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Attachment E – Notice of Intent

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

DIVISION OF WATER QUALITY

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

I. NOTICE OF INTENT STATUS (see Instructions)

Mark only one item A. New Applicator B. Change of Information: WDID# _____
 548 AP0000, RA# 397762
 C. Change of ownership or responsibility: WDID# _____

II. DISCHARGER INFORMATION

A. Name City of Vacaville - Utilities Department			
B. Mailing Address P.O. Box 220			
C. City Emira	D. County Solano	E. State CA	F. Zip 95625
G. Contact Person Royce W. Cunningham	H. E-mail address rcunningham@cityofvacaville.com	I. Title Director of Utilities	J. Phone 707-469-6400

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

A. Name			
B. Mailing Address			
C. City	D. County	E. State	F. Zip
G. E-mail address	H. Title	I. Phone	

IV. RECEIVING WATER INFORMATION

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

1. Canals, ditches, or other constructed conveyance facilities owned and controlled by Discharger.
Name of the conveyance system: _____

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

3. Directly to river, lake, creek, stream, bay, ocean, etc.
Name of water body: Old Alamo Creek

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

V. ALGAECIDE AND AQUATIC HERBICIDE APPLICATION INFORMATION

A. Target Organisms: _____
Cattail

B. Algaecide and Aquatic Herbicide Used: List Name and Active ingredients
Roundup (Glyphosate)

C. Period of Application: Start Date 7/1/14 End Date 6/30/15

D. Types of Adjuvants Used: Surfactant (included in Roundup mixture)

VI. AQUATIC PESTICIDE APPLICATION PLAN

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

If not, when will it be prepared? _____

VII. NOTIFICATION

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

VIII. FEE

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

IX. CERTIFICATION

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

A. Printed Name: Royce W. Cunningham

B. Signature: 

Date: 8/18/14

C. Title: Director of Utilities

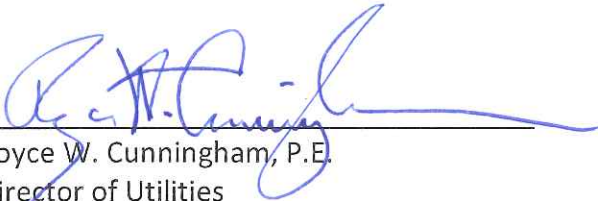
XI. FOR STATE WATER BOARD STAFF USE ONLY

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

City of Vacaville - Old Alamo Creek Cattail Control Project

The City of Vacaville Utilities Department Water Quality Division staff prepared this Aquatic Pesticides Application / Project Monitoring Plan / Quality Assurance Plan ("APAP") as part of the City of Vacaville's program for control of invasive cattail overgrowth in ½-mile section of Old Alamo Creek.

This document provides a description of the objectives to be followed by City of Vacaville and contractor's staffs. This document will be periodically reviewed and revised as necessary to update procedures or information. Management for the City of Vacaville will approve all potential revisions.



Royce W. Cunningham, P.E.
Director of Utilities
City of Vacaville

9/10/14
Date

Old Alamo Creek Cattail Control Project APAP

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Distribution List

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City of Vacaville Old Alamo Creek Cattail Control Project APAP

A. Introduction

Authors note: This Aquatic Pesticides Application Plan (APAP) is outlined to follow the *Statewide General NPDES Permit for Residual Aquatic Pesticide Discharges to Waters of the United States from Algae and Aquatic Weed Control Applications*, Water Quality Order No. 2013-0002-DWQ, General Permit No. CAG990005, Section VIII.C. This General Permit is effective from 3/5/13 through 11/30/18.

Vacaville is a city located in Solano County in northern California. The town is nearly half way between Sacramento and San Francisco on Interstate-80. It sits approximately 35 miles southwest from Sacramento, and 45 miles northeast from San Francisco. As of the 2014, Vacaville has a population of approximately 95,000, making it the third largest city in Solano County.

City of Vacaville Utilities Department staff will contract the management of vegetation along Old Alamo Creek including the control of cattails downstream of the effluent release point.

City of Vacaville is committed to the safe use of any pesticide in conformance with all applicable laws and regulations governing protection of employee health and safety, public welfare, and the environment. The City will also ensure that contractors uphold the same standards and conformance set forth in this permit.

B. Aquatic Pesticides Application Plan

1. Description of Water System

The Old Alamo Creek channel conveys the Vacaville wastewater discharge, two groundwater discharges, agricultural tail water, and storm water runoff. Old Alamo Creek was disconnected from the main Alamo Creek in the Ulatis Flood Control Project in the 1960's, with New Alamo Creek conveying most storm water and agricultural runoff away from a historical flood plain. Old Alamo Creek is now tributary to New Alamo Creek, which is tributary to Ulatis Creek, to Cache Slough, and to the San Francisco Bay.

Per Sacramento-San Joaquin Delta Basin Plan, Old Alamo Creek presently has designated uses of REC-1, WARM and AGR. Old Alamo Creek does not have MUN, COLD, MIGR or SPWN beneficial uses, per Basin Plan exception.

2. Description of the Treatment Area

The proposed water system treatment area for this Aquatic Pesticide Application Plan (APAP) is limited to the application of glyphosate pesticide to control overgrowth of invasive cattails (sp. *Typha*) located within a ½-mile section of Old Alamo Creek from about 50 yards downstream of the Easterly WWTP discharge (GPS coordinates 38.34638, -121.90122) to west of Lewis Road (38.34644, -121.89708) in Elmira, California (reference Figures 1 & 2).

Figure 1. Old Alamo Creek Cattail Control Project Location Map

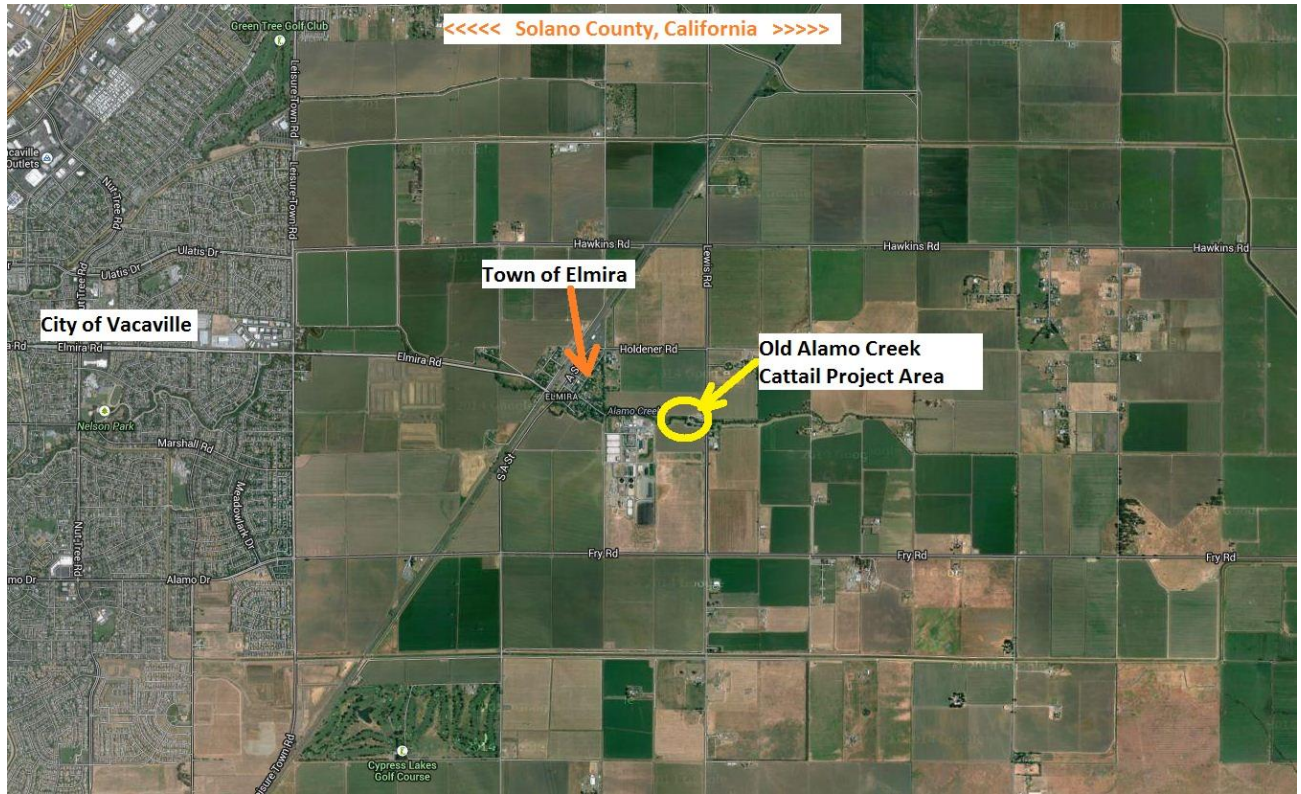
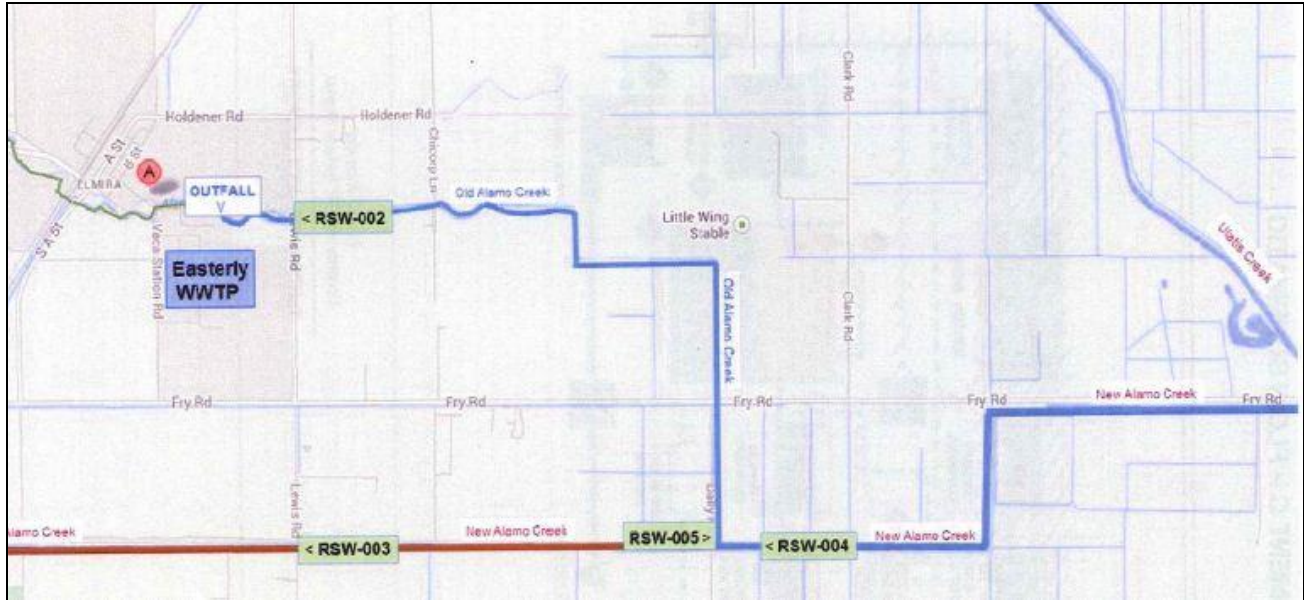


Figure 2. Old Alamo Creek Cattail Control Project – Detail Map



Figure 3. EWWTP Receiving Waters Reference Map (for RSW-002 & RSW-005)



3. Types of Weeds Controlled and Why

The ½-mile section of Old Alamo Creek to be treated is presently choked with cattail overgrowth, which increases the likelihood of potential localized flooding in the area. Also, this nuisance overgrowth provides damming opportunities for downed trees and other debris, which limits the natural flow of water in the creek.

4. Aquatic Herbicide and Surfactant to be Applied

The herbicide product used and the concentration at which it is applied will be determined by a licensed Pest Control Advisor (PCA) and communicated in a formal Recommendation. Glyphosate (N-(phosphonomethyl) glycine), can effectively control and limit the growth of cattails within the creek system and its use is standard within the industry. The glyphosate containing product that will be used is called *Roundup Custom*® (EPA Registration No. 524-343), which contains 53.8% glyphosate, and 46.2% inert ingredients. This product does not contain surfactant, but the use of one is recommended per product label. If the PCA determines that a surfactant should be used, the product will be a vegetable oil-based surfactant product such as *Competitor*® (CA Registration No. 2935-50173) which would improve the adhesion of the glyphosate solution to target foliage without significantly increasing the toxicity to aquatic organisms.

5. Factors Influencing the Decision to Select Herbicide Treatment

The need for control of invasive cattail growth commonly arises during summer months when longer periods of sunlight and higher temperatures result in rapid growth of aquatic weeds. Herbicide treatment should be started early to get control over aquatic weeds to prevent their growth state from being such that it cannot be readily managed or requires larger amounts of herbicide. In the case of the section of Old Alamo Creek

channel that is defined in this document, no herbicide treatment has been made in recent time, which has led to a proliferation of cattails dominating much of the creek waterway.

Glyphosate application is routinely the preferred option to control excessive cattail growth, as “*Glyphosate applied at label rates seems relatively safe for waterfowl and aquatic invertebrates.*” (US Department of the Interior Fish and Wildlife Service Leaflet 13.4.13, 1993, p.7). Accordingly, the use of glyphosate to control cattails within natural water bodies is common practice. Glyphosate kills the cattails by disrupting the plant’s photosynthetic carbohydrate metabolic pathway. Glyphosate can be effective without the need for adjuvant, but a vegetable oil-based surfactant (*Competitor*[®]) will be used to improve the spray distribution of the herbicide.

Use of glyphosate does have potential hazards to humans, as noted on the product label. Handlers are directed to wear personal protective equipment, long-sleeved shirt, long pants, and shoes plus socks. After use, handlers are advised to wash clothing separately from other laundry, and should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.

Other feasible control measures include, which are considered less desirable than herbicide treatment are: (1) Cutting/crushing/shearing, which would temporarily block creek water flows; and (2) physical removal of the plant from the creek bottom using a bulldozer and cookie cutter, which would destroy benthic and fish habitats.

6. Gates and Control Structures: Not applicable.

7. Short-Term or Seasonal Exception: Not applicable.

8. Monitoring and Reporting Program (MRP)

Per General Order, this MRP is designed to address two key questions:

#1: Does the residual aquatic herbicide discharge cause an exceedance of receiving water limitations?; and

#2: Does the discharge of residual aquatic herbicide, including active ingredients, inert ingredients, and degradation byproducts, in any combination cause or contribute to an exceedance of the “no toxics in toxic amount” narrative toxicity objective?

A. General Monitoring Provisions:

1. Samples and measurements shall be taken as required herein shall be representative of the nature of the monitored discharge, with all samples collected at pre-defined monitoring locations.
2. All laboratory analyses shall be conducted at a laboratory certified for such analyses by the CDPH in accordance with CWC section 13176. For this permit, the City of Vacaville Water Quality Laboratory (Vacaville WQ Lab), ELAP No. 1952, will be conducting all field testing and most in-laboratory analyses; Glyphosate and Nonylphenol testing will be tested by an ELAP-certified commercial laboratory to be determined. Vacaville WQ Lab has over 20 years of experience providing quality assurance review and timely SMR reporting to support City of

Vacaville NPDES discharge permits; and will provide laboratory support to meet the requirements stated in this MRP.

3. Per CDPH ELAP requirements, Vacaville WQ Lab and its contract laboratory will conduct all analyses in accordance with the latest USEPA 40 CFR 136 "Guidelines Establishing Test Procedures for Analysis of Pollutants".
 4. Records of monitoring information shall include:
 - The date, exact place, and time of sampling or measurements;
 - The individuals who performed the sampling or measurements;
 - The dates analyses were performed;
 - The individuals who performed the analyses;
 - The analytical techniques or methods used; and
 - Results of analyses.
- B. All monitoring instruments and devices used to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure accuracy.
- C. Monitoring results, including noncompliance, shall be reported per this MRP.

Note: The following paragraphs in this section are itemized to match General Permit requirements

I. Monitoring Locations and Sample Types

- A. Monitoring Locations: The limited scope of the herbicide application area (1/2-mile distance), coupled with landowner access restrictions, limits the representative sampling sites to two locations:
1. Easterly WWTP Outfall (EWWTP-Outfall), (GPS: 38.34662,-121.90159): This location is about 50 feet upstream of the beginning of the application area;
 2. Old Alamo Creek at Lewis Road (EWWTP RSW-002), (GPS: 38.34645,-121.89688): This location is about 30 feet downstream of the end of the application area.
 3. Old Alamo Creek Terminus (EWWTP RSW-005), (GPS: 38.32977,-121.86921): This location is just upstream of New Alamo Creek confluence where the MUN beneficial use is assigned.
- B. Sample Types: The following monitoring is required for each sampling:
1. Background Monitoring Sample Set: Collected within 24 hours in advance of the application event;
 2. Event Monitoring Sample Set: Collected in flowing waters immediately after the application event, but after sufficient time has elapsed such that the treated water would have exited the treatment area (= 18 to 24 hours post-treatment for this project).
 3. Post-Event Monitoring Sample Set: Post-application event monitoring samples shall be collected within 5 -to 7-days after application.

II. Receiving Water Monitoring Requirements – Surface Water

- A. General Monitoring Requirements – Considerations:
1. Basic geographic and hydrographic features of the area, application points and pathways of residue flow: Old Alamo Creek is a fully-treated wastewater effluent-dominated channel that conveys mostly wastewater, storm water, agricultural tail water flows, and other non-point source waters flowing south and eastward toward the San Francisco Bay via New Alamo Creek, Ulatis Creek and Cache Slough tributaries. The 8-12 foot wide, 4-6 foot depth Old Alamo Creek channel carries relatively low flows, except during periods of heavy storm

water runoff. The application area is relatively small, resulting in little to no expected adverse impact to potential beneficial uses (REC-1, WARM, AGR).

2. Aquatic herbicide application practices and how they are distributed in space and time: The application of herbicide will be limited only to periods effective at controlling the cattail population. This period is typically in the spring or autumn.
3. Relevant knowledge about the transport, fates, and effects of aquatic herbicide, including best- and worst-case scenarios: Glyphosate is a well-known, relatively non-toxic to animal life herbicide, with residues degrading within a few weeks of application. The best-case scenario: All glyphosate herbicide sticks to above water plant stalks with no detectable residual observed in the Event Monitoring Samples (Section II.B.2.). The worst-case scenario: A large amount of glyphosate is inadvertently spilled into the creek, leading to high detection levels in Event Monitoring Samples, and death of most vegetation in the waterway; it is still unlikely that fish kills would occur in a worst-case scenario.
4. Description of the designated beneficial uses in the waterway: Old Alamo Creek has a designated use of REC-1, WARM, and AGR. Per Basin Plan Amendment, MUN, COLD, MIGR and SPWN were de-designated as beneficial uses in 2006, due to Old Alamo Creek having been disconnected from the upper watershed for flood control reasons.
5. Relevant knowledge about the action of cumulative and indirect effects: Glyphosate breaks down into relatively non-toxic byproducts rather quickly, with no documented cumulative or indirect effects found in a literature search.
6. Mechanisms through which glyphosate application could lead to designated use impacts, given the basic features of the area: As the Old Alamo Creek waterway is adjacent of farmland that is routinely sprayed with pesticides, it is unlikely that the glyphosate application will be noticed in the impact area.
7. Known and potential impacts of glyphosate applications on water quality, ranked in terms of relative risk, based on factors such as magnitude, frequency and duration: Glyphosate application could render the agricultural use of water inapplicable to land irrigation for a brief period not likely to extend beyond 24 hours of application, but this risk is very low as Old Alamo Creek waters are not typically used for irrigation. Most irrigation water supplied to agriculture in the area is distributed in channels that run parallel to the creek system, which are operated by the Solano Irrigation District.
8. Sufficient number of sampling areas to assess the entire Discharger's area of influence: As noted in the introduction to this MRP, the limited scope of the herbicide application area (1/2-mile distance), coupled with landowner access restrictions, limits the representative sampling sites to three locations: one upstream and one downstream of the application area, and one at the terminus of Old Alamo Creek at the confluence of New Alamo Creek where the MUN beneficial use becomes assigned.
9. A description of sampling methods and a sampling schedule: Vacaville WQ Lab staff routinely perform weekly sample collections and field observations of the Receiving Surface Water (RSW-###) locations associated with City of Vacaville Easterly WWTP NPDES fully-treated wastewater discharge into Old Alamo Creek. The Lab is well-trained on clean sampling and field testing techniques, employing specialty sampling ladles and buckets to collect samples into lab-clean containers. The sampling schedule will follow that noted in sections II.A. and II B. above.

Receiving Water Observations: In conducting receiving water sampling, a log shall be kept of the conditions throughout the reach bounded by the treatment area (Outfall and RSW-002 locations), to be summarized and submitted with the monitoring report. Attention shall be given to the presence or absence of:

1. Floating or suspended matter;
2. Discoloration;
3. Bottom deposits;
4. Aquatic life;
5. Visible films, sheens, or coatings;
6. Fungi, slimes, or objectionable growths; and
7. Potential nuisance conditions.

B. Visual, Physical, and Chemical Monitoring Requirements

Monitoring shall take place at the two locations previously described in this MRP (Section II.A.). Monitoring for glyphosate and surfactant contaminant (Nonylphenol) shall be conducted for each location as noted in the schedule outline (MRP Section II.B.), as summarized in the table below:

Table 1. Monitoring Requirements for Old Alamo Creek Cattail Control APAP

Sample Type	Constituent/Parameter	Units	Sample Method	Minimum Sampling Frequency	Sample Type Requirement	Required Test Method
Visual	1. Monitoring area description; 2. Appearance of waterway; 3. Weather conditions	Not applicable	Visual Observation	Per sample event location	Background, Event and Post-event	Not applicable
Physical	1. Temperature of water (in-field)	°F	Grab (mid-water depth)*	Per application event	Background, Event and Post-event	Per 40 CFR 136 methods
	2. pH (in-field or <15 min in-lab)	Std Unit				
	3. Turbidity (in-lab)	NTU				
	4. Specific Conductivity (@ 25°C) (in-lab)	µmhos/cm				
Chemical	1. Glyphosate (Roundup active ingred.)	µg/L	Grab (mid-water depth)*	Per application event	Background, Event and Post-event	Per 40 CFR 136 methods
	2. Nonylphenol (surfactant contaminant)	µg/L				
	3. Dissolved Oxygen (in-field)	mg/L				

* Water in Old Alamo Creek is typically <3 feet deep

Table 2. Applicable Receiving Water Limitations

Constituent / Parameter	Applicable Beneficial Use Protection	Receiving Water Limit	Monitoring Location(s) in Old Alamo Creek	Basis
Glyphosate	MUN	70 µg/L	Outfall & RSW-005	USEPA MCL
Nonylphenol	WARM	6.6 µg/L	Outfall & RSW-002	USEPA National Recommended Ambient WQ Criteria
Toxicity	WARM	Not cause toxicity in water	Outfall & RSW-002	RWQCB Basin Plan

III. Reporting Requirements

A. General Monitoring and Reporting Requirements:

1. The City of Vacaville (Discharger) shall comply with all Standard Provisions in Order No. 2013-0002-DWQ, Attachment B, related to monitoring, reporting and recordkeeping.
2. Upon written direction of the SWRCB or Central Valley RWQCB, the City of Vacaville (Discharger) shall submit information as specified below.
3. The City of Vacaville (Discharger) shall report to the SWRCB and Central Valley RWQCB any toxic chemical release data that are reported to the State Emergency Response Commission with 15 days of reporting the data to the Commission pursuant to section 313 of the "Emergency Planning and Community Right to Know Act" of 1986.

B. Annual Information Collection

The City of Vacaville (Discharger) shall complete and retain all information on the previous reporting year beginning January 1 and ending December 31, which will be submitted to the SWRCB and RWQCB annually, or upon request. This annual report shall include the following:

1. An executive summary discussing compliance or non-compliance of this General Permit, including the effectiveness of this APAP to reduce or prevent the discharge of pollutants;
2. A summary of monitoring data, including identification of water quality improvements or degradation resulting from application of herbicide, and if appropriate, recommended improvements to the APAP;
3. Identification of BMPs currently in use and a discussion of their effectiveness in meeting General Permit requirements;
4. A discussion of BMP modifications addressing violations of this General Permit;
5. A map showing the location of each treatment area;
6. Types and amounts of aquatic herbicide 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 glyphosate and surfactant used;
8. Sampling results, including the following:
 - a. Name of sampling agency or organization;
 - b. Detailed sampling location information, including GPS location;
 - c. Detailed map or description of each sampling area;
 - d. Sample collection date(s);
 - e. Constituent name, and its concentration detected;
 - f. Minimum Level (ML) for each constituent (if applicable);
 - g. Method Detection Limit (MDL) for each constituent;
 - h. Name of water body sampled;
 - i. Comparison of sample results with water quality standards;
 - j. Description of Quality Assurance results associated with sample results; and
9. Summary of aquatic herbicide application log.

C. Annual Report

1. The City of Vacaville (Discharger) will submit an annual report to the SWRCB and Central Valley RWQCB consisting of a summary of the past year's activities (as noted previously), and to certify compliance with all requirements of this General Permit. If there is discharge of aquatic herbicides, their residues, or their degradation byproducts, the City of Vacaville shall provide certification that aquatic herbicide application activities did not result in a discharge to any water body.

2. The annual report shall include the information noted in Section IV.B of this APAP.
3. The annual report shall be due on March 1 of each year.
4. The RWQCB may require the annual report to be submitted electronically.
5. The City of Vacaville shall report with each sample result per Reporting Protocols listed in Section IV.E of General Permit Order No. 2013-0002-DWQ.

D. Other Reporting Requirements

1. Twenty-Four (24-) Hour Report: Any permit noncompliance, including any unexpected or unintended effect of aquatic herbicide use that may endanger health or the environment shall be report to the SWRCB and RWQCB with 24-hours of Discharger awareness of the circumstances.* This report must include the following information:
 - a. The caller's name and telephone number;
 - b. Applicator name and mailing address;
 - c. Waste Discharge Identification (WDID) number;
 - d. The name and telephone number of the contact person;
 - e. How and when the Discharger became aware of the noncompliance situation;
 - f. Description of the location of noncompliance;
 - g. Description of the noncompliance identified, including USEPA pesticide registration number for each product the Discharger applied in the area of noncompliance;
 - h. Description of any steps that the Discharger has taken or will take to correct, repair, remedy, cleanup, or otherwise address any adverse effects.

*If the Discharger is unable to notify the SWRCB and RWQCB with 24 hours, the Discharge must do so as soon as possible and also provide the rationale for why the Discharger was unable to provide timely notification.

2. Five (5-) Day Report: The Discharger shall also provide a written submission with five days of the time the Discharger becomes aware of the noncompliance. The written submission shall contain the following information:**
 - a. Date and time the Discharge contacted the SWRCB and RWQCB notifying of the noncompliance, and any instruction received from the SWRCB and/or RWQCB required to be provided in the 24-Hour Report;
 - b. A description of the noncompliance and its cause, including exact date and time;
 - c. Location of incident, including names of any water affected and appearance of those waters (sheen, color, clarify, etc.);
 - d. Magnitude and scope of the affected area;
 - e. Aquatic herbicide application rate, intended use site, method of application, and name of herbicide product, description of herbicide ingredients, and associated USEPA registration number;
 - f. Description of the habitat and the circumstances under which the noncompliance activity occurred;
 - g. Laboratory tests performed, if any, and timing of tests. A summary of the test results must be provided within five days after Discharger receipt of results;
 - h. If applicable, explain why the Discharger believes the noncompliance could not have been caused by exposure to aquatic herbicides from Discharger's application; and
 - i. Actions to be taken to prevent recurrence of adverse incidents.

** The SWRCB or RWQCB 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.

9. Procedures Used to Prevent Sample Contamination

The contractor will use foliar spraying technique using hand held equipment to distribute glyphosate herbicide onto the above water cattail growth. All efforts will be made to not allow the spray to directly contact the water surface. Spray personnel wear proper personal protective equipment when applying the herbicide.

10. Best Management Practices (BMPs) to be implemented

The Solano Resource Conservation District employs Best Management Practices (BMPs) that are designed to ensure efficient use of resources while minimizing potential adverse impacts to the environment.

A. Measures to prevent herbicide spill and for spill containment

To prevent pesticide spill accidents, containers are stored upright and out of the way of personnel before use. The Roundup Custom concentrate is added directly to the spray tank half full of water and then further diluted. If a spill incident were to occur, personnel would clean up all traces of chemical immediately and dispose of it per manufacturer's instructions.

B. Measures to ensure only herbicide is applied per product label

The contractor's staff members will have received annual pesticide safety training by Qualified Applicators. They will have demonstrated understanding of safety procedures as well as equipment calibration methods. Contractors will calculate the correct amount of herbicide to be applied to the target vegetation given the area covered and the rate specified on the label. The amount will not exceed the maximum allowable annual rate (7.5 pints per acre) and will be the minimum quantity demonstrated to be effective in control. Ambient conditions such as wind speeds and chance of precipitation are monitored using NOAA weather prediction information and checked in the field with a wind meter. Wind speeds should be between 2 and 10 mph. The label recommends that herbicide should not be applied if rain is forecast within 6 hours of application time. Contractor staff must be able to readily identify both the target plant species (*Typha* sp) and the non-target plant species on site (e.g. *Juncus* sp) to avoid injury to surrounding vegetation.

C. Applicator education practices employed

All Applicators are trained on the use of spray equipment, with emphasis on using the least amount of pesticide that will effectively kill the target weed. Applicators are also made available all information about chemicals used, including Safety Data Sheets.

D. Notification of local farmers and agencies

The adjacent property owner will be given prior notice of the spraying event. The closest water intake is 23 miles away via waterway (North Bay Aqueduct), which has been determined in past water quality and dye studies to not be significantly impacted (<0.3%) by Old Alamo Creek water quality. Therefore, no water agency needs to be notified prior to the spray application of glyphosate to cattails in Old Alamo Creek.

E. Measures to prevent fish kills

The spray concentration of glyphosate to be employed should have a low to non-existent toxicity to silversides and crawdads known to reside in Old Alamo Creek. All efforts will be made to not allow the spray to directly contact the water surface, which should minimize fish exposure to the herbicide. Any fish that are found to have been killed as result of this cattail spraying event will be reported.

11. Examination of Possible Alternatives

- A. Evaluation of management options
- i. No action. No corrective action to reduce the overgrowth of cattails would likely result in creek blockages that would threaten nearby lands with flood waters during heaving rain events. Further, the invasive cattails would overtake other natural plants in and around the creek.
 - ii. Prevention. Cattail seeds are spread easily in the windy conditions that prevail in the area, making it nearly impossible to prevent cattails from populating the creek system.
 - iii. Mechanical or physical methods. Physical removal of cattails from the creek using a mechanical bucket or other scraping tool is not recommended, as this action would destroy natural plant life and the aquatic habitat for benthic and fish communities.
 - iv. Cultural methods. Cultural methods for control of cattails are unknown.
 - v. Biological control agent application. Biological control agent application to control cattails are unknown.
 - vi. Aquatic herbicide application. The use of glyphosate to control cattails in water ways is common practice, due to past successes that result in high effectiveness, couple with little observed negative effects on aquatic habitat.
- B. Use of least intrusive application method
- C. Choice of most appropriate formulation

12. Other Aquatic Pesticide Use Requirements: Applicator's Field Log

The contractor shall maintain a log for each aquatic pesticide application containing the following information:

- The date of the application;
- The location of the application;
- The name of the applicator(s);
- The name(s) of the water bodies treated;
- Flow or level of the treated water body;
- Confirmation that sand-trap waste gates closed prior to application and during treatment;
- Time application started and stopped;
- Name, formulation, concentration, and amount of pesticide used;
- Observed conditions at time of application, including growth status of aquatic vegetation, appearance of waterway, weather conditions; and
- Signature certifying that the applicator(s) followed the conditions in the Aquatic Pesticides Application Permit.

C. Old Alamo Creek Cattail Control Project: Contacts

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