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

This Change Sheet covers revisions to the Draft Spray Applications General Permit, posted on the State Water Board website:
http://www.waterboards.ca.gov/board_info/agendas/2011/feb/021511_5.pdf

Changes in red underline: additional language proposed after February 4, 2011.

Changes in ~~red strikeout~~: language proposed to be removed after February 4, 2011.

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Draft Spray Applications General Permit

Section II.A. General Permit Coverage, Limitations and Discharge Requirements, page 4

Except for discharges on tribal lands which are regulated by a federal permit, this General Permit covers the point source* discharge of biological and residual pesticides resulting from spray applications using the following: acetamiprid, aminopyralid, Bacillus thuringiensis kurstaki (Btk), carbaryl, chlorsulfuron, clopyralid, cyfluthrin, dinotefuran, glyphosate, imazapyr, imidacloprid, malathion, naled, nuclear polyhedrosis virus (NPV), pheromone, pyrethrins, Spinosad A and D, triclopyr butoxyethyl ester (BEE) and triclopyr triethylamine salt (TEA).

Same changes are made in corresponding Sections in Attachments C and D.

Section II. D. Fees, Limitations and Discharge Requirements, page 6

The annual fee for enrollment under this General Permit shall be based on Category 3 in section 2200(b)(~~8~~9) 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 biological and residual pesticides from causing exceedance of water quality objectives. The annual fee associated with this rating can be found in section 2200(b)(~~8~~9) of Title 23, CCR, which is available at http://www.waterboards.ca.gov/resources/fees/docs/fy10_11_fee_schedule.pdf and is payable to the State Water Board.

Section III.L. Antidegradation Policy, Limitations and Discharge Requirements, page 11

Given the nature of a General Permit and the broad range of beneficial uses to be protected across the state, data analysis of specific water bodies is infeasible. 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 human health. However, compliance with receiving water limitations and other permit

requirements is required.~~will ensure that degradation of the State's waters will be temporary and that the waters will be returned to pre-application conditions after project completion.~~ Therefore, this General Permit is consistent with State and federal antidegradation policies.

Note: This change was also added to Attachment D, Section IV.C.4.

Section VII. RECEIVING WATER MONITORING TRIGGERS, Limitations and Discharge Requirements, page 15

Table 4. Receiving Water Monitoring Triggers

Ingredient	Unit	Instantaneous Maximum Monitoring Trigger	Basis
Insecticide Active Ingredients			
Acetamiprid	µg/L	6.6	USEPA Office of Pesticides *Ecotoxicity Database*
Carbaryl	µg/L	2.53	California Department Fish and Game Criterion
Cyfluthrin	µg/L	0.00022	USEPA Office of Pesticides *Ecotoxicity Database*
Dinotefuran	µg/L	79	USEPA Office of Pesticides *Ecotoxicity Database*
Imidacloprid	µg/L	3.8	USEPA Office of Pesticides *Ecotoxicity Database*
Naled	µg/L	0.014	USEPA Office of Pesticides *Ecotoxicity Database*
Herbicide Active Ingredients			
Pyrethrins	µg/L	0.14	USEPA Office of Pesticides *Ecotoxicity Database*
Clopyralid	µg/L	2,874	USEPA Office of Pesticides *Ecotoxicity Database*
Glyphosate	µg/L	700	USEPA primary MCL for protection of drinking water quality
Triclopyr Butoxyethyl Ester	µg/L	36	USEPA Office of Pesticides *Ecotoxicity Database*

Section VIII.B. Pesticide Notification Requirements, Limitations and Discharge Requirements, page 16

"The Discharger shall notify potentially affected governmental agencies and the public as soon as a pesticide application for a project is scheduled by posting a notification on its website. The notification shall include the following information:

Section VIII.C. Pesticide Application Plan (PAP), Limitations and Discharge Requirements, pages 17 to 18

14.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

If there are no alternatives to pesticides, Dischargers shall use the least ~~toxic~~ amount of pesticide necessary to control the pest.

Section VIII.E. Pesticide Log, Limitations and Discharge Requirements, page 19

4. The names of the water bodies ~~treated~~ impacted (e.g., canal, creek, lake, etc);

Section IX. A. Standard Provisions, Limitations and Discharge Requirements, page 20

2. This General Permit does not authorize the discharge of biological and residual pesticides or their degradation by-products to waters of the US that are impaired by the same pesticides used or any pesticide in the same chemical family. Impaired waters are those waters not meeting water 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/2010state_ir_reports/2010_combo303d.xls (to be reviewed and adopted by USEPA).

Note: This change was also added to Attachment D, Section IV.D.

Section IX.C.4.a. Situations Requiring Revision of Control Measures, Limitations and Discharge Requirements, page 24

iii. Any monitoring activities indicate that the Discharger failed to:

a. Follow the label instructions for the product used;

b. Use the lowest amount of pesticide product per application and optimum frequency of pesticide applications necessary to control pests, consistent with reducing the potential for development of pest resistance;

Attachment A DEFINITIONS

Biological Pesticide
A chemical which is derived from plants, fungi, protozoa, bacteria, or other non-man-made synthesis and which can be used for pest control.

Receiving Waters
See Waters of the US.

Self Monitoring
Sampling and analysies performed by ~~a~~the Discharger to determine compliance with the ~~a p~~Permit ~~or other regulatory requirements~~. ~~–~~All laboratory analyses must be conducted by a laboratory certified by the California Department of Public Health ~~Services~~.

Section IV. STANDARD PROVISION – RECORDS, Attachment B, page B-3

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 Deputy Director at any time. (40 C.F.R. §122.41(j)(2).)

Section III.C.4. Test Species, Attachment C, page C-5

Test Species – ~~Each Discharger shall conduct acute and 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 spray application of malathion products compared to that of the control organisms.~~

Each Discharger shall conduct acute toxicity tests with *Hyalella azteca* exposed to the receiving water that contains residual pesticides from ~~the~~ spray applications of pyrethrin products compared to that of the control organisms.

For malathion, each Discharger shall conduct ~~acute and~~ chronic toxicity tests with *Ceriodaphnia dubia* to measure survival and reproduction endpoints to *C.dubia*.

For all other active ingredients, each Discharger shall conduct chronic toxicity tests with 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.

Section III.D. Toxicity Testing, Attachment C, page C-6

1. Monitoring Frequency – Each Discharger shall conduct toxicity testing at each environmental setting (urban, agricultural, or wetland) in conjunction with chemical testing to determine whether residual pesticides including active ingredients, inert ingredients, and degradation by-products, in any combination, are causing or contributing toxicity to the receiving water. If feasible, the required six consecutive samples specified below shall be collected in the same water body. For the first application, the Discharger shall collect one Background sample and one Event sample in the application area for toxicity testing. If the Background sample result shows no toxicity, the Discharger shall continue taking only Event samples until a total of six consecutive Event sample results show no toxicity in the receiving water. Thereafter, no further testing for toxicity will be required for the active ingredient used at that representative site. When the Background sample shows toxicity, the Coalition or Discharger must collect paired Background and Post-Event samples to determine whether the application is causing or adding toxicity to the Background receiving water.~~However,~~ ~~t~~The presence of toxicity in the Event sample at anytime indicates that: (1) there is pre-existing toxicity in the receiving water, but the application is not adding

to the pre-existing toxicity; (2) there is pre-existing toxicity in the receiving water and the application is adding toxicity to the pre-existing toxicity; or (3) there is no pre-existing toxicity in the receiving water, but the application itself is responsible for the toxicity.

Section III.E.4. Test Species, Attachment C, page C-7

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 *Hyalella azteca* 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.

Section III.E.5. Method, Attachment C, pages C-7 to C-8

Methods – The presence of chronic toxicity shall be estimated as specified in Short-term Methods 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~~ Statistical analysis methods shall be consistent with USEPA test method manuals (see EPA/821/R-02/0132~~, page 86~~), or in USEPA's NPDES Test of Significant Toxicity Implementation Document June 2010.

The presence of acute~~chronic~~ toxicity shall be estimated as specified in ~~Short-term~~ Methods for ~~Estimating the Chronic Toxicity~~ Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organism, Fifth~~,~~ ~~Fourth~~ Edition, EPA/821-R-02-0123, 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.

Section IV. Table C-1 Monitoring Requirements, Attachment C, pages C-11 to C-12

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,	Not applicable	Visual Observation	[1] ~~All applications at all application areas~~	Background and Event Monitoring	Not applicable

Sample Type	Constituent/Parameter	Units	Sample Method	Minimum Sampling Frequency	Sample Type Requirement	Required Analytical Test Method
	rain, wind, etc.)					
Physical	1. Temperature[1,2]	ºF	Grab[3,4]	[5,4]	Background and Event Monitoring	[6,5]
	2. pH[2,3]	Number				
	3. Turbidity[2,3]	NTU				
	4. Electrical Conductivity[2,3] @ 25°C	µmhos/cm				
Chemical	1. Active Ingredient[6,7]	µg/L	Grab[3,4]	[4,5]	Background and Event Monitoring	[5,6]
	2. Dissolved Oxygen[2,3]	mg/L				
Toxicity	Toxicity	Pass/Fail	Grab[3,4]	[7]See Section III above.	Background and Event Monitoring	[5,6]

1 All applications at 10% of all application areas or six application areas, whichever is greater. If applying to less than six application areas, monitor at all application areas.

2,3 Field or laboratory testing.

3,4 Samples shall be collected at the surface of the water body.

4,5 If applying six or more times a year, collect six samples for each active ingredient in each environmental setting (agricultural, urban, or wetland). If applying less than six times a year, collect a sample during each application for each active ingredient in each environmental setting (agricultural, urban, or wetland).

5,6 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 in 40 C.F.R. Part 136, the 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 Deputy Director.~~

6,7 1) Insecticides containing acetamiprid, carbaryl, cyfluthrin, dinotefuran, imidacloprid, malathion, naled, and pyrethrins; 2) Herbicides containing aminopyralid, chlorsulfuron, clopyralid, glyphosate, imazapyr, and triclopyr butoxyethyl ester (BEE).

7 ~~See section III above for toxicity testing frequency and requirements.~~

Section I.A.3.a. Emergency Invasive Insect Control, Attachment D, page D-11

iv. Asian Citrus Psyllid

The Asian citrus psyllid (ACP), an aphid-like insect, is a serious pest of all citrus and closely-related plants because it can transmit the disease huanglongbing (HLB) when it feeds on the plants' leaves and stems. HLB is the most devastating disease of citrus in the world. Symptoms of HLB include yellow shoots, leaf mottle, small upright leaves and lopsided fruit with a bitter flavor. Infected trees decline in health, produce inedible fruit and eventually die. There is no cure for the disease and infected trees must be removed and destroyed to prevent further spread of HLB. Establishment of ACP and HLB would cause economic losses via direct damage to citrus plants and quarantine restrictions designed to mitigate the spread of ACP. California has a $1.88 billion citrus industry. If the ACP begins to transmit the disease HLB, the entire industry could be at risk. In one recent study in Florida, the presence of HLB increased citrus production costs by 40%.

Section I.A.3. a. Emergency Invasive Insect Control, Attachment D, page D-12

v. Palm Weevil Program

Palm weevil program includes the control of red palm weevil (RPW), scientific name *Rhynchophorus ferrugineus*. The RPW is considered the most destructive pest of palms worldwide. RPW is a native of Southeast Asia; its discovery in a residential planting in Laguna Beach in the Fall of 2010 is the first time this weevil has been found in the United States. The presence of the RPW in California represents a serious threat to palms, many of which are highly valued as landscaping plants. The sale of palms generates approximately $70 million in nursery plant sales in California annually. Palm trees are also used for producing crops and marketable agricultural commodities including coconuts, dates and oils. In California, date palm growers harvest an annual crop worth approximately $30 million. The vast majority of these farms are in the Coachella Valley region.

Female red palm weevils bore into a palm tree to form a hole into which they lay eggs. Each female may lay an average of 250 eggs, which take about three days to hatch. Larvae emerge and tunnel toward the interior of the tree, inhibiting the tree's ability to transport water and nutrients upward to the crown. After about two months of feeding, larvae pupate inside the tree for an average of three weeks before the reddish-brown adults emerge. Adults live for two to three months, during which time they feed on palms, mate multiple times and lay eggs.

Adult weevils are considered strong fliers, venturing more than a half-mile in search of host trees. With repeated flights over three to five days, weevils are reportedly capable of traveling nearly four-and-a-half miles from their hatch site. They are attracted to dying or damaged palms, but can also attack undamaged host trees. Feeding symptoms of the weevil and the larval holes are often difficult to detect because these sites can be covered with offshoots and tree fibers. Careful inspection of infested palms may show holes in the crown or trunk, possibly along with oozing brown liquid and chewed fibers.

A Technical Working Group comprised of scientific experts on RPW has been formed by USDA, and treatment options are being evaluated at this time. Preliminary recommendations include a drench/foliar spray with Merit 2F® (active ingredient: imidacloprid), and/or a trunk spray/foliar spray with Safari® 20 SG (active ingredient: dinotefuran) and/or a crown foliar treatment with Sevin® SL (active ingredient: carbaryl). Timing of these treatments has not been decided. As an example of what might be decided upon, treatment for RPW in other countries can involve an imidacloprid drench applied twice a year, with the other treatments applied at least once, or more often as needed.

Section I.A.3. b. On Going Invasive Insect Control, Attachment D, page D-13

ii. The light brown apple moth (LBAM) *Epiphyas postvittana* (*Lepidoptera: Tortricidae*)

"… *The CDFA control and suppress 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 control and suppression 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 2008a[10]). Products containing the following active ingredients are used in the LBAM eradication program: spinosad A and D, and Btk*."

Section III.B. Discharge Description, Attachment D, page D-19

This General Permit covers the point source discharge of pesticide residues resulting from spray applications using acetamiprid, aminopyralid, Bacillus thuringiensis kurstaki (Btk), carbaryl, chlorsulfuron, clopyralid, cyfluthrin, dinotefuran, glyphosate, imazapyr, imidacloprid, malathion, naled, nuclear polyhedrosis virus (NPV), pheromone, pyrethrins, ~~S~~spinosad A and D, triclopyr butoxyethyl ester (BEE) and triclopyr triethylamine salt (TEA).

Section IV.F.4. Antidegradation Policy, Attachment D, page D-28

Given the nature of a General Permit and the broad range of beneficial uses to be protected across the state, data analysis of specific water bodies is infeasible. 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 human health. However, compliance with receiving water limitations is required.~~and other permit requirements will ensure that degradation of the State's waters will be temporary and that the waters will be returned to pre-application conditions after project completion.~~ Therefore, this General Permit is consistent with State and federal antidegradation policies

Section IV.G. Impaired Water Bodies on CWA 303(d) List, Attachment D, pages D-28 to D-29

This General Permit does not authorize the discharge of biological and residual pesticides listed in Attachment E and their degradation by-products, or class of pesticides of the active ingredient to water bodies that are already impaired due to the same product active ingredients or their degradation by-products. California's impaired waters bodies are listed on http://www.waterboards.ca.gov/water_issues/programs/tmdl/2010state_ir_reports/2010_combo303d.xls (to be reviewed and adopted by USEPA).

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

Section V.B. Effluent Limitation, Attachment D, page D-31

2. This General Permit regulates biological and residual pesticides, which are degradation by-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~~ degradation byproduct 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

Section VI.B.1. a. Microbial Insecticides, Attachment D, pages D-50 to D-51

~~Pheromones~~ Light Brown Apple Moth (LBAM) Pheromone Blend and European Grapevine Moth (EGVM) Pheromone Blend

LBAM and EGVM pheromone blends consist~~s~~ of two synthetic straight chained lepidopteran pheromones (SCLPs). 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 and EGVM pheromone blends ~~is~~are used to disrupt the mating 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 or EGVM pheromone blend.

Section VI.B.1. ~~d. Pyrethroids~~, Attachment D, pages D-50 to D-51

~~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.~~

~~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/.

Section VI.B.1.g. Neonicotinoids, Attachment D, page D-60

ii. Dinotefuran

Dinotefuran is the active ingredient of a broad-spectrum insecticide that belongs to neo-nicotinoid insecticide. Dinotefuran is used to control insect pests such as aphids, whiteflies, thrips, and etc. in leafy vegetables, residential and commercial buildings, golf courses, lawn and gardens. This insecticide is applied by soil incorporation, foliar application, bait application, spot treatment. Foliar application can be made aerially or with tractor-mounted sprayers or spreaders, as well as, handheld equipment such as low-pressure handwand sprayers, backpack sprayers, turf guns, ready-to-use trigger sprayers, and hose-end sprayers.

Dinotefuran has high water partition coefficient, which suggests that it is high water soluble, but low potential for fish bioaccumulation. The available studies on dinotefuran are limited. According to USEPA Fact Sheet for dinotefuran, it is practically nontoxic on an acute basis to freshwater and estuarine/marine fish (LC50 > 99.3 ppm), as well as freshwater invertebrates (EC50 > 968.3 ppm). However, since an estuarine/marine chronic study was not submitted for this compound there is an uncertainty regarding chronic risk to estuarine invertebrates. The saltwater toxicity studies in mysids and oysters were all conducted at several concentrations. The study in mysid shrimp, however, reports substantial and concentration-related mortality, and the LC50 with 95% confidence intervals is 0.79 (0.49-1.0) mg/L. Based on this study, U.S. EPA/OPP (2004f, p. 20) classifies dinotefuran as highly toxic to shrimp.

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

Table D-5. Summary of Toxicity Data for Dinotefuran (CAS#165252-70-0)

Type of Organism	Study Length	Study Date	LC50 (µg/L)
Bluegill Sunfish	96 hr	2000	>99300
Common Carp	96 hr	2000	>99100
Mysid	96 hr	2003	**790**
Rainbow Trout	96 hr	1999	>99500
Sheephead Mino	96 hr	2001	>99000
Lowest LC50/10 = 79			

Ambient Water Quality Criteria are unavailable for dinotefuran. Table D-5 shows that the lowest one-tenth of LC50 to protect the most sensitive freshwater aquatic life for dinotefuran is 79 µg/l.

Therefore, this General Permit contains an Instantaneous Maximum Receiving Water Monitoring Trigger of 79 ug/l based on the lowest one tenth of LC50 from the *Ecotoxicity Database*

Section VI.B. Surface Water, Table D-4 to Table D-10, Attachment D, pages D-60 to D-68

Table D-4. 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
Mysid	96 hr	1997	19,000
	96 hr	1998	**66**
Rainbow Trout	96 hr	1997	≥100,000
	96 hr	1998	≥98,100
Sheepshead Minnow	96 hr	1998	100,000
Lowest LC50/10 = 6.6			

Table D-5. 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
Amphipod/Scud	48 hr	1991	115.3
	96 hr	1991	55
Sheepshead Minnow	96 hr	1990	163,000
Lowest LC50/10 = 3.8			

Table D-6. Summary of Toxicity Data for Aminopyralid (CAS#150114-71-9)

Type of Organism	Study Length	Study Date	LC50 (µg/L)
Bluegill Sunfish	96 hr	2003	≥100,000
Mysid	96 hr	2002	≥100,000
Rainbow Trout	96 hr	2001	**≥100,000**
Sheepshead Minnow	96 hr	2002	≥120,000

Table D-7. 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

Type of Organism	Study Length	Study Date	LC50 (µg/L)
Mysid	96 h	1991	**89,000**
Rainbow Trout	96 h	1979	≥250,000
Sheepshead Minnow	96 h	1991	≥980,000
Lowest LC50/10 = 8,900			

Table D-8 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
Lowest LC50/10 = 10,350			
Monitoring trigger after considering both active and the inert ingredients			**2,784**

Table D-9. Summary of Toxicity Data for Imazapyr (CAS#81334-34-1)

Type of Organism	Study Length	Study Date	LC50 (µg/L)
~~Water Flea~~ Bluegill Sunfish	~~48~~ 96 h	1983	~~N/A~~100,000
	~~21 d~~ 96 h	1983~~8~~	~~N/A~~ 100,000
Rainbow Trout	96 h	1983	**≥100,000**
	96 h	1995	≥110,000
Lowest LC50/10 = 10,000			

Table D-10. 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
	96 h	1994	980
Lowest LC50/10 = 36			

Section VI.B. Surface Water, Attachment D, page D-70

Table D-13. Summary of Receiving Water Monitoring Triggers

Ingredient	Unit	Instantaneous Maximum Monitoring Trigger	Basis
Insecticide Active Ingredients			
Acetamiprid	µg/L	6.6	USEPA Office of Pesticides *Ecotoxicity Database*
Carbaryl	µg/L	2.53	California Department Fish and Game Criterion
Pyrethrins	µg/L	0.14	USEPA Office of Pesticides *Ecotoxicity Database*
Dinotefuran	µg/L	79	USEPA Office of Pesticides *Ecotoxicity Database*
Cyfluthrin	µg/L	0.00022	USEPA Office of Pesticides *Ecotoxicity Database*
Imidacloprid	µg/L	3.8	USEPA Office of Pesticides *Ecotoxicity Database*
Naled	µg/L	0.014	USEPA Office of Pesticides *Ecotoxicity Database*
Herbicide Active Ingredients			
Clopyralid	µg/L	2,874	USEPA Office of Pesticides *Ecotoxicity Database*
Glyphosate	µg/L	700	USEPA primary MCL for protection of drinking water quality
Triclopyr Butoxyethyl Ester	µg/L	36	USEPA Office of Pesticides *Ecotoxicity Database*

Section VIII.B. Reopener Provisions, Attachment D, page D-73

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 4 exceed the associated monitoring trigger.

Attachment E

ATTACHMENT E – LIST OF PESTICIDE PRODUCTS

Product Name/ Trade Name	Active Ingredient	Manufacturer	EPA Number
Insecticides			
DiPel DF Biological Insecticide	Bacillus thuringiensis kurstaki	Valent Biosciences Corp ~~USA~~	73049-39~~-AA~~
DiPel **Pro** DF Biological Insecticide Dry Flowable	Bacillus thuringiensis kurstaki	Valent ~~USA~~ Biosciences Corp	73049-39~~-ZA~~
Entrust ~~Naturalyte Insect Control~~	Spinosad Factor A&D	Dow AgroSciences LLC	62719-282
TM Biocontrol	Douglas-fir tussock moth nuclear polyhedrosis virus	Espro, Inc.	27586-1
Fyfanon ULV AG	Malathion	Cheminova, Inc.	67760-35~~-AA~~

Product Name/ Trade Name	Active Ingredient	Manufacturer	EPA Number
			used with SLN
Dibrom Concentrate	Naled	Chemical Corporation	5481-480-AA
GF-120 NF Naturalyte Fruit Fly Bait	Spinosad A and D	Dow AgroSciences LLC	62719-498-AA
Pyganic Crop Protection EC 5.0 II	Pyrethrins	MGKMcLaughlin Gormley King Company	1021-1772
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 Technolgies, Inc.	80286-6-AA
Isomate-LBAM Plus	(E)-11-Tetradecen-1-yl acetate and (E,E)-9,11-Tetradecadien-1-yl acetate	ISCA Technologies, Inc.	80286-6-AA
somate-EGVM	(E.Z)-7,9-Dodecadien-1-yl-Acetate	Pacific Biocontrol Corporation	53575-33
Success Naturalyte Insect Control	Spinosad A and D Bacillus Thuringiensis Kurstaki	Dow AgroSciences LLC	62719-292
Tristar 30 SG Insecticide	Acetamiprid	Nippon Soda Co., Ltd. Cleary Chemical Corporation	8033-94-1001
Tristar 70 WSP Insecticide	Acetamiprid	Nipon Soda Company, Ltd/Cleary Chemical Corp.	8033-22-1001
Safari 20 SG Insecticide	Dinotefuran	Valent USA Corporation	33657-16-59639
Merit 2F	Imidacloprid	Bayer Environmental Science	432-1312
Merit 75 WSP Insecticide	Imidacloprid	Bayer Environmental Science	432-1318-AA
Merit 75 WSP	Imidacloprid	Bayer Environmental Science	432-1314
Tempo 20 WP Insecticide	Cyfluthrin	Bayer Environmental Science Healthcare LLC	432-1302-AA
Tempo SC Ultra Insecticide	Cyfluthrin	Bayer Environmental Science	432-1363-AA
Tempo Ultra WP Insecticide	Cyfluthrin	Bayer Environmental Science	432-1304227
Herbicides			
Roundup Pro Concentrated Herbicide	Glyphosate, Isopropylamine salt	Monsanto Companyrporation	524-529-AA
Arsenal Herbicide Applicators Concentrate	Imazapyr	Helena Chemical CompanyBASF Corporation	241-299-ZA
Milestone	Aminopyralid	Dow AgroSciences LLCchemicals	62719-519-AA
Milestone VM	Aminopyralid	Dow AgroScience	62719-537-AA

Product Name/ Trade Name	Active Ingredient	Manufacturer	EPA Number
		LLC~~chemicals~~	
Milestone VM Plus	TIPA salt of aminopyralid and Triclopyr triethylamine salt of 3,5,6-dichloropyridin-2-carboxylic acid	Dow AgroSciences LLC~~chemicals~~	62719-572-~~AA~~
Transline herbicide	Clopyralid	Dow AgroScience LLC~~chemicals~~	62719-259-~~AA~~
DuPont Telar XP Herbicide	Clorsulfuron	E.I. Du Pont de Nemours and Co., Inc.mpany	352-654-~~AA~~
Roundup weather Max Herbicide	Glyphosate, Potassium salt	Monsanto ~~Technology LLC~~Company	524-537-~~AA~~
Telar DF	Chlorsulfuron	E.I. DuPont de Nemours ~~&~~and Co., Inc.~~mpany~~	352-522-~~ZA~~
Garlon 4	Triclopyr Butoxyethyl Ester	~~The~~ Dow AgroSciences LLC~~chemical Company~~	62719-40-~~ZB~~