrow for aerial activities due to weather conditions.

2. **Adulticiding**

Adulticiding is the process of controlling invasive insects when they are mature. Adulticiding is necessary because larviciding is not 100 percent effective. Chemical pest control is implemented when necessary.

There are three basic techniques for applying adulticides:

a. **Barrier Application**

Adulticides are sprayed onto vegetation or other surfaces to leave a residual adulticide intended to kill invasive insects that land on that surface. Barrier application is typically done with backpack sprayers or high pressure spray guns that produce large droplets that immediately fall out of the air onto the intended surface. Barrier type adulticides can kill “non-target” insects.

b. **ULV (Ultra Low Volume) Application**

Adulticides are sprayed into the air with the intent of killing flying insects in the sprayed area. ULV application is typically done with

truck-mounted sprayers, but can be done with aircraft. ULV produces very small droplets that hang in the air for a few hours. Droplet sizes range from 8 to 30 microns. ULV applied adulticides can also kill “non-target” insects.

c. Thermal Fogging Application

Fog can be effective as a space treatment to control invasive insects. The insecticides are usually mixed in oil and apply in late evening, at night, or early morning when the air is calm. Fogging is effective as a contact application with no residual effect.

3. Herbiciding

Herbicides are effectively used to control invasive and noxious plants that threaten natural communities and rare species, high value sites, forested lands, recreational sites, parkways, public right-of-way, riparian areas, vegetation under or adjacent to power transmission lines, and in a variety of other situations. Herbicides may be sprayed onto the leaves or other vegetative plant structures of targeted weeds to kill the weed plant, or may also be basally applied/cut stump treated to the targeted species and hollow-stem treatments. Herbicides may be sprayed by truck mounted spray rigs, ATVs, backpack sprayer or other handheld low-pressure equipment.

IV. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in this General Permit are based on the applicable plans, policies, and regulations identified in the Findings in Section III of this General Permit. This section provides supplemental information, where appropriate, for the plans, policies, and regulations relevant to the discharge.

A. Legal Authorities

This General Permit is issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. Environmental Protection Agency (USEPA) and chapter 5.5, division 7 of the California Water Code; commencing with section 13370). It shall serve as an NPDES permit for point source discharges of residual pesticides to surface waters. This General Permit also serves as WDRs pursuant to article 4, chapter 4, division 7 of the California Water Code (commencing with section 13260).

B. California Environmental Quality Act (CEQA)

Pursuant to California Water Code section 13389, State and Regional Water Boards are exempt from the requirement to comply with Chapter 3, Division 13 of the Public Resources Code when adopting NPDES permits.

C. State and Federal Regulations, Policies, and Plans

1. Water Quality Control Plans

The Regional Water Boards have adopted Water Quality Control Plans (hereinafter Basin Plans) that designate beneficial uses, establish water quality objectives, and contain implementation programs and policies to achieve those objectives for all waters addressed through the plans. In addition, the Basin Plans implement State Water Board Resolution No. 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. The Basin Plans identify typical beneficial uses as follows: municipal and domestic supply, agricultural irrigation, stock watering, process supply, service supply, hydropower supply, water contact recreation, canoeing and rafting recreation, other non-contact water recreation, warm freshwater aquatic habitat, cold freshwater habitat, warm fish migration habitat, cold fish migration habitat, warm and cold spawning habitat, wildlife habitat, navigation, rare, threatened, or endangered species habitat, groundwater recharge, and freshwater replenishment.

Requirements of this General Permit implement provisions contained in the applicable Basin Plans.

2. National Toxics Rule (NTR) and California Toxics Rule (CTR)

USEPA adopted the NTR on December 22, 1992, and later amended it on May 4, 1995 and November 9, 1999. About 40 criteria in the NTR applied in California. On May 18, 2000, USEPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that were applicable in the state. The CTR was amended on February 13, 2001. These rules contain water quality criteria for priority pollutants.

3. State Implementation Policy (SIP)

On March 2, 2000, the State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP). The SIP became effective on April 28, 2000 with respect to the priority pollutant criteria promulgated for California by USEPA through the NTR and to the priority pollutant objectives established by the Regional Water Board in the Basin Plans. The SIP became effective on May 18, 2000 with respect to the priority pollutant criteria promulgated by USEPA through the CTR. The State Water Board adopted amendments to the SIP on February 24, 2005 that became effective on July 13, 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this General Permit implement the SIP.

4. **Antidegradation Policy**

Section 131.12 of 40 C.F.R. requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing water quality be maintained unless degradation is justified based on specific findings. The Basin Plans implement, and incorporate by reference, both the state and federal antidegradation policies. The permitted discharge must be consistent with the antidegradation provision of 40 C.F.R. § 131.12 and Resolution No. 68-16. The conditions of this General Permit require residual pesticide discharges to meet applicable water quality objectives. Waters of exceptional quality may be degraded due to the application of pesticides; however, it would only be temporary and in the best interest of the people of the State. While surface waters may be temporarily degraded; water quality standards and objectives will not be exceeded. The nature of pesticides is to be toxic in order to protect beneficial uses such as human health. However, compliance with receiving water limitations is required. Therefore, this General Permit is consistent with State and federal antidegradation policies.

5. **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.

D. **Impaired Water Bodies on CWA 303(d) List**

Under section 303(d) of the 1972 CWA, states, territories, and authorized tribes are required to develop lists of water quality limited segments. The waters on these lists do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. On November 30, 2006 USEPA gave final approval to California's 2006 section 303(d) List of Water Quality Limited Segments. The Basin Plans reference this list of Water Quality Limited Segments (WQLSs), which are defined as "...those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources (40 C.F.R. §130.2(j))." The Basin Plans also state, "*Additional treatment beyond minimum federal standards will be imposed on dischargers to*

[WQLSs]. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment. Impaired waters do not support beneficial uses.

This General Permit does not authorize the discharge of residual pesticides listed in Attachment E and their degradation byproducts to water bodies that are already impaired due to the product active ingredients or their degradation byproducts. California's impaired waters bodies are listed on http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml.

E. Other Plans, Policies, and Regulations

The State Water Board adopted the *Water Quality Control Policy for the Enclosed Bays and Estuaries of California*. The requirements within this General Permit are consistent with the Policy.

V. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

Effluent limitations and toxic and pretreatment effluent standards established pursuant to sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 304 (Information and Guidelines), and 307 (Toxic and Pretreatment Effluent Standards) of the CWA and amendments thereto are applicable to the discharge.

The CWA mandates the implementation of effluent limitations that are as stringent as necessary to meet water quality standards established pursuant to state or federal law [33 U.S.C., §1311(b)(1)(C); 40 C.F.R. 122.44(d)(1)]. NPDES permits must incorporate discharge limits necessary to ensure that water quality standards are met. This requirement applies to narrative criteria as well as to numeric criteria specifying maximum amounts of particular pollutants. Pursuant to 40 C.F.R. § 122.44(d)(1)(i), NPDES permits must contain limits that control all pollutants that *"are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality."* Section 122.44(d)(1)(vi) of 40 C.F.R. further provides that *"[w]here a state has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority must establish effluent limits."*

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations in 40 C.F.R.: Section 122.44(a) requires that permits

include applicable technology-based limitations and standards; and Section 122.44(d) requires that permits include water quality-based effluent limitations to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water where numeric water quality objectives have not been established.

With respect to narrative objectives, the State Water Board must establish effluent limitations using one or more of three specified sources: (1) USEPA's published water quality criteria; (2) a proposed state criterion (i.e., water quality objective) or an explicit state policy interpreting its narrative water quality criteria; or (3) an indicator parameter (i.e., 40 C.F.R. 122.44(d)(1)(vi)(A), (B) or (C)). Basin Plans contain a narrative objective requiring that: "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" Basin Plans require the application of the most stringent objective necessary to ensure that surface water and groundwater do not contain chemical constituents, discoloration, toxic substances, radionuclides, or taste and odor producing substances that adversely affect beneficial uses. Basin Plans state that material and relevant information, including numeric criteria, and recommendations from other agencies and scientific literature will be utilized in evaluating compliance with the narrative toxicity objective. Basin Plans also limit chemical constituents in concentrations that adversely affect surface water beneficial uses. Basin Plans further state that, to protect all beneficial uses, the Regional Water Board may apply limits more stringent than MCLs.

A. Discharge Prohibitions

1. The discharge of residual pesticides at a location or in a manner different from that described in the Findings is prohibited.
2. The discharge of residual pesticides shall not create a nuisance as defined in section 13050 of the California Water Code.
3. The discharge shall not cause, have a reasonable potential to cause, or contribute to an in-stream excursion above any applicable criterion promulgated by USEPA pursuant to Section 303 of the CWA, or any water quality objective adopted by the State or Regional Water Boards.

B. Effluent Limitations

NPDES permits for discharges to surface waters must meet all applicable provisions of sections 301 and 402 of the CWA. These provisions require controls that use BAT, BCT, and any more stringent controls necessary to reduce pollutant discharge and meet water quality standards.

Title 40, CFR § 122.44 states that if a discharge causes, has the reasonable potential to cause, or contributes to an excursion above a numeric or narrative water quality criterion, the permitting authority must develop effluent limits as necessary to meet water quality standards. Section 122.44(k)(3) of 40 C.F.R.

allows the use of other requirements such as BMPs in lieu of numeric effluent limits if the latter are infeasible. It is infeasible for the State Water Board to establish numeric effluent limitations in this General Permit because:

1. The application of pesticides is not necessarily considered a discharge of pollutants according to the *National Cotton Council of America v. USEPA* 553 F.3d 927 (6th Cir. 2009) and other applicable case law. The Sixth Circuit Court of Appeals ruled that residual pesticides associated with the application of pesticides at, over, or near water constitute pollutants within the meaning of the CWA and that the discharge must be regulated under an NPDES permit;
2. This General Permit regulates residual pesticides, which are breakdown products or other pesticide ingredients that are present after the use of the pesticide for pest control. In spray applications to control pests, any pesticide product or its degradate that is deposited in waters of the US is a pollutant. However, at what point the pesticide becomes a residue is not precisely known and varies depending on the type of spray system, wind speed and direction, temperature, droplet size distribution, droplet drift, water chemistry, etc. Therefore, in the application of pesticides, the exact effluent is unknown; and
3. It would be impractical to treat the numerous short duration intermittent pesticide residue releases to surface waters from many different locations.

Therefore, the effluent limitations contained in this General Permit are narrative and include requirements to develop and implement a PAP that describes appropriate BMPs, including compliance with all pesticide label instructions, and to comply with narrative receiving water limitations.

The BMPs required herein constitute BAT and BCT and will be implemented to minimize the area and duration of impacts caused by the discharge of pesticides in the target area and to allow for restoration of water quality and protection of beneficial uses of the receiving waters to pre-application quality following completion of an application event.

C. **Best Management Practices**

The development of BMPs provides the flexibility necessary to establish controls to minimize the area extent and duration of impacts caused by the discharge of pesticides. This flexibility allows dischargers to implement appropriate BMPs for different types of applications and different types of waters.

Much of the BMP development has been incorporated into the pesticide regulation process by the USEPA, DPR, CDPH, and County Agricultural Commissioners. The Dischargers must be licensed by DPR or CDPH if such licensing is required for the pesticide application project. The pesticide use

must be consistent with the pesticide label instructions and any Use Permits issued by County Agricultural Commissioners.

USEPA and DPR scientists review pesticide labels to ensure that a product used according to label instructions will cause no harm (or “adverse impact”) on non-target organisms that cannot be reduced (or “mitigated”) with protective measures or use restrictions. Many of the label directions constitute BMPs to protect water quality and beneficial uses. Label directions may include: precautionary statements regarding toxicity and environmental hazards; directions for proper handling, dosage, application, and disposal practices; prohibited activities; spill prevention and response measures; and restrictions on type of water body and flow conditions.

A Use Permit issued by the County Agricultural Commissioner incorporates applicable suggested permit conditions from DPR and local site-specific conditions necessary to protect the environment. State regulations require that specific types of information be provided in an application to the County Agricultural Commissioners for a pesticide use permit. The County Agricultural Commissioners review the application to ensure that appropriate alternatives were considered and that any potential adverse effects are mitigated. The County Agricultural Commissioners also conduct pre-project inspections on at least five percent of projects.

This General Permit requires that Dischargers use BMPs when implementing control programs in order to mitigate effects to water quality resulting from pesticide applications. Dischargers are required to consider alternative control measures to determine if there are feasible alternatives to the selected pesticide application project that could reduce potential water quality impacts. If the Discharger identifies alternative control measures to the selected pesticide application project that could reduce potential water quality impacts and that are also feasible, practicable, and cost-effective, the Discharger shall implement the identified alternative measures. The selection of control measures that use non-toxic and less toxic alternatives is an example of an effective BMP.

D. Water Quality-Based Effluent Limitations (WQBELs)

1. Scope and Authority

Section 122.44(d)(1)(i) of 40 C.F.R. mandates that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, WQBELs must be established using: (1) USEPA criteria under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric

water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in 40 C.F.R. § 122.44(d)(1)(vi).

The process for determining reasonable potential and calculating WQBELs when necessary is intended to protect the designated uses of the receiving water as specified in the Basin Plans, and achieve applicable water quality objectives and criteria that are contained in other state plans and policies, or any applicable water quality criteria contained in the CTR and NTR.

2. Receiving Water Beneficial Uses

Spray applications for pest control may potentially deposit residual pesticides to surface waters. Beneficial uses of receiving waters are as follows: municipal and domestic supply, agricultural irrigation, agricultural stock watering, process water supply, service water supply, and hydropower supply, water contact recreation, canoeing and rafting recreation, other non-contact water recreation, warm freshwater aquatic habitat, cold freshwater aquatic habitat, warm fish migration habitat, cold fish migration habitat, warm and cold spawning habitat, wildlife habitat, navigation, groundwater recharge, and freshwater replenishment.

3. Determining the Need for WQBELs

- a. Water quality standards include Regional Water Board Basin Plan beneficial uses and narrative and numeric water quality objectives, State Water Board-adopted standards, and federal standards, including the CTR and NTR, as well as antidegradation policies. The Basin Plans include numeric site-specific water quality objectives and narrative objectives for toxicity, chemical constituents, and tastes and odors. The narrative toxicity objective states: "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" With regard to the narrative chemical constituent's objective, the Basin Plans state that waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At minimum, "*...water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) in Title 22 of CCR.*" The narrative tastes and odors objective states: "*Water shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.*"
- b. Federal regulations require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard.

4. **Antidegradation Policy**

The permitted discharge is consistent with the antidegradation provisions of 40 C.F.R. § 131.12 and State Water Board Resolution No. 68-16. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge. Due to the low volume of discharge expected from discharges regulated under this General Permit, the impact on existing water quality will be insignificant. Dischargers seeking authorization to discharge under this General Permit are required to demonstrate compliance with receiving water limitations during the application. If, however, the appropriate Regional Water Board, subsequent to review of any application, finds that the impact of a discharge will be significant, then authorization for coverage under this General Permit will be denied and coverage under an individual permit will be required (including preparation of an anti-degradation analysis).

VI. **RATIONALE FOR RECEIVING WATER LIMITATIONS AND MONITORING TRIGGERS**

A. **Groundwater**

[Not Applicable]

B. **Surface Water**

CWA section 303(a-c), requires states to adopt water quality standards, including criteria necessary to protect beneficial uses. Regional Water Boards adopted water quality criteria as water quality objectives in the Basin Plans. The Basin Plans state that “[t]he numerical and narrative water quality objectives define the least stringent standards that the Regional Water Board will apply to regional waters in order to protect the beneficial uses.” The Basin Plans include numeric and narrative water quality objectives for various beneficial uses and water bodies. This General Permit contains receiving surface water limitations based on the Basin Plans’ numerical and narrative water quality objectives for biostimulatory substances, chemical constituents, color, temperature, floating material, settleable substances, suspended material, tastes and odors, and toxicity. This General Permit also requires compliance with any amendment or revision to the water quality objectives contained in the Basin Plans adopted by Regional Water Boards subsequent to adoption of this General Permit.

Once a pesticide has been applied to an application area, the pesticide product can actively control pests within the application area. Discharge of residual pesticides produced by the application to surface water must meet applicable water quality criteria and objectives. The receiving water limitations ensure that an application event does not result in an exceedance of a water quality standard in the receiving water. Receiving water is defined as any surface

water or drainage courses where the pesticide may be deposited as a result of direct or spray applications.

To protect all designated beneficial uses of the receiving water, the most protective (lowest) and appropriate (to implement the CTR criteria and WQOs in the *Water Quality Control Plans*) limit should be selected as the water quality limit for a particular water body and constituent. In many cases, water quality standards include narrative, rather than numerical, water quality objectives. In such cases, numeric water quality limits from the literature or publicly available information may be used to ascertain compliance with these standards.

Pesticide formulations contain disclosed “active” ingredients that yield toxic effects on target organisms and may also have toxic effects on non-target organisms. Residual active ingredients that do not contain pollutants for which there are applicable numeric CTR criteria may still have toxic effects on receiving water bodies. In addition, the inactive or “inert” ingredients of pesticides, which are trade secrets and have not been publicly disclosed, may also contain toxic pollutants or pollutants that could affect water quality.

DPR is responsible for reviewing toxic effects of product formulations and determining whether a pesticide is suitable for use in California’s waters. In this General Permit, inert ingredients are also considered on a constituent-by-constituent basis. USEPA regulates pesticide use through strict labeling requirements in order to mitigate negative impacts to human health and the environment, and DPR environmental and medical toxicologists review toxicity data on formulations and can deny registration or work with registrants or County Agricultural Commissioners to impose additional requirements in order to protect human health or the environment.

USEPA and DPR require that pesticides undergo toxicity testing and meet specific toxicity requirements before registering the pesticide for application to surface waters. USEPA has found that the application of properly registered pesticides pose a minimum threat to people and the environment. In addition, the effects of these pesticides on water quality will be mitigated through compliance with FIFRA label requirements, application of BMPs, and monitoring.

Basin Plan water quality objectives to protect the beneficial uses of surface water and groundwater include numeric objectives and narrative objectives, including objectives for chemical constituents, toxicity, and tastes and odors. The toxicity objective requires that surface water and groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, animals, or aquatic life. The chemical constituent objective requires that surface water and groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use or that exceed the maximum contaminant levels (MCLs) set forth in Title 22, CCR. The tastes and odors objective states that surface water

and groundwater shall not contain taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plans require the application of the most stringent objective necessary to ensure that surface water and groundwater do not contain chemical constituents, toxic substances, radionuclides, or taste and odor producing substances in concentrations that adversely affect domestic drinking water supply, agricultural supply, or any other beneficial use.

Establishing Receiving Water Monitoring Triggers

In pesticide applications for pest control, it is reasonable to conclude that some residual pesticides will be deposited in surface waters. These residual pesticides may cause toxicity to aquatic life. However, information regarding residual pesticides deposited in the receiving water as a result of spray applications is not adequate to develop receiving water limitations for individual and combinations of pesticides; therefore, this General Permit only contains Receiving Water Monitoring Triggers. The monitoring triggers will be used to assess compliance with the narrative toxicity receiving water limitation and initiate additional investigations for the causes of toxicity caused by pesticides used and their additive or synergistic effects. This General Permit includes an Instantaneous Maximum Receiving Water Monitoring Trigger for residual pesticides of concern.

The Instantaneous Maximum Receiving Water Monitoring Triggers are based on promulgated water quality criteria such as those provided in the CTR, water quality objectives adopted by the State and Regional Water Boards in their water quality control plans, water quality criteria adopted by the California Department of Fish and Game, or water quality standards such as drinking water standards adopted by the California Department of Public Health. In the absence of these adopted criteria, objectives, or standards, the State Water Board used USEPA's *Ambient Criteria for the Protection of Freshwater Aquatic Life* (Ambient Water Quality Criteria) which are directly applicable as a regulatory level to implement narrative toxicity limitations included in all Regional Water Board Basin Plans. Where Ambient Water Quality Criteria are unavailable in addition to adopted criteria, objectives, or standards, the State Water Board used data from the *Ecotoxicity Database* to develop the Receiving Water Monitoring Triggers for individual pesticides and combinations of pesticides to protect all beneficial uses of the receiving water. In most, if not all cases, protection of the most sensitive aquatic life in receiving water provides protection of all beneficial uses of that receiving water.

For constituents that do not have Ambient Water Quality Criteria, the Instantaneous Maximum Receiving Water Monitoring Trigger is based on one-tenth of the lowest 50 Percent Lethal Concentration (LC50) from the *Ecotoxicity Database*. Using one-tenth of the lowest LC50 as the receiving water monitoring trigger is consistent with the Central Valley Regional Water Board's

Basin Plan approach when developing the Daily Maximum limitation for pesticides that do not have water quality criteria.

The following is a detailed discussion of toxicity data, applicable water quality criteria, if available, and Receiving Water Monitoring Triggers, if required, for: 1) larvicides including microbial larvicides containing *Btk*, NPV, and Spinosad A and D) ; 2) adulticides* containing acetamiprid, bifenthrin, carbaryl, , , esfenvalerate, lambda cyhalothrin, malathion, naled, pyrethrins, piperonyl butoxide (PBO) and PBO/pyrethrin mixture; , 3) lavicides/adulticides containing cyfluthrin, imidacloprid; and 4) herbicides* containing aminopyralid chlorsulfuron, clopyralid, glyphosate, imazapyr, triclopyr butoxyethyl ester and triclopyr triethylamine salt.

This General Permit may be re-opened to add receiving water limitations if the monitoring results show exceedance of the monitoring triggers.

1. Larvicides

a. Microbial Larvicides

Microbial larvicides are bacteria or viruses that are registered as pesticides for control of invasive insect larvae. Duration of effectiveness depends primarily on the species, the environmental conditions, and the formulation of the product. Microbial larvicides may be used along with other control measures in an Integrated Pest Management (IPM) program. The microbial larvicides used for invasive insect control are *Btk*, NPV, and Spinosad A and D.

Btk acts by producing proteins that react with the cells of the gut lining of susceptible insects. The *Btk* proteins paralyze the digestive system, and the infected insect stops feeding within hours. *Btk* affected insects generally die from starvation, which can take several days.

According to USEPA, (http://www.epa.gov/oppbppd1/biopesticides/ingredients/factsheets/factsheet_006452.htm#description) The risk of *Btk* is minimal to nonexistent to nontarget organisms including endangered species except endangered insect species. A label limitation to terrestrial use was necessary since 1) an aquatic risk level of concern was triggered for endangered species based on the freshwater aquatic invertebrate study, and 2) only one freshwater fish species was tested and minimal toxicity was observed.

Based on the above information from USEPA, this General Permit does not include a Receiving Water Monitoring Trigger and does not require monitoring for *Btk*.

b. NPV

The NPV belongs to a sub group of *Baculoviruses*, is a virus that affects insects, predominantly moths and butterflies. It has been used

as an active ingredient in bio-pesticide, such as TM Biocontrol, for crops infested by insects, such as Douglas-fir tussock moth that are susceptible to contraction.

Baculoviruses are pathogens that attack insects and other arthropods. Like some human viruses, they are usually extremely small (less than a thousandth of a millimeter across), and are composed primarily of double-stranded DNA that codes for genes needed for virus establishment and reproduction. Because this genetic material is easily destroyed by exposure to sunlight or by conditions in the host's gut, an infective baculovirus particle (*virion*) is protected by protein coat called a *polyhedron*. Most insect baculoviruses must be eaten by the host to produce an infection, which is typically fatal to the insect.

The majority of baculoviruses used as biological control agents are in the genus *NPV*, so "baculovirus" or "virus" refers to nucleopolyhedroviruses. These viruses are excellent candidates for species-specific, narrow spectrum insecticidal applications. They have been shown to have no negative impacts on plants, mammals, birds, fish, or even on non-target insects. This is especially desirable when beneficial insects are being conserved to aid in an overall IPM program, or when an ecologically sensitive area is being treated. The USDA Forest Service in California currently uses the Douglas fir tussock moth (*Orgyia pseudotsugata*) nuclear polyhedrosis viruses, also referred to as *OpNPV*. This product, registered as TM Biocontrol, is effective against Douglas-fir tussock moths but leaves all other animals unharmed

(<http://www.nysaes.cornell.edu/ent/biocontrol/pathogens/baculoviruses.html#references>). Although TM Biocontrol's registration in California expired in 2008, USFS can still use the remaining product purchased previously. USFS is actively seeking re-registration in California.

According to USEPA re-registration, the NPV has low acute toxicity to human with the exception of eye irritation. The aerial applications of NPV to forest ecosystems to control Douglas-fir tussock moth can be expected to result in exposure to a wide variety of birds, mammals, fish, aquatic invertebrates, and non-target insects. However, the submitted studies, scientific literature and twenty years of use of NPV as active ingredient in bio-pesticides for controlling Douglas-fir tussock moth indicate no adverse effects on non-target wildlife, including endangered species.

Based on the above information from USEPA, this General Permit does not include a Receiving Water Monitoring Trigger and does not require monitoring for NPV.

c. **Spinosad**

Spinosad is a biologically derived insecticide produced via fermentation culture of the actinomycete *Saccharopolyspora spinosa*, a bacterial organism isolated from soil. It is composed of a mixture of two members of the chemical class of 12-membered macrocyclic lactones in a unique tetracyclic ring. Each component, designated spinosyn A and spinosyn D, is an unsaturated tetracyclic ester with two sugar derivatives (forosamine and rhamnose sugars) attached through ether linkages. Spinosyn A and D are identical in structure except for an additional methyl group on the core macrolide of spinosyn D. Technical grade spinosad is a light gray to white crystalline solid with an odor of slightly stale water.

Spinosad is a naturally occurring insecticide. It activates the central nervous system of insects through interaction with the nicotinic acetylcholine receptors. Immediately after application, insect pests exhibit irreversible tremors, prostrate trembling, paralysis, and death.

It is stable to metal and metal ions for 28 days, degrades under ultraviolet light, and is non-phytotoxic when used as directed. It is non-explosive, non-reactive toward monoammonium phosphate, zinc, and water, and reactive toward potassium permanganate. Spinosad is soluble in water, and soluble in common organic solvents such as acetone, acetonitrile, methanol, and toluene. Spinosad is relatively short-lived in the field and photodegrades rapidly. Its half-life* is less than one day.

USEPA determined that spinosad does not leach, bioaccumulate, volatilize, or persist in the environment. Spinosad will degrade photochemically when exposed to light after application. Because spinosad strongly adsorbs to most soils, it does not leach through soil to groundwater. Spinosad demonstrates low mammalian and avian toxicity. It does not pose long-term health problems in mammals. In addition, a low potential for acute toxicity exists due to low oral, dermal, and inhalation toxicity from the use of spinosad.

Spinosad is the winner of both 1999 and 2010 *Designing Greener Chemicals Award*. This Award promotes pollution prevention through partnerships with the chemistry community. Through high level recognition and support, the Award promotes innovative developments in and uses of green chemistry for pollution prevention. USEPA's Office of Pollution Prevention and Toxics is leading this voluntary partnership program with other USEPA offices, other federal agencies, members of the chemical industry, trade associations, scientific organizations, and academia.

Based on the above considerations, this General Permit does not contain a Receiving Water Monitoring Trigger and does not require monitoring for spinosad.

2. **Adulticides**

The receiving water monitoring trigger for each constituent below is based on the Basin Plans' narrative toxicity objective of no toxics in toxic amounts. The trigger is only applicable to spray applications using each of the adulticide products.

a. **Microbial Adulticide**

Light Brown Apple Moth (LBAM) Pheromone Blend

LBAM pheromone blend consists of two synthetic straight chained lepidopteran pheromones (SCLPs): E-11-tetradecenyl acetate and E,E-9,11-tetradecenyl acetate. Lepidoptera is a large order of insects that includes moths and butterflies. The SCLPs are pheromones (including identical or substantially similar synthetic compounds) produced by a member in the order Lepidoptera.

The LBAM pheromone blend is used to disrupt the mating of LBAMs by a non-toxic mode of action.

According to 40 C.F.R. §158.2050, toxicology and environmental data for SCLP manufacturing products are not required. In addition, 40 C.F.R. §158.2060 states that toxicology and environmental data requirements for end use products are greatly reduced.

USEPA's reviews during the SCLP product registration process confirmed that no risks to human health are expected from the use of SCLPs based on the low toxicity in animal testing and the expected low exposure to humans. Furthermore, adverse effects on non-target organisms are not expected because these pheromones are released in very small quantities in the environment and act on a select group of insects, such as LBAMs. Appropriate precautionary labeling of end use products will further minimize potential exposure and mitigate risk to non-target organisms.

Based on the above considerations, this General Permit does not contain a Receiving Water Monitoring Trigger and does not require monitoring for LBAM pheromone blend.

b. **Organophosphate (OP) Insecticides**

i. **Malathion**

Malathion is an OP insecticide that has been registered for use in the United States since 1956. It is used in agriculture, residential gardens, public recreation areas, and in public health pest control programs.

Malathion is an adulticide, which is used to kill adult pests. Malathion can be applied by truck-mounted or aircraft-mounted sprayers. Malathion is applied as an ultra-low volume (ULV)

spray. ULV sprayers dispense very fine aerosol droplets that stay aloft and kill invasive insects on contact.

Malathion is highly toxic to insects, including beneficial insects such as honeybees. For that reason, USEPA has established specific precautions on the label to reduce such risks. Malathion is classified as an Acute Toxicity Category III compound. Although it is less acutely toxic than other OPs, adverse health effects have been reported by exposed persons.

According to a Report from the CDC that summarizes investigations of illnesses associated with exposures to insecticides uses during 1999-2002 to control mosquito populations in nine states (including California), 133 cases of acute insecticide-related illness associated with mosquito control were identified. Of the 133 reported cases of pesticide-related illness, 95 (71.4%) cases were associated with OPs, mainly malathion. Malathion was associated with 64 (67.4%) of the 95 cases.

USEPA has also refined its characterization of the potential risk from *malaoxon*, a more toxic compound that is formed from malathion under certain conditions. For example, malathion runoff and spray drift may reach drinking water sources downstream from where the malathion was used. Malathion present in untreated water will form malaoxon during the chlorination process in water treatment facilities. Malaoxon can also form more slowly when malathion is deposited on hard, dry surfaces and exposed to air over time. USEPA's assessment shows that even when considering the presence of malaoxon on surfaces following applications of malathion, the relatively low application rates and small droplet sizes used in these types of applications result in minimal exposure to people in the treated area.

USEPA has established an ambient water quality criterion of 0.1 µg/l both as a continuous concentration (four-day average) and instantaneous maximum concentration for the protection of freshwater aquatic life for malathion. USEPA Aquatic Life Acute Benchmarks for freshwater fish and invertebrates are 0.295 µg/l and 0.005 µg/l, respectively. USEPA Aquatic Life Chronic Benchmarks for freshwater fish and invertebrates are 0.014 µg/l and 0.000026 µg/l, respectively. USEPA Aquatic Life Acute Benchmarks for nonvascular plants and vascular plants are 2,040 µg/l and 24,065 µg/l, respectively. The USEPA Integrated Risk Information System (IRIS) Reference Dose as a drinking water level for malathion is 140 µg/L. The USEPA Suggested-No-Adverse-Response-Level (SNARL) for toxicity other than cancer risk for malathion is 100 µg/L.

Under Section 303(d) of the CWA, states, territories, and authorized tribes are required to develop a list of water quality limited segments. The waters on the list do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. The law requires for waters on the list that priority rankings be established for the development of action plans, called Total Maximum Daily Loads (TMDLs), to improve the water quality. California waters impaired due to malathion are listed on http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml. Because impairment by malathion, this General Permit does not authorize the discharge of residual malathion to the water bodies identified on the California 303(d) listing as impaired by malathion.

DPR collected water and sediment samples during the summer of 2003 for OP and pyrethroid pesticides in the San Joaquin River Watershed (Stanislaus County) and Salinas River Watershed (Monterey County). The purpose of this study was to determine the presence of pyrethroid insecticides in water and bed sediments and the presence of OP pesticides in water during the summer growing season. The Salinas and San Joaquin valleys were selected because they are important agricultural regions in California. Sampling sites were chosen on waterways whose flows are dominated by summer agricultural run-off. For Monterey County, malathion was detected in 17 of 64 samples with a maximum concentration of 0.544 µg/l, while 9 of 17 detected samples were reported as "trace," which means the concentration was detected above the method detection limit (MDL) but below reporting limit (RL). The MDL and RL for malathion were reported at 0.0117 µg/l and 0.04 µg/l, respectively. For Stanislaus County, malathion was detected in 1 of 68 samples at a concentration of 0.0741 µg/l.

Based on the above information, this General Permit contains an Instantaneous Maximum Receiving Water Monitoring Trigger of 0.1 µg/l for malathion. This is because 0.1 µg/l is USEPA promogated water quality criterion per Clean Water Act sction 304(a).

ii. **Naled**

Naled is an OP insecticide that has been registered since 1959 for use in the United States. It is used primarily for controlling adult mosquitoes, but naled is also used on food and feed crops and in greenhouses.

Naled is applied as an ULV spray. ULV sprayers dispense very fine aerosol droplets that stay aloft and kill pests on contact.

At high doses, naled like other OP pesticides, can overstimulate the nervous system causing nausea, dizziness, or confusion. Severe high-dose poisoning with any OP pesticide can cause convulsions, respiratory paralysis, and death. There is potential for risks to invertebrates from the repeated use of naled. Naled is highly toxic to insects, including beneficial insects such as honeybees. For that reason, USEPA has established specific precautions on the label to reduce such risk.

According to a report from the Centers for Disease Control and Prevention that summarizes investigations of illnesses associated with exposures to insecticides uses during 1999-2002 to control mosquito populations in nine states (including California), naled was associated with 23 of 133 reported cases of pesticide-related illness associated with mosquito control.

Toxicity data for naled were obtained from the *Ecotoxicity Database* to assess toxicity of naled to freshwater aquatic life. Table D-1 summarizes toxicity data for naled.

Table D-1. Summary of Toxicity Data for Naled (CAS# 300-76-5)

Type of Organism	Study Length	Study Date	LC50 (µg/L)
Bluegill Sunfish	96 h	1971	1200
	96 h	1986	1200
	96 h	1986	4000
	96 h	1986	2200
	96 h	1986	240
Fathead Minnow	96 h	1986	3,300
	35 d	1992	N/A
Mysid	96 hr	1993	8.8
	30 d	2000	N/A
Rainbow Trout	96 h	1969	160
	96 h	1977	215
	96 h	1986	195
	96 h	1986	345
	96 h	1986	900
	96 h	1986	340
	96 h	1986	130
Scud	48 h	1969	0.14
	96 h	1972	14
	96 h	1986	18
Water Flea	48 h	1978	N/A
	48 h	1978	N/A
	48 h	1986	N/A
	48 h	1986	N/A
	48 h	1986	N/A
	48 h	1986	N/A

Type of Organism	Study Length	Study Date	LC50 (µg/L)
	48 h	1986	N/A
	21 d	1993	N/A
Lowest LC50/10 = 0.014			

Ambient Water Quality Criteria are unavailable for naled. Table D-1 shows that the lowest one-tenth of LC50 to protect the most sensitive freshwater aquatic life for naled is 0.014 µg/l.

Therefore, this General Permit contains an Instantaneous Maximum Receiving Water Monitoring Trigger of 0.014 ug/l based on one-tenth of the lowest LC50 from the *Ecotoxicity Database*.

c. Pyrethrin

Pyrethrin is an insecticide that is derived from the extract of chrysanthemum flowers. Pyrethrins have a soil half-life of 12 days. The plant extract called pyrethrum contains pyrethrin I and pyrethrin II; collectively, these are called pyrethrins.

A study from the UC Berkeley (*Aquatic Effects of Aerial Spraying for Mosquito Control over an Urban Area*, Weston, et al., Environ. Sci. Technol. 2006, 40, 5817-5822) on aquatic effects of aerial spraying for adult mosquito control found that a few hours after spraying, 35% of the water samples contained measurable pyrethrin residues (up to 3.8 µg/l), but pyrethrin was not detected in any water sample collected before or 10 to 34 hours after spraying. Water sampling results were similar to that conducted by the local mosquito control district in which none of 14 water samples was detected with pyrethrin prior to spraying. Pyrethrin was not detected in any sediment sample in two creeks before spraying for which pre-spray data were available; however, sediments in these two creeks were found to contain pyrethrin at a maximum concentration of 372 µg/kg immediately following the aerial application (8 days later). This study was conducted to evaluate effects of mosquito control agents on aquatic life within an urban setting due to aerial applications of insecticide containing pyrethrin and the synergist PBO over Sacramento in an effort to combat West Nile virus in 2005.

Toxicity data for pyrethrin were obtained from the *Ecotoxicity Database* to assess toxicity of pyrethrin to freshwater aquatic life. Table D-2 summarizes toxicity data for pyrethrin.

Table D-2. Summary of Toxicity Data for Pyrethrin (CAS#8003-34-7)

Type of Organism	Study Length	Study Date	LC50 (µg/L)
Bluegill Sunfish	96 h	1976	49
	96 h	1986	104

Type of Organism	Study Length	Study Date	LC50 (µg/L)
	96 h	1986	41
	96 h	1994	10
Fathead Minnow	96 h	1986	74
	35 d	1994	N/A
Mysid	96 h	1994	1.4
Rainbow Trout	96 h	1976	68
	96 h	1986	20
	96 h	1994	5.1
	96 h	1994	3.2
Scud	96 h	1986	1.4
Water Flea	48 h	1968	N/A
	48 h	1994	N/A
	21 d	1994	N/A
Lowest LC50/10 = 0.14			

Ambient Water Quality Criteria are unavailable for pyrethrin. Table D-2 shows that the lowest one-tenth of LC50 to protect the most sensitive freshwater aquatic life for pyrethrin is 0.14 µg/l. Therefore, this General Permit contains an Instantaneous Maximum Receiving Water Monitoring Trigger of 0.14 ug/l based on one-tenth of the lowest LC50 from the *Ecotoxicity Database*.

d. **Pyrethroids**

Pyrethroids are synthetic (human-made) chemical insecticides that act in a similar manner to pyrethrins. They work by quickly paralyzing the nervous systems of insects, producing a quick "knockdown" effect on insect pest populations. Pyrethroids are widely used for controlling various insects. Permethrin, resmethrin, and sumithrin are synthetic pyrethroids commonly used in mosquito control programs to kill adult mosquitoes.

Most pyrethroid mosquito control products can be applied only by public health officials and trained personnel of mosquito control districts. Mosquito control professionals apply pyrethroids as an ULV spray. ULV sprayers dispense very fine aerosol droplets that stay aloft and kill adult mosquitoes on contact. Pyrethroids used in mosquito control are typically mixed with a synergist compound, such as PBO, which enhances the effectiveness of the active ingredient.

Pyrethroids are considered to pose slight risks of acute toxicity to humans, but at high doses, pyrethroids can affect the nervous system. Mosquito control formulations of permethrin break down in the environment, and high temperatures and sunlight accelerate this process. However, pyrethroids are toxic to fish and to bees.

Pyrethroids are designed to breakdown more slowly than the naturally occurring pyrethrin. While pyrethrins, extremely sensitive to light, heat and moisture, break down in a few hours, the synthetic pyrethroids are stable and persist in the environment much longer. With a few exceptions, pyrethroids break down most quickly in direct sunlight, usually just a few days after application. However, in areas with limited sunlight, pyrethroids can persist for months.

According to the Scientific Investigations Report (Hladik M.L., Orlando J.L., and K.M. Kuivila. 2009. Collection of Pyrethroids in Water and Sediment Matrices: Development and Validation of a Standard Operating Procedure: U.S. Geological Survey Scientific Investigations Report 2009-5012, 22p.) from U.S. Geological Survey prepared in cooperation with the USEPA, pyrethroids are challenging to measure accurately in environmental samples. Sample-collection devices, sample-collection and laboratory-container material, container size, holding conditions, and sample-handling procedures have been found to have significant influences on the losses of pesticides onto container walls. The Report identifies the following techniques to minimize pyrethroid sorption to sample containers:

- Container composition affects the extent of pyrethroid loss:
 - Pyrethroids associate less to glass containers than plastic (HDPE or LDPE);
 - Teflon has the greatest pyrethroid association;
- Containers should be agitated vigorously for at least one minute before transfer to another container;
- Use larger sample containers;
- When pumping through larger filtration apparatuses (plate filter, autosampler), pump speeds should be greater than 500 mL/min;
- Composition of the water affects the extent of association of pyrethroids to container surfaces: when adding higher amounts of dissolved organic carbon (DOC) or suspended sediments to a water matrix, a lower amount of pyrethroids associated to the container surfaces;
- Appreciable losses of pyrethroids were not found for sediment samples collected in glass containers; and
- When possible, water samples should be analyzed within three days of collection. Sediment samples can be frozen for up to six months.

The Report is available at <http://pubs.usgs.gov/sir/2009/5012/>.

i. **Bifenthrin**

Bifenthrin is a pyrethroid insecticide registered for use indoor and outdoor residential and commercial areas, including indoor pet uses and food handling establishments, as well as on a variety of

agricultural and livestock commodities. Bifenthrin is registered for use to control a variety of insects including aphids, worms, ants, gnats, moths, beetles, grasshoppers, mites, etc. It was first registered to use in 1989.

According to USEPA's 2008 Assessment, USEPA indicates the risk concerns for freshwater and estuarine/marine organisms. Bifenthrin is highly toxic on an acute and chronic basis to freshwater fish and aquatic-phase amphibians, and highly toxic to freshwater aquatic invertebrate. Bifenthrin has also been classified as highly toxic to estuarine/marine fish and invertebrates on an acute basis.

Toxicity data for bifenthrin were obtained from the *Ecotoxicity Database* to assess toxicity of bifenthrin to freshwater aquatic life. Table D-3 summarizes toxicity data for bifenthrin.

Table D-3. Summary of Toxicity Data for Bifenthrin (CAS# 82657-04-3)

Type of Organism	Study Length	Study Date	LC50 (µg/L)
Bluegill Sunfish	96 hr	1983	0.35
Fathead Minnow	368 days	1988	N/A
Gizzard Shad	192 hr	1988	0.194
Mysid	96 hr	1987	0.004
Rainbow Trout	96 hr	1983	0.15
Sheepshead Minnow	96 hr	1986	17.5
Water Flea	48 hr	1983	N/A
	21 days	1989	N/A
Lowest LC50/10 = 0.0004			

Ambient Water Quality Criteria are unavailable for bifenthrin. Table D-3 shows that the lowest one-tenth of LC50 to protect the most sensitive freshwater aquatic life for pyrethrin is 0.0004 µg/l. Therefore, this General Permit contains an Instantaneous Maximum Receiving Water Monitoring Trigger of 0.0004 ug/l based on one-tenth of the lowest LC50 from the *Ecotoxicity Database*.

ii. **Cyfluthrin**

Cyfluthrin is a synthetic pyrethroid derivative. Like most pyrethroids, cyfluthrin is highly toxic to fish. Technical-grade cyfluthrin consists of a mixture of four diastereomeric pairs of enantiomers, consisting of two *cis* and two *trans* isomeric pairs. Beta-cyfluthrin consists of two diastereoisomeric pairs, which are the biologically active isomers of cyfluthrin. They are contained in cyfluthrin at a level of about 40 percent.

USEPA first registered cyfluthrin in 1987. Same as pyrethrins and pyrethroid, cyfluthrin act on tiny channels through which sodium is pumped to cause excitation of neurons and eventual death of the insect. Cyfluthrin is used to control chewing and sucking insects such as cutworms, ants, silverfish, cockroaches, termites, grain beetles, mosquitoes, fleas, flies, etc.

Cyfluthrin is highly toxic to marine and freshwater organisms. Cyfluthrin is broken down quickly in surface water. Because it is relatively non-soluble, and less dense than water, it will float on the surface film of natural waters. At the surface, it is subject to breakdown by exposure to sunlight (1 day). With low water solubility and a high Soil Organic Carbon-Water Partitioning Coefficient, cyfluthrin has a strong tendency to absorb to soil and sediments. Although cyfluthrin displays high aquatic toxicity in laboratory studies, the tendency to sorb strongly to suspended sediment and dissolved organic materials in field aquatic systems probably reduces cyfluthrin's bioavailability, hence cyfluthrin's aquatic toxicity. However, the extent to which bioavailability is mitigated and the aquatic toxicity of a hydrophobic pyrethroid is reduced in the water column or in sediments is uncertain.

Toxicity data for cyfluthrin were obtained from the *Ecotoxicity Database* to assess toxicity of cyfluthrin to freshwater aquatic life. Table D-4 summarizes toxicity data for cyfluthrin.

Table D-4. Summary of Toxicity Data for Cyfluthrin (CAS# 68359-37-5)

Type of Organism	Study Length	Study Date	LC50 (µg/L)
Bluegill Sunfish	96 hr	1983	1.5
	96 hr	1989	0.87
	96 hr	1991	0.28
	96 hr	1994	0.566
	96 hr	1994	0.998
Fathead Minnow	307 day	1990	0.25
Mysid	96 hr	1985	0.00637
	28 day	1986	N/A
	96 hr	1987	0.00242
	96 hr	1994	0.0022
	96 hr	1994	0.0023
Rainbow Trout	96 hr	1983	0.68
	58 day	1985	N/A
	96 hr	1988	0.085
	96 hr	1989	0.3
	96 hr	1991	0.068

Type of Organism	Study Length	Study Date	LC50 (µg/L)
	96 hr	1994	0.209
	96 hr	1994	0.111
	96 hr	1994	0.302
Water Flea	21 day	N/A	N/A
	48 hr	1983	N/A
	48 hr	1988	N/A
	48 hr	1989	N/A
	48 hr	1989	N/A
Lowest LC50/10 = 0.00022			

Ambient Water Quality Criteria are unavailable for cyfluthrin. Table D-4 above shows that the lowest one-tenth of LC50 to protect the most sensitive freshwater aquatic life for cyfluthrin is 0.00022 µg/l.

Therefore, this General Permit contains an Instantaneous Maximum Receiving Water Monitoring Trigger of 0.00022 ug/l based on the lowest one-tenth LC50 from the *Ecotoxicity Database*.

iii. **Lambda Cyhalothrin**

Lambda-cyhalothrin is a pyrethroid insecticide registered by the USEPA since 1988. Pyrethroids are manmade chemicals that are similar to natural insecticides pyrethrins. Lambda-cyhalothrin is a mixture of highly active isomers of cyhalothrin.

Pyrethroids, including lambda-cyhalothrin, disrupt the normal functioning of the nervous system in an organism causing paralysis or death. Lambda-cyhalothrin is a broad-spectrum insecticide used to control plant sucking bugs, such as aphids, beetle adults, and larvae and leaf eating Lepidoptera.

Toxicity data for lambda cyhalothrin were obtained from the *Ecotoxicity Database* to assess toxicity of lambda cyhalothrin to freshwater aquatic life. Table D-5 summarizes toxicity data for lambda cyhalothrin.

Table D-5. Summary of Toxicity Data for Lambda Cyhalothrin (CAS#91465-08-6)

Type of Organism	Study Length	Study Date	LC50 (µg/L)
Mysid	96 hr	1985	0.0041
	28 days	1989	N/A
Scud	48 hr	1985	N/A
Water Flea	21 days	N.R.	N/A
	48 hr	1984	N/A

Type of Organism	Study Length	Study Date	LC50 (µg/L)
	48 hr	1985	N/A
	48 hr	1985	N/A
	21 days	1985	N/A
	48 hr	1995	N/A
	48 hr	2001	N/A
Sheepshead Minnow	N.R.	N.R.	N/A
Fathead Minnow	300 d	1989	N/A
Rainbow Trout	96 hr	1984	0.24
	96 hr	1985	3.4
	96 hr	1995	13
	96 hr	1995	11.2
	96 hr	2001	0.19
Bluegill Sunfish	96 hr	1984	0.21
	96 hr	1985	2.2
	96 hr	1995	4.9
	96 hr	1995	5.3
	96 hr	2001	0.106
Lowest LC50/10 = 0.00041			

Ambient Water Quality Criteria are unavailable for lambda cyhalothrin. Table D-5 above shows that the lowest one-tenth of LC50 to protect the most sensitive freshwater aquatic life for lambda cyhalothrin is 0.00041 µg/l.

Therefore, this General Permit contains an Instantaneous Maximum Receiving Water Monitoring Trigger of 0.00041 ug/l based on the one-tenth of LC50 from the *Ecotoxicity Database*.

e. Piperonyl Butoxide (PBO)

PBO is a synergist used to increase the potency of insecticides like pyrethrins and pyrethroids. According to USEPA, PBO is one of the most commonly used ingredients in household pesticide products.

PBO acts as a synergist by inhibiting the activity of a family of enzymes called P450s in the target organism that would otherwise detoxify the pyrethrin or pyrethroid. These enzymes have many functions, including breakdown of toxic chemicals and transformation of hormones.

Symptoms of PBO poisoning include anorexia, vomiting, diarrhea, intestinal inflammation, pulmonary hemorrhage and perhaps mild central nervous system depression. Repeated contact may cause slight skin irritation. USEPA’s classification of PBO is “Group C,” a possible human carcinogen based on a study result on mice. The study found that PBO caused liver tumors and cancer.

In field tests of agricultural soils conducted in California by a manufacturers’ task force, PBO persisted (measured as the time

required for all applied PBO to dissipate) up to 30 days. The manufacturers' task force also measured PBO's half-life (the time required for half of applied PBO to break down or move away from the application site) and persistence in water and aquatic sediments. In water tested in California, PBO's half-life is about a day. In sediment, the half-life is up to 24 days and PBO persisted up to 120 days.

A study from the UC Berkeley (Weston, Et Al.) on aquatic effects of aerial spraying for adult mosquitoes over Sacramento in 2005 found that PBO was detected in every creek sample at concentrations ranging from 0.44 µg/L to 3.92 µg/L after a completion of an aerial application. These results are similar to the local Mosquito Control District's post-application sampling that reported PBO was detected at about 4 µg/L in four of ten creeks and 20 µg/L in one creek. The study also found PBO detections after spraying in sediment samples at 16 to 61 µg/kg in 4 of 6 samples (these 4 samples also contains pyrethrin), where PBO was not detected in sediment samples collected just before aerial spraying. As indicated in this study, the greatest risk of aerial application to aquatic lives is the synergy between the PBO and insecticides already presented in the environment, or in this case, pre-existing pyrethroids. The synergistic effect is proportional to the logarithm of the PBO concentration.

Toxicity data for PBO for the mixture of PBO and pyrethrin were obtained from USEPA's *Ecotoxicity Database* to assess the toxicity of PBO and its mixtures to freshwater aquatic life. Table D-6 and D-7 below summarize the toxicity data for PBO and PBO/pyrethrin mixture.

Table D-6. Summary of Toxicity Data for PBO (CAS# 51-03-6)

Type of Organism	Study Length	Study Date	LC50 (µg/L)
Bluegill Sunfish	96 h	1980	4,200
	96 h	1985	4,000
	96 h	1992	5,370
Fathead Minnow	96 h	1985	6,200
	35 d	1986	N/A
	N.R.	1994	N/A
Mysid	96 hr	1995	490
Rainbow Trout	96 h	1980	3,400
	96 h	1985	2,820
	96 h	1986	1,800
	96 h	1992	6,100
Sheepshead Minnow	96 h	1992	3940
Water Flea	48 h	1975	N/A
	48 h	1984	N/A
	21 d	1992	N/A
	48 h	1992	N/A
	21 d	1994	N/A

Type of Organism	Study Length	Study Date	LC50 (µg/L)
Lowest LC50/10 = 49			

Ambient Water Quality Criteria are unavailable for PBO. Table D-6 above shows that the lowest one-tenth of LC50 to protect the most sensitive freshwater aquatic life for PBO is 49 µg/l.

Therefore, this General Permit contains an Instantaneous Maximum Receiving Water Monitoring Trigger of 49 ug/l based on the lowest one-tenth of LC50 obtained from the *Ecotoxicity Database*.

Table D-7. Summary of Toxicity Data for PBO (in the PBO/Pyrethrin Mixture) (CAS # 51-03-6 & 8003-34-7)

Test Species	Study Length	Study Date	LC50 (µg/l)
Bluegill sunfish	96 hrs	1994	3.4
Mysid	96 hrs	1994	0.14
Water flea	48 hrs	1975	N/A
	48 hrs	1994	N/A
Lowest LC50/10 = 0.014			

Ambient Water Quality Criteria are unavailable for PBO (in the PBO/Pyrethrin Mixture). Table D-7 shows that the lowest one-tenth of LC50 to protect the most sensitive freshwater aquatic life for PBO in the PBO/Pyrethrin mixture is 0.014 µg/l.

Therefore, this General Permit contains an Instantaneous Maximum Receiving Water Monitoring Trigger of 0.014 ug/l based on one-tenth of the lowest one-tenth of LC50 obtained from the *Ecotoxicity Database*.

f. Carbaryl

Carbaryl (1-naphthyl methylcarbamate) is a chemical in the carbamate family used chiefly as an insecticide. Carbarl is the active ingredient for insecticide with the trade name Sevin, which controls over 100 species of insects on citrus, fruit, cotton, forests, lawns, nuts, ornamentals, shade trees, and other crops, as well as on poultry, livestock and pets. It is highly toxic to honey bees and many other beneficial insects and mites.

Degradation of carbaryl in the soil is mostly due to sunlight and bacterial action. Carbaryl bounds with organic matters and can be transported to surface water in soil through runoff. Carbaryl has a half-life of 7 days in aerobic soil and 28 days in anaerobic soil. In pond water, carbaryl is broken down by bacteria through chemical processes. Carbaryl has a half-life of from 1 to 32 days in pond water.

Carbaryl's mode of action is by disrupting the normal functions of the insect nervous system by adding a carbamyl moiety to the active site of the acetylcholinesterase enzyme, which prevents it from interacting with acetylcholine.

USEPA has a national recommended water quality criterion for fresh water aquatic life protection of instantaneous maximum value of 0.2 µg/L for carbaryl. However, this criterion is from a 1973 USEPA reference, and it does not appear in the current list of recommended criteria published by USEPA. USEPA also has a recommended criterion for fresh water aquatic life protection maximum and continuous of 2.53 µg/L derived by the California Department of Fish and Game.

This General Permit contains an Instantaneous Maximum Receiving Water Monitoring Trigger of 2.53 ug/l based on *the* California Department of Fish and Game criterion.

g. **Esfenvalerate**

Esfenvalerate is a mixture of four stereoisomers, enriched with the S,S-isomer, the most insecticidally active isomer. The parent mixture, fenvalerate, is a mixture of the same four isomers in relatively equal proportions and was originally marketed as Pydrin (fenvalerate). However, since the S,S-isomer showed the most insecticidal activity, modern production techniques have been modified to enrich the racemic fenvalerate mixture with the S,S-isomer, and the mixture called esfenvalerate.

Esfenvalerate is practically insoluble in water (<2 ug/l), extremely hydrophobic (log Kow >6) and has a strong tendency to bind to soil particles (Koc = 215,000). As a result of these characteristics, esfenvalerate is expected to be relatively immobile in soil and to show a low tendency to leach. Esfenvalerate may contact surface waters either via drift following improper application, or be adsorbed to sediment transported to streams following rain events. Esfenvalerate, when present in surface waters, is expected to be bound to suspended particulates (clay, soil, and sediment particles) and to organic matter.

Esfenvalerate is a broad-spectrum nonselective insecticide applied as needed for the control of a wide selection of arthropod pests.

Esfenvalerate works against the insect/arthropod nervous system, resulting in repetitive firing of neurons. Esfenvalerate enters into the insect/arthropod either via contact or through ingestion. Direct contact with spray droplets provides the most effective method of control. A second mode of entry is through consumption of spray droplets or residues present on treated foliage following esfenvalerate application.

The photostability of esfenvalerate in water is 10 days when exposed to sunlight and six days when exposed to artificial sunlight. Hydrolytic stability of esfenvalerate was reported to be 129 days at pH 5 and 65 days at pH 9. Laboratory data show that esfenvalerate is extremely toxic to aquatic organisms. However, researches have shown that these toxicity conditions generally do not occur in the field due to

esfenvalerate’s strong tendency to adsorb to suspended soil, clay, and organic particles in the water column.

Toxicity data for esfenvalerate were obtained from the *Ecotoxicity Database* to assess toxicity of esfenvalerate to freshwater aquatic life. Table D-8 summarizes toxicity data for esfenvalerate.

Table D-8. Summary of Toxicity Data for Esfenvalerate (CAS# 66230-04-4)

Type of Organism	Study Length	Study Date	LC50 (µg/L)
Bluegill Sunfish	96 hr	1994	0.23
Rainbow Trout	96 hr	1994	0.07
Water Flea	48 hr	1987	N/A
	48 hr	1994	N/A
Lowest LC50/10 = 0.007			

Ambient Water Quality Criteria are unavailable for esfenvalerate. Table D-8 shows that the lowest one-tenth of LC50 to protect the most sensitive freshwater aquatic life for esfenvalerate is 0.007 µg/l.

Therefore, this General Permit contains an Instantaneous Maximum Receiving Water Monitoring Trigger of 0.007 ug/l based on one-tenth of the lowest one-tenth of LC50 obtained from the *Ecotoxicity Database*.

h. Neonicotinoids

i. Acetamiprid

Acetamiprid is an active ingredient in insecticides for control of sucking-type insects on leafy vegetables, fruiting vegetables, cole crops, citrus fruits, pome fruits, grapes, cotton, and ornamental plants and flowers. It was registered to use in 2002

Acetamiprid belongs to a new class of insecticides called neonicotinoids, which have different effects from other insecticides. Neonicotinoids act as selective agonists at the nicotinic acetylcholine receptors, therefore their toxicity is higher to insect pests than to humans.

Toxicity data for acetamiprid were obtained from the *Ecotoxicity Database* to assess toxicity of acetamiprid to freshwater aquatic life. Table D-9 summarizes toxicity data for acetamiprid.

Table D-9. Summary of Toxicity Data for Acetamiprid (CAS# 135410-20-7)

Type of Organism	Study Length	Study Date	LC50 (µg/L)
Bluegill Sunfish	96 hr	1997	119,300

Type of Organism	Study Length	Study Date	LC50 (µg/L)
Fathead Minnow	35 days	1997	N/A
Mysid	96 hr	1997	19,000
	96 hr	1998	66
	28 days	1998	N/A
Rainbow Trout	96 hr	1997	100,000
	96 hr	1998	98,100
Sheepshead Minnow	96 hr	1998	100,000
Scud	96 hr	2003	N/A
Water Flea	48 hr	1997	N/A
	48 hr	1997	N/A
	21 days	1997	N/A
	48 hr	1997	N/A
	48 hr	1998	N/A
	48 hr	2002	N/A
	21 days	2003	N/A
Lowest LC50/10 = 6.6			

Ambient Water Quality Criteria are unavailable for acetamiprid. Table D-9 shows that the lowest one-tenth of LC50 to protect the most sensitive freshwater aquatic life for acetamiprid is 6.6 µg/l

Therefore, this General Permit contains an Instantaneous Maximum Receiving Water Monitoring Trigger of 6.6 ug/l based on the lowest one tenth of LC50 from the *Ecotoxicity Database*.

ii. **Imidacloprid**

Imidacloprid is a neonicotinoids, which are a class of insecticides which act on the central nervous system of insects with lower toxicity to mammals. Neonicotinoids are among the most widely used insecticides worldwide. In insects, neonicotinoids cause paralysis which leads to death, often within a few hours. However, they are much less toxic to mammals

Imidacloprid is a systemic, chloro-nicotinyl insecticide for the control of sucking insects including rice hoppers, aphids, thrips, whiteflies, termites, turf insects, soil insects and some beetles. It is most commonly used on rice, cereal, maize, potatoes, vegetables, sugar beets, fruit, cotton, hops and turf, and is especially systemic when used as a seed or soil treatment.

Toxicity data for imidacloprid were obtained from the *Ecotoxicity Database* to assess toxicity of imidacloprid to freshwater aquatic life. Table D-10 summarizes toxicity data for imidacloprid.

Table D-10. Summary of Toxicity Data for Imidacloprid (CAS# 138261-41-3)

Type of Organism	Study Length	Study Date	LC50 (µg/L)
Bluegill Sunfish	96 hr	1990	105,000
Mysid	96 hr	1990	38
	96 hr	1992	159
Rainbow Trout	96 hr	1988	229,100
	96 hr	1990	83,000
	98 D	1991	N/A
Amphipod/Scud	48 hr	1991	115.3
	96 hr	1991	55
Sheepshead Minnow	96 hr	1990	163,000
Water Flea	21 Day	1990	N/A
	48 hr	1990	N/A
Lowest LC50/10 = 3.8			

Ambient Water Quality Criteria are unavailable for imidacloprid. Table D-10 shows that the lowest one-tenth of LC50 to protect the most sensitive freshwater aquatic life for imidacloprid is 3.8 µg/l.

Therefore, this General Permit contains an Instantaneous Maximum Receiving Water Monitoring Trigger of 3.8 ug/l based on the lowest one tenth of LC50 from the *Ecotoxicity Database*.

3. Herbicides

The receiving water monitoring trigger for each constituent below is based on the Basin Plans' narrative toxicity objective of no toxics in toxic amounts. The trigger is only applicable to spray applications using herbicide products containing the following active ingredients.

a. Aminopyralid

Aminopyralid acts as a pyridine carboxylic acid herbicide like clopyralid, which is intended for use in rangeland, permanent grass pastures, non-cropland areas (rights-of-way, roadsides and non-irrigation ditch banks), natural areas, such as wildlife management areas, natural recreation areas, campgrounds, trailheads, trails, and grazed area. Aminopyralid is a growth regulator herbicides which selectively controls broadleaf weeds in grasses.

In aquatic systems, the primary route of degradation is photolysis, where a laboratory experiment yielded a half-life of 0.6 day. Carbon dioxide and oxamic and malonamic acid were identified as major degradates. Aminopyralid was stable to direct hydrolysis and in anaerobic sediment-water systems. In aerobic sediment-water

systems, degradation proceeded slowly, with observed total system half-lives of 462 to 990 days.

Toxicity data for aminopyralid were obtained from the *Ecotoxicity Database* to assess toxicity of aminopyralid to freshwater aquatic life. Table D-11 summarizes toxicity data for aminopyralid.

Table D-11. Summary of Toxicity Data for Aminopyralid (CAS#150114-71-9)

Type of Organism	Study Length	Study Date	LC50 (µg/L)	NOEL (µg/L)
Bluegill Sunfish	96 hr	2003	100,000	100,000
Fathead Minnow	36 D	2002	N/A	1,360
Mysid	96 hr	2002	100,000	100,000
Rainbow Trout	96 hr	2001	100,000	100,000
Sheepshead Minnow	96 hr	2002	120,000	120,000
Water Flea	48 hr	2001	N/A	98,600
	21 D	2003	N/A	102,000
Lowest NOEL = 1,360				
Lowest LC50/10 = 10,000				

Ambient Water Quality Criteria are unavailable for aminopyralid. Table D-11 shows that the lowest NOEL and the lowest LC50/10 to protect the most sensitive freshwater aquatic life for aminopyralid are 1,360 and 10,000 µg/l, respectively. The lowest NOEL is more stringent than one-tenth of the lowest LC50.

Therefore, this General Permit contains an Instantaneous Maximum Receiving Water Monitoring Trigger of 1,360 ug/l based on the lowest NOEL obtained from the *Ecotoxicity Database*.

b. Chlorsulfuron

Chlorsulfuron is an active ingredient in herbicide products used as a pre- and post-emergent herbicide to control a variety of weeds on cereal grains, pasture and rangeland, industrial sites, and turf grass. Chlorsulfuron was first registered in the United States in 1982 by E.I. du Pont de Nemours and Company.

Chlorsulfuron is likely to be persistent and highly mobile in the environment. It may be transported to non-target areas by runoff and/or spray drift. Degradation by hydrolysis appears to be the most significant mechanism for degradation of chlorsulfuron, but is only significant in acidic environments (23 day half-life at pH = 5); it is stable to hydrolysis at neutral to high pH. Degradation half-lives in soil environments range from 14 to 320 days.

USEPA concluded in the chlorsulfuron Registration Eligibility Decision (RED) that it is practically nontoxic to both freshwater and estuarine/marine fish on an acute exposure basis and is slightly toxic to estuarine/marine invertebrates.

Ambient Water Quality Criteria are unavailable for chlorsulfuron. Toxicity data for chlorsulfuron were obtained from the *Ecotoxicity Database* to assess toxicity of arsenal to freshwater aquatic life. Table D-12 summarizes toxicity data for chlorsulfuron.

Table D-12. Summary of Toxicity Data for Chlorsulfuron (CAS#64902-72-3)

Type of Organism	Study Length	Study Date	LC50 (µg/L)
Bluegill Sunfish	96 h	1979	300,000
Fathead Minnow	96 h	1979	300,000
Mysid	96 h	1991	89,000
Rainbow Trout	96 h	1979	250,000
	77 d	1991	N/A
Sheepshead Minnow	96 h	1991	980,000
Water Flea	48 h	1979	N/A
	21 d	1989	N/A
Lowest LC50/10 = 8,900			

Due to chlorsulfuron’s almost nonexistent toxicity to freshwater and estuarine/marine fish according to USEPA, this General Permit does not have a monitoring trigger for chlorsulfuron. However, due to chlorsulfuron’s slight toxicity to estuarine/marine invertebrates, this General Permit requires monitoring when a chlorsulfuron-containing product is used.

c. Clopyralid

Clopyralid is active ingredient used in herbicide, such as Transline, recommended for control of selective, post-emergent broad leaf weeds in non-cropland areas including equipment pathways, industrial manufacturing and storage sites, and rights-of-way such as along roadsides, electrical lines, and railroads.

Toxicity data for clopyralid were obtained from the *Ecotoxicity Database* to assess toxicity of clopyralid to freshwater aquatic life. Table D-13 summarizes toxicity data for clopyralid.

Table D-13 Summary of Toxicity Data for Clopyralid (CAS#57754-85-5)

Type of Organism	Study Length	Study Date	LC50 (µg/L)
Bluegill Sunfish	96 hr	1978	125,400
	96 hr	1986	4,686,000
Fathead Minnow	96 hr	1986	2,900,000
Rainbow Trout	96 hr	1978	103,500
	96 hr	1986	1,968,000
Water Flea	48 hr	1980	N/A
	48 hr	1986	N/A
Lowest LC50/10 = 10,350			
Monitoring trigger after considering both active and the inert ingredients			2,784

Ambient Water Quality Criteria are unavailable for clopyralid. Table D-13 shows that the lowest one-tenth of LC50(LC50/10) to protect the most sensitive freshwater aquatic life for clopyralid is 10,350 µg/L.

However, the product Transline Herbicide contains an inert ingredient with an LC50/10 value lower than 10,350 ug/LI. To be protective of aquatic life in the receiving water, the monitoring trigger for clopyralid must consider the lowest values of LC50/10 in both the active and inert ingredients and their percentages in the product. Thus, this General Permit contains a calculated value for Instantaneous Maximum Receiving Water Monitoring Trigger of 2,784 ug/l for clopyralid when Transline Herbicide is used.

d. Glyphosate

Glyphosate is a broad-spectrum, non-selective systemic herbicide. It is useful on essentially all annual and perennial plants including grasses, sedges, broad-leaved weeds and woody plants. It can be used on non-cropland and among a great variety of crops.

Glyphosate is usually formulated as an isopropylamine salt. Considerable research has shown that glyphosate inhibits an enzyme pathway, prevents plants from synthesizing three aromatic amino acids. These amino acids are essential for growth and survival of most plants.

USEPA has promulgated a primary maximum contaminant level of 700 µg/L for glyphosate for protection of drinking water sources or water bodies with an MUN designation. This number is protective of all beneficial uses in the receiving water. Thus, this General Permit

contains an Instantaneous Maximum Receiving Water Monitoring Trigger of 700 ug/l based on USEPA's primary maximum contaminant level.

e. **Imazapyr**

The active ingredient, imazapyr, is marketed in compounds by the trade names, Arsenal, Chopper, and Assault. Upon contact, imazapyr can interfere with DNA synthesis and cell growth of the plants. The target weed species are grasses, broadleaves, vines, brambles, shrubs and trees, riparian and emerged aquatics. The result of exposure is death of new leaves. It was first registered in the United States in 1984.

Imazapyr is a slow-acting amino acid synthesis inhibitor. It has an average water half life of four days with photodegradation as the primary form of degradation in water. Imazapyr acts quicker and is less toxic than other low-volume herbicides. According to the San Francisco Estuary Invasive Spartina Project's May 4, 2005 report titled *Use of Imazapyr Herbicide to Control Invasive Cordgrass (Spartina spp.) in the San Francisco Estuary*, imazapyr in water rapidly degrades via photolysis. The report further states that a number of field studies demonstrated that imazapyr rapidly dissipated from water within several days, no detectable residues of imazapyr were found in either water or sediment within two months; and in estuarine systems, dilution of imazapyr with the incoming tides contributes to its rapid dissipation suggesting that imazapyr is not environmentally persistent in the estuarine environment and does not result in significant impacts to water quality. The report concludes that imazapyr herbicides can be a safe, highly effective treatment for control and eradication of non-native *Spartina* species in the San Francisco Estuary and offers an improved risk scenario over the existing treatment regime with glyphosate herbicides. On August 30, 2005, DPR registered imazapyr for aquatic application in aquatic pesticides.

Ambient Water Quality Criteria are unavailable for imazapyr. Toxicity data for imazapyr were obtained from the *Ecotoxicity Database* to assess toxicity of imazapyr to freshwater aquatic life. Table D-14 summarizes toxicity data for imazapyr.

Table D-14. Summary of Toxicity Data for Imazapyr (CAS#81334-34-1)

Type of Organism	Study Length	Study Date	LC50 (µg/L)
Water Flea	48 h	1983	N/A
	21 d	1988	N/A
Bluegill Sunfish	96 h	1983	100,000
	96 h	1983	100,000

Type of Organism	Study Length	Study Date	LC50 (µg/L)
Fathead Minnow	32 d	1998	N/A
	8 mos	1999	N/A
Rainbow Trout	96 h	1983	100,000
	28 d	1988	N/A
	96 h	1995	110,000
Lowest LC50/10 = 10,000			

Due to its safe use in the environment, low toxicity to aquatic life as indicated in the *Ecotoxicity Database* and a report by the San Francisco Estuary Invasive Spartina Project, this General Permit does not have a monitoring trigger for imazapyr. However, this General Permit requires monitoring when an imazapyr-containing product is used. Ambient Water Quality Criteria are unavailable for aminopyralid. Table D-14 shows that the lowest one-tenth of LC50 to protect the most sensitive freshwater aquatic life for aminopyralid is 10,000 µg/l.

According to the eco-toxicity data, aminopyralid can be considered to be non-toxic to slight toxic to aquatic life. This General Permit does not have a monitoring trigger for aminopyralid. However, due to aminopyralid's slight toxicity to aquatic life, this General Permit requires monitoring when a TIPA salt of aminopyralid-containing product is used

f. **Triclopyr Butoxyethyl Ester (BEE)**

Triclopyr BEE is an active ingredient in selective foliar- and root-absorbed, translocated herbicide used for control of woody and broadleaf plants along rights-of-way, in forests, on industrial lands, and on grasslands and parklands, On an acute basis, triclopyr BEE is moderately to highly toxic to freshwater fish and highly toxic to estuarine/marine fish. The compound has little if any potential to accumulate in aquatic organisms. However, triclopyr BEE releases the breakdown product, 3,5,6-trichloro-2-pyridinol (TCP) , which is considered to be persistent in aquatic environments and considered to have slight to moderate acute toxicity to freshwater warm- and cold-water fish species.

Toxicity data for triclopyr BEE were obtained from the *Ecotoxicity Database* to assess toxicity of triclopyr BEE to freshwater aquatic life. Table D-15 summarizes toxicity data for Triclopyr BEE.

Table D-15. Summary of Toxicity Data for Triclopyr BEE (CAS#64700-56-7)

Type of Organism	Study Length	Study Date	LC50 (µg/L)
Bluegill Sunfish	96 h	1973	1,460
	24 h	1991	1,300
	96 h	1993	360
	96 h	1994	440
Fathead Minnow	24 h	1980	2,400
	24 h	1981	2,310
Rainbow Trout	96 h	1973	1,290
	24 h	1991	2,700
	96 h	1992	650
	65 d	1993	N/A
	96 h	1994	980
Water Flea	48 h	1980	N/A
	48 h	1981	N/A
	48 h	1994	N/A
Lowest LC50/10 = 36			

Ambient Water Quality Criteria are unavailable for triclopyr BEE. Table D-15 shows that the lowest one-tenth of LC50 to protect the most sensitive freshwater aquatic life for triclopyr BEE is 36 µg/l.

Therefore, this General Permit contains an Instantaneous Maximum Receiving Water Monitoring Trigger of 36 ug/l based on the lowest one tenth of LC50 from the *Ecotoxicity Database*.

g. Triclopyr triethylamine salt (TEA)

Triclopyr TEA is a systemic herbicide used on rice, rangeland and pasture, rights-of-way, forestry and turf, including home lawns, for control of broadleaf weeds and woody plants. There are currently 24 products containing triclopyr triethylamine salt (TEA). Triclopyr TEA was first registered on May 8, 1979 as an herbicide on non-crop areas and in forestry use for the control of broadleaf weeds and woody plants.

USEPA concluded in its RED documentation that triclopyr TEA is practically non-toxic to freshwater fish and aquatic invertebrates on an acute basis and triclopyr TEA is slightly toxic to practically non-toxic to estuarine/marine fish and invertebrates on an acute basis.

Triclopyr produce the metabolite or degradate 3,5,6-trichloro-2-pyridinol (TCP). TCP Based on its analysis, USEPA concludes that the existing uses of triclopyr are unlikely to result in acute or chronic dietary risks from TCP. Based on limited available data and modeling estimates, with less certainty, the USEPA concluded that existing uses

of triclopyr are unlikely to result in acute or chronic drinking water risks from TCP.

Toxicity data for triclopyr TEA were obtained from the *Ecotoxicity Database* to assess toxicity of triclopyr TEA to freshwater aquatic life. Table D-16 summarizes toxicity data for Triclopyr TEA.

Table D-16. Summary of Toxicity Data for Triclopyr Triethylamine Salt (CAS#57213-69-1)

Type of Organism	Study Length	Study Date	LC50 (µg/L)
Bluegill Sunfish	96 hr	1978	891,000
	96 hr	1973	471,000
Fathead Minnow	96 hr	1978	947,000
	96 hr	1983	546,000
	96 hr	1983	279,000
	28 D	1983	N/A
Grass Shrimp	14 d	1992	326,000
Pink Shrimp	96 hr	1975	895,000
Rainbow Trout	96 hr	1973	240,000
	96 hr	1978	552,000
Water Flea	21 D	1982	N/A
	48 hr	1978	N/A
Lowest LC50/10 = 24,000			

Due to its safe use in the environment, low toxicity to aquatic life as indicated in the *Ecotoxicity Database* and as concluded by USEPA, this General Permit does not have a monitoring trigger and does not require monitoring for triclopyr TEA.

Summary of Receiving Water Monitoring Triggers

Table D-17 below summarizes the Receiving Water Monitoring Triggers and controlling water quality criteria and standards for all larvicides, adulticides and herbicides active ingredients.

Table D-17. Summary of Receiving Water Monitoring Triggers

Ingredient	Unit	Instantaneous Maximum Monitoring Trigger	Basis
Adulticide Active Ingredients			
Acetamiprid	µg/L	6.6	USEPA Office of Pesticides <i>Ecotoxicity Database</i>
Bifenthrin	µg/L	0.0004	USEPA Office of Pesticides <i>Ecotoxicity Database</i>

Ingredient	Unit	Instantaneous Maximum Monitoring Trigger	Basis
Carbaryl	µg/L	2.53	California Department Fish and Game Criterion
Esfenvalerate	µg/L	0.007	USEPA Office of Pesticides <i>Ecotoxicity Database</i>
Lambda Cyhalothrin	µg/L	0.00041	USEPA Office of Pesticides <i>Ecotoxicity Database</i>
Malathion	µg/L	0.1	USEPA National Recommended Water Quality Criteria for Fresh Water Aquatic Life Protection
Naled	µg/L	0.014	USEPA Office of Pesticides <i>Ecotoxicity Database</i>
PBO (in PBO/Pyrethrin Mixture)	µg/L	49	USEPA Office of Pesticides <i>Ecotoxicity Database</i>
Piperonyl Butoxide (PBO)	µg/L	30	USEPA Office of Pesticides <i>Ecotoxicity Database</i>
Pyrethrins	µg/L	0.14	USEPA Office of Pesticides <i>Ecotoxicity Database</i>
Lavicide/Adulticide Active Ingredients			
Cyfluthrin	µg/L	0.00022	USEPA Office of Pesticides <i>Ecotoxicity Database</i>
Imidacloprid	µg/L	3.8	USEPA Office of Pesticides <i>Ecotoxicity Database</i>
Herbicide Active Ingredients			
Aminopyralid	µg/L	1,360	USEPA Office of Pesticides <i>Ecotoxicity Database</i>
Clopyralid	µg/L	2,874	USEPA Office of Pesticides <i>Ecotoxicity Database</i>
Glyphosate	µg/L	700	USEPA primary MCL for protection of drinking water quality
Triclopyr Butoxyethyl Ester	µg/L	36	USEPA Office of Pesticides <i>Ecotoxicity Database</i>

Acute and Chronic Toxicity

The narrative toxicity objective contained in the Regional Water Boards' Basin Plans states that "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life." For compliance with that objective, this General Permit requires each Coalition or individual Discharger to conduct toxicity testing as specified in the Monitoring and Reporting Program. This General Permit also contains a receiving water limitation for toxicity and requires the Coalition or individual Discharger to implement BMPs to identify corrective actions to reduce or eliminate any toxicity caused by residual pesticides from spray applications for pest control.

VII. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

Section 122.48 of 40 C.F.R. requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorize the Regional Water Boards to require technical and monitoring reports. The Monitoring and Reporting Program (Attachment C) for this General Permit establishes monitoring and reporting requirements to implement federal and state requirements. The following provides the rationale for the requirements contained in the Monitoring and Reporting Program for discharges of residual pesticides from direct and spray applications for pest control.

A. Effluent Monitoring

Pursuant to the requirements of 40 C.F.R. § 122.44(i)(2) effluent monitoring is required for all constituents with effluent limitations. Effluent monitoring is necessary to assess compliance with effluent limitations, assess the effectiveness of the treatment process, and to assess the impacts of the discharge on the receiving water and groundwater.

The application of pesticides for pest control is not necessarily considered a discharge of pollutants according to the *National Cotton Council of America v. USEPA* decision and other applicable case law. The regulated discharge is the discharge of residual pesticides. At what point the pesticide becomes a residue is not precisely known. Therefore, in the application of pesticides, the exact effluent is unknown. Thus, effluent monitoring requirement is not applicable for pesticide spray applications.

B. Toxicity Testing Requirements

Acute and Chronic toxicity performed in conjunction with the Background and Event Monitoring for active ingredients and at a monitoring frequency specified in Table C-1 is required to demonstrate compliance with the Basin Plans' narrative toxicity objective.

C. Receiving Water Monitoring

Receiving water monitoring is necessary to determine the impacts of the discharge on the receiving stream.

VIII. RATIONALE FOR PROVISIONS

A. Standard Provisions

Standard Provisions, which apply to all NPDES permits in accordance with 40 C.F.R. § 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 C.F.R. § 122.42, are provided in Attachment B. The Discharger must comply with applicable standard provisions and with those additional conditions that are applicable under 40 C.F.R. § 122.42.

Sections 122.41(a)(1) and (b) through (n) of 40 C.F.R. establish conditions that apply to all State-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the General Permit.

Section 123.25(a)(12) of 40 C.F.R. allows the state to omit or modify conditions to impose more stringent requirements. In accordance with 40 C.F.R. § 123.25, this General Permit omits federal conditions that address enforcement authority specified in 40 C.F.R. § 122.41(j)(5) and (k)(2) because the enforcement authority under the California Water Code is more stringent. In lieu of these conditions, this General Permit incorporates by reference California Water Code section 13387(e).

B. Reopener Provisions

1. The reopener provisions allow the State Water Board to reopen the permit in accordance with 40 C.F.R. § 122.62.
2. **Chronic Toxicity.** This General Permit may be reopened if a numeric chronic toxicity water quality objective is adopted by the State Water Board. This General Permit may be reopened to include a numeric chronic toxicity limitation based on that objective.
3. **Receiving Water Limitations.** This General Permit may be re-opened to add receiving water limitations if the monitoring result for residual pesticides specified in the Table 3 exceed the associated monitoring trigger.

IX. PUBLIC PARTICIPATION

The State Water Board is considering the issuance of WDRs that will serve as a general NPDES permit for pesticide spray applications. As a step in the WDR adoption process, the State Water Board staff has developed tentative WDRs. The State Water Board encourages public participation in the WDR adoption process.

A. Notification of Interested Parties

The State Water Board has notified interested agencies, parties, and persons of its intent to prescribe general WDRs for pesticide spray applications and has provided them with an opportunity to submit their written comments and recommendations. Notification was provided to interested parties through specific mailings, distribution through publication in major newspapers for the following communities:

B. Written Comments

The staff determinations are tentative. Interested persons are invited to submit written comments concerning this tentative WDR. Comments must be submitted either in person or by mail to the State Water Board at the address listed on the cover page of this General Permit.

To be fully responded to by staff and considered by the State Water Board, written comments must be received at the State Water Board offices by 5:00 p.m. on November 16, 2010.

C. Public Hearing

The State Water Board will hold a public hearing on the tentative WDRs during its regular Board meeting on the following date and time and at the following location:

Date: November 2, 2010
Time: 10 a.m.
Location: State Water Resources Control Board
1001 I Street
Sacramento, CA 95814

Interested persons are invited to attend. At the public hearing, the State Water Board will hear testimony, if any, pertinent to the discharge, WDRs, and permit. Oral testimony will be heard; however, for accuracy of the record, important testimony should be in writing.

Please be aware that dates and venues may change. Our web address is www.waterboards.ca.gov where you can access the current agenda for changes in dates and locations.

D. Information and Copying

The tentative effluent limitations, receiving water limitations, and special provisions, comments received, and other information are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the State Water Board by calling (916) ____ ____.

E. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding this general WDRs and NPDES permit should contact the State Water Board, reference the general WDRs and NPDES permit, and provide a name, address, and phone number.

F. Additional Information

Requests for additional information or questions regarding this General Permit should be directed to Jenny Chen at (916) 341-5570 or at hjchen@waterboards.ca.gov.

ATTACHMENT E – LIST OF PESTICIDE PRODUCTS

Product Name/ Trade Name	Active Ingredient	Manufacturer	EPA Number
Larvicides			
DiPel DF Biological Insecticide	Bacillus thuringiensis kurstaki	Valent USA	73049-39-AA
DiPel Pro DF Biological Insecticide Dry Flowable	Bacillus thuringiensis kurstaki	Valent USA	73049-39-ZA
Entrust Naturalyte Insect Control	Spinosad Factor A&D	Dow AgroSciences	62719-282
TM Biocontrol	Douglas-fir tussock moth nuclear polyhedrosis virus	Espro, Inc.	27586-1
Adulticides			
Evergreen Crop Protection EC60-6	Pyrethrins and PBO	McLaughlin Gormley King Company	1021-1770
Fyfanon ULV AG	Malathion	Chemnova, Inc.	67760-35-AA
Dibrom Concentrate	Naled	AMVAC Chemical Corporation	5481-480-AA
GF-120 NF Naturalyte Fruit Fly Bait	Spinosad A and D	Dow AgroSciences	62719-498-AA
Hercon Disrupt Bioflake-LBAM	E-11-Tetradecen-1-yl Acetate and (E,E)-9,11-Tetradecadien-1-yl Acetate	Hercon Environmental	8730-73-AA
Pyganic EC 5.0 II	Pyrethrins	MGK McLaughlin Gormley	1021-1772
Warrior II with Zeon Technology	Lambda Cyhalothrin Technical	Syngenta Crop Protection, Inc.	100-1295-AA
Sevin SL Carbaryl Insecticide	Carbaryl	Bayer Environmental Science	432-1227-ZA
Splat LBAM HP	(E)-11-Tetradecen-1-yl acetate and (E,E)-9,11-Tetradecadien-1-yl acetate	ISCA Technologies, Inc.	80286-6-AA
Success Naturalyte Insect Control	Bacillus Thuringiensis Kurstaki	Dow AgroSciences	62719-292
Tristar 30 SG Insecticide	Acetamiprid	Nippon Soda Co., Ltd.	8033-94-1001
Tristar 70 WSP Insecticide	Acetamiprid	Nipon Soda Company, Ltd/Cleary Chemical Corp.	8033-22-1001
Drexel Carbaryl 4L	Drexel 99% Carbaryl Tech.	Drexel Chemical Company	19713-49-AA
Drexel Carbaryl 80S	Drexel 99% Carbaryl Tech.	Drexel Chemical Company	19713-50-AA
Prokoz Sevin SL Carbaryl Insecticide	Sevin SL Carbaryl Insecticide	Bayer Environmental Science	432-1227-ZA-72112
Sevin 80WSP Carbaryl Insecticide	Sevin brand 99% Technical Carbaryl Insecticide	Bayer Environmental Science	432-1226-ZA

Product Name/ Trade Name	Active Ingredient	Manufacturer	EPA Number
Sevin Brand 4F Carbaryl Insecticide	Sevin ® Brand 99% Technical Carbaryl Insecticide	Bayer CropScience	264-349-ZB
Sevin Brand 80 Solupak	Sevin brand Technical Carbaryl Insecticide	Bayer CropScience	264-316-ZD
Sevin Brand RP4 Carbaryl Insecticide	Sevin ® Brand 99% Technical Carbaryl Insecticide	Bayer CropScience	264-335-ZE
Sevin Brand XLR Plus Carbaryl Insecticide	Sevin ® Brand 99% Technical Carbaryl Insecticide	Bayer CropScience	264-333-ZC
Onyx Pro	Bifenthrin Technical 89% w/w	FMC Corporation	279-4269
duPont Asana® XL	Esfenvalerate	E.I. DuPont de Nemours and Co., Inc.	352-515-AA
Adjourn™ Insecticide	Esfenvalerate	E.I. DuPont de Nemours and Co., Inc.	352-515-AA-66222
Agrisolutions Grizzly™ Z	Lambda Cyhalothrin	ZENECA Ag Products	1381-211-AA
Warrior Insecticide with Zeon Technology	Lambda Cyhalothrin	Syngenta Crop Protection, Inc.	100-1112-1381
Kaiso 24WG Insecticide	Lambda-Cyhalothrin Technical	Zufarm Americas Inc.	228-526-AA
Lambdastar 1 CS	Lambda-Cyhalothrin Technical	LG Life Sciences, Ltd.	71532-25-AA-73006
Lambda-cy EC	Lambda-Cyhalothrin Technical	United Phosphorus, Inc.	70506-121-AA
Lambda-T	Lambda Cyhalothrin	ZENECA Ag Products	100-1112-5905
Silencer	Lambda Cyhalothrin	Makhteshim-Agan of North America, Inc.	66222-104-AA
Warrior	Lambda Cyhalothrin	Syngenta Crop Protection, Inc.	100-1112-AA
Lavicides/Adulticides			
Merit 75 WSP Insecticide	Imidacloprid	Bayer Environmental Science	432-1318-AA
Merit 75 WSP	Imidacloprid	Bayer Environmental Science	432-1314
Tempo 20 WP	Cyfluthrin	Bayer Environmental Science	432-1302-AA
Tempo SC Ultra Insecticide	Cyfluthrin	Bayer Environmental Science	432-1363-AA
Tempo Ultra WP Insecticide	Cyfluthrin	Bayer Environmental Science	432-1227
Herbicides			
Roundup Pro Concentrated Herbicide	Glyphosate, Isopropylamine salt	Monsanto Corporation	524-529-AA
Arsenal Herbicide Applicators Concentrate	Imazapyr	Helena Chemical Company	241-299-ZA
Garlon 4	Triclopyr	Dow Agrochemicals	62719-40-ZB
Milestone	Aminopyralid	Dow Agrochemicals	62719-519-AA
Milestone VM	Aminopyralid	Dow Agrochemicals	62719-537-AA
Milestone VM Plus	TIPA salt of aminopyralid and Triclopyr triethylamine salt of 3,5,6-dichloropyridin-2-carboxylic acid	Dow Agrochemicals	62719-572-AA
Transline herbicide	Clopyralid	Dow Agrochemicals	62719-259-AA

Product Name/ Trade Name	Active Ingredient	Manufacturer	EPA Number
DuPont Telar XP Herbicide	Clorsulfuron	E.I. Du Pont de Nemours and Company	352-654-AA
Roundup weather Max Herbicide	Glyphosate, Potassium salt	Monsanto Technology LLC	524-537-AA
Telar DF	Chlorsulfuron	E.I. DuPont de Nemours & Company	352-522-ZA
Roundup Promax Herbicide	Glyphosate, Potassium salt	Monsanto Company	524-579-AA
Roundup Original Herbicide	Glyphosate, Isopropylamine salt	Monsanto Company	524-445-ZF
Garlon 4	Triclopyr Butoxyethyl Ester	The Dow chemical Company	62719-40-ZB

ATTACHMENT F – NOTICE OF INTENT

**WATER QUALITY ORDER NO. 2011-XXXX-DWQ
GENERAL PERMIT NO. CAG XXXXXX**

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

I. NOTICE OF INTENT STATUS (see Instructions)

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

II. DISCHARGER INFORMATION

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

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
G. Email address	H. Title	I. Phone	

IV. RECEIVING WATER INFORMATION

A. Pesticide residues discharge to (check all that apply):	
1.	<input type="checkbox"/> Canals, ditches, or other constructed conveyance facilities owned and controlled by Discharger. Name of the conveyance system: _____
2.	<input type="checkbox"/> 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. <input type="checkbox"/> Name of water body: _____
B. Regional Water Quality Control Board(s) where application areas are located (REGION 1, 2, 3, 4, 5, 6, 7, 8, or 9): Region _____ (List all regions where pesticide application is proposed.)	

V. PESTICIDE APPLICATION INFORMATION

A. Target Organisms: _____
B. Pesticides Used: List Name and Active ingredients
C. Period of Application: Start Date _____ End Date _____
D. Types of Adjuvants Used:

VI. PESTICIDES APPLICATION PLAN

Has a Pesticides Application Plan been prepared and is the applicator familiar with its contents? <input type="checkbox"/> Yes <input type="checkbox"/> No
If not, when will it be prepared? _____

VII. NOTIFICATION

Have potentially affected public and governmental agencies been notified? <input type="checkbox"/> Yes <input type="checkbox"/> No
--

VIII. FEE

Have you included payment of the filing fee (for first-time enrollees only) with this submittal? ... <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> 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: _____

B. Signature: _____ **Date:** _____

C. Title: _____

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-XXXX-DWQ
GENERAL PERMIT NO. CAG XXXXXX**

**STATEWIDE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
PERMIT FOR RESIDUAL PESTICIDE DISCHARGES TO WATERS OF THE UNITED
STATES FROM SPRAY 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 Division of Water Quality, State Water Resources Control Board. Please also send a copy of the form and supporting documentation to the appropriate Regional Water Quality Control Board (Regional 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. Print the name of the conveyance system.
 - 2. Check this box if the application area is not a constructed conveyance system (including application to river, lake, creek, stream, bay, ocean) and enter the name of the water body.
 - 3. Check this box if the application area is not listed in Items 1 and 2 above. Provide a description of the application area and the name of the water body(s) that pesticide residues discharge to.
- 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

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9

Regional Water Board Names

- North Coast
- San Francisco Bay
- Central Coast
- Los Angeles
- Central Valley (Includes Sacramento, Fresno, Redding Offices)
- Lahontan (South Lake Tahoe, Victorville offices)
- Colorado River Basin
- Santa Ana
- 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 that will be used.

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?

Section VIII – Fee

The amount of Annual fee shall be based on Category 3 discharge specified in Section 2200(b)(8) of Title 23, California Code of Regulations. Fee information can be found at <http://www.waterboards.ca.gov/resources/fees/>.

Check the YES box if you have included payment of the annual fee. Check the NO box if you have not included this payment.

NOTE: You will be billed annually and payment is required to continue coverage.

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 USEPA).
- B. The person whose name is printed above must sign and date the NOI.
- C. Enter the title of the person signing the NOI.

IV. CERTIFICATION

“I certify under penalty of law that 1) I am not required to be permitted under this General Permit No.CAG____, and 2) 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 understand that the submittal of this Notice of Termination does not release a pesticide applicator from liability for any violations of the Clean Water Act.”

A. Printed Name: _____

B. Signature: _____ Date: _____

C. Title: _____

V. FOR STATE WATER BOARD USE ONLY

Approved for Termination

Denied and Returned to the Discharger

A. Printed Name: _____

B. Signature: _____

C. Date: _____

NOT Effective Date: / /