

RECEIVED

AUG 25 2016

Attachment E – Notice of Intent

WATER QUALITY ORDER NO. 2013-0002-DWQ  
 GENERAL PERMIT NO. CAG990005

DIVISION OF WATER QUALITY

STATEWIDE GENERAL NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM  
 (NPDES) PERMIT FOR RESIDUAL AQUATIC PESTICIDE DISCHARGES TO WATERS OF  
 THE UNITED STATES FROM ALGAE AND AQUATIC WEED CONTROL APPLICATIONS

I. NOTICE OF INTENT STATUS (see Instructions)

Mark only one item	A. <input type="checkbox"/> New Applicator	B. <input checked="" type="checkbox"/> Change of Information: WDID#	5A31AP00002
	C. <input type="checkbox"/> Change of ownership or responsibility: WDID#		

II. DISCHARGER INFORMATION

A. Name Placer County Water Agency (PCWA)			
B. Mailing Address P.O. BOX 6570			
C. City Auburn	D. County Placer	E. State California	F. Zip 95604
G. Contact Person Randy Cox	H. E-mail address rcox@pcwa.net	I. Title Water Management Specialist	J. Phone 530-823-4850

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. E-mail address	H. Title	I. Phone	

**IV. RECEIVING WATER INFORMATION**

A. Algaecide and aquatic herbicides are used to treat (check all that apply):

1.  Canals, ditches, or other constructed conveyance facilities owned and controlled by Discharger.  
Name of the conveyance system: PCWA Raw Water Conveyance System (inclusive)

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

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

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

**V. ALGAECIDE AND AQUATIC HERBICIDE APPLICATION INFORMATION**

A. Target Organisms: \_\_\_\_\_  
Algae; Aquatic Weeds

B. Algaecide and Aquatic Herbicide Used: List Name and Active ingredients  
Cutrine Plus - Chelated Copper  
Cutrine Plus Granular - Chelated Copper  
Cutrine Ultra - Chelated Copper  
Algimycin PWF - Chelated Copper  
PAK27 - Sodium Carbonate Peroxyhydrate  
Phycomycin - Sodium Carbonate Peroxyhydrate  
Round up - Custom - Glyphosate  
Reward - Diquat  
Clearcast - Imazamox

C. Period of Application: Start Date January 1 -Yearly End Date December 31 Yearly

D. Types of Adjuvants Used:  
Liberate - A Soy based Lecithin

**VI. AQUATIC PESTICIDE APPLICATION PLAN**

Has an Aquatic Pesticide Application Plan been prepared and is the applicator familiar with its contents?  
 Yes  No

If not, when will it be prepared? \_\_\_\_\_

**VII. NOTIFICATION**

Have potentially affected public and governmental agencies been notified?  Yes  No

**VIII. FEE**

Have you included payment of the filing fee (for first-time enrollees only) with this submittal?  
 YES  NO  NA

**IX. CERTIFICATION**

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

A. Printed Name: Don Kellner

B. Signature: 

Date: August 26, 2016

C. Title: Director of Field Service (Interim)

**XI. FOR STATE WATER BOARD STAFF USE ONLY**

WDID:	Date NOI Received:	Date NOI Processed:
Case Handler's Initial:	Fee Amount Received: \$	Check #:
<input type="checkbox"/> Lyris List Notification of Posting of APAP	Date _____	Confirmation Sent _____



**PLACER COUNTY WATER AGENCY  
AQUATIC PESTICIDE APPLICATION PLAN**

WATER QUALITY ORDER NO. 2013 – 0002 – DWQ  
GENERAL PERMIT NO. CAG990005

STATEWIDE GENERAL NATIONAL POLLUTANT DISCHARGE ELIMINATION  
SYSTEM  
(NPDES) PERMIT FOR RESIDUAL PESTICIDE DISCHARGES TO WATER OF THE  
UNITED STATES FROM ALGAE AND AQUATIC WEED CONTROL APPLICATIONS

## Contents

C.1 Description of water system to which algaecides and aquatic herbicides are being applied .....	4
C.2 Description of treatment area in water system .....	4
C.3 Description of types of weed(s) and algae that are being controlled and why.....	4
C.4 Algaecide and aquatic herbicide products or types of algaecides and aquatic herbicides expected to be used and, if known, their degradation byproducts, the method in which they are applied, and if applicable, the adjuvants and surfactants used .....	5
Surfactant (s) Used.....	7
C.5 Discussion of the factor influencing the decision to select algaecide and aquatic herbicide applications for algae and weed control. ....	8
C.6 If applicable, list the gates or control structures to be used to control the extent of receiving water potentially affected by algaecide and aquatic herbicide application and provide an inspection schedule of those gates or control structures to ensure they are not leaking. ....	8
C.7 If the Discharger has been granted a short-term of seasonal exemption under the State Water Board <i>Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays and Estuaries of California</i> (policy) Section 5.3 .....	9
C.8 Description of Monitoring Program.....	9
C.9 Description of procedures used to prevent sample contamination from persons, equipment, and vehicles associated with algaecide and aquatic herbicide application.....	10
C.10 Description of the BMP's to be implemented. The BMP's shall include, at the minimum: .....	11
C.10.a Measure to prevent algaecide and aquatic herbicide spill and for spill containment during the event of a spill;.....	11
C.10.b Measures to ensure that only an appropriate rate of application consistent with product label requirements is applied for the target weeds or algae; .....	11
C.10.c The Dischargers plan to educate its staff and algaecide and aquatic herbicide applicators on how to avoid and potential adverse effects from the algaecide and aquatic herbicide applications....	11
C.10.d Discussion on planning and coordination with nearby farmers and agencies with water rights diversion so that beneficial uses of the water (irrigation, drinking water supply, domestic stock water, etc.) are not impacted during the treatment period.....	11
C.10.e A description of measures that will be used for preventing fish kill when algaecides and aquatic herbicides will be used for algae and aquatic weed controls.....	12
C.11 Examination of possible alternatives. Dischargers should examine the alternatives to algaecide and aquatic herbicide use to reduce the need for applying algaecides and herbicides. Such methods include: .....	12
C.11.a Evaluate the following management options, in which the impact to water quality, impact to non-target organisms including plants, algaecide and aquatic herbicide resistance, feasibility, and cost effectiveness should be considered:.....	12
C.11.a.i No Action.....	12
C.11.a.ii Prevention .....	12

C.11.a.iii Mechanical or physical methods..... 13  
C.11.a.iv Cultural Methods..... 13  
C.11.a.v Biological control agents ..... 13  
C.11.a.vi Algaecides and aquatic herbicides ..... 13  
C.11.b Using the least intrusive method of algaecide and aquatic herbicide application..... 13  
C.11.c Applying a decision matrix concept to the choice of the most appropriate formulation. .... 14  
Appendix A..... 15

### **C.1 Description of water system to which algaecides and aquatic herbicides are being applied**

The Placer County Water Agency (PCWA) was created under its own state legislation entitled the "Placer County Water Agency Act," adopted in 1957 by the California State Legislature. In 1968, PCWA purchased Pacific Gas and Electric's (PG&E) Lower Drum Division Water System and entered into a water supply contract which is the basis for the PCWA Zone 1 water supply.

PCWA owns and operates a network of over 165 miles of raw water canals, ditches, flumes and pipelines that generally follows the California Interstate 80 corridor between Alta and Roseville. Many of these canals, ditches and flumes were originally constructed during 1850's using native soils and timbers. The canals traverse a diverse terrain of hills, valleys, and soil types, delivering raw water to individual customers for outdoor irrigation of green belts, golf courses, farms, ranches, and crops. Raw water is also distributed, via the canal system, to eight PCWA and several other private water treatment plants for domestic water supplies.

### **C.2 Description of treatment area in water system**

Aquatic pesticides and algaecides are seasonally applied to flowing waters in the PCWA canal system to control the growth of algae and aquatic weeds to maintain the water conveyance capacity of the canals to insure full deliveries of raw water to domestic water treatment plants and raw water irrigation customers. PCWA applies aquatic herbicides at 21 established locations along the 165 miles of canal that make up the raw water conveyance and delivery system. The application locations are predominately located in rural settings, away from inhabited dwellings. During times of heavy algae or aquatic weed infestations, aquatic herbicides and algaecides may be applied at intermediary locations between the permanent aquatic herbicides application locations.

Aquatic pesticides are applied every four to six weeks during the application season, generally between April and October, to control the growth of algae and aquatic weeds prior to such time that the weeds and algae have an opportunity to mature and become established on the floors and walls of the canals. Early and regular treatment of the raw water conveyance system allows for suitable control of the algae's and aquatic weeds utilizing less active ingredient(s) annually.

### **C.3 Description of types of weed(s) and algae that are being controlled and why**

There are four basic categories of aquatic weeds requiring control within the PCWA canals or along the edges of irrigation canals:

1. Floating Aquatic Plants – These plants either float freely on the surface deriving nutrients directly from the water via root systems or cell wall interactions, or they

have leaves that float on the surface and are rooted in the bottom sediment. Examples of these plants include duckweed, watermeal, and watershield.

Reason for control:

Impedes the flow of water and affects the carrying capacity of the canal system.

2. Submerged Weeds – These plants are completely underwater and are generally rooted in the bottom sediment. If flowers exist, they may extend above the surface of the water. Plants in this group include many species of pondweed, eurasian watermilfoil, and elodea.

Reason for control:

Impedes the flow of water and affects the carrying capacity of the canal system.

3. Emergent Weeds – These plants grow in shallow area of lakes, ponds, rivers and ditches. Generally rigid, these plants do not need water for support. Some of these plants are not considered truly aquatic, but can survive submerged in water or in saturated soils for extended periods of time. Plants in this group include cattail, waterprimrose and canary grass.

Reason for control:

Impedes the flow of water and affects the carrying capacity of the canal system and seeds growers' fields with unwanted vegetation.

4. Algae and various mosses – A very diverse group of simple of autotrophic organisms that grow and spread rapidly in water.

Reason for control:

Impedes the flow of water and affects the carrying capacity of the canal system, plugs irrigation screens and high tech irrigation systems, such as sprinklers, drip and micro irrigation systems. Algae blooms can also cause undesirable tastes and odors in the finished water at treatment plants.

#### **C.4 Algaecide and aquatic herbicide products or types of algaecides and aquatic herbicides expected to be used and, if known, their degradation byproducts, the method in which they are applied, and if applicable, the adjuvants and surfactants used**

- Cutrine-Plus – A chelated copper based liquid that is applied to flowing water using a continuous drip system for a minimum of three hours to achieve desired aquatic pest control with the least amount of chemical used. The amount of product used is dependent upon amount of algae and aquatic weeds present, and the amount of water flowing through the treatment area.
- Cutrine Plus Granular – A chelated copper based, granular solid, that is evenly applied to still or flowing water directly over the targeted aquatic weeds or algae. The amount

of product used is dependent upon the amount of algae and aquatic weeds present and water flow through treatment area.

- Cutrine Ultra – A chelated copper based liquid that is applied to flowing water using a continuous drip system for a minimum of three hours to achieve desired aquatic pest control with the least amount of chemical used. The amount of product used is dependent upon amount of algae and aquatic weeds present, and the amount of water flowing through the treatment area.
- Algimycin PWF - A copper based liquid that is applied to flowing water using a continuous drip system for a minimum of three hours to achieve desired aquatic pest control with the least amount of chemical used. The amount of product used is dependent upon amount of algae and aquatic weeds present, and the amount of water flowing through the treatment area.
- - Fate of Copper Based Products –Each of the above liquid and granular copper formulations has different characteristics to increase the length of time that the copper remains biologically available for uptake into algae's and aquatic weeds. As the copper product is applied to the treatment area, it is readily adsorbed into the algae and aquatic plants, disrupting plant growth. Only the portion of copper that is biologically available is adsorbed into the plants and algae. Any remaining dissolved copper readily binds itself with sediment, clay and other humic particles and becomes biologically unavailable to plants and animals.
- Round-Up Custom (Glyphosate) – Applied as a liquid, utilizing a backpack sprayer, on the inside of canal and reservoir banks for emerged aquatic plants and other weeds growing at the water line and to floating-leaved aquatic weeds. These herbicides may be mixed with an aquatic approved non-ionic surfactant.
  - Environmental fate – Over time, glyphosate undergoes microbial degradation in soil, sediment and natural waters, under both aerobic and anaerobic conditions. The major metabolite formed is aminomethylphosphonic acid, which undergoes further microbial degradation. Glyphosate is ultimately metabolized to carbon dioxide, inorganic phosphate, and other naturally occurring compounds. Glyphosate readily dissipates from surface water by two primary mechanisms. It quickly partitions from water into sediment, and then is microbially degraded over time in both water and the sediment. In flowing waters, factors such as tributary dilution and dispersion contribute to the dissipation of glyphosate.<sup>1</sup>
- Reward (Diquat) – Applied as a liquid, utilizing a backpack sprayer, on the inside of canal and reservoir banks for emerged aquatic plants and other weeds growing at the water line and to floating-leaved aquatic weeds. This herbicide may be mixed with an aquatic approved non-ionic surfactant.

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<sup>1</sup> Round-up Technical Fact Sheet 2005 (Monsanto)  
Placer County Water Agency  
Aquatic Pesticide Application Plan (APAP)  
Revised August 25, 2016 rc

- Environmental fate - REWARD poses virtually no environmental risks and will not contaminate groundwater. It is quickly deactivated once adsorbed by clay particles in the soil or lake sediment. The concentration of REWARD is low immediately after application and rapidly decreases as it is adsorbed onto soil sediments, aquatic vegetation and organic matter. As a result of this rapid adsorption and binding of any REWARD remaining in the system, it is rendered biologically unavailable.<sup>2</sup>
- Phycomycin SCP (sodium carbonate peroxyhydrate) – A granular peroxide based material that is added directly to either still or flowing water, dissolving as it falls through the water column. Most effective in controlling algae in slow moving water.
  - Environmental fate – Phycomycin SCP degrades into water and oxygen, typically in twenty minutes or less.
- Clearcast (Imazamox) – Applied as a liquid, utilizing a power sprayer or backpack sprayer, on the inside of canal and reservoir banks for emerged aquatic plants and other weeds growing at the water line and to floating aquatic weeds. This herbicide may be mixed with an aquatic approved non-ionic surfactant.
  - Environmental fate – Clearcast is quickly absorbed by foliage and/or plant roots and rapidly translocated to the growing points, stopping growth. Susceptible plants may develop a yellow appearance or general discoloration and will eventually die or be severely growth inhibited.<sup>3</sup>
  - Imazamox is moderately persistent in soil and degrades aerobically to a non-herbicidal metabolite and the terminal metabolite is moderately mobile to immobile.<sup>4</sup>

All algaecides and aquatic herbicides are applied according to all FIFRA pesticide label instructions and restrictions, if any, set by Restricted Material Use Permits issued by the Placer County Agricultural Commissioner.

### Surfactant (s) Used

- Liberate – A non-ionic, low foam penetrating adjuvant combination of Lecithin, methyl esters of fatty acids and alcohol ethoxylate that is mixed with Round-Up custom, or Reward to enhance the activity and effectiveness of the herbicide.
  - Environmental fate – Being Soy based, Liberate is biodegradable.

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<sup>2</sup>

<http://www.syngentaprofessionalproducts.com/prodrenderwr/index.aspx?nav=environimpact&ProdID=358&ProdNM=Reward Landscape and Aquatic>

<sup>3</sup> Clearcast label

<sup>4</sup> <http://www.ecy.wa.gov/programs/wq/pesticides/enviroReview/riskAssess/riskassessmentimazamox110712.pdf>

page 3-6

Placer County Water Agency

Aquatic Pesticide Application Plan (APAP)

Revised August 25, 2016 rc

## **C.5 Discussion of the factor influencing the decision to select algaecide and aquatic herbicide applications for algae and weed control.**

The factors that influence the decision to use aquatic algaecides and herbicides are determined by the time of year, increases in the average water, soil and air temperatures, and observed algae and aquatic weed growth. As temperatures increase, algae and aquatic weeds grow and mature at a faster pace. It is the goal of the PCWA algae and aquatic weed control program to limit the growth of algae and aquatic weeds utilizing the least amount of active ingredient as possible. By pursuing algae's and aquatic weeds early in their growth cycle, the younger plants are more susceptible to lower concentrations of the active ingredient and there is less plant mass to target, resulting in control of the target pests using less active ingredient(s).

## **C.6 If applicable, list the gates or control structures to be used to control the extent of receiving water potentially affected by algaecide and aquatic herbicide application and provide an inspection schedule of those gates or control structures to ensure they are not leaking.**

The PCWA canal system is a closed system from the origin of the canal system in eastern Placer County above the community of Alta, Ca. to the ends of the canals in western Placer County near Roseville, Ca. There are several locations along the canal system where regulated releases of water can occur to facilitate maintenance and repairs of the canals.

PCWA Canal Operators patrol the 165 miles of the canal system on a regular basis to insure that all of the regulated outlets are operating as designed and stop leakage, if any, from these regulated outlets.

Prior to any application of aquatic herbicides, the Weed and Brush crews meet with the Canal Operators and canal maintenance crews to determine if any work is being performed or regulated releases are being made within or downstream of the treatment area. If work is being performed, aquatic herbicide applications are canceled or postponed to a later date when regulated releases are not being made.

**C.7 If the Discharger has been granted a short-term of seasonal exemption under the State Water Board *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays and Estuaries of California* (policy) Section 5.3 from meeting acrolein and copper receiving water limitations, provide the beginning and ending dates of the exception period, If algaecide and aquatic herbicide applications occur outside of the exception period, describe plans to insure that receiving water criteria are not exceeded because the Dischargers must comply with the acrolein and copper receiving water limitations for all applications that occur outside of the exception period.**

PCWA has a SIP Section 5.3 seasonal exemption from meeting the receiving water limitations for copper under the State Water Board *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays and Estuaries of California* (policy). The policy allows for short-term or seasonal exceptions from meeting the receiving water limitations for priority pollutants of acrolein or copper.

The PCWA exception period begins on April 1<sup>st</sup> of each year and ends October 31<sup>st</sup> of the same year.

If copper based products are applied outside of the above exception period, the products will only be applied at locations sufficiently upstream of any regulated release points or canal ends to insure that any concentrations of dissolved copper in the released water is below the water quality standards as listed in the California Toxics Rule for receiving waters.

## **C.8 Description of Monitoring Program**

PCWA operates and maintains 165 miles of canals, flumes and pipes to convey raw water to irrigation customers, public and private water treatment plants. Application points are sited at strategic locations along the canal system to maintain the optimal concentration of algaecide or aquatic pesticide for each application. Waters from upper treatment area(s) flow into lower areas of the canal system, allowing the treated water to remain within the canal system and within PCWA control. As applications occur in the lower reaches of the canal system, water is released from regulated outlets. This released water flows across private lands, and/or into private ponds and/or other features before entering natural water courses. Once the water is released at the regulated outlet, PCWA no longer has control of the water and/or constituents that may be applied by others to the released water that may degrade the water quality before it enters the natural water ways.

Samples are collected upstream of the treatment area just prior to algaecide or aquatic pesticide application (Background Monitoring). Samples are also collected at a location

downstream of the treatment area after sufficient time has elapsed that the treated water has exited the treatment area (Event Monitoring). Samples are also recovered within the treatment area within seven days of the application event (Post Event Monitoring).

PCWA Weed and Brush crews recover and analyze water quality samples from the canal system as set forth in this permit. Duplicate samples are also collected and analyzed for dissolved copper at a California State Certified Laboratory (ELAP Certified) for each sampling event (Background monitoring, Event monitoring, and Post-Event monitoring).

PCWA has standardized on the use of two monitoring forms that must be completed prior to any algaecide or aquatic herbicide application (Appendix A). Completed forms are kept for three years and summarized digitally for convenience of annual reporting.

The first monitoring form requires the personnel applying the algaecides / aquatic herbicides to evaluate the physical characteristics of the treatment area, including surveying for any threatened, endangered or species of concern that may be affected by the application of algaecides or aquatic herbicides; flow rates; amount of plant mass; and other environmental observations. The second monitoring form is used at the locations where sampling for this permit occurs. The second form requires the same information as the first and also includes spaces to record the results of field and laboratory analysis.

### **C.9 Description of procedures used to prevent sample contamination from persons, equipment, and vehicles associated with algaecide and aquatic herbicide application**

Personnel responsible for sample collection and field analysis are trained annually on proper sample collection techniques to ensure representative samples are collected and to avoid sample contamination. Sample containers will be provided and prepared by the laboratory performing the analysis. All sample containers and field analysis will be kept separate from all aquatic herbicide containers and application equipment. As samples are recovered, a sample container label will be completed, noting the date, time and location of sample. A separate monitoring form will also be completed to record the results of the field analysis and other observations (see Appendix A).

The sample will then be placed into an insulated container with ice packs to maintain a temperature near  $-4^{\circ}\text{C}$ . Samples will be accounted for utilizing a standard "Chain of Custody" form supplied by the laboratory performing the analysis to insure the integrity of the sample collection and transfer process.

## **C.10 Description of the BMP's to be implemented. The BMP's shall include, at the minimum:**

### **C.10.a Measure to prevent algaecide and aquatic herbicide spill and for spill containment during the event of a spill;**

All algaecide and aquatic herbicide applications are made by the PCWA Weed and Brush Division and are performed following written recommendations prepared by a Licensed Pest Control Advisor (PCA) that also possesses Qualified Applicators Certification (QAC) as issued by the California Department of Pesticide Regulation (DPR). Employees that are assigned to apply algaecides and aquatic herbicides are continually trained in the proper handling and safe use of algaecides and aquatic herbicides. This insures that the dosing, mixing, application and usage of the algaecides and aquatic herbicides are conducted in ways that minimize accidental spills and overexposure to both the applicators and the environment. In the event of a spill or accidental release of algaecide or aquatic herbicides, all PCWA algaecide and aquatic herbicide application vehicles and storage areas are equipped with appropriate spill supplies. All spills will be cleaned up according to label instructions and properly disposed of. Employees will also report all spills, when required, to all Local, State and Federal agencies as appropriate.

### **C.10.b Measures to ensure that only an appropriate rate of application consistent with product label requirements is applied for the target weeds or algae;**

Prior to any algaecide and/or aquatic herbicide treatment, the PCWA Weed and Brush supervisor and/or qualified staff personnel perform a site visit to the application area(s) to determine the amount of plant mass and flow rate of the canals to be treated. Before algaecides or aquatic herbicides are applied, the application rate (drip rate) is verified at the application point prior to treatment with a graduated cylinder and stopwatch.

### **C.10.c The Dischargers plan to educate its staff and algaecide and aquatic herbicide applicators on how to avoid and potential adverse effects from the algaecide and aquatic herbicide applications.**

Annually, before the beginning of the application/treatment season, the PCWA Weed and Brush Supervisor conducts meetings with the PCWA Customer Service Staff, PCWA Treatment Plant Operators, and private water treatment plant operators to review the need for algaecide and aquatic herbicide applications; the schedule of when and where treatments will occur; and potential effects of the treatment to operation of the water treatment plants and canals.

### **C.10.d Discussion on planning and coordination with nearby farmers and agencies with water rights diversion so that beneficial uses of the water (irrigation, drinking water supply, domestic stock water, etc.) are not impacted during the treatment period.**

Annually, before the beginning of the application/treatment season, the PCWA Weed and Brush Supervisor conducts a meeting with the PCWA Customer Service Staff, PCWA Treatment Plant Operators, and private water treatment plant operators to review the

Placer County Water Agency

Aquatic Pesticide Application Plan (APAP)

Revised August 25, 2016 rc

need for algaecide and aquatic herbicide applications; the schedule of when and where treatments will occur; and potential effects of the treatment to operation of the water treatment plants and canals. All agencies that are unable to attend are provided with a schedule of algaecide and aquatic herbicide applications. Included with the schedule are PCWA contacts and phone numbers.

#### **C.10.e A description of measures that will be used for preventing fish kill when algaecides and aquatic herbicides will be used for algae and aquatic weed controls.**

Fish are not intentionally placed into the canal system, but are occasionally found in the PCWA canals and reservoirs. Fish can be harmed during the application of copper containing algaecides and aquatic herbicides, which can reduce the amount of dissolved oxygen in the water. Only the minimum amount of algaecides and/or aquatic herbicides containing copper are applied to PCWA canals to control the growth of algae and/or aquatic weeds.

#### **C.11 Examination of possible alternatives. Dischargers should examine the alternatives to algaecide and aquatic herbicide use to reduce the need for applying algaecides and herbicides. Such methods include:**

##### **C.11.a Evaluate the following management options, in which the impact to water quality, impact to non-target organisms including plants, algaecide and aquatic herbicide resistance, feasibility, and cost effectiveness should be considered:**

###### **C.11.a.i No Action**

If algae and/or aquatic weed growth is at a minimum and not impacting the operation or capacity of the raw water conveyance system, no action is taken to control the algae and/or aquatic weed growth. During the late spring or when air and water temperatures increase, algae and aquatic weed growth is accelerated. If not controlled, this algae and aquatic weed growth would reduce the ability of the raw water conveyance system to deliver adequate supplies of water to the eight PCWA water treatment plants and several private treatment plants. Along with the reduction in the water carrying capacity of the canals, excessive algae and aquatic weed growth has the possibility to affect the quality of the water delivered to treatment plants, increasing the use of water treatment chemicals, treatment processes, and energy consumption.

###### **C.11.a.ii Prevention**

Continual efforts are made to reduce or prevent the growth of algae's and aquatic weeds. Efforts include limiting intercepted storm and other runoff from entering the raw water conveyance system and providing nutrients for plant growth. Other efforts include lining earthen canals with gunite (a cement sand mixture), or piping sections of canal where appropriate. Though this does not prevent all algae and aquatic weed growth, it provides a less than desirable surface for the algae's and aquatic weeds to grow on.

#### **C.11.a.iii Mechanical or physical methods**

Beginning in January of each year, sections of canal are isolated from the water supply and hand crews remove accumulated sediment, rocks, algae and aquatic weeds from the bottom and sides of each canal. While effective, this process is very labor intensive and time consuming. This method requires up to five months to maintain the entire 165 miles of canal.

#### **C.11.a.iv Cultural Methods**

Cultural methods used to reduce the amount of algaecides and/or aquatic herbicides include scheduled applications of algaecide and aquatic herbicides to prevent or reduce the number of plants reaching maturity and reproducing.

#### **C.11.a.v Biological control agents**

Goats and sheep work well for terrestrial weed control, but are not suitable for the control of algae and aquatic weeds. Animals in the canal can become trapped in swift moving water, provide nutrients for plant growth and impact source water quality from the deposition of feces and urine, increase turbidity of the water, and bank erosion. The use of plant eating fish is also impractical due to the many barriers, gates, pipes and shallow water depths encountered in the raw water conveyance system.

#### **C.11.a.vi Algaecides and aquatic herbicides**

The PCWA Weed and Brush supervisor considers a variety of algae and aquatic weed control approaches that may include; mechanical removal, cultural methods, and/or algaecide and aquatic herbicides. Algaecides and aquatic herbicides may be applied alone, or in combination with other algae and/or aquatic weed control methods.

Evaluating the most effective algae/aquatic weed control in PCWA canals and reservoirs is the mission of the PCWA Weed and Brush division. In general, mechanical removal of algae and aquatic weeds is time consuming, labor intensive, and interrupts deliveries of raw water to public and private treatment plants. Mechanical control and biological control may increase the turbidity of the water, further impacting the quality of water deliveries to treatment plants, increasing the use of treatment chemicals, labor and energy.

The quantity of algaecide and/or aquatic herbicide that is applied to the canals is determined by the PCA following FIFRA label instructions. The optimal dosage of algaecide and aquatic herbicide used is highly variable and depends upon the amount of flow in the canal, turbidity of the water, the plant mass, type of algae and/or aquatic weeds, and goal of the application. All of these factors are considered by the PCA when making a recommendation for an application.

#### **C.11.b Using the least intrusive method of algaecide and aquatic herbicide application**

It is the goal of PCWA to only use that amount of algaecide and aquatic herbicide necessary to control the growth of algae's and aquatic weeds. The amounts of algaecide and aquatic herbicides needed for complete elimination of all algae's and aquatic weeds is cost prohibitive and could result in excessive releases of active ingredients, potentially harming non-target plants and animals.

All algaecide and aquatic herbicides are applied using drip systems and backpack sprayers in order to limit the amounts of applied product(s) and to isolate applications to designated treatment areas only.

#### **C.11.c Applying a decision matrix concept to the choice of the most appropriate formulation.**

As previously stated, the PCA or designee evaluates the area to be treated prior to the application to determine the presence and extent of the target algae(s) and aquatic weeds. Once evaluated, the PCA, following the FIFRA label, will determine the proper dosage and amount of algaecide and/or aquatic herbicide to apply, including the rate of application. Information for and about each application is recorded on a form, including the desired dosage rate, application rate, flow rate of the canal, and other physical observations. If the canal has been designated for sampling, additional information, including the results of the field sampling analysis is included.

# Appendix A

Application and Monitoring Forms

# Algaecide and Aquatic Herbicide Application Form

**P C W A**

**Date:** \_\_\_\_\_

**Aquatic Pesticide Application Log**

**FIELD SERVICES**

**WEED & BRUSH CONTROL**

**By:** \_\_\_\_\_

- Boardman @ Clipper Gap YB 179
- Boardman @ YB 49
- Boardman @ Foothill WTP YB 78
- Boardman @ Heather Glenn & 49er Spill (1289+42)
- Boardman @ Luther & Channel Hill Rd (356+05)
- Boardman @ McCrary Reservoir YB 92
- Boardman Below Mammoth Res (343+22)
- Bowman Canal YB 87
- Caperton @ Clark Tunnel Road (316+80)
- Caperton below Caperton Reservoir
- Cedar Creek @ YB 96

- Dutch Ravine @ Ridge & Taylor Road (11+60)
- Freeman & Shockley @ Luther Road (22+79)
- Lwr Antelope & Antelope Stub (194+05)
- Lwr Greely @ YB 91
- Middle Fiddler Green @ Raccoon Hollow (16+40)
- Newcastle @ Head of South Loop (50+92)
- Pery @ Mammoth Dr & Hooter Spill (23+51)
- Red Ravine @ Gilardi Rd (126+45)
- Shirland @ Pacific YB 147
- Upper Fiddler Green @ RR Spill (85+83)
- Other: \_\_\_\_\_

Flow \_\_\_\_\_ CFS

Station Number: \_\_\_\_\_

**Time Start:** \_\_\_\_\_ **Time End:** \_\_\_\_\_

Target Weed \_\_\_\_\_

Pesticide(s) Used	Concentration (ppm)	Application Rate (ml/30sec)	Total Amount Applied
Curtine Plus	_____	_____	_____ Lbs
Citrine Plus Granular	_____	_____	_____ Gal
Citrine Ultra	_____	_____	_____ Lbs
Algimycin - PWF	_____	_____	_____ Gal
Round-up Custom	_____	_____	_____ Gal
Reward	_____	_____	_____ Gal
Phycomysin	_____	_____	_____ Lbs

**Visual Monitoring Assessment:**

Special-Status Species Observed:

- California Red-Legged Frog Y / N
- Foothill Yellow-Legged Frog Y / N
- Western Pond Turtle Y / N
- Valley Elderberry Longhorn Beetle Y / N
- Anadromous Fish
- Central Valley Steelhead Trout Y / N
- Chinook Salmon Y / N

**Environmental Observations**

**Air Temp** \_\_\_\_\_ **Water Temp** \_\_\_\_\_ **Wind Speed** \_\_\_\_\_

**Wind** Calm Breezy Windy

**Cloud Cover** No Clouds Partly Cloudy Overcast

**Precipitation** None Foggy Drizzle Rain Snow

**Water Clarity** Clear Water Cloudy Water Murky Water

**Sample Color** Clear Amber Yellow Green Brown Gray Other

**Sample Odor** None Fresh Algae Smell Chlorine Sulfide Sewage

**Other** Algae Oily Sheen Foam or Suds Leaves Trash

Comments:

\_\_\_\_\_

\_\_\_\_\_

Applicator(s) \_\_\_\_\_

Supervisor \_\_\_\_\_

Placer County Water Agency according to FIFRA label and PCWA Aquatic Pesticide Application Plan

Steve Schuler - Weed and Brush Supervisor

Aquatic Pesticide Application Plan (APAP)

Revised August 25, 2016 rc



Algaecide and Aquatic Herbicide Application and Sampling Form (back page)

**Visual Monitoring Assessment:**

Special-Status Species Observed:

- California Red-Legged Frog Y / N
- Foothill Yellow-Legged Frog Y / N
- Western Pond Turtle Y / N
- Valley Elderberry Longhorn Beetle Y / N
- Anadromous Fish
- Central Valley Steelhead Trout Y / N
- Chinook Salmon Y / N

**Environmental Observations**

Air Temp \_\_\_\_\_ Water Temp \_\_\_\_\_ Wind Speed \_\_\_\_\_

Observations: Circle one underlined option

Wind Calm Breezy Windy

Cloud Cover No Clouds Partly Cloudy Overcast

Precipitation None Foggy Drizzle Rain Snow

Water Clarity Clear Water Cloudy Water(>4" visibility) Murky Water (<4" visibility)

Sample Color None Amber Yellow Green Brown Gray Other

Sample Odor None Fresh Algae Smell Chlorine Sulfide(rotten eggs) Sewage Other

Other Algae or Water Plants Oily Sheen Foam or Suds Leaf Litter Trash Other

Flow \_\_\_\_\_ CFS Time Start \_\_\_\_\_ Time End \_\_\_\_\_

Pesticide(s) Used	Concentration (ppm)	Application Rate (ml/30sec)	Total Amount Applied
Curtine Plus	_____	_____	_____ Lbs
Curtine Plus Granular	_____	_____	_____ Gal
Curtine Ultra	_____	_____	_____ Lbs
Algimycin - PWF	_____	_____	_____ Gal
Round-Up Custom	_____	_____	_____ Gal
Reward	_____	_____	_____ Gal
Phycomysin	_____	_____	_____ Lbs

Comments: \_\_\_\_\_

Sample Bottles to be labeled as follows: \_\_\_\_\_ Notes: \_\_\_\_\_

**Background monitoring** sample is collected upstream of the application area prior to the application of algaecides and/or aquatic pesticides

**Event Monitoring** sample is collected immediately downstream of the treatment area shortly after sufficient time has elapsed such that treated water would have exited the treatment area

**Post-Event Monitoring**, sample(s) are collected within seven days after the application of algaecides and/or aquatic pesticides.

