Aquatic Pesticide Application Plan

California Park Association

AQUATIC PESTICIDE APPLICATION PLAN (APAP)

Water Quality Order (# 2004-0009-DWQ) Statewide General National Pollutant Discharge Elimination System (NPDES) Permit for the Discharge of Aquatic Pesticides for Aquatic Weed Control in Waters of the United States

General Permit # CAG990005

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CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direct supervision in accordance with a system designed to insure that qualified personnel properly gathered and evaluated 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".

Signed and Agreed:

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CALIFORNIA PARK ASSOCIATION

AQUATIC PESTICIDE APPLICATION PLAN

FOR THE STATEWIDE NPDES PERMIT FOR DISCHARGES OF AQUATIC PESTICIDES

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Introduction

In March 2001, the State Water Resources Control Board (SWRCB) prepared Water Quality Order # 2001-12-DWQ which created Statewide General National Pollutant Discharge Elimination System (NPDES) Permit # CAG990003 for the discharges of aquatic herbicides to waters of the United States**.** The purpose of Order # 2001-12-DWQ was to minimize the areal extent and duration of adverse impacts to beneficial uses of water bodies treated with aquatic herbicides. The purpose of the general permit was to substantially reduce the potential discharger liability incurred for releasing water treated with aquatic herbicides into waters of the United States. The general permit expired January 31, 2004.

On May 20, 2004 the SWRCB adopted the statewide general NPDES Permit for Discharge of Aquatic Pesticides for Aquatic Weed Control in Waters of the United States #CAG 990005 (herein referred to as the “general permit”). Dischargers must have the general permit to perform aquatic herbicide applications. In May 2009, the general permit expired, but according to SWRCB staff, it is still active. It is anticipated that a new general permit will be available for use in 2012. Changes to the general permit, if any, are not known at this time.

Coverage under the general permit is available to single dischargers and potentially to regional dischargers for releases of potential and/or actual pollutants to waters of the United States. Dischargers eligible for coverage under the general permit are public entities that conduct resource or pest management control measures, including local, state, and federal agencies responsible for control of algae, aquatic weeds, and other organisms that adversely impact operation and use of drinking water reservoirs, water conveyance facilities, irrigation canals, flood control channels, detention basins and/or natural water bodies.

The general permit does not cover indirect or non-point source discharges, whether from agricultural or other applications of pesticides to land, that may be conveyed in storm water or irrigation runoff, and only covers pesticides that are applied according to label directions and that are registered for use on aquatic sites by the California Department of Pesticide Regulation (DPR).

The California Park is a residential housing development located along the eastern side of Chico, California. The California Park development includes several recreational common areas including a series of interconnected lakes collectively known as California Park Lake (herein referred to as “Lake”). The California Park Association (CPA) is responsible for the maintenance of the Lake. Refer to **Figures 1**.

The Lake is approximately 60 acres and is impounded by a dam at the southern end. Drainage into the Lake occurs during winter and spring from natural runoff into its tributaries and from stormwater discharge of the surrounding residential area. Additional flow into the Lake occurs from late spring to fall from incidental runoff associated with landscape irrigation, and from groundwater pumped into the upper reaches of the Lake to minimize evaporation loss. From late spring through fall, water is retained in the Lake for contact and non-contact recreation, including boating, windsurfing, swimming, fishing, and wildlife observation.

Discharge from the Lake can occur at the dam. The receiving water of the Lake is Dead Horse Slough. Dead Horse Slough downstream of the Lake typically runs dry during late spring to fall. During winter months, inflow from stormwater and natural runoff can cause water to spill over the dam into Dead Horse Slough. Dead Horse Slough receives additional runoff from other downstream residential developments and the City of Chico before flowing into Little Chico Creek, and ultimately the Sacramento River.

The Lake has experienced impacts from aquatic plants and algae. Aquatic weed and algae populations can increase to densities that adversely affect contact and non-contact recreation, aesthetic and odor issues for nearby residents and park or Lake visitors. Aquatic vegetation levels that create impacts generally occur during late spring through fall. Aquatic vegetation that impacts the lake includes Eurasian watermilfoil (*Myriophyllum spicatum*), coontail (*Ceratophyllum demersum*), pondweeds (*Potamogeton* spp), and planktonic and filamentous algae. CPA predicts that aquatic vegetation will continue to impact beneficial uses of the Lake.

Using Integrated Pest Management (IPM) techniques, CPA applies aquatic herbicides that are identified in the Notices of Intent to Comply (NOIs) previously submitted to the Central Valley Regional Water Quality Control Boards (CV-RWQCB). For the purposes of applying to, and complying with, the 2004 general permit, CPA has created this Aquatic Pesticide Application Plan (APAP).

The general permit Fact Sheet describes the APAP as follows:

An APAP is a comprehensive plan developed by the discharger (in this case, CPA) that describes the project, the need for the project, what will be done to reduce water quality impacts, and how those impacts will be monitored. Specifically, the APAP must contain the following thirteen (13) elements.

A. Description of the water body(ies) or water body systems being controlled.

B. Description of what weed(s) are being controlled and why.

C. Discussion of control tolerances (i.e. how much growth can occur before action is necessary).

D. Discussion of the factors influencing the decision to use aquatic herbicides in regard to those tolerances (pros and cons).

E. Type(s) of aquatic herbicides used[1], the method in which they are applied, and the adjuvants used.

F. Description of the application area and the treatment area in the system.

G. Other control methods used (alternatives) and what their limitations are.

H. How much product is needed and how this is determined.

I. Monitoring Plan, including the location of representative site(s).

J. If applicable, list the gates or control structures and inspection schedule of those gates or control structures to ensure that they are not leaking.

[1] List the types and the names of aquatic pesticides used or anticipated to be used. If additional or alternative pesticides are used during the year, amend the APAP and note this in the annual report.

K. If the Control Agency has been granted a Section 5.3 exception, describe the exception period. If weeds are also controlled outside of this period, describe how is it ensured that receiving water criteria are not exceeded.

L. Description of the BMPs to be implemented.

M. Evaluation of other available BMPs to determine feasible alternatives to the selected aquatic herbicide application project that could reduce potential water quality impacts.

This APAP is organized to address the aforementioned A-M elements.

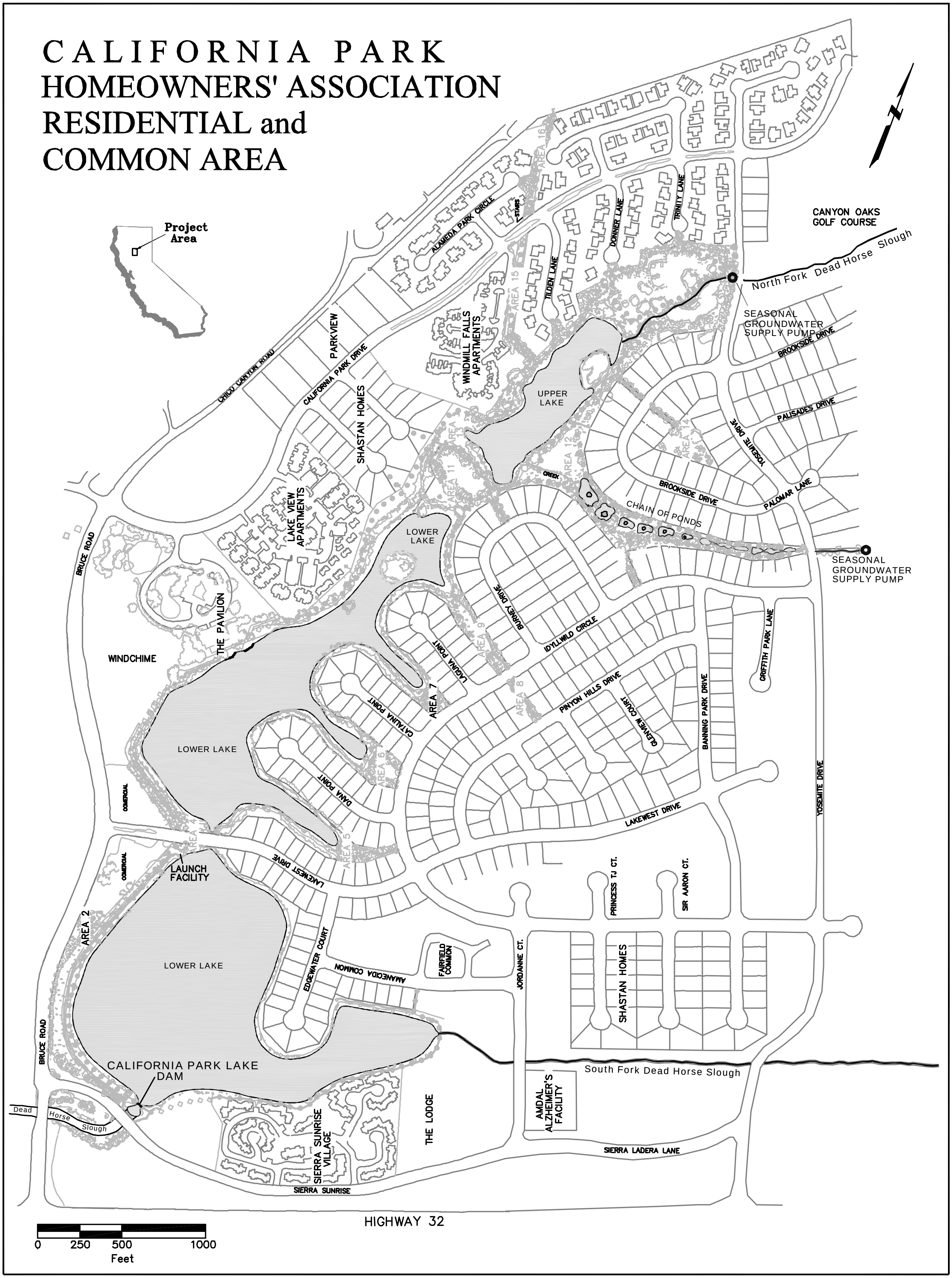

Figure 1. Local Site Map: California Park Homeowners' Association.

Element A: Description of Water Bodies and Systems Controlled

The Lake is approximately 60 acres and is impounded by a dam at the southern end. Drainage into the Lake occurs during winter and spring from natural runoff into its tributaries and from stormwater discharge of the surrounding residential area. Additional flow into the Lake occurs from late spring to fall from incidental runoff associated with landscape irrigation, and from groundwater pumped into the upper reaches of the Lake to minimize evaporation loss. From late spring through fall, water is retained in the Lake for contact and non-contact recreation, including boating, windsurfing, swimming, fishing, and wildlife observation.

Discharge from the Lake can occur at the dam. The receiving water of the Lake is Dead Horse Slough. Dead Horse Slough downstream of the Lake typically runs dry during late spring to fall. During winter months, inflow from stormwater and natural runoff can cause water to spill over the dam into Dead Horse Slough. Dead Horse Slough receives additional runoff from other downstream residential developments and the City of Chico before flowing into Little Chico Creek, and ultimately the Sacramento River.

Element B: Description of Weeds

Weeds found in the Lake include emergent, floating, and submerged aquatic vegetation and algae. Vegetation in the Lake includes Eurasian watermilfoil (*Myriophyllum spicatum*), pondweed (*Potamogeton* spp), coontail (*Ceratophyllum demersum*), cattails (*Typha spp.*), duckweed (*Lemna spp.*), mosquitofern (*Azolla spp.*), and filamentous and planktonic algae. The presence of these weeds and others adversely impact the aesthetic and recreational uses of the Lake.

Element C: Discussion of Control Tolerances

Treatment of aquatic vegetation by CPA is determined by the application of Integrated Pest Management (IPM). For example, if a population of weeds equals or exceeds a threshold, an aquatic herbicide application is made. Thresholds are met when weeds cause problems in the lake. Problems associated with aquatic vegetation or algae blooms are typically associated with impediments to contact and non-contact recreation in the Lake.

Aquatic herbicide applications may also be made prior to threshold exceedance. For example, based on predicted growth rate and density, historical weed trends, weather, water availability, and experience, weeds or algae may reasonably be predicted to cause future problems. Accordingly, they maybe treated soon after emergence or when appropriate based on the herbicide to be used. Even though weeds may not be an immediate problem at this phase, treating them before they mature reduces the amount of aquatic herbicide needed because the younger weeds are more susceptible and there is less plant mass to target. Generally, treating weeds earlier in the growth cycle results in less total herbicide used. Selection of appropriate aquatic herbicide(s) and rate of application is done based on the identification of the weed, its growth state and the appearance of that weed on the product label as a plant it controls.

Element D: Discussion of Factors Influencing Aquatic Pesticide Use

The selection of and decision to use an aquatic herbicide is based on the recommendation of a California Department of Pesticide Regulation (CDPR)-licensed Pest Control Advisor (PCA). The PCA considers a variety of control options that may include mechanical and cultural techniques that alone or in combination with chemical controls are the most efficacious and protective of the environment.

Evaluating alternative control techniques is part of CPA's IPM approach; therefore an alternative treatment may be selected as part of a test program. An alternative control technique includes mechanical removal (harvesting of weeds in the Lake). A more detailed description is presented in **Element G** of this document.

In general, alternative control techniques are expensive, labor intensive, not as effective, may cause temporary water quality degradation, and/or further spread aquatic weeds. The equipment and labor required to perform these techniques is not always readily available. This may cause delays in removal leading to increased plant material to remove and increased cost.

Element E: Types of Aquatic Pesticides Used

Table 1 summarizes the products used by the CPA.

Table 1: Aquatic Herbicides Available for Use

Herbicide[(1)]	**Method**
Fluridone	Submersed boom, or spreader
Endothall	Submersed boom, spreader (granules), handgun or boom sprayer
Diquat	Submersed boom, handgun, or boom sprayer
Copper[(2)]	Submersed boom, spreader (granules), handgun or boom sprayer
Triclopyr	Backpack sprayer, handgun, or boom sprayer
Glyphosate	Backpack sprayer, handgun, or boom sprayer
2,4-D	Backpack sprayer, handgun, or boom sprayer
Imazapyr	Backpack sprayer, handgun, or boom sprayer
Sodium Carbonate Peroxyhydrate	Handgun, boom sprayer (liquid), or spreader (granules)

[(1)] Adjuvants are not included in this list and will be selected as appropriate based on herbicide choice.
[(2)] Copper will not be used by CPA until/unless a SIP Section 5.3 Exception is granted

All applications are made in strict accordance with the product label. For example, an application of fluridone granules to a lake will be made with a spreader calibrated to deliver the correct amount of material per acre treated to deliver the desired target concentration. Spray applications are not made if wind speed exceeds 10 miles per hour (mph) or consistent with label requirements. Applications will also not be made if there is a potential for drift onto desirable vegetation, or if any other adverse conditions exist.

Element F: Description of Application and Treatment Area

The application and treatment area is all parts of the CPA Lake. The Lake of concern is approximately 60 Acres and ranges from 0 to 15 feet in depth. All areas within the lake, various coves and bays where aquatic vegetation meets treatment thresholds are subject to treatment.

Element G: Other Control Methods Used

CPA has assessed the effectiveness of the following techniques as alternatives or supplements to the control of aquatic vegetation:

G.1 Mechanical Removal

Mechanical removal in the Lake includes hand cutting while wading or diving, hand-pulling weeds, or use of motor-driven aquatic weed harvesters to pull up and remove vegetation.

Generally, these techniques are very labor intensive per unit acre or length of water treated. Mechanical removal places personnel at risk of general water, boating, slip, trip and fall hazards, drowning, risks the spilling of motor oil and fuel, and can increase air pollution. Blankinship & Associates, Inc. estimates that the cost per area of is significantly higher than the cost of labor, product and equipment of the application of aquatic herbicide. Evaluations by CPA and US Department of Agriculture staff show that mechanical harvesting of the Lake would not be feasible. The increased cost of mechanical aquatic weed abatement does not include the cost of the aforementioned risks (pollution abatement, workman's compensation claims, etc.).

Environmental impacts due to the use of mechanical techniques include the creation of water-borne sediment and turbidity due to people and equipment working in the water. This suspended sediment can adversely affect aquatic species by lowering dissolved oxygen and preventing light penetration. Disturbing sediment may cause additional problems including, but not limited to, new areas for weed establishment, division and re-establishment of aquatic weeds, and siltation in the Lake. Many aquatic plant species CPA hopes to control can be spread through fragmentation, and mechanical control has the potential to increase the distribution of the problem vegetation. The costs for trucking and waste disposal are not included. Waste must be taken to traditional landfills and cannot be taken to green waste disposal due to the concern that redistribution of the material may occur and subsequently result in re-establishment.

G.2 Native Species Establishment

No appropriate native plants have been found to establish within ponds or lakes that out-compete weed species and not create similar or other operational or aesthetic problems. As such, aquatic vegetation found in the lake must be removed or controlled to maintain the weed density tolerances established by CPA. Native species establishment within the Lake is not a suitable alternative control method.

G.3 Controlled Burns

This option is most suitable for some types of emergent and terrestrial weeds, and is not suitable for submerged aquatic vegetation. This option is not a suitable alternative control method for the Lake.

G.4 Grazing

This option is most suitable for emergent and terrestrial weeds, and is not suitable for submerged aquatic weeds or algae present in the Lake. Impacts to water quality from animal feces, increases in turbidity, nutrients, and bank erosion, and impacts to desirable species make this option unfeasible in some cases. The cost of hiring grazing animals is also generally more costly than chemical control alternatives. This option is not a suitable alternative control for the Lake.

G.5 Tilling or Discing

This option is not suitable for the control of aquatic vegetation in a lake.

G.6 Habitat Modification

After the removal of non-native terrestrial and emergent invasive species, the introduction and re-establishment of native species has been successful at the waters' edge. See Section G.2. This technique is intended to provide competition for non-desirable species and reduce the need for weed abatement only around the perimeter of the Lake, but is not possible within the lake. Limitations to this approach include availability of suitable native species, availability of labor to plant native species, and safe access to banks for work crews.

A potential method for the control of submersed aquatic vegetation is the use of weed mats. These mats can be secured to the floor of the lake with soil nails or like devices and provide a physical and sunlight penetration barrier to weeds growing in soil in the lake bottom.

G.7 No Controls

As feasible, this technique is used. For example, consistent with the IPM program used by CPA, a threshold is typically reached prior to treatment. Prior to reaching a threshold, no control is considered.

Element H: Quantity of Product Required

The quantity of aquatic herbicide product required is determined by a PCA that has followed the label directions in making a recommendation. The amount of material used is highly variable and depends on the type, location, and density of weeds, weed area to be treated, water depth in treated area, temperature and hardness of the water. All these factors are considered by the PCA prior to making an application.

Element I: Monitoring and Reporting Program (MRP)

The general permit Fact Sheet describes the goals of the MRP as:

i. Determine compliance with the receiving water limitations and other requirements specified in the General Permit.
ii. Measure and improve the effectiveness of the APAP.
iii. Support the development, implementation, and effectiveness of BMPs.
iv. Assess the chemical, physical, and biological impacts on receiving waters resulting from aquatic herbicide applications.
v. Assess the overall health and evaluate long-term trends in receiving water quality.
vi. Demonstrate that water quality of the receiving waters following completion of resource or weed management projects are equivalent to pre-application conditions.
vii. Identify and characterize aquatic herbicide application projects conducted by the discharger.
viii. Ensure that projects that are monitored are representative of all herbicides and application methods used by the discharger.

Attachment C of the General Permit provides MRP guidelines that CPA will use to meet the aforementioned goals. The MRP for this APAP is consistent with the above goals.

I.1 Monitoring Procedures

I.1.1 Monitoring Frequency and Site Locations

Visual monitoring will be performed for all applications at all sites and be recorded by the applicator or other present qualified personnel. Records from this monitoring will be kept with the application records of CPA. **Figure 2** is the form used to document this monitoring.

Water quality sampling will be conducted for all applications at 10% of all sites. The number of application sites required can be determined based on the following table:

Number of Application Site(s)	Number of Samples Site(s)
1	1
1-24	2
25-34	3
35-44	4
45-54	5

Sites will be chosen to represent the variations in treatment that occur, including product, target species, conveyance or reservoir type, seasonal, and regional variations. The exact location(s) of sample site(s) will be determined after site scouting and a decision to make an aquatic herbicide application are made per CPA's IPM approach. **Figure 3** is the form used to document sampling.

I.1.2 Determining Sample Locations

Sampling will be performed as described in Attachment C of the general permit and will include background monitoring, event monitoring, and post-event monitoring. Once CPA determines that an herbicide application is needed, the exact locations of sample collection will be determined using guidance presented in **Figure 4**.

Figure 2: Aquatic Pesticide Application Log

Aquatic Pesticide Application Log rev 3.10 Pg. 1/1

****IMPORTANT** To Be Completed EVERY TIME an Aquatic Pesticide Application Is Made**

I. GENERAL

Date ______________ Location ____________________ Start Time ______________ Stop Time ____________

Agency ________________________________ Personnel ________________________________

Weather ____

Total Area Treated (Ac or linear ft) ________________ Target Weed(s) ____________________

☐ If NO applications made this month, check here and list month: ______

II. PESTICIDE & ADJUVENT INFORMATION

Pesticide #1 Used: ____________________ Rate or Target Concentration: ____________ Total Amt Applied ____________

Pesticide #2 Used: ____________________ Rate or Target Concentration: ____________ Total Amt Applied ____________

Adjuvant #1 Used: ____________________ Rate or Target Concentration: ____________ Total Amt Applied ____________

Adjuvant #2 Used: ____________________ Rate or Target Concentration: ____________ Total Amt Applied ____________

Method of Application: ________________________________ Application Made **With or Against water flow**

III. TREATED WATERBODY INFORMATION

Waterbody type (lined canal, unlined canal, creek, drain, ditch, reservoir, lake, pond) ________________

Water flow (ft/sec, cfs) ____________ Water Depth (ft): ____________ Water temperature (F): ________________

Percent weed cover ________________________________ Sheen: ☐ yes ☐ no

Color: ☐ none ☐ brown ☐ green other: ____________ Clarity: ☐ poor ☐ fair ☐ good

Other information: ____

IV. POST TREATMENT EFFICACY & IMPACT

Describe post treatment efficacy: ☐ poor ☐ fair ☐ good Describe any impacts to water quality ☐ none ☐ some ☐ significant

If other than "none", describe: ____

V. GATES, WEIRS, CHECKS OR OTHER CONTROL STRUCTURES (ONLY FILL OUT IF APPLICABLE)

A. Are there any gates or control structures in the treatment area that may discharge to streams, rivers, lakes, or other natural waterways? ☐ Yes ☐ No ☐ N/A

(If the answer to question A is Yes then answer questions B-F the Table below, otherwise leave blank)

<u>Before Application</u>

B. Have flow control structures been closed & sealed to prevent aquatic pesticide from discharging to natural waterways? ☐ Yes ☐ No

C. Have necessary flow control structures been inspected for leaks? ☐ Yes ☐ No

D. If leaks were found, were they sealed or otherwise prevented from allowing water to discharge to natural waterways prior to application? ☐ Yes ☐ No

<u>During Application</u>

E. Were necessary flow control structures inspected for leaks? ☐ Yes ☐ No

F. If leaks developed, was the application stopped until the leak could be sealed or prevented from allowing water to discharge to natural waterways? ☐ Yes ☐ No

If the answer of any of the above questions is No, explain: ________________________________

Gate	Time Closed	Time Opened	How was time opened determined:

VI. CERTIFICATION

I ____________________ (print name) certify that the APAP has been followed (sign here): X ____________________

Figure 3: Aquatic Pesticide Field Monitoring & Sampling Form – Static Water (Page 1 of 2)

Aquatic Pesticide Field Monitoring & Sampling Form – Static Water

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IMPORTANT Attach Relevant Aquatic Pesticide Application Log (APAL) Form

Client Name:_______________________________________

SAMPLE #1: Background (BG)
Collect inside the treatment area < 24 hours before treatment

Draw Sample Location and Include Identifiable points of reference

N   Scale: 1"~_____

Sampler Name:_______________________________
Date:_______________ Time:_______________
Herbicide Applied (Surfactants?):_______________________________
____
Sample Waypoint # or ID:_______________________________
Target Weeds: _______________________________
Site Description:_______________________________
____
DO (mg/L):___________ EC (mmho/cm):___________
pH:___________ Turbidity (NTU):___________
Temp (°C):_______________

SAMPLE # 2: Adjacent to Treatment Area (ATA1)
Collect adjacent to the treatment area following pesticide application only when sufficient time has elapsed for pesticide to disperse and move out of treatment area.

Draw Sample Location and Include Identifiable points of reference

N Scale: 1"~_____

Date:_______________ Time:_______________
Application Start/End Time:___________//___________
Sample Waypoint # or ID: _______________________________
Distance from Treatment Area Boundary (ft):___________
Site Description:_______________________________
____
Approximate Water Speed (ft/sec):_______________
Size of Treated Area (ft^2 or Ac):_______________
DO (mg/L):___________ EC (mmho/cm):___________
pH:___________ Turbidity (NTU):___________
Temp (°C):_______________

Figure 3: Aquatic Pesticide Field Monitoring & Sampling Form – Static Water (Page 2 of 2)

Aquatic Pesticide Field Monitoring & Sampling Form – Static Water

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SAMPLE # 3: Adjacent to Treatment Area (ATA2)

Collect at the same location as ATA1 within 1 week of application.

Sampler Name:________________________

Date:______________ Time:____________

Approximate Water Speed (ft/sec):____________

DO (mg/L):________ EC (mmho/cm):________

pH:__________ Turbidity (NTU):__________

Temp (°C):__________

SAMPLE # 4: Treatment Area (TA)

Collect at the same location as the BG within 1 week of application.

Date:______________ Time:____________

Approximate Water Speed (ft/sec):____________

DO (mg/L):________ EC (mmho/cm):________

pH:__________ Turbidity (NTU):__________

Temp (°C):__________

Date Field Blank Collected: ____________

Date Field Duplicate Collected: __________

	Date and Time Samples, COC and Cooler shipped to lab	Method of Shipment
BG		
ATA 1		
ATA 2		
TA		
	NOTE: Attach Chain of Custody	

S:\Admin\Field Forms\Field Work\Daily Activity Forms\Reservoir Water Sampling Form rev 03.10.doc

I.1.2.1 Static Water (Lake or Pond) Sampling

Background (BG): The Background sample (BG) is collected inside the treatment area within 24 hours prior to the start of treatment.

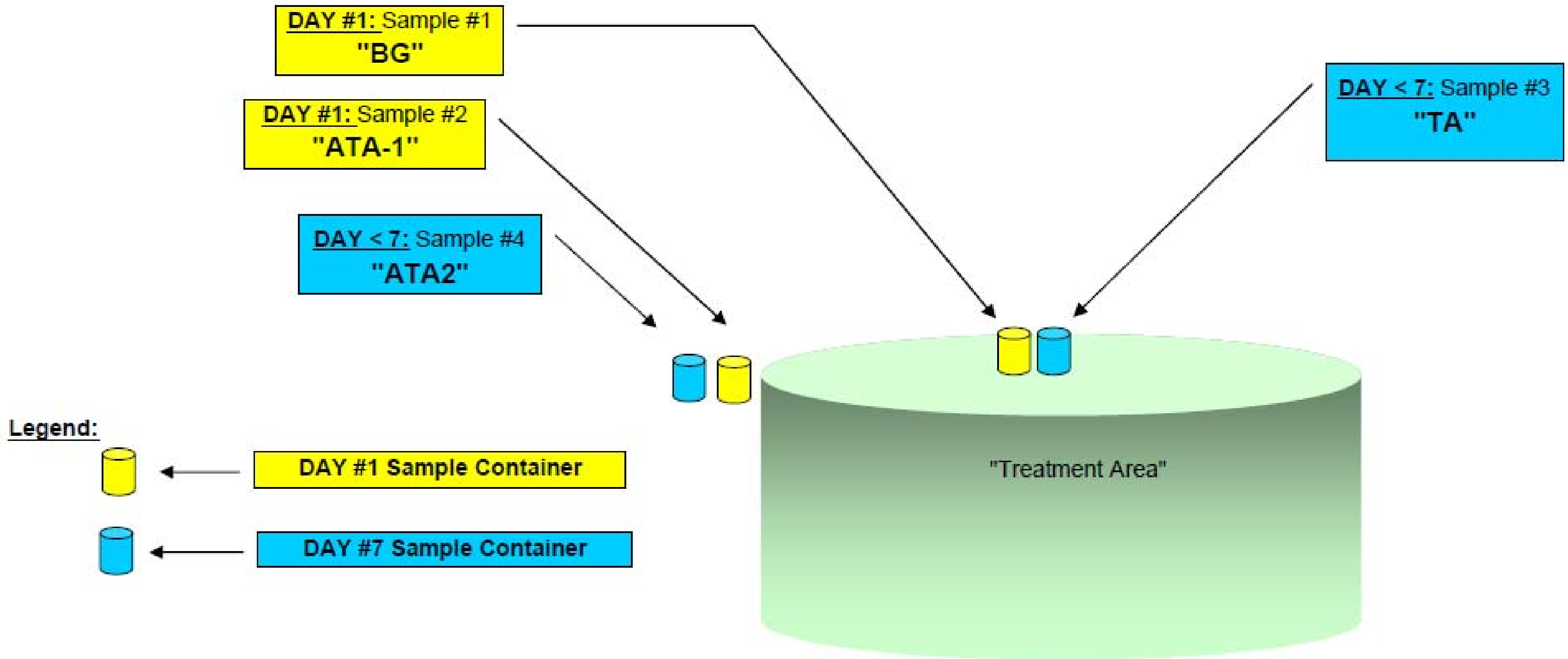
Adjacent Treatment Area-1 (ATA1): The Adjacent Treatment Area sample (ATA1) is collected adjacent to the treatment area immediately following the application. The treatment area is the area that is treated by the aquatic herbicide to control weeds. Refer to **Figure 4** for detail. Field Duplicate and Field Blank samples will be collected at this site.

Adjacent Treatment Area-2 (ATA2): The first post-event sample is collected at the same location as the ATA1 sample within one (1) week after the herbicide application. The Adjacent Treatment Area 2 sample (ATA2) will be collected at the same time as the TA sample. This will allow assessment of additional uptake, dilution, and degradation of the herbicide in the treatment area.

Treatment Area (TA): The second post-event sample is the treatment area sample (TA). It will be collected at the same location as the BG sample, within one (1) week after the application was made.

One full set of four samples (i.e., BG, ATA1, TA, and ATA2) will be collected during each treatment from the predetermined sites. Additionally, one Field Duplicate (FD) and one Field Blank (FB) will be collected and submitted for analysis for each analyte, once per year. The FD and FB samples will be collected at the ATA1 site immediately after application. See **Figure 3** for the field sampling form to be used.

Figure 4: Static Water Sampling Schematic



Notes:

Samples to be collected on the day of application (Day 1)

Sample #1. Collect Background sample (**BG**) before treatment inside the area to be treated.

Sample #2. Collect Adjacent to the Treatment Area (**ATA1**) sample adjacent and outside of the treatment area immediately after application.

Samples to be collected within 7 days of application (Days 2-7)

Sample #3. Collect Adjacent to the Treatment Area (**ATA2**) sample at the same location as ATA1 within 7 days of application.

Sample #4. Collect Treatment Area (**TA**) sample at the same location as the BG within 7 days of application.

Sampling Schematic, APAP Static Water Sample r3.10
3/23/2010

Blankinship & Associates

I.1.3 Sample Collection

If the water depth is 6 feet or greater the sample will be collected at a depth of 3 feet. If the water depth is less than 6 feet the sample will be collected at the approximate mid-depth. An subsurface sampling device (Van-Dorn style sampler or equivalent) will be used. Appropriate cleaning technique is discussed in section I.3.3.3.

I.1.4 Field Measurements

In conjunction with sample collection, temperature will be measured in the field. Turbidity, electrical conductivity/ salinity, pH, and dissolved oxygen may be measured in the field using field meters as available, or analyzed in the laboratory. Turbidity meters are calibrated according to manufacturer's specifications to a standard curve at the beginning of the year, and checked with a standard prior to each use. Conductivity meters are calibrated by the manufacturer and will be checked according to manufacturer's specifications with standards throughout the year (typically once per month) to evaluate instrument performance. If the calibration drifts outside the manufacturer's specifications, the conductivity probe will be recalibrated. Calibration logs are maintained for all instruments to document calibration.

I.1.5 Sample Preservation and Transportation

If preservation is required for the monitored constituent, the preservative will be placed in the sample container by the container vendor prior to sample collection. Once a sample is collected and labeled it will immediately be placed in a dark, cold (~4° C) environment, typically a cooler with ice. Delivery to the laboratory should occur on the same day or the next day as the sample collection.

I.1.6 Sample Analysis

Table 2 shows the constituents that each sample must be analyzed for.

Table 2: Required Sample Analysis

Analyte	EPA Method	Reporting Limit	Hold Time (Days)	Container	Chemical Preservative
Temperature[1]	N/A	N/A	N/A	N/A	N/A
Turbidity[2]	180.1	0.00 NTU	2	100 mL HDPE	None
Electrical Conductivity[2]	120.1	0 µS/cm	28	100 mL HDPE	None
*2,4-D[2]	8151, 8150A, 615	0.5 µg/L	7	1L Amber Glass	None
*Copper (total)	200.7, 200.8	0.5 µg/L	180	250 mL HDPE	pH<2 w/ HNO_3
*Diquat	549	40 µg/L	7	500 mL Amber HDPE	H_2SO_4
*Endothall	548.1	40 µg/L	7	2x40 mL VOA	HCl
*Fluridone	SePro FasTest	1 ug/L	7	30 ml Amber HDPE	None
*Glyphosate[2]	547	0.5 µg/L	14	2 x 40 mL VOA	None
*Triclopyr	8151-modified	1.0 µg/L	7	1L Amber Glass	None
Nonylphenol[3]	EPA 550.1m	0.5 µg/L	7	2 x 40 mL VOA	None
pH[2]	150.1 or 150.2	1-14	Immediately	100 mL HDPE	None
Dissolved Oxygen[2]	360.1 or 360.2	0.0 mg/L	1	1L Amber Glass	None
Hardness[4]	200.7	1.0 mg/L	1	250 mL HDPE	None

* Signifies active ingredient (herbicide). Chemical analysis is only required for the active ingredient(s) used in treatment.
EPA Methods are taken from NEMI 2004.
[1]Must be field measured.
[2]May be field or laboratory measured.
[3]Required only when nonylphenol surfactant is used.
[4]Required for copper applications only.

I.2 Reporting Procedures

An annual report for each reporting period, from January 1 to December 31 will be prepared and submitted by March 1 of the following year. The annual report will be submitted to the Central Valley RWQCB. In years when no aquatic herbicides are used, a letter stating no applications will be sent to the RWQCB in lieu of an annual report.

The annual report will contain the following information as described in Attachment C of the general permit:

a. An Executive Summary discussing General Permit compliance or violation and the effectiveness of the APAP to reduce or prevent the discharge of pollutants associated with aquatic herbicide applications.

b. A summary of monitoring data, including the identification of water quality improvements or degradation, and recommendations for improvement to the APAP (including proposed BMPs) based on the monitoring results. All receiving water monitoring data shall be compared to applicable water quality standards.

c. Identification of BMPs and a discussion of their effectiveness in meeting the 2004 General Permit requirements.

d. A discussion of BMP modifications addressing violations of the 2004 General Permit.

e. A map showing the location of each application and treatment area.

f. Types and amounts of aquatic herbicides used at each application event during each application.

g. Information on surface area and/or volume of treatment area and any other information used to calculate dosage and quantity of each herbicide used.

h. List of gates in the treatment area that may discharge to surface waters; time of gate closure and reopening, include any calculations used to determine closure and reopening times, if applicable.

i. Sampling results for all required monitoring under section B of the 2004 General Permit MRP and any additional sampling conducted in compliance with section A.2 of the 2004 General Permit MRP. 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 site (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/QC plan. Sampling results shall be tabulated so that they are readily discernable.

j. Recommendations to improve the monitoring program, BMPs, and APAP to ascertain compliance with this General Permit.

k. Proposed changes to the APAP and monitoring program as appropriate.

I.3 MRP Quality Assurance Plan (QAP)

I.3.1 Purpose

The purpose of this section is to present guidelines for the collection and analysis of samples necessary to meet the APAP objective of assessing adverse impacts, if any, to beneficial uses of water bodies treated with aquatic herbicides.

This section describes the techniques, equipment, analytical methods, and quality assurance and quality control procedures for sample collection and analysis. Guidance for the preparation of this chapter included: NPDES Storm Water Sampling Guidance Document (USEPA 1992); Guidelines and Specifications for Preparing Quality Assurance Project Plans (USEPA 1980); and U.S. Geological Survey, National Field Manual for the Collection of Water Quality Data (USGS 1995).

I.3.2 APAP Contact

Chuck Prehoda of the Hignell Company is the contact for this project. The Hignell Company is the management company retained by CPA. Mr. Prehoda can be reached at (530) 894-0404, and will be responsible for receiving, reviewing, and providing feedback on project reports to the RWQCB. Michael Blankinship and Stephen Burkholder of Blankinship & Associates, Inc. are the environmental consultants responsible for permit compliance documentation. They can be reached at (530) 757-0941.

I.3.3 Surfacewater Sampling Techniques

If the water depth is 6 feet or greater the sample will be collected at a depth of 3 feet, if the water depth is less than 6 feet the sample will be collected at the approximate mid-depth. As necessary, an intermediary sampling device (Van-Dorn style sampler) will be used for locations that are difficult to access. Appropriate cleaning technique is discussed in section I.3.3.3.

During collection, the samples will be collected in a manner that minimizes the amount of suspended sediment and debris in the sample. Surface water grab samples will be collected directly by the sample container, or by an intermediary container in the event that the sample container cannot be adequately or safely used. Intermediary samplers will be either poly (plastic/HDPE), stainless steel or glass. Stainless steel and glass containers will be washed thoroughly and triple rinsed before collection of the next sample. Alternatively, disposable poly or glass intermediary sample containers can be used.

I.3.3.1 Sample Containers

Clean, empty sample containers with caps will be supplied in protective cardboard cartons or ice chests by the primary laboratory. The containers will be certified clean by either the laboratory or the container supplier. To ensure data quality control, the sampler will utilize the appropriate sample container as specified by the laboratory for each sample type. Sample container type, holding time, and appropriate preservatives are listed in **Table 2**. Each container will be affixed with a label indicating a discrete sample number for each sample location. The label will also indicate the date and time of sampling and the sampler's name.

I.3.3.2 Sample Preservation

Samples will be collected with bottles containing the correct preservative(s), refrigerated at four (4) degrees Celsius (C), stored in a dark place, and transported to the analytical laboratory. Preservatives shall be added to sampling bottles before sampling occurs by the laboratory supplying the containers and performing the analysis. Refer to **Table 2**.

I.3.3.3 Sampling Equipment Cleaning

In the event that sampling equipment will be used in more than one location, the equipment will be thoroughly cleaned with a non-phosphate cleaner, triple-rinsed with distilled water, and then rinsed once with the water being sampled prior to it's first use at a new sample collection location.

I.3.3.4 Sample Packing and Shipping

All samples are to be packed and transported the day the samples are collected to provide ample time for samples to be analyzed within the required holding time.

Ice will be included in coolers containing samples that require temperature control. Samples will be packaged in the following manner:

1. Sample container stickers will be checked for secure attachment to each sample container.

2. The sample containers will be placed in the lined cooler. Bubble-wrap, suitable foam padding, or newspaper will be placed between sample containers to protect the sample containers from breakage during shipment and handling.

3. The Chain of Custody (COC) will be placed inside a plastic bag and placed inside the cooler. The COC will indicate each unique sample identification name, time and place of sample collection, the sample collector, the required analysis, turn around time, and location to which data will be reported.

4. The cooler will then be readied for pick-up by a courier or delivered directly to the laboratory.

I.3.4 Field Sampling Operations

I.3.4.1 Field Logbook

A bound logbook will be maintained by members of the sampling team to provide a record of sample location, significant events, observations, and measurements taken during sampling. Entries will be signed and dated. Field data will be recorded with permanent ink. Field logbooks are intended to provide sufficient data and observations to enable project team members to reconstruct events that occurred during the sampling. The field logbook entries will be legible, factual, detailed, and objective. See **Figure 3** for the forms to be used to record relevant field data.

I.3.4.2 Alteration of Sampling Techniques

It is possible that actual field conditions may require a modification of the procedures outlined herein. Specifically, water levels, weather, other environmental parameters and hazards including stream flow, rainfall, irrigation water use may pose access and/or sampling problems. In such instances, variations from standard procedures and planned sampling locations and frequencies will be documented by means of appropriate entry into the field logbook.

I.3.4.3 Flow Estimation

A flow meter calibrated according to the manufacturer's directions will be placed as close to the center of the stream or creek as possible and a reading taken in feet per second (ft/sec). Alternatively, the time a common floating object (branch, leaf, etc.) travels a known distance will be estimated and represented in ft/sec. A minimum distance of approximately 25 feet will be used. Flow estimation measurements will be made for all moving water sampling locations.

I.3.4.4 Chain-of-Custody (COC)

The COC record will be employed as physical evidence of sample custody. The sampler will complete a COC record to accompany each sample shipment from the field to the laboratory. The COC will specify: time, date, location of sample collection, specific and unique sample number, requested analysis, sampler name, required turn around time, time and date of sample transaction between field and laboratory staff, preservative, if any, and name of receiving party at the laboratory.

Corrections to the COC will be made by drawing a line through, initialing, and dating the error, and entering the correct information. Erasures are not permitted.

Upon receipt of the samples, laboratory personnel will check to insure that the contents of the ice chest(s) are accurately described by the COC. Upon verification of the number and type of samples and the requested analysis, a laboratory representative will sign the COC, indicating receipt of the samples.

The COC record form will be completed in duplicate. Upon sample delivery, the original copy will be left with the laboratory and a copy will be kept by the sampler, three-hole punched, and placed in the field logbook.

I.3.4.5 Sample Label

The sample label should resemble the example provided below. The label will contain information on the specific project (i.e. California Park Association APAP), the unique individual sample ID (i.e. CPA Lake – BG), the date and time the sample was collected, and the name of the sampler (i.e. J. Armstrong).

Prior to sampling, a water resistant label will be completed with waterproof ink and will be affixed to the appropriate container.

I.3.4.6 Corrections to Documentation

Documents will not be destroyed or thrown away, even if they are illegible or contain inaccuracies that require a replacement or correction. If an error is made on a document used by an individual, that individual will make corrections by making a line through the error and entering the correct information. The erroneous information will not be obliterated. Corrections will be initialed and dated.

I.3.4.7 Document Control

A central file location will be established and used to store documentation such as the filed logbook and laboratory data. A binder kept in a known location in the CPA office is an ideal place.

I.3.4.8 Sample Kit

Prior to departing to the field to collect samples, the following equipment will be prepared for use:

- Laboratory-supplied sampling bottles (one set for each sample to be collected plus spares, plus QA/QC samples)
- Sample labels (one for each sample to be collected plus spares)
- Sharpie® Pen or other permanent, water-proof ink marker
- Chain of Custody forms
- Field data logbook

- Flow meter (optional – for moving water applications)
- Zip lock style bags for paperwork
- Non-phosphate cleaner (i.e. Liqui-Nox®)
- Deionized or distilled water
- Ice or blue ice packs
- Clear Mailing Tape
- Plastic ice chest(s)
- Grab pole
- Gloves
- Rubber boots
- Stop or wrist watch
- Camera

I.3.5 Quality Assurance and Quality Control (QA/QC)

The purpose of quality assurance and quality control (QA/QC) is to assure and control the quality of data generated during sample collection and analysis as described earlier in this document. Quality assurance and quality control are measured in a variety of ways, as described below.

I.3.5.1 Precision

Precision is a measure of the reproducibility of measurements under a given set of conditions. It is a quantitative measure of the variability of a group of measurements compared to the average value of the group and is expressed as the relative percent difference (RPD). Sources of error in precision (imprecision) can be related to both laboratory and field techniques. Specifically, lack of precision is caused by inconsistencies in instrument setting, measurement and sampling techniques, and record keeping.

Laboratory precision is estimated by generating analytical laboratory matrix spike (MS) and matrix spike duplicate (MSD) sample results and calculating RPD. In general, laboratory RPD values of less than 25% will be considered acceptable.

Field precision is estimated by collecting field duplicates (FDs) in the field and calculating RPD. In general, field RPD values of less than 25% will be considered acceptable. Refer to the discussion of FDs in section I.3.6.1.

I.3.5.2 Accuracy

Accuracy is a measure of how close data are to their true values and is expressed as percent recovery (%R), which is the difference between the mean and the true value expressed as a percentage of the true value. Sources of error (inaccuracy) are the sampling process, field contamination, preservation, handling, sample matrix effects, sample preparation, analytical techniques, and instrument error.

Laboratory accuracy is estimated using reference standards and matrix spike (MS) and matrix spike duplicates (MSD) samples. Acceptable accuracy is between 75 and 125%. Refer to the earlier discussion of MS and MSD. Field accuracy cannot be measured in as true field values are not known.

I.3.5.3 Completeness

Completeness is defined as the percentage of measurements made which are judged to be valid measurements. The completeness objective is that the sufficiently valid data is generated to allow for submittal to the RWQCB. Completeness will be assessed by comparing the number of valid sample results to the number of samples collected. The objective for completeness is $\geq$ 80 %.

I.3.5.4 Representativeness

Representativeness refers to a sample or group of samples that reflects the predominant characteristics of the media at the sampling point. The objective in addressing representativeness is to assess whether the information obtained during the sampling and analysis represents the actual site conditions. Permit requirements of sampling each application at 10 % of all sites treated is assumed to meet the representativeness criteria

I.3.6 Field Quality Assurance and Quality Control

I.3.6.1 Field Duplicate

The purpose of a field duplicate (FD) is to quantify the precision, or reproducibility, of the field sampling technique. It involves the duplication of the technique used for a particular field sample collection method and the subsequent comparison of the initial and duplicate values. This comparison is measured as the relative percent difference (RPD). RPD is calculated as follows:

RPD = [(Sample1 – Sample2) / (Average of Samples 1 and 2)] X 100

An acceptable field RPD value is $\leq$ 35%.

The FD is collected at the same time as the actual field sample and one FD per year will be collected.

I.3.6.2 Field Blank

The purpose of the field blank (FB) is to assure that the field sampling technique, equipment, or equipment cleaning technique or materials do not impart a false positive or negative result during the collection of the sample. A FB will be prepared with distilled water and allowed to come into contact with the sampling device in a manner identical to the actual sample. The only acceptable values for analytes in the FB is less than the detection limit for the compounds of interest, or an expected, previously determined, background value.

The FB will be collected at the same time as the actual field sample and one FB per year will be collected.

A summary of the field and laboratory QA/QC samples being analyzed is presented in **Table 3**.

Table 3: Summary of QA/QC Sample Analysis, Actions, and Validation Criteria

QA/QC Sample	Action Required	QA/QC Parameter Estimated	Value Required For Valid Data
Field			
Field Blank (FB)	Collect in Field	False Negative/Positive	0 or no more than 20% of known Background
Field Duplicate (FD)	" " "	Precision	RPD $\leq$ 35 %
Laboratory			
Matrix Spike (MS)	Prepared By Lab	Accuracy	75< % R < 125 %
Matrix Spike Duplicate (MSD)	" " "	Precision	RPD < 25 %
Method Blank (MB)	" " "	False Negative/Positive	0 or no more than 20% of known Background

I.3.7 Laboratory Quality Assurance and Quality Control

Laboratory precision and accuracy will be monitored by a series of laboratory-generated quality control samples. As long as sufficient sample volume is collected and submitted to the laboratory, no additional effort is required by field activities to generate laboratory quality control samples. Each set of field samples will have associated with it one each from the following set of laboratory quality control samples.

I.3.7.1 Method Blank

The purpose of the method blank (MB) is to assure that the analytical technique does not impart a false positive result during the preparation or analysis of the sample. A method blank will be prepared by the laboratory from high purity distilled or deionized water. The only acceptable values for analytes in the MB are zero or an expected, previously determined, background values.

I.3.7.2 Matrix Spike

The purpose of a matrix spike (MS) is to quantify accuracy and to assure that the analytical technique does not impart a false negative or positive result during the preparation or analysis of the sample. It involves the introduction of the analyte (or an analyte surrogate) of interest into the actual sample matrix and then quantitating it.

The amount detected divided by the amount added to the matrix is expressed as a percent recovery (%R). Acceptable values of %R range from 75% to 125%. Percent recovery is calculated as follows:

%R = [(Spike Amount Detected - Sample Value) / Amount Spiked] x 100

10.3.7.3 Matrix Spike Duplicate

The purpose of a matrix spike duplicate (MSD) is to quantify laboratory precision. An acceptable RPD is less than or equal to 25%. The MSD involves duplication of the MS resulting in two data points from which relative percent difference (RPD) is calculated as follows:

RPD = [(MS – MSD) / (Average of MS and MSD)] X 100

I.3.8 Data Validation

Data validation will use data generated from the analytical laboratory and the field. The criteria for evaluating data are summarized in **Table 3**. References that can be used to assist in data validation include USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (USEPA 1994) and USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (USEPA 1999).

The purpose of data validation is to ensure that data collected are of sufficient quality for inclusion in reports to the RWQCB. In order to serve this purpose, the following information must be available in order to evaluate data validity:

1. Date of sample collection – required to uniquely identify sample and holding time.
2. Location of samples – required to identify sample.
3. Laboratory QA/QC procedures – required to assess analytical accuracy, precision, and sample integrity. A laboratory QA/QC sample set consists of a MS, a MSD, and a MB. A laboratory QA/QC sample set will be analyzed by the laboratory for each field sample batch. Sufficient sample volume and number will be supplied to the laboratory in order to prepare and evaluate the laboratory QA/QC sample set.
4. Analytical methods – required to assess appropriateness and acceptability of analytical method used.
5. Detection limits – required to assess lower limit of parameter identification.
6. Holding times, preservation, and dates of extraction and analysis – required to assess if a sample was extracted and analyzed within the specified time limits and if a sample was stored at the appropriate temperature.
7. Field QA/QC procedures – required to assess field precision and sample integrity. A field QA/QC sample set consists of FB and FD samples. A field QA/QC sample set will be analyzed by the laboratory for one sampling event per year. Sufficient sample volume and number will be collected in the field and supplied to each laboratory in order to prepare and evaluate the field QA/QC sample set.

I.3.9 Data Qualification

Data collected for compliance with the Permit will be qualified through the Analytical Lab Validation process described in *I.3.8*. This process will ensure all data has been thoroughly reviewed and qualified as valid. During the data validation process, data qualifiers will be used to classify sample data. The following qualifiers will be used:

A - Acceptable. The data have satisfied each of the requirements and are quantitatively acceptable (i.e., valid) and will be used in reports.

R - Reject. Data not valid. This qualifier will be used for samples that cannot be uniquely identified by date of collection or sample location or that fail holding time, detection limit requirements, or criteria established in **Table 3**. Invalid data will not be presented in reports submitted to the RWQCB.

I.3.10 Corrective Action

I.3.10.1 Field or Laboratory QA/QC Exceedence

If previously described criteria for valid data are not met, then corrective action as follows will be taken:

1. The laboratory will be asked to check their quality assurance/quality control data and calculations associated with the sample in question. If the error is not found and resolved, then:

    a. The extracts or the actual samples, which will be saved until the data are validated, will be reanalyzed by the laboratory if they are within holding time limitations. These new results will be compared with the previous results. If the error is not found and resolved, then:

    b. If field analytical equipment is used, then calibration records will be reviewed. If the error is not found, then:

    c. The sampling procedure and sample preparation will be re-checked and verified. If the procedures appear to be in order and the error is not resolved, then:

    d. The data will be deemed invalid and not used.

2. Upon discovery of the source of an error, every attempt will be made to address the cause of the error and remedy the problem.

I.3.11 Data Reporting

The results of sampling and analysis will be summarized to the RWQCB an Annual Report. The data will be tabulated so that they are readily discernible.

Element J: Leaks and Inspection Schedule

To evaluate the presence of leaks, gates within the treatment area will be inspected prior to and during the application. The Aquatic Pesticide Application Log (APAL, **Figure 2**) is the form used to document this inspection. If leaks do develop, they will be stopped immediately.

Element K: Section 5.3 Exception Period

CPA may apply for a SIP Section 5.3 Exception for the use of copper in the Lake. If an exception is granted this section will be amended to include the period as outlined in the required CEQA documentation. CPA will not apply any copper until/unless a SIP Exception is granted. This amendment will be noted in the annual report.

Element L: Description of Implemented BMPs

CPA regularly implements the following Best Management Practices (BMPs) to eliminate or reduce the discharge of pollutants and minimize the areal extent and duration of impacts to water quality. During implementation, the effectiveness of the BMPs are continually evaluated and refined as needed to enhance protection of surface water.

L.1 Site Scouting

Prior to treatment, CPA's PCA and/or qualified staff scout sites to evaluate the extent to which acceptable aquatic weed thresholds have been exceeded. Thresholds are based on maintenance of recreational and aesthetic beneficial uses, and the prevention of odors.

If a location is deemed to have exceeded a threshold, or given weed population is anticipated to exceed a threshold based on site and weather conditions, historic weed growth, or other information, an aquatic herbicide application is considered. If the application can be made without negatively impacting the water quality, then an application is made.

L.2 Consideration of Alternatives to Aquatic Pesticides

If aquatic weed thresholds can be maintained at acceptable levels with efficient use of alternative control techniques, then these techniques will be considered and implemented as feasible. Several alternative aquatic pest control techniques were discussed earlier.

L.3 Written Recommendations Prepared by PCA

Prior to application, a PCA licensed by California Department of Pesticide Regulation (DPR) scouts the area to be treated, makes a positive identification of pest(s) present, checks applicable product label(s) for control efficacy, and prepares a written recommendation, including rates of application, and any warnings or conditions that limit the application so that non-target flora and fauna are not adversely impacted. Licensed PCAs must complete continuing education to stay licensed, and therefore are up-to-date on the latest techniques for pest control.

L.4 Applications Made According to Label

All aquatic herbicide applications are made according to the product label in accordance with regulations of the U.S. EPA, CalEPA, DPR, and the local Agricultural Commissioner. CPA regularly monitors updates and amendments to the label so that applications are always in accordance with label directions.

L.5 Applications Made by Qualified Applicator Certificate Holders

Qualified Applicator Certificate holders (QACs) licensed by DPR make applications or supervise applications recommended by the PCA. Licensed applicators have knowledge of proper equipment loading, nozzle selection, calibration, and operation so that spills are minimized, precise application rates are made according to the label, and only target plants are treated. Licensed QACs must complete continuing education to stay licensed, and therefore are up-to-date on the latest techniques for pest control.

L.6 Use of Adjuvants

As appropriate, the PCA will consider and use adjuvants (surfactants, emulsifiers, pH control agents, drift retardants, etc.) to increase the efficacy of the aquatic herbicide so that the least possible material is used in the most efficient manner possible to control the pest. Adjuvants also reduce the unintentional movement of aquatic herbicide applications to off-site locations that may have sensitive receptors.

CPA is in regular contact with the manufacturer's representatives to gain knowledge and assess new or modified adjuvants that will improve efficacy or further decrease off-target movement.

L.7 Application Restrictions Based on Site Conditions

As needed, the PCA will modify treatment techniques accordingly. For example, wind speed and air temperature have significant impacts on the transport of herbicides. As needed, restrictions or prohibitions are placed on aquatic herbicide applications to prevent impact to non-target sensitive species that may be downwind or downstream of the application area. Other factors considered by the PCA include, but are not limited to day length, existing or anticipated precipitation, current and anticipated water exchange, and water depth and movement.

L.8 Evaluation of Effectiveness

The effectiveness of BMPs will be continuously evaluated during the year, as well as in-depth evaluation at the end of the year. The following data will be used to evaluate BMP effectiveness:

- Results of sampling and analysis as described herein, and
- Feedback from field staff, including efficacy, staff safety and efficiency

After data from surfacewater quality monitoring has been reviewed, if results indicate that a herbicide was present at a time and location that are not protective of water quality, BMPs used in that area will be reevaluated and modified as needed to address potential cause(s) for the presence of the herbicide detection.

Note that the presence of an herbicide does not in and of itself suggest that a beneficial use has been impaired or that water quality has been adversely affected. Criteria used to evaluate protectiveness include, but are not limited to review of published beneficial uses, actual beneficial uses based on site-specific conditions, uses, and location, and numeric criteria, if any, described in the appropriate RWQCB Basin Plan, the 2004 General Permit, or as described in "A Compilation of Water Quality Goals" (CVRWQCB 2008).

Element M: Evaluation of Other Available BMPs

As appropriate BMPs are identified and demonstrated by reliable sources, CPA will evaluate them and consider them for implementation. Reliable sources include, for example, the University of California Cooperative Extension (UCCE).

References

CVRWQCB 2004. A Compilation of Water Quality Goals. Accessed: http://www.swrcb.ca.gov/rwqcb5/water_issues/water_quality_standards_limits/water_quality_goals/. Updated September 2011.

National Environmental Methods Index (NEMI) 2004. Accessed: http://www.nemi.gov

USEPA. 1980. Guidelines and Specifications for Preparing Quality Assurance Project Plans.

USEPA. 1992. NPDES Storm Water Sampling Guidance Document.

USEPA. 1994. USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.

USEPA. 1999. USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review.

USGS 1995. U.S. Geological Survey, National Field Manual for the Collection of Water Quality Data.