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APR 1 1 2014
DIVISION OF WATER QUALITY

Notice of Intent

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

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. New Applicator	B. X Change of Information: WDID#
	C. ☐ Change of ownership or responsibility: WDID# 2 07AP00009	

II. DISCHARGER INFORMATION

A. Name City of Walnut Creek			
B. Mailing Address 511 Lawrence Way			
C. City City of Walnut Creek	D. County Contra Costa County	E. State CA	F. Zip 94596
G. Contact Person Mike Vickers	H. E-mail address vickers@walnut-creek.org	I. Title Public Services Manager	J. Phone 925-256-3538

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

A. Name			
B. Mailing Address As Above			
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: _____
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: Unnamed ditch flowing from the Nature Lake to Walnut Creek
3. **X** Directly to river, lake, creek, stream, bay, ocean, etc.
   Name of water body: Walnut Creek flowing through Civic Park, streambank invasive weeds treated along with excessive growths of cattails and bulrush that impair the passage of high flows and cause local flooding.

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

V. ALGAECIDE AND AQUATIC HERBICIDE APPLICATION INFORMATION

A. Target Organisms: Filamentous algae; sago pondweed; duckweed in Heather Farms Park
Pampas grass along the streambank of Walnut Creek, Civic Center Park

B. Algaecide and Aquatic Herbicide Used: List Name and Active ingredients

Cutrine Plus granular (chelated copper)
Reward (diquat)
Sonar (fluridone)
Aquamaster (glyphosate)

C. Period of Application: Start Date May 1 End Date October 1

D. Types of Adjuvants Used: ProSpreader (non-ionic sticker & penetrator); Liberate (non-ionic drift control sticker & penetrator)

VI. AQUATIC PESTICIDE APPLICATION PLAN

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

If not, when will it be prepared? The APAP has been prepared and is with this submittal.

VII. NOTIFICATION

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

VIII. FEE

Have you included payment of the filing fee (for first-time enrollees only) with this submittal?
☐ YES ☐ NO ☐ **X** 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: Mike Vickers

B. Signature: _____ **Date:** 4/4/14

C. Title: Public Services Manager, City of Walnut Creek

XI. FOR STATE WATER BOARD STAFF USE ONLY

WDID:	**Date NOI Received:**	**Date NOI Processed:**
Case Handler's Initial:	**Fee Amount Received:** **$**	**Check #:**
☐ **Lyris List Notification of Posting of APAP**	**Date** _____	**Confirmation Sent** _____

City of Walnut Creek

Aquatic Pesticide Application Plan
for
NPDES Permit for Discharges of Aquatic Pesticides
to Waters of the United States
General Permit No. CAG990005

Submitted to:

State Water Resources Control Board
Atten: Russell Norman, P.E.
NPDES Wastewater Unit, Div. of Water Quality
1001 I Street, 15th Floor
Sacramento, CA 95814

Submitted by:

Mike Vickers
Public Services Manager
Parks and Open Space Division
City of Walnut Creek
511 Lawrence Way
Walnut Creek, CA 94596

April 8, 2014

PREFACE

The following Aquatic Pesticide Application Plan was prepared by Scott Cressey of Cressey & Associates (510-525-4389) under contract to the City of Walnut Creek. Four of the water bodies addressed in this document are located in Heather Farms Park in the City of Walnut Creek, California in Contra Costa County. A fifth water body included herein is 600 feet of Walnut Creek as it runs through Civic Park in the City of Walnut Creek. The Aquatic Pesticide Application Plan is a requirement of the State Water Resources Control Board for a NPDES General Permit for aquatic pesticide application. This Aquatic Pesticide Application Plan is modeled on the requirements presented in Water Quality Order No. 2013-0002-DWQ for regulations effective December 1, 2013.

Note that the "APAP Review Check List for Order No. 2013-0002-DWQ, Aquatic Weed Control Permit", is provided on the two pages following the Table of Contents with the APAP page numbers shown for the various permit requirements. This check list, used by the State Water Board reviewers of the submitted APAP, should facilitate review by directing the reviewer to the appropriate page number in the APAP.

CERTIFICATION AND SIGNATURE

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

Printed Name: Mike Vickers

Mike Vickers, Public Services Manager, Parks and Open Space Division, City of Walnut Creek

Signature: _____ **Date:** 4/7/14

CITY OF WALNUT CREEK
AQUATIC PESTICIDE APPLICATION PLAN, 2014

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ATTACHMENT A – Public Notification Sign
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ATTACHMENT B – Five-Day Written Report Outline

APAP Review Check List for
Order 2013-0002-DWQ
Aquatic Weed Control Permit

No.[1]	Permit requirements	-√[3]	Found on Page No.
C .1.	Describe the water system where the pesticide[2] will be applied.		Page 2
C . 2	Describe the treatment area.		Page 6-8
C . 3	Types of weeds to be controlled and why		Page 8
C . 4	- Pesticide products to be used.		Page 9
	- Degradation byproducts of pesticide used if known.		Page 8
	- Method of application.		Page 9
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C . 5	Discuss factors influencing the decision of using pesticide for weed control.		Pages 8-9
C.6	- List of gates or control structures to be used in receiving water.		Page 10
	- Inspection schedule of the gates and control structures.		Page 10
C.7	For those with SIP exception:		N/A
	- exception period (begging date to ending dates)		N/A
	- justification for exception period		N/A
	- describe plans to ensure compliance if applying pesticide outside the exception period.		N/A
C.8	Describe monitoring program		Pages 11-19
C.9	How to prevent sample contamination.		Pages 17-18

No.	Permit requirements		AP[3]	Found on Page No.
	Minimum content of BMPs:			
C.10	a. How to prevent pesticide spill and spill contamination;			Page 26-27
	b. Ensure only minimum and consistent amount of pesticide used for targeted weeds;			Page 25-26
	c. Plan for educating applicators on avoiding adverse effect from pesticide application;			Page 26
	d. Plan on informing the farmers and agencies who have water rights on the receiving water:			Page 10
	e. Plan on preventing fish kill from pesticide application;			Page 27
C.11	a. Evaluation of alternatives:	i. no action.		Pages 6-9, 23
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		vi. Pesticide control.		Pages 24-26
	b. Use least intrusive method of weed control;			Pages 22 & 24
	c. Apply decision matrix concept for choosing the most appropriate formulation			Page 29-31

Notes:
1. Item in the permit.
2. Pesticides refer to algaecides and aquatic herbicides.
3. Check *4* if APAP contains the required information.

City of Walnut Creek

Aquatic Pesticide Application Plan
for
NPDES Permit for Discharges of Aquatic Pesticides
to Waters of the United States

GENERAL PERMIT No. CAG990003

1.0 INTRODUCTION

In March of this year, the State Water Resources Control Board (State Water Board) adopted the Statewide General National Pollutant Discharge Elimination System (NPDES) Permit (General Permit) for residual aquatic pesticide discharges to Waters of the United States from applications of aquatic pesticides (algaecides and aquatic herbicides) for algae and aquatic weed control. This General Permit covers only those aquatic pesticides that are currently registered with the State of California or that become registered for use in California. To obtain permit coverage, the General Permit requires Dischargers submit to the Water Board an application consisting of a Notice of Intent (NOI) and an Aquatics Pesticide Application Plan (APAP). This application will be posted for 30 days for public review and comment. Within 90 days of the receipt of the permit application, State Water Board's Deputy Director of the Division of Water Quality (Deputy Director) will either issue a Notice of Applicability (NOA) or deny the application. The Discharger is authorized to begin discharging waters treated with aquatic pesticides starting on the date of the NOA. Alternatively, the Deputy Director may issue a Notice of Exclusion (NOE) denying the permit and justifying why the proposed Discharger is not eligible for coverage under this General Permit and stating the reason why.

The APAP describes the methods and procedures that will be used to:

- Determine the need for aquatic pesticide use;
- Evaluate and use alternatives to pesticides when feasible;
- Identify the pesticides proposed for use;
- Describe application methods and application rate determination;
- Assess treatment effectiveness;
- Describe the self-monitoring procedures and annual reporting, and;
- Generally describe how compliance with the permit requirements will be documented.

Should methods and procedures change significantly during the 5-year term of the permit (change in pesticide or quantity), the City of Walnut Creek (City) will submit these proposed amendments to the APAP to the Deputy Director of the State Water Board for review and approval as required by the General Permit. Following is the APAP for the City's Heather Farm Park water bodies and Walnut Creek where it flows through Civic Park.

1.1 PURPOSE AND OBJECTIVES

The City manages several water bodies that are subject to seasonal infestations of aquatic weeds and algae or emergent and invasive vegetation. With one exception, these water bodies are within Heather Farm Park, and consist of the: 1) Irrigation Reservoir (HFP-1); 2) Nature Lake (HFP-2); 3) Cement Pond (HFP-3); and 4) 1,500 feet of unnamed inflow channel within Heather Farm Park that drains into the Nature Lake. The final water body for which the City is responsible for aquatic weed control is Walnut Creek at Civic Park where 600 feet of the creek runs entirely within Civic Park. This application by the City to use aquatic pesticides to assist in control of nuisance weeds and algae is for these five water bodies noted above.

1.2 PROJECT LOCATION

The City is located in Contra Costa County near the junction of Hwy 680 and Hwy 580 (Map 1). The water bodies addressed in this document are mostly in Heather Farm Park (37.9188126 N; 122.0427401 W), with one water body (Walnut Creek) in Civic Park (37.903275 N; 122.059685 W). The location of these water bodies in Walnut Creek is shown in Map 2. More detailed maps of the two City-owned parks are presented as Map 3 and Map 4.

2.0 DESCRIPTION OF PROJECT WATERS

2.1 PHYSICAL CHARACTERISTICS

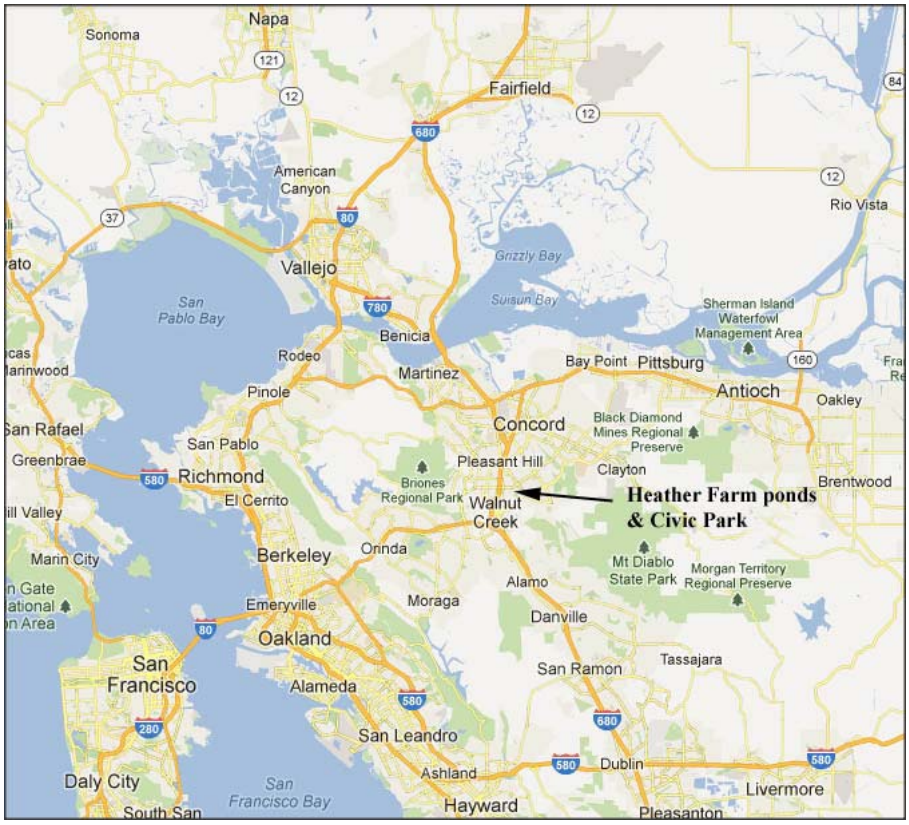
The first four water bodies described below are those in Heather Farm Park. The final water body described (Walnut Creek) is in Civic Center Park.

Irrigation Reservoir (HFP-1). This small reservoir is 1 surface acre in size, has a maximum depth of 7 feet, an average depth of 5 feet, and has concrete sides and a concrete apron that extends 5 feet into the reservoir bottom. The reservoir contains catfish, but is not open to the public for fishing. This reservoir is used to irrigate the landscaping of Heather Farm Park.

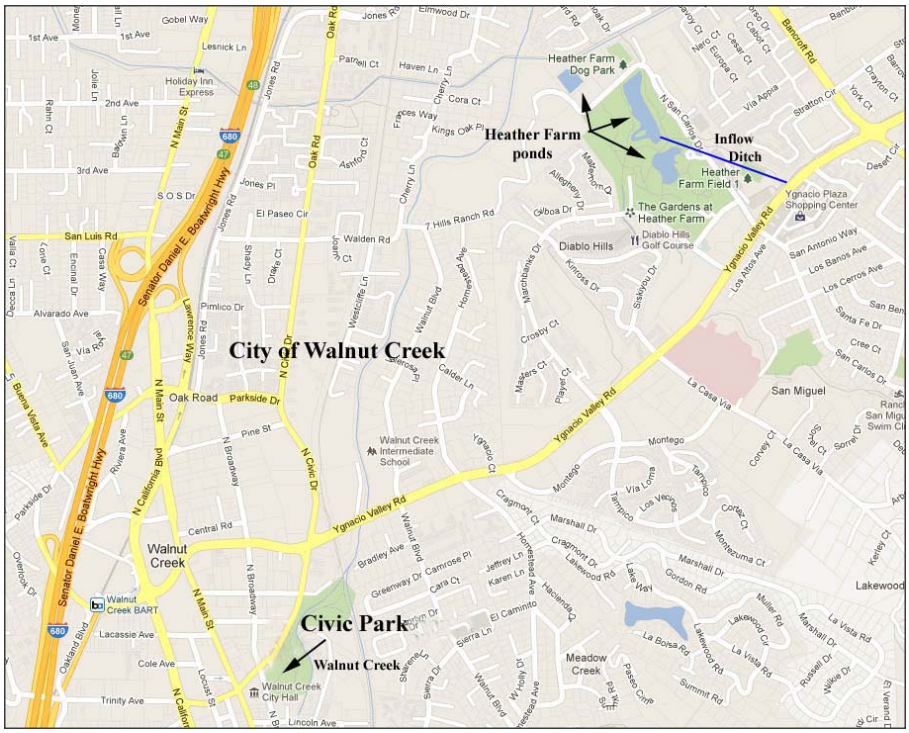
Nature Lake (HFP-2). This lake is 5 surface acres in size, with a maximum and average depth of 6 feet. The shoreline and bottom of the lake are natural, and mature trees are common along the shoreline as well as cattails and tules along the lake edge. The lake contains rainbow trout and catfish, as well as turtles and amphibians. Wading birds such as egrets and great blue heron are frequent visitors to the lake.

Cement Pond (HFP-3). Lined with concrete on its sides and bottom, this pond is 2.5 surface acres in size and has a maximum and average depth of 8 feet. Rainbow trout and catfish occur in this lake. No riparian vegetation occurs along the shoreline of this water body.

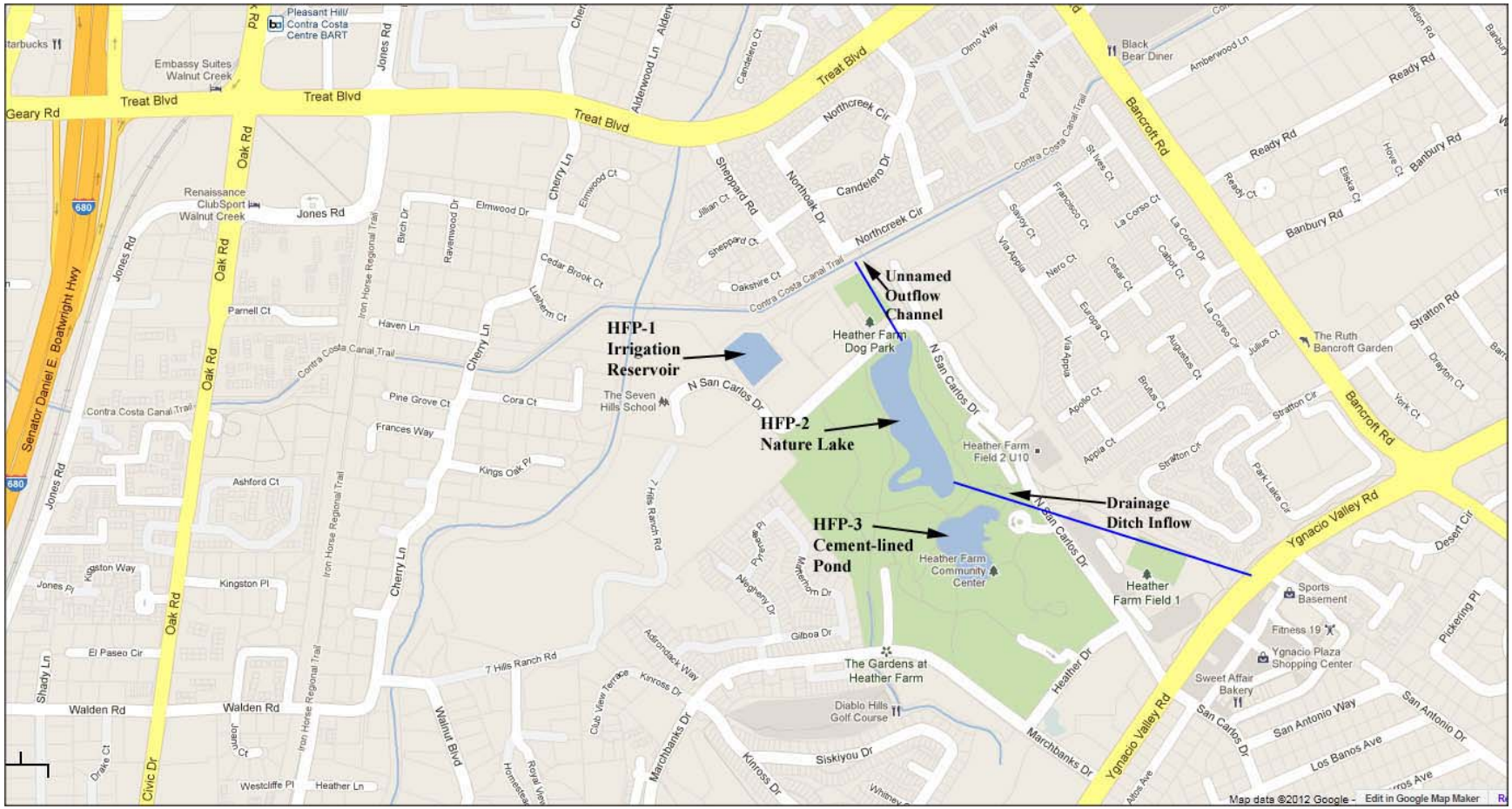
Inflow Drainage Channel (HFP-4). A relatively small (10-15 feet wide) drainage ditch enters Heather Farm Park from the east side beneath Ygnacio Valley Road and flows into the southeast end of the Nature Lake (see Map 3). Except when carrying runoff from rain events, the water depth in this man-made ditch is averages 8 inches, with a maximum depth of 3 feet.



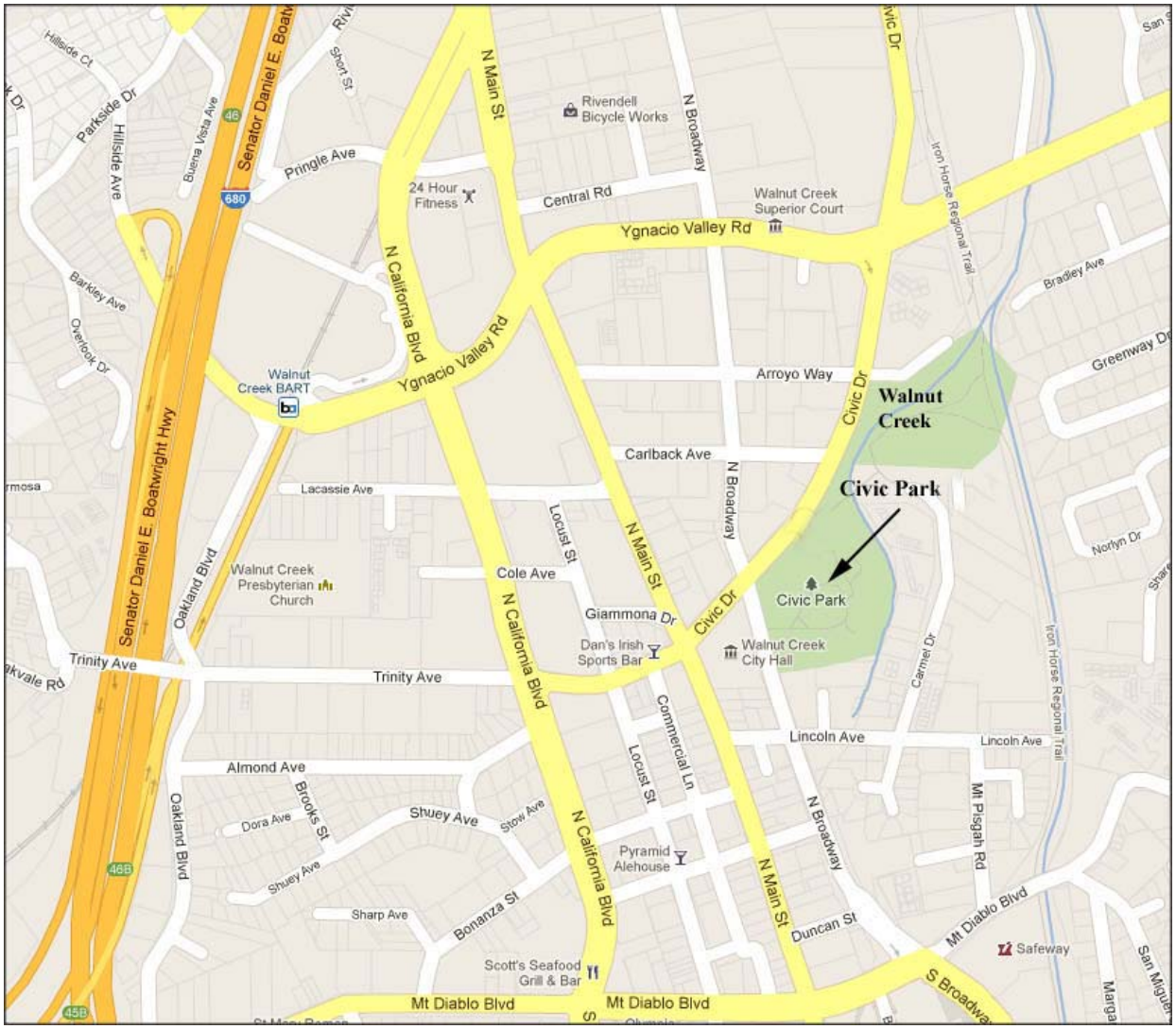
Map 1. Regional location of the City of Walnut Creek, CA



Map 2. Location of waters proposed for aquatic pesticide applications, City of Walnut Creek, CA



Map 3. Water bodies associated with Heather Farm Park, City of Walnut Creek, CA



Map 4. Walnut Creek within Civic Park, City of Walnut Creek, CA

Approximately 1,500 linear feet of this channel crosses Heather Farm Park, for a total acreage of 0.4 surface acres.

Walnut Creek in Civic Park. Approximately 600 feet of Walnut Creek is fully contained within Civic Park, and another 700 feet boarders Civic Park, amounting to 0.6 acres of riparian vegetation that the City manages. Within Civic Park, the summer flow of Walnut Creek results in water depths of 12-14 inches. Resident fish in Walnut Creek within Civic Park are likely California roach, threespine stickleback, and mosquitofish.

The beneficial uses of these five water bodies described above and the concerns of excessive growth of aquatic weeds and algae or emergent vegetation associated with each water body are presented in Table 1.

Table 1. Beneficial Uses and Concerns, City of Walnut Creek Waters

Water Body	Description	Benefits	Concerns
HFP-1	Irrigation Reservoir	Irrigation water for HFP	Algae, Azolla, & duckweed clogging filtration system and impeding water flow
HFP-2	Nature Lake	Wildlife habitat; Aesthetics	Algae and aquatic weed growth providing mosquito habitat, and when decaying, depleting oxygen levels, potentially causing fish kills
HFP-3	Cement Pond	Aesthetically pleasing, fishing, wildlife habitat	Algae growth depleting oxygen levels and degrading fish habitat
HFP-4	Inflow Drainage Channel to Nature Lake	Street drainage	Cattails and bulrush impeding water flow and creating damns that are eroding the channel banks
Civic Park	Walnut Creek	Natural drainage	Invasive weeds, cattails, and bulrush are spreading widely & impeding floodwater passage

2.2 WATER QUALITY

There is currently no water quality information on the five water bodies noted above. However, it is known that none these waters are tidally influenced and all contain fresh water.

2.3 BIOTA

Rainbow trout, catfish, and turtles occur in the Heather Farm Parks ponds, and stickleback, roach, and mosquitofish likely occur in Walnut Creek in Civic Park. In addition, all of these water bodies are assumed to be utilized by great blue heron, egrets, Canadian geese, mallards, and coots at various times.

3.0 AQUATIC WEEDS, ALGAE, AND INVASIVE WEEDS SUBJECT TO CONTROL

The ponds in Heather Farm Park contain sago pondweed, duckweed (*Lemna* sp.), *Azolla*, and filamentous algae which must be managed and controlled. The shoreline of the Nature Lake and the inflow ditch supports cattail, bulrush, blackberries, alder, and willow trees which must be periodically managed when these growths get so thick they interfere with their beneficial uses. In Civic Park, that portion of Walnut Creek in the park has invasive pampas grass on its upper streambank and isections of the creek channel occasionally become filed with extensive growths or cattails and bulrush that impair floodwaters and cause local flooding.

4.0 TREATMENT AREA AND APPLICATION EVENTS

4.1 DEFINITION OF TREATMENT AREA

The NPDES Permit defines the "application area" as the area to which aquatic pesticides are applied, and defines "treatment area" as the area (including drift from the application area) that is treated (affected) by aquatic pesticide to control the target pest. Treatment of nuisance growth in the lakes in Heather Farm Park is not intended to be accomplished by employing "drift" within the water body; rather, applications are made at the point that control is desired. Therefore, the application area and treatment area is the same. "Application area" is the term used in this document for the lakes. An application area may be located anywhere within the lake where an action level has been reached. There may be specific isolated locations or shorelines within the Nature Lake that need treatment, and specific sections along the inflow ditch or Walnut creek within Civic Park may have excessive growth of cattails and bulrush that need treatment.

Emergent vegetation (cattails and bulrush) in the inflow ditch and portions of Walnut Creek through Civic Park that significantly impedes flow and requires pesticide treatment will be sprayed with Aquamaster (glyphosate), a systemic pesticide for emergent vegetation. The application of the Aquamaster is directly on new growth of the emergent portion of the plants to be controlled. There is no "drift' component to this type of pesticide application.

4.2 DEFINITION OF APPLICATION EVENT

The NPDES Permit defines "application event" as the time that introduction of the aquatic pesticide to the application area takes place; that is, the time that the product is applied, not the length of time that it releases to the environment. Only the Nature Lake is sufficiently large that action levels may not occur for the entire water body but rather treatment may be needed at a specific location at a given time. Therefore, there may be more than one application area and more than one type of application event on a given day. The number of and locations of treatments to control cattails, bulrush, and willow in the inflow ditch and in portions of Walnut Creek in Civic Park will also vary.

For the purpose of establishing the total number of application events, "application event" is further defined as a contiguous area of treatment using the same pesticide. If two pesticides were combined for a single application to treat two different target species (e.g. sago pondweed and filamentous algae) in the same location, this would be one application event for <u>each</u> of the two pesticides. Use of a different pesticide or pesticide combination to an adjacent but separate application area is a separate application event.

4.3 TREATMENT AREA DESCRIPTION

A description of each water body and its vegetation to be treated with pesticides is previously provided in Section 2.1. The treatment area for each water body is described below.

Irrigation Reservoir (HFP-1). This small reservoir is 1 surface acre in size, has a maximum depth of 7 feet, an average depth of 5 feet, and has concrete sides and a concrete apron that extends 5 feet into the reservoir bottom. Duckweed and filamentous algae within the reservoir must be controlled so irrigation pumps don't clog.

Nature Lake (HFP-2). This lake is 5 surface acres in size, with a maximum and average depth of 6 feet. The shoreline and bottom of the lake are natural and the entire lake must be treated for sago pondweed and filamentous algae. Much of the shoreline of the lake must be periodically treated to reduce the cattails and bulrush encroaching on the lake and obstructing views of the lake from surrounding trails.

Cement Pond (HFP-3). Lined with concrete on its sides and bottom, this pond is 2.5 surface acres in size and has a maximum and average depth of 8 feet. Extensive growths of duckweed and filamentous algae throughout the lake require treatment.

Inflow Drainage Channel (HFP-4). This drainage ditch enters Heather Farm Park from the east and flows into the Nature Lake (see Map 3). Approximately 1,500 linear feet of this 10-15 foot wide channel crosses Heather Farm Park, for a total acreage of 0.4 surface acres. The entire drainage ditch becomes filled with growths of cattails, bulrush, and willow, and must periodically be thinned of this vegetation to allow the effective flow of water, particularly during rainstorm events.

Walnut Creek in Civic Park. Approximately 600 feet of Walnut Creek is fully contained within Civic Park, and another 700 feet boarders Civic Park, amounting to 0.6 acres of riparian vegetation that the City manages. Invasive pampas grass on the streambanks must be removed, and periodically the excessive growth of cattails and bulrush must be thinned to allow high flows to pass through the area with no or minimal flooding of Civic Park.

5.0 AQUATIC PESTICIDES USED AND APPLICATION METHODS

The following aquatic pesticides (Table 2) will be applied as necessary by a professional aquatic pesticide application firm licensed by the California Department of Pesticide Regulation (DPR). Dosages of each aquatic pesticide to be used are also shown in Table 2. Note that mg/L is the same as ppm and that ug/L is equal to ppb. Possible adjuvants used with these aquatic pesticides are: Pro-Spreader (non-ionic sticker and penetrator); Liberate (non-ionic drift control, sticker, and penetrator). Degradation of these pesticides and adjuvants are non-toxic with the exception of a build-up of copper concentrations that could have adverse impacts on sensitive biota.

Application methods for the aquatic pesticides shown in Table 2 are listed below in Table 3 for each body of water.

6.0 DECISION FACTORS FOR USING AQUATIC PESTICIDES

The control tolerances shown below in Table 4 for each of the five water bodies are relatively subjective. The decision to take action is made by senior personnel in the City's Parks and

Recreation Department when they feel the beneficial uses of the resource are jeopardized by excessive growth of aquatic weeds and algae, or emergent vegetation.

Table 2. Aquatic Pesticides and Dosage Proposed for City of Walnut Creek Waters

Water Body	Description	Aquatic Pesticide and Active Ingredient	Dosage
HFP-1	Irrigation Reservoir	Reward (diquat)	Spot treatment at 1 mg/L
HFP-2	Nature Lake	SonarOne (fluridone) Cutrine Ultra (copper)	Full lake treatment at 45 ug/L; Partial lake treatment at 1 mg/L
HFP-3	Cement Pond	Sonar Genesis (fluridone) Cutrine Ultra (copper)	Full lake treatment at 90 ug/L; Partial lake treatment at 1 mg/L
HFP-4	Drainage Channel	Aquamaster (glyphosate)	Total area to be treated at 1 % solution
Civic Park	Walnut Creek	Aquamaster (glyphosate)	Total area to be treated at 1 % solution

Table 3. Aquatic Pesticide Application Methods for City of Walnut Creek Waters

Water Body	Description	Aquatic Pesticide Application Method and Treatment Area
HFP-1	Irrigation Reservoir	Spot treat (only) with backpack
HFP-2	Nature Lake	Full and partial lake treatment with Panther Airboat with electronic granular spreader
HFP-3	Cement Pond	Full and partial pond treatment with Jon boat with adjustable flow valve, power sprayer
HFP-4	Drainage Channel	Foliage treatment as needed with truck mount sprayer (flow control valves and pressure release valves)
Civic Park	Walnut Creek	Foliage treatment as needed with truck mount sprayer (flow control valves and pressure release valves)

Table 4. Control Tolerances for City of Walnut Creek Waters

Water Body	Description	Action is taken when Filamentous Algae or Aquatic Weeds Cause the Following
HFP-1	Irrigation Reservoir	Potential for clogging filtration system for irrigation pumps
HFP-2	Nature Lake	Threatens aesthetics & creates a potential for fish kills
HFP-3	Cement Pond	Threatens recreational use & creates a potential for fish kills
HFP-4	Drainage Channel	Potentially restricts floodwater flows
Civic Park	Walnut Creek	Potentially restricts floodwater flows

7.0 CONTROL STRUCTURES AND THEIR INSPECTION SCHEDULE

Only the Nature Lake and the Cement Pond in Heather Farm Park have any form of water level control structure. Both of these ponds have an overflow basin that limits the height of water elevation in each pond. The overflow basins are inspected annually. None of the other three water bodies have gates or control structures.

8.0 CATEGORICAL EXCEPTION

The City of Walnut Creek has not applied for a Categorical Exception per Section 5.3 of the *Policy for Implementation of Toxic Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California*.

9.0 PUBLIC NOTIFICATION OF AQUATIC PESTICIDE APPLICATION

The General Permit requires that every calendar year, at least 15 days prior to the first application of algaecide or aquatic herbicides, dischargers notify potentially affected public agencies. However, there are no public agencies or farmers that are potentially affected by the City's pesticide applications, so no notice is needed at this time.

The City does post signs notifying the public using Heather Farms Park and Civic Park prior to the application of aquatic pesticides in the City's waters. Presented below is the process by which the public is notified prior to applying pesticides:

- Sign must be posted at least 48 hours before application of the pesticide product and remain posted at least 48 hours after application of the pesticide.
- Sign must posted at entry points where the pesticide is applied if it is applied in an enclosed area; and in highly visible locations, signs will be posted around the perimeter of the area where the pesticide is applied.
- Sign shall be of standard design that is easily recognizable to the public and City employees (see notification sign in Attachment A).
- Sign shall contain the name and active ingredient of the pesticide project, target pest, the date of pesticide use, the toxicity category of the pesticide project, the name and contact number for the Department responsible for the application.
- Individual copies of posted signs shall be retailed for record keeping purposes for one year.

10.0 AQUATIC PESTICIDE APPLICATION LOG

The City's pesticide applicator will maintain a log for each application of aquatic pesticide in the City's permitted waters. The application log contains the following information:

- Date of application;
- Location of application;
- Name of applicator;
- Type and amount of each pesticide used;

- Application details, such as the water level of the lake trreated, time the application started and stopped, pesticide application rate and concentration;
- Visual monitoring assessment; and
- Certification that applicator followed the APAP.

11.0 MONITORING AND REPORTING PROGRAM

The City's Monitoring and Reporting Program (MRP) is structured to meet the requirements described in Attachment C of the General Permit. As such, the MRP is designed to answer two key questions.

Question No. 1: Does the residual algaecides and aquatic herbicides discharge cause an exceedance of receiving water limitations?

Question No. 2: Does the discharge of residual algaecides and aquatic herbicides, including active ingredients, and degradation products, in any combination cause or contribute to an exceedance of the "no toxics in toxic amount" narrative toxiCity objective?

For a monitoring program to satisfactorily answer the above two questions, its sampling locations must be representative of the discharge characteristics for all treatment areas, and its sampling schedule must encompass the time periods of interest appropriate to each active ingredient in the environment to which it has been applied. Factors that can determine the answers to the questions stated above include:

- Application practices (application method and ensuring that the manufacturer's recommended application rate of the pesticide is not exceeded);

- Transport, fate, and effects understanding for each pesticides active ingredient (copper ultimately binds to the sediment and is no longer bioavailable; fluridone photo-degrades and has a half-life of 20 days in water and is rapidly adsorbed to sediment particles).

Potential Impacts. Potential adverse impacts of an aquatic pesticide are both direct and indirect. Exceedance of an active ingredient's chronic or acute criterion for receiving water limitations is assumed to cause stress, illness, or death to sensitive aquatic biota. Copper added to a water body will cause a temporary reduction in dissolved oxygen levels in the treatment area. Treating too large a portion of a water body at one time may result in the decomposition of large amounts of aquatic plant biomass sufficient to severely lower dissolved oxygen levels and cause a fish kill. The premature use of fluridone-treated fresh water for irrigation can stress or kill sensitive crops or landscaping.

To answer Question No. 1, the following receiving water limitations, expressed as instantaneous maximum concentrations, for the active ingredients of the aquatic pesticides planned for use in the City's managed waters are shown in Table 5 below.

Table 5. Criteria for Pesticides, City of Walnut Creek

Active Ingredient	Instantaneous Maximum Concentration[1]
Copper (dissolved)	0.960exp{0.8545[Ln(hardness)]-1.702}[2]
Diquat	20 ug/L
Fluridone	560 ug/L
Glyphosate	700 ug/L

[1] From the *General NPDES Permit Order No. 2013-0002-DWQ* Section VI.A Table 3.
[2] For fresh water with a hardness 400 mg/L or less as calcium carbonate, the actual ambient hardness of the surface water shall be used in the criteria calculation for dissolved copper. For waters with a calcium carbonate hardness over 400 mg/L, a harness of 400 mg/L as calcium carbonate shall be used with a default Water-Effect Ratio of 1.

Should the Post-Application monitoring analysis result for the active ingredient in the aquatic pesticide be found at a concentration higher than the standard shown in Table 5, then the State Water Board and Regional Water Board will be notified by phone within 24 hours. A written report to these agencies must follow within 5 days of being aware of the "non-compliance" (criterion exceeded).On occasions when the Pre-Application monitoring sample finds dissolved copper in excess of the 3.1 ug/L criterion the Post-Application sample (taken within 7 days of the application) can be compared to the background (Pre-Application) sample results to determine compliance or non-compliance. More details on reporting requirements are provided in Section 11.2

The determination of an answer to Question No. 2 is based partly on the results of the general water quality parameters measured at the sampling locations at the time of the aquatic pesticide residue monitoring, plus visual observation of the surrounding aquatic conditions. The Basin Plan states that freshwater warmwater habitats should contain a minimum of 5 mg/L dissolved oxygen. As such, a Post-Application reading less than the 5 mg/L dissolved oxygen Basin Plan objective is considered to be non-compliant with the General Permit and must be reported to regulatory agencies as described above. However, should the dissolved oxygen for the Post-Application reading be greater than the dissolved oxygen level for the Pre-Application (background) sample, then it is in compliance even though it may be less than the 5 mg/L Basin Plan objective. Otherwise this evaluation largely depends on a subjective assessment of the following (include summarized notes on water conditions in the monitoring report):

- Floating or suspended matter;
- Discoloration;
- Bottom deposits;
- Aquatic life;
- Visible films, sheens, or coatings;
- Fungi, slimes, or objectionable growths; and
- Potential nuisance conditions.

An understanding of the aquatic biota and ecosystem of an area are essential in subjectively assessing if the environmental conditions described above violate the narrative descriptions of

the Basin Plan by harming aquatic biota. Furthermore, this evaluation must take into consideration the following considerations:

- The basic geographic and hydrographic features of the area, particularly application points and the logical pathway(s) of residue flow;
- Algaecides and aquatic herbicide application practices and how they are distributed in time and space;
- Relevant knowledge about the transport, fates, and effects of aquatic pesticides, including best- and worst-case scenarios;
- The designated beneficial uses of the water body;
- Relevant knowledge of the action of cumulative and indirect effects;
- Mechanisms through which aquatic pesticide applications could lead to designated use impacts, given the basic features of the area;
- Known and potential impacts of aquatic pesticide applications on water quality, ranked in terms of relative risk based on factors such as magnitude, frequency and duration;
- Sufficient numbers of sampling areas to assess the entire area of influence; and
- An understanding of the sampling methods and sampling schedule.

11.1 MONITORING PROGRAM REQUIREMENTS

Monitoring requirements in regard to constituents/parameters monitoring and sampling depths are provided in Attachment C of the General Permit and reproduced below as Table 6. There are four items from the notes of Table 6 to which particular attention should be paid, plus one note of caution in regard to copper sampling. Be aware of the following:

- Samples shall be collected at 3 feet below the surface of the water or at mid-water column depth if the water depth is less than 3 feet.
- The minimum number of aquatic pesticide application monitoring is six events, unless the total number of pesticide application events are less than six, in which case all application events must be monitoring (more details on this are provided under "Sampling Frequency").
- Because the applicable copper criterion (see Table 5) is expressed as "dissolved copper", the analysis of the water sample must be for dissolved copper, not total copper. As such, the water sample should be filter through a 0.45 micron filter within 15 minutes of collection. Therefore the water sample must be filtered in the field at the time of

collection. This is best accomplished with a peristaltic pump with a disposable 0.45 micron filter on the end of the sampling tube incorporated into the sampling procedure.

- Applications of glyphosate are monitored on a different frequency that other pesticides (see the lower portion of footnote 5 in Table 6). Only one monitoring per year is needed regardless of the number of glyphosate applications that year. However, if both flowing and non-flowing habitats are treated with glyphosate, each habitat type must have one of its applications monitored.

Table 6. Monitoring Requirements

Sample Type	Constituent/Parameter	Units	Sample Method	Minimum Sampling Frequency	Sample Type Requirement	Required Analytical Test Method
Visual	1. Monitoring area description (pond, lake, open waterway, channel, etc.) 2. Appearance of waterway (sheen, color, clarity, etc.) 3. Weather conditions (fog, rain, wind, etc.)	Not applicable	Visual Observation	1	Background, Event and Post-event Monitoring	Not applicable
Physical	1. Temperature[2]	°F	Grab[4]	5	Background, Event and Post-event Monitoring	6
	2. pH[3]	Number				
	3. Turbidity[3]	NTU				
	4. Electric Conductivity[3] @ 25°C	umhos/cm				
Chemical	1. Active Ingredient[7]	ug/L	Grab[4]	5	Background, Event and Post-event Monitoring	6
	2. Nonylphenol[8]	ug/L				
	3. Hardness (if copper is monitored; freshwater only)	mg/L				
	4. Dissolved Oxygen[2]	mg/L				

[1] All applications at all sites.
[2] Field testing.
[3] Field or laboratory testing.
[4] Samples shall be collected at three feet below the surface of the water body or at mid water column depth if the depth is less than three feet.
[5] Collect samples from a minimum of six application events for each active ingredient in each environmental setting (flowing water and non-flowing water) per year, except for glyphosate. If there are less than six application events in a year, collect samples during each application event for each active ingredient in each environmental setting (flowing water and non-flowing water). If the results from six consecutive sampling events show concentrations that are less than the receiving water limitation/trigger for an active ingredient in an environmental setting, sampling shall be reduced to one application event per year for that active ingredient in that environmental setting. If the yearly sampling event shows exceedance of the receiving water limitation/trigger for an active ingredient in an environmental setting, then sampling shall return to six application events for that active ingredient in each environmental setting. For glyphosate, collect samples from one application event from each environmental setting (flowing water and non-flowing water) per year.
[6] Pollutants shall be analyzed using the analytical methods described in 40 C.F.R. part 136.
[7] 2,4-D, acrolein, dissolved copper, diquat, endothall, fluridone, glyphosate, imazamox, imazapyr, penoxsulam, and triclopyr.
[8] It is required only when a surfactant is used.

- For fresh water, the dissolved copper criterion is calculated based on the calcium carbonate hardness of the water receiving the aquatic pesticide. Therefore it is important when monitoring to take a water sample to the laboratory to determine the calcium carbonate hardness of the water to be used in this calculation (see Table 5)

Monitoring Frequency. The number of aquatic pesticide application events required to be monitored each year is six events for each pesticide. If the total number of aquatic pesticide application events is less than six events for the year, then all of these events must be monitored. Should six consecutive monitoring show that the active ingredient of concern is within the stated criterion concentration (see Table 5), then monitoring for that particular pesticide can be reduced to one application event per year for the remaining years of the permit. However, if a following year's initial monitoring shows that the criterion is exceeded, then the discharger must resume with monitoring up to six application events per year.

Monitoring Locations and Number of Samples per Monitoring Event. Each monitored application event results in the collection of three water samples for laboratory analysis for the pesticide's active ingredient. This occurs over two visits to the sampling site within 7 days of the application event. The three collected samples are as follows:

Pre-Application (background) Sample – This sample is taken within the treatment area up to 24 hours in advance of the pesticide application event.

Event Sample – This consists of locating oneself 50-70 feet outside of the treatment boundary, waiting 5 minutes after the pesticide application has occurred along this boundary, and collecting the "Event" sample at this location outside the treatment area.

Post-Application Sample – Within 4 to7 days of the pesticide application event, return to the previously sampled area within the treatment area and collect one post-application event water sample for laboratory analysis.

Monitoring Sonar Applications. Sonar is a slow acting systemic pesticide that settles into the lake's substrate where it's active ingredient (fluridone) is gradually drawn up into the root system of the aquatic plants present. As such, fluridone must be available for plant uptake over a period of several weeks. Using the slow release pellets of Sonar, the California Department of Food and Agriculture's Hydrilla Eradication Program conducted studies in 2004 in golf course ponds in Redding and in Clear Lake. Weekly monitoring over 35 days found that fluridone levels reached maximum concentrations in the receiving waters 5 and 7 days after the final treatment, then degraded to less than 5 ug/L.

Monitoring for fluridone requires different protocols than those used for the other pesticides shown in this document.
The Water Quality Order No. 2013-0002-DWQ protocols for monitoring a systemic pesticide like Sonar are not as well established as those for contact pesticides, but the basic principles are as follows.

- There are two primary reasons for monitoring the concentration of fluridone following an application of Sonar: 1) to ensure that concentrations of fluridone are at the desired level for approximately 45 days to be effective (45 ug/L for the Nature Lake; 90 ug/L for the Concrete Pond); and 2) to hold any discharge from the treated water body until fluridone levels are down to less than 10 ug/L (recommended by SePRO for most irrigation water) or 5 ug/L (recommended by SePRO for irrigation in plant nurseries and certain row crops [Dave Blodget, 916-955-2464, SePRO representative for California]).

- Testing for fluridone is accomplished using the Enzyme-Linked Immunoassay (ELOSA Test) known as FasTest which is performed by SePRO, the manufacturers of Sonar. Water samples are packed in ice and sent overnight express to SePRO who will provide the analysis results in 48 hours.

Sonar Monitoring Frequency and Location**.** Monitoring of fluridone in the Sonar applications must follow the General NPDES permit protocol, plus is conducted at intervals during the 45 day holding time to ensure that fluridone concentration in the lake is sufficiently high to be effective. Additionally, there may be testing of the lake water after the 45 day holding time to be sure that the fluridone concentrations have dropped to sufficiently low levels if the water is to be used for irrigation. A departure from standard pesticide application monitoring is that the entire lake (if relatively small like the Nature Lake) may be treated during a single day. When this occurs, there is no Event sample from Outside the Treatment Area as the entire water body is within the Treatment Area. When this is the case, there is no Event sample collected (Jenny Chen, Water Boards, pers. com. [email] April 1, 2014). Should less than the entire lake be treated with Sonar, then both the Pre-Treatment and the Event sample outside the treatment area would be collected.

These details are presented below as bulleted items.

- Just prior to the Sonar application, a background sample (Pre-Treatment sample) is taken from 50-70 feet inside the treatment area. If the entire lake is treated, there is no Event sample collected as there is no outside the treatment area.

- Within 7 days after the Sonar application, a Post-Treatment water sample is taken from the same location sampled previously. This sampling is to satisfy the requirements of the General NPDES permit.

- Approximately 15 days after the Sonar is applied, sampling the treatment area by the applicator is typically conducted to determine that the desired concentration of fluridone is achieved. If not, more Sonar may be applied, and this is called a “bumper” application. Additional sampling and testing for fluridone may be conducted at intervals to ensure proper concentrations of fluridone in the water body.

- Following the final bumper application event, a final Post-Treatment sample from the treatment area is collected. If the pond water is to be used for irrigation to be sure that fluridone levels in the lake are less than 10 ug/L or 5 ug/L as appropriate. If the pond water is not to be used for irrigation, than discharge of the water can occur as long as the

fluridone level is below the 560 ug/L level for MUN water designated by the State Water Board.

Recording of Field Data. During the collection of each water sample for pesticide residue analysis, field measurements of general water quality constituents are recorded on the field form along with visual observations of water quality conditions. Listed in Table 6, these field measurements are for: air and water temperature; dissolved oxygen; pH; salinity; and turbidity.

In addition to recording all field measurements and observations on the field sheet, the following information shall also be on the field sheet:

- The date, exact place (GPS coord., plus narrative description), and time of the sampling or measurements;
- The individual(s) who performed the sampling or measurements;
- Date of the application event being monitored (on the Post-Event sample sheet).

Field Instrument Calibration. All field instruments used to monitor water quality shall be properly maintained and calibrated as necessary to ensure their accuracy. The dissolved oxygen meter and the turbidity meter should be calibrated each morning just prior to the first sampling. The pH meter should be calibrated weekly. A refractometer type of salinity meter is relatively stable, but placing distilled water on a well rinsed lens and checking for a 0 salinity reading serves as a calibration check. Be sure and rinse the lens off with distilled water three times after its use, and dry the lens before putting it away.

It is important to note that calibration fluids for the turbidimeter and pH meter should be replaced annually or at least every 2 years. The membrane fluid used when replacing the membrane on the probe for the dissolved oxygen meter should also be replaced every 2 years.

The City and its contractor(s) must follow a Quality Assurance–Quality Control Program for any onsite field measurements such as salinity, pH, turbidity, temperature, and dissolved oxygen. A manual containing the steps followed in this program is kept in the City office and is available for inspection by the State Water Board and the appropriate Regional Water Board staff. The Quality Assurance–Quality Control Program must conform to U.S. EPA guidelines or to procedures approved by the State Water Board and the appropriate Regional Water Board.

Sampling Procedures and Contamination Avoidance. Measurements of dissolved oxygen, temperature, pH, turbidity, and salinity are conducted in the field. These parameters, and water samples for laboratory testing, shall be taken from 3 feet below the surface of the water. If the water depth is less than 3 feet, then the sample is taken from the mid-depth of the water column.

If sample collection is achieved using a discrete–depth sampling bottle such as a Kemmerer bottle. The Kemmerer bottle or equivalent shall be rinsed three times in the water to be sampled prior to collecting the water samples from that site.

Samples for dissolved copper testing shall be collected using a length of silicone tubing sufficient to reach 3 feet deep in the water column, a peristaltic pump, and a 0.45 micron

disposable filter on the end of the tubing feeding into a plastic sampling bottle. The sampling bottles for dissolved copper should contain an acid preservative provided by the analytical laboratory. Should a peristaltic pump and filter be unavailable, the sample should not be acidified but merely put on ice in a cooler for delivery to the analytical laboratory.

All samples shall be stored in a cooler with ice packs until delivery to a certified laboratory for analyses. All sample containers shall be labeled before storing them in the cooler.

Sampling will be conducted using sampling procedures which minimize loss of monitored constituents during sample collection and analysis and maintain sample integrity. To minimize the risk of contamination during sampling, the following protocols are followed:

- Water sample collection should not be conducted out of the "treatment" boat (residue risk);
- Latex gloves should be worn during sampling;
- Sample container labels will be filled out with permanent ink prior to attachment to the container;
- Sample labels will include: location, date, and time of sample collection.
- The discrete-depth sampling device will be rinsed three times with water from the sampling site before retaining the sample;
- Silicon tubing and the 0.45 micron disposable filter for the peristaltic pump will be used for one application event for that day only, then replaced or thoroughly decontaminated before future use;
- Samples will be kept out of the sun and stored in a cooler with ice packs;
- The analytical laboratory's chain-of-custody form will be used at all stages of sample transfer;
- Following the day's sampling event, the Kemmerer bottle (or equivalent) will be washed inside and out with an Alconox solution (a detergent used to wash lab glassware), rinsed twice, then given a final rinse with distilled water. During this process, the spigots on the instrument will be open and both soapy water and rinse water passed through the spigots.

Laboratory Sample Containers. It is important to use the correct size and type of container for each water sample. Depending on the pesticide active ingredient being tested, the sample container may need to be glass or plastic, opaque, amber or dark. Some samples need a preservative, others will do fine just being on ice in a cooler. Table 7 summarizes these requirements.

Laboratory Analysis for Pesticide Residue. All laboratory analyses shall be conducted at a laboratory certified for such analyses by the California Department of Public Health in accordance with California Water Code section 13176. Laboratories that perform sample analyses shall be identified in all monitoring reports.

All laboratory analyses for the pesticide's active ingredient shall be conducted in accordance with the latest edition of "Guideline Establishing Test Procedures for Analysis of Pollutants" promulgated by the U.S. EPA in title 40 Code Federal Regulation (40 C.F.R.) 136 or equivalent methods that are commercially and reasonably available and that provide quantification of

sampling parameters and constituents sufficient to evaluate compliance with applicable effluent limits and to perform reasonable potential analysis. Equivalent methods must be more sensitive than those specified in 40 C.F.R.136 and must be approved for use by the Regional Water Board Executive Officer.

Table 7. Sample Storage and Preservation Requirements

Reference Parameters	Methods	Holding Time	Container	Preservation	Storage
Sonar (fluridone)	Fluridone RaPID Assay	6 months	60 mL amber PVC bottle	None	2 to 8 degree C
Cutrine-Ultra (Total Cu)	EPA Method 200.8	6 months	500 mL plastic bottle	HNO_3 to pH of < 2	
Reward (diquat)	EPA Method 549.1	7 days	1 liter dark plastic bottle	None	2 to 8 degree C
Aquamaster (glyphosate)	EPA Method 547	14 days	125 mL Amber glass bottle	None	2 to 8 degree C

11.2 REPORTING PROGRAM REQUIREMENTS

There are three types of reporting to the State Water Board: 1) Annual Reporting (due March 1 describing the results of the previous year's monitoring); 2) 24 hour Reporting (provided orally); and 3) Five Day Reporting (a written report following up the oral report). There is also a fourth type of reporting that involves reporting an adverse incident to a threatened or endangered species to the National Marine Fisheries Service (NMFS) and/or the U.S. Fish and Wildlife Service. The requirements and purpose of each of these types of reports are explained in the following sections.

Annual Report. The City will submit to the State Water Board and San Francisco Bay (Region 2) Regional Water Board Executive Officer an annual report consisting of a summary of the past year's activities, and will certify compliance with all requirements of the General Permit. If there is no discharge of algaecides and aquatic herbicides, their residues, or their degradation byproducts, the City will provide a certification that algaecide and aquatic herbicide application activities did not result in a discharge to any water body. The annual report shall contain the following information:

- An executive summary discussing compliance or violation of the General Permit and the effectiveness of the APAP; and

- A summary of monitoring data, including the identification of water quality improvements or degradation as a result of the algaecide or aquatic pesticide application.

The annual report will be submitted according to the following schedule in Table 8:

Table 8. Annual Reporting Schedule

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

Annual Report Protocols. The City shall adhere to the following protocols when preparing an Annual Report.

- Each sample result will include the applicable reported Minimum Level (ML) and the current Minimum Detection Limit, as determined by the procedure in 40 C.F.R. part 136.

- The results of analytical determinations for the presence of the pesticide's active ingredient will use reporting protocols listed on page C-9 of Order No. 2013-0002-DWQ. These protocols describe the reporting procedures to follow regarding Method Detection Limits and Reporting Limits.

- All reported data will be arranged in a tabular format. The data will be summarized to clearly illustrate whether the algaecide and aquatic herbicide applications are conducted in compliance with effluent and receiving water limitations.

- The City will attach a cover letter to the annual report that clearly identifies violations of the permit; discusses corrective actions taken or planned; and provides a time schedule for corrective actions. Identified violations will include a description of the requirement that was violated and a description of the violation.

- The annual report will be submitted to the State Water Board and the San Francisco Bay (Region 2) Regional Water Board, signed and certified as required by the Standard Provisions (Attachment B, Standard Provision, of the Order No. 2013-0002-DWQ).

- A Water Board email dated February 27, 2014 states the Annual Report should be sent to the following:

If an electronic report
Address to: Victoria A. Whitney, Deputy Director, Division of Water Quality
Email to: NPDES_Wastewater@waterboards.ca.gov

If a paper report
Send to: Victoria A. Whitney, Deputy Director
Division of Water Quality

c/o NPDES Wastewater Unit
State Water Resources Control Board
1001 I Street, 15th Floor
Sacramento, CA 95814

Electronic Submittal of the Annual Report. Note that at any time during the term of the General Permit, the California State Water Board or the Regional Water Board may notify dischargers of the requirement to submit electronically Self-Monitoring Reports (SMRs) using the State Water Board's California Integrated Water Quality System (CIWQS) Program (http://www.waterboards.ca.gov/ciwqs/index.html). Until such notification is given, the City will submit hardcopy SMRs. The CIWQS website will provide additional directions for SMR submittal in the event there will be service interruption for electronic submittal.

Dischargers are not required to duplicate the submittal of data that are entered in a tabular format within CIWQS. When electronic submittal of data is required and CIWQS does not provide for entry into a tabular format within the system, dischargers shall submit electronically the data in a tabular format as an attachment.

Dischargers will report the results for all monitoring specified in the General Permit MRP in the SMR. Dischargers will submit annual SMRs including the results of all required monitoring using U.S. EPA-approved test methods or other test methods specified in the General Permit. If dischargers monitor any pollutant more frequently than required by the General Permit, the results of this monitoring shall be included in the calculations and reporting of the data submitted in the SMR.

Twenty-Four Hour Report. The City will report to the State Water Board (Russell Norman, 916-323-5598) and the Regional Water Board (Farhad Azimzadeh, 510-622-2310) any noncompliance, including any unexpected or unintended effect of an algaecide or aquatic herbicide use that may endanger health or the environment. Information will be provided orally within 24 hours from the time the City becomes aware of the circumstances and will include the following information:

- The caller's name and telephone number;
- Applicator name and mailing address;
- Waste Discharge Identification (WDID) number (WDID#2 07AP00009);
- The name and telephone number of a contact person;
- How and when the City become aware of the noncompliance;
- Description of the location of the noncompliance;
- Description of the noncompliance identified and the U.S. EPA pesticide registration number for each product applied in the area of the noncompliance; and
- Description of any steps that the City has taken or will take to correct, repair, remedy, cleanup, or otherwise address any adverse effects.

A log form for a Twenty-Four Hour Report is provided in this document as Attachment A. In the event that the City or its contractor(s) are unable to notify the State and Regional Water

Boards within 24 hours, the City will do so as soon as possible and also provide the rationale for why it was unable to provide such notification within 24 hours.

Five-Day Written Report. The City will provide a written submission within five (5) days of the time it becomes aware of the noncompliance. The written submission shall contain the following information:

- Date and time the City contacted the State Water Board and the Regional Water Board notifying of the noncompliance and any instructions received from the State and/or Regional Water Board; information required to be provided in Section D.1 (24-Hour Reporting);
- A description of the noncompliance and its cause, including exact date and time and species affected, estimated number of individual and approximate size of dead or distressed organisms (other than the pests to be eliminated);
- Location of incident, including the names of any waters affected and appearance of those waters (sheen, color, clarity, etc.);
- Magnitude and scope of the affected area (e.g. aquatic square area or total stream distance affected);
- Algaecide and aquatic herbicide application rate, intended use site (e.g., banks, above, or direct to water), method of application, and name of algaecide and herbicide product, description of algaecide and herbicide ingredients, and U.S. EPA registration number;
- Description of the habitat and the circumstances under which the noncompliance activity occurred (including any available ambient water data for aquatic algaecides and aquatic herbicides applied);
- Laboratory tests performed, if any, and timing of tests. Provide a summary of the test results within five days after they become available;
- If applicable, explain why the City believes the noncompliance could not have been caused by exposure to the algaecides or aquatic herbicides from the Discharger's application; and
- Actions to be taken to prevent recurrence of adverse incidents.

The State Water Board staff or Regional Water Board staff may waive the above-required written report under this provision on a case-by-case basis if an oral report has been received within 24 hours. A Five-Day Written Report Outline (with mailing addresses) is provided in this document as Attachment B.

Adverse Incident Notification. During aquatic pesticide operation, if an adverse incident should occur to a federally designated threatened or endangered anadromous or marine species or their critical habitat, the NMFS in Santa Rosa should be contacted by phone (707-575-6050) within 24 hours. Should the adverse incident occur to a threatened or endangered terrestrial or freshwater species, the FWS (916-414-6600) should be verbally contacted within 24 hours.

12.0 EVALUATION OF OTHER MEANS OF AQUATIC WEED CONTROL

The primary alternative to applying aquatic pesticides to the aquatic weeds and filamentous algae has been the physical removal of nuisance weeds and algae by hand or by mechanical harvesters.

Both the Nature Lake and the Irrigation Pond have previously had mechanical weed harvesters in them. However, mechanical harvesters are not particularly effective for filamentous algae which can be extensive in the Irrigation Pond, and large woody debris common to the shoreline of the Nature Lake prevent harvesters from accessing portions of the lake. Applying a water dye to the Cement Pond has slowed the growth of filamentous algae, but does not always eliminate the potential for heavy growth of algae. Using heavy-duty weed wackers and machetes, cattails and bulrush have been cut and removed from the inflow ditch to the Nature Lake and to Walnut Creek in Civic Park. This action is very labor intensive and the weeds soon grow back to a density that can impede stream flow.

In 2014, the City expects to work with a contractor to try a program of beneficial bacteria and blue water dye on some of the water bodies. If successful, these management tools will be used on a regular basis.

Both non-chemical and chemical means of effectively controlling weed and algae growth will be reviewed each winter or early spring and non-chemical options chosen where appropriate. Some of the alternative control options are described below.

12.1 NON-CHEMICAL CONTROL METHODS

Mechanical Harvesting. Mechanical harvesters work best on aquatic plants as they are more effectively mowed than are filamentous algae. The harvesters work well to crop off aquatic weeds in the portions of the Nature Lake without large woody debris. However, shallow water near shore, fallen trees and logs in the lake are all unsuitable for the mechanical harvester. These areas will be treated as needed with aquatic pesticides.

Rotovation. Mechanical rotovation holds promise as a measure to discourage rooted aquatic weed infestation. Rotovators use underwater rototiller-like blades that churn up to a foot into the bottom of the water body to disrupt a seed bed and young rooting plants. Rotovation would be deployed in the early spring when the season's growth is only beginning to emerge. As no biomass exists at this stage of growth, there is no biomass generated and no resulting biomass removal needs. Depending on plant density and sediment type, two to three acres per day can be rotovated.

Nutritent Inactivation. The growth of most aquatic weeds in most water bodies are limited by the amount of the nutrient phosphorus available for biological assimilation. Free reactive phosphorus can be removed from the water column by treating the water with alum (aluminum sulfate) or commercial products like Phoslock (a modified bentonite clay containing lanthanum) by SePro. The phosphorus in the water column binds with the product dispersed into the lake and it precipitates to the bottom where it is locked into the sediments. Alum applications in lakes are usually to clarify lake water turbid with suspended coloidals of fine clay particles along with any phosphorus in the water column. This approach may have promise for the small concrete-lined lakes in Heather Farm Park where floating plants and algae are a problem, but not for controlling rooted aquatic plants in the lakes with natural bottoms.

Aquatic Dyes. Aquatic dye has potential to discourage rooted aquatic plant and algae growth in a more shallow lake, and has been used previously in the Cement Pond and will continue to be used here if found effective in 2014.

Benthic Weed Barrier. This approach is aimed at controlling rooted aquatic weeds and consists of installing a fabric material similar to a pond liner on the bottom of a relatively small area such as a swimming lane to deeper water. Applied in the spring, they can prevent growth of rooted aquatic weeds in the area covered. The barrier material should be removed and cleaned each fall, and the material can last up to 10 years. Although some Heather Farm Park lakes are sufficiently small that benthic barriers could be used there. The problem in these small lakes is not rooted aquatic plants but filamentous algae and abundant small floating plants such as duckweed *(Lemna* sp.) and *Azolla*. Benthic barriers would not be effective with these plants.

Biological Control. Aquatic weed management by biological typically means three possible general approaches: 1) beneficial bacteria to digest decaying organic matter; 2) aquatic beetles to feed on the living tissue of aquatic weeds; and 3) triploid grass carp that feed on living aquatic weeds.

Beneficial Bacteria. Beneficial bacteria may have potential to reduce bioavailability of nutrients in the water column and the bottom sediments. Beneficial bacteria consume the same decaying organic matter and nutrients that are available to nuisance plants. In effect, beneficial bacteria deprives aquatic nuisance growth of a ready food source, thereby inhibiting growth. Beneficial bacteria work most effectively is there is a thick layer of organic matter in the lake bottom as this supplies the bacteria with a large food source and allows the bacteria to proliferate. The City plans to try beneficial bacteria in 2014.

Aquatic Insects. Weevils that consume aquatic plants have been used in freshwater impoundments for aquatic weed control with mixed success. This approach is currently undergoing research and development. Locally, Marin Municipal Water District has been experimentally using a native weevil, *Euhrychiopsis lecontel*, for the past several years in one of its reservoirs on Lagunitas Creek that is heavily infested with Eurasian watermilfoil.

Herbacious Fish. Grass carp have been used with mixed results throughout the country. A triploid grass carp is preferred as they can't reproduce and the spread of carp into waters of the United States over the past 80 years has been a serious problem. Grass carp favor consuming hydrilla, so they can be very effective for isolated waters where hydrilla is the primary aquatic weed species needing control. However, the carp rarely consume floating plants and avoid Eurasian watermilfoil. These fish would not be effective for duckweed (*Lemna* sp.) and *Azolla*.

Mechanical Uprooting and Removal of Emergent Vegetation. The drainage channel into the Nature Lake can be cleared of much of its emergent vegetation (cattails and bulrush) with a backhoe positioned beside the channel. In lakes, this can be accomplished with an AquaMog if there is no access for a backhoe. An AquaMog is essentially a backhoe on a self-propelled barge that can travel across water and position itself in aquatic environments. Emergent vegetation is uprooted by the backhoe bucket and deposited in a large floating container for transport back to land for removal to an approved disposal site.

12.2 STRATEGY TO MINIMIZE AQUATIC PESTICIDE USE

Mechanical harvesting of aquatic weeds in the Nature Lake and the Irrigation Pond will continue to be used for those portions of these water bodies accessible to the harvester. Water dye, such as AquaShade, will continue to be used in the Cement Pond and Irrigation Pond to slow the growth of algae. Excessive growths of cattails and bulrush in the inflow ditch to the Nature Lake and in Walnut Creek in Civic Park will continue to be removed by hand, but the cut stalks will then be sprayed with the systemic pesticide Aquamaster (glyphosate) to impede their future growth.

13.0 BEST MANAGEMENT PRACTICES

The following best management practices (BMPs) will be implemented to minimize the amount of aquatic pesticides used in an area, to minimize the extent and duration of impacts caused by the application of aquatic pesticides to the City's managed waters, and to allow for restoration of water quality and protection of beneficial uses of these waters to pre-application quality following completion of a treatment event.

Licenses and Permits.

- The City will obtain all necessary regulatory permits prior to application of aquatic pesticides.
- Aquatic pesticide applications by the City and its contractors will be conducted in conformance with licensing and other requirements of the Cal-EPA Department of Pesticide Regulation.

Inspection and Assessment. The City or its contractors will conduct visual observations of the entire lagoon at a frequency deemed prudent to identify emerging nuisance conditions, need for treatment, and type of treatment (see the following Decision Matrices, Figures 1,2, and 3). The following actions will be employed:

- Initiate inspections in March; conduct weekly inspections, April through July, or as the nuisance growth season dictates.
- Observe for indicators of nuisance growth, such as accumulation of bottom or floating algae, and spot "raking" for evidence of weed growth if not otherwise visible.
- Utilize predetermined "action levels" to qualify treatment decision making.
- Measure and record ambient environmental conditions and physical water quality characteristics that may provide clues to impending nuisance conditions.
- Record the inspection event on daily work report.
- Schedule subsequent inspection and/or application event, as applicable.

Action Levels. The City has established action levels for nuisance control that protects community values while ensuring that use of aquatic pesticides is minimized. An appropriate threshold ensures that herbicides will not be used prior to visual evidence of growth, while at the same time ensuring that projected growth rates do not result in routine exceedance of the threshold. Action levels are defined as follows and illustrated in a decision matrix (Figure 1):

- *Algae*: Dots of floating algae begin to accumulate on the surface, or the algae is at a life stage when, in the opinion of the qualified applicator (a holder of a Department of Pesticide Regulation Qualified Applicator License), a detachment is probably imminent.
- *Sago Pondweed and coontail:* Rake samples of bottom growth indicate a grass length of 6 to 12 inches and a life stage when, in the opinion of the qualified applicator (a holder of a Department of Pesticide Regulation Qualified Applicator License), the typical acceleration in growth rate is probably imminent.
- *Duckweed and Azolla:* When clusters of these floating weeds become 3 feet in diameter or greater, reduce its density by hand raking and removal. Should rapid proliferation of these plants occur, then aquatic pesticides will be applied to the area to kill or impair the remaining plants.

Integrated Control Strategy. Once action levels have been reached, the City will implement the following sequence of chemical and mechanical controls action:

- *Algae*: Initiate applications for algae control. If and when rate of algal accumulations on water surface result in formation of substantial biomass, augment chemical applications with mechanical or hand-rake skimming.
- *Duckweed or Azolla*: Small patches of these weeds are hand-raked and removed. Once patches of these floating weeds cover 25 percent or more of the water surface, application of appropriate aquatic pesticides may be initiated.
- *Sago Pondweed:* When growths of sago pondweed near the surface of the Nature Pond, mechanical harvest of the open water is initiated. Because the harvester can't operate along shallow shorelines or shorelines with frequent large woody debris or branches, application of pesticides can occur at these locations at this time.

Pesticide Application Protocols.

- Always apply product in accordance with it product labeling.
- Apply aquatic pesticides only to infested areas.
- Apply herbicides at the optimal time and conditions to maximize their effectiveness and minimize amount applied. (e.g. when plants are succulent and actively growing, and water column is not turbid.) Avoid applying under conditions of high wind, water flow, or wave action.)
- Calibrate application equipment as needed to assure the desired application rate. Check tank mix level frequently to insure proper dosage rates are being applied.
- Close chemical intake valve when pump is not in use.
- Upon completion, flush the tank and pump system with water for a minimum of three minutes in the application area.
- Ensure that applicators practice herbicide use safety and that applicator equipment is properly inspected to prevent accidental leaks, spills, and hazards to applicators and the environment.
- When copper-based herbicides are called for, a chelated form of copper that offers the greatest affinity for adherence to the target and least likelihood of settling to the bottom shall be used.

Applicator Education on Avoiding Adverse Environmental Impacts.

- The City will use only California licensed aquatic pesticide applicators to apply pesticides in the City's managed waters. Licensed applicators are required to take periodic training on spill avoidance, proper application techniques, and avoiding environmental impacts.
- A copy of this APAP will be provided to the licensed applicator at least 30 days prior to aquatic pesticide application, and require that all primary applicators used by the City sign an affidavit that they have reviewed the contents and are familiar with all requirements.

Preventing Fish Kills.

- Experienced, licensed, and trained applicators have had training on avoiding potential fish kills; however,
- This section is to remind applicators that they should avoid treating all of a relatively enclosed embayment or side channel at once in a manner that leaves no escape route for fish seeking higher levels of dissolved oxygen.
- Pesticide applications in an embayment should begin at the shore furthest from the opening to the embayment and apply the pesticide outward toward this opening. Never begin pesticide applications at the mouth of the embayment and work inward as fish can be trapped by zones of low levels of dissolved oxygen.
- The Nature Lake and other water bodies containing fish should never be treated in its entirety by a single pesticide application. By treating half or less of the water body at one time, fish are left with a refugia with higher levels of dissolved oxygen should it be needed.
- An exception to the above rule is Sonar (fluridone), as it is a systemic pesticide that settles into the sediment and enters the root system of the aquatic weeds over time, so there is no danger of fish kills, particularly at the 40 ug/L concentration at which it is typically applied.
- This exception also applies to the application of glysophate to emergent vegetation along the shoreline of wetlands.

General Handling, Storage and Disposal of Pesticides.

- Always handle, store, and dispose of product in accordance with label instructions
- Mix or load herbicides in a safe and prudent manner so as to minimize potential for spillage of raw or mixed product.
- Mix only as much material as is necessary for treatment.
- When changing pesticides or cleaning spray tanks, use tank rinse water as product within the application area.
- Triple rinse empty pesticide containers and dispose in accordance with label instructions recommendations of the County Agricultural Commissioner and the manufacturer.
- Provide spill kits, store the kits near pesticides, and train employees to use them.
- Keep raw product in original container. Mix and use pesticides only in labeled containers and in accordance with local law.

Find a qualified user for any unwanted pesticides, or return to the manufacturer if unopened.

14.0 ANNUAL INFORMATION COLLECTION

The City will complete and retain all information on the previous reporting year beginning January 1 and ending December 31. When requested by the Deputy Director or Executive Officer of the Regional Water Board, the City will submit the annual information including:

1. An executive summary discussing compliance or violation of the General Permit and the effectiveness of the APAP to reduce or prevent the discharge of pollutants associated with algaecide and aquatic herbicide applications;
2. A summary of monitoring data, including the identification of water quality improvements or degradation as a result of the algaecide or aquatic pesticide application, if appropriate, and recommendations for improvements to the APAP (including proposed BMPs) and monitoring program based on the monitoring results. All receiving water monitoring data will be compared to receiving water limitations and receiving water monitoring triggers;
3. Identification of BMPs currently in use and a discussion of their effectiveness in meeting the requirements in the General Permit;
4. A discussion of BMP modifications addressing violations of the General Permit;
5. A map showing the location of each treatment area;
6. Types and amounts of algaecides and aquatic herbicides used at each application event;
7. Information on surface area and/or volume of treatment areas and any other information used to calculate dosage, concentration, and quantity of each algaecide and aquatic herbicide used;
8. Sampling results shall indicate the name of the sampling agency or organization, detailed sampling location information (including latitude and longitude or township/range/section if available), detailed map or description of each sampling area (address, cross roads, etc.), collection date, name of constituent/parameter and its concentration detected, minimum levels, method detection limits for each constituent analysis, name or description of water body sampled, and a comparison with applicable water quality standards, description of analytical QA/quality control plan. Sampling results shall be tabulated so that they are readily discernible; and
9. Summary of algaecide and aquatic herbicide application log.

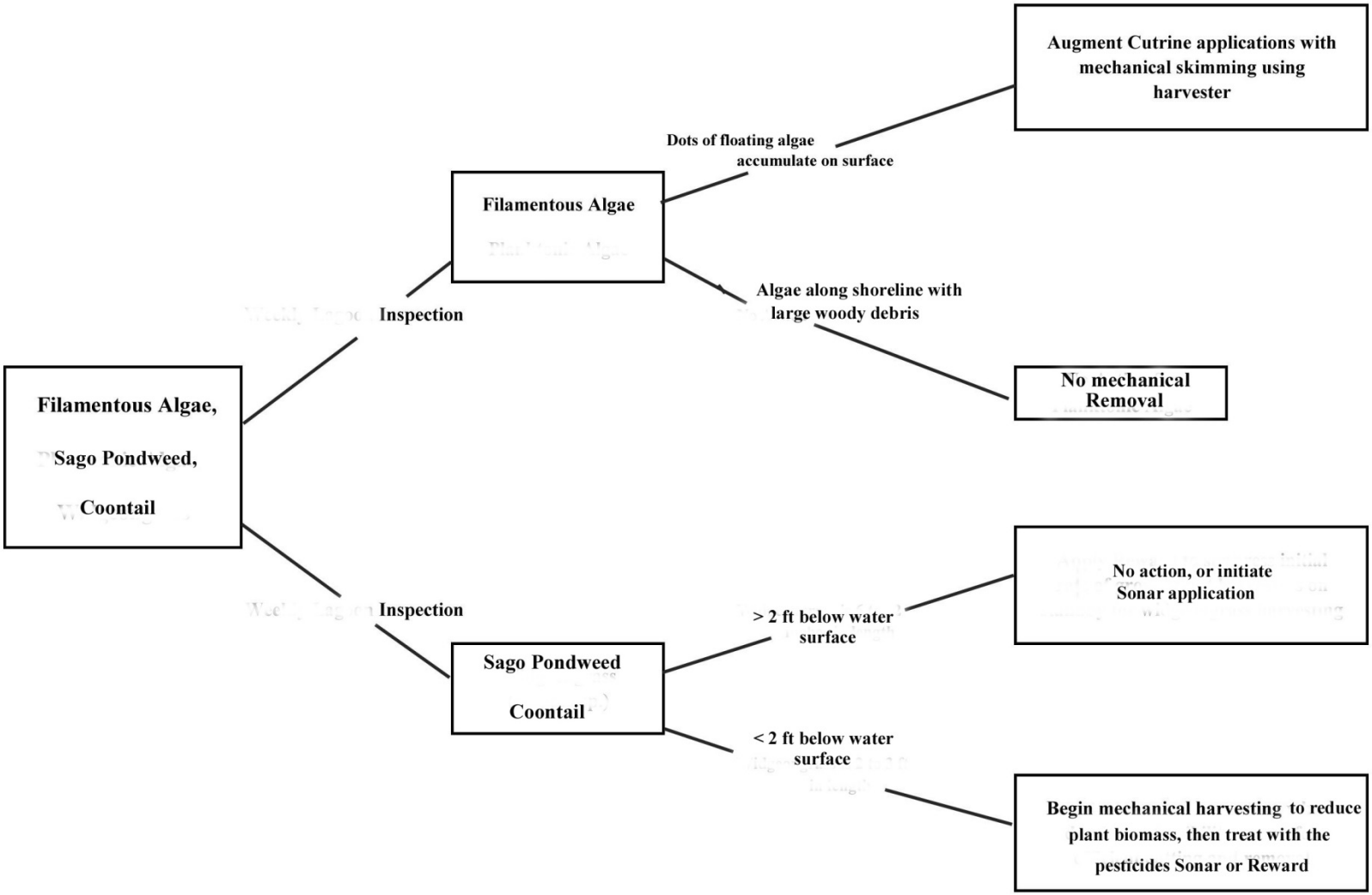


Figure 1. Decision Matrix for Nature Lake, Heather Farms Park, City of Walnut Creek

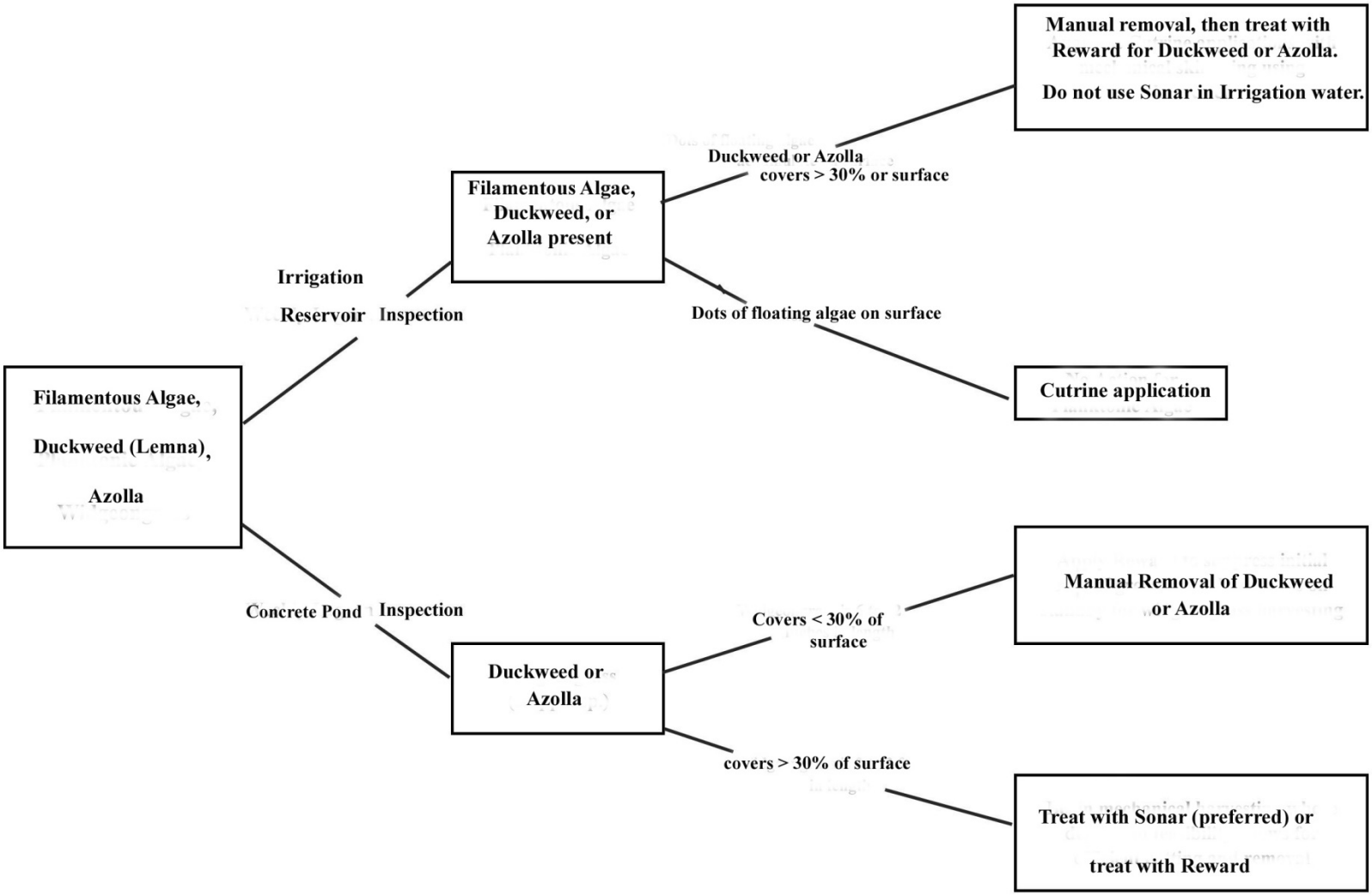


Figure 2. Decision Matrix for Irrigation Reservoir and Concrete Pond, Heather Farms Park

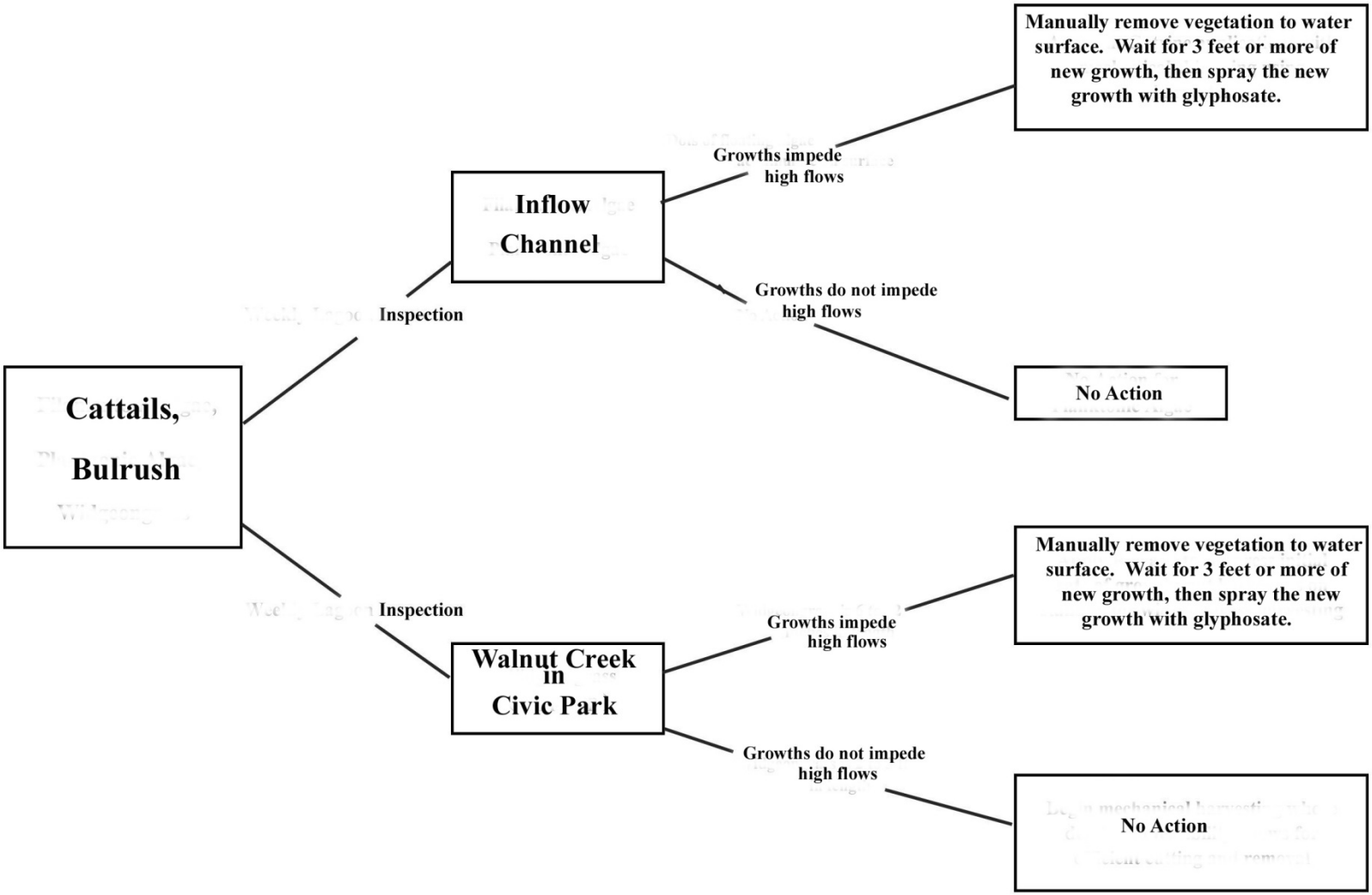


Figure 3. Decision Matrix for Inflow Channel (Heather Farms Parks) and Walnut Creek, Civic Park

ATTACHMENT A

Public Notification Sign

and

Twenty-Four Hour Report Log Form

INTEGRATED PEST MANAGEMENT PROGRAM

NOTICE OF PESTICIDE APPLICATION

Day: _____ Date: _____

The material(s) being applied is (are): _____

_____

_____

Product Toxicity Category: _____
(signal word)

Target Pest: _____

Area Treated: _____
(Attach map if necessary)

_____

Signs will remain 48 hours after pesticide application.

If you have any questions, please call us:

_____ at (925) _____

ATTACHMENT A

TWENTY-FOUR HOUR REPORT LOG FORM

Purpose: This verbal report must be provided to the appropriate San Francisco Bay Regional Water Quality Control Board and the State Water Board in the event that there is any noncompliance with the General NPDES Permit for Residual Aquatic Pesticide Discharges from Algae and Aquatic Weed Control Applications (General Permit). This includes any unexpected or unintended effect of an algaecide or aquatic herbicide use that may endanger health or the environment. Requirements for this report are found on page 21 of the APAP for Heather Farms Park and Walnut Creek in Civic Park.

The report must be provided within 24 hours from the time the City or its contractors become aware of the circumstances.

State Board Contact Phone Number: _____
Name of State Board Employee Contacted:

SFRWQCB Contact Phone Number: _____
Name of Regional Board Employee Contacted

The following information shall be provided:

a. Caller's name and phone number

Name _____

Telephone Number _____

b. Applicator name and mailing address

Mike Vickers, Public Services Manager
Parks and Open Space Division
City of Walnut Creek
511 Lawrence Way
Walnut Creek, CA 94596

c, Waste Discharge Identification (WDID) number

WDID# 2 07AP00009

d. Name and Telephone Number of Contact Person
Mike Vickers, Public Services Manager
Parks and Open Space Division
Office: (925) 256-3538
Cell: (925) 330-2915

Email: Vickers@walnut-creek.org

e. How and when the City or its contractor became aware of the noncompliance

How: _____

_____

_____

_____

When: _____

_____

_____

f. Description of the location of the noncompliance

_____

_____

g. Description of the noncompliance identified and the U.S. EPA pesticide registration number for each product the Discharger applied in the area of noncompliance.

Description of Noncompliance: _____

_____

_____

Products Applied Including USEPA pesticide registration numbers

_____

_____

h. Description of any steps that the City or its contractor has taken or will take to correct, repair, remedy, cleanup, or otherwise address any adverse effect.

_____

_____

_____

Other comments provided to or received from State Board or CVRWQCB during phone call:

ATTACHMENT B

FIVE-DAY WRITTEN REPORT OUTLINE

Following submission of a twenty-four report, a written report must also be provided to the San Francisco Bay Regional Water Quality Control (SFRWQCB) Board and the State Water Board in the event that there is any noncompliance with the General NPDES Permit for Residual Aquatic Pesticide Discharges from Algae and Aquatic Weed Control Applications (General Permit), including any unexpected or unintended effect of an algaecide or aquatic herbicide use that may endanger health or the environment. Requirements for this report are found on pages 21 and 22 of the APAP for Heather Farms Park and Walnut Creek in Civic Park .

The written report must be provided within 5 days from the time the City or its contractor becomes aware of the circumstances. The State Water Board staff or Regional Water Board staff may waive the written report required under this provision on a case-by-case basis if an oral report has been received within 24 hours.

The report should contain the following information:

a. Date and time the City contacted the State Water Board and the appropriate Regional Water Board notifying of the noncompliance and any instructions received from the State and/or Regional Water Board (24-Hour Reporting);

b. A description of the noncompliance and its cause, including exact date and time and species affected, estimated number of individual and approximate size of dead or distressed organisms (other than the pests to be eliminated);

c. Location of incident, including the names of any waters affected and appearance of those waters (sheen, color, clarity, etc);

d. Magnitude and scope of the affected area (e.g. aquatic square area or total stream distance affected);

e. Algaecide and aquatic herbicide application rate, intended use site (e.g., banks, above, or direct to water), method of application, and name of algaecide and herbicide product, description of algaecide and herbicide ingredients, and U.S. EPA registration number;

f. Description of the habitat and the circumstances under which the noncompliance activity occurred (including any available ambient water data for aquatic algaecides and aquatic herbicides applied);

g. Laboratory tests performed, if any, and timing of tests. Provide a summary of the test results within five days after they become available;

h. If applicable, explain why the Discharger believes the noncompliance could not have been caused by exposure to the algaecides or aquatic herbicides from the Discharger's application; and

i. Actions to be taken to prevent recurrence of adverse incidents.