Attachment E – 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. Change of Information: WDID# 1 49AP00001
	C. ☐ Change of ownership or responsibility: WDID# _____	

II. DISCHARGER INFORMATION

A. Name Waterworks Industries Inc.			
B. Mailing Address 930 Shiloh Rd. Bldg. 38 Suite D			
C. City Windsor	D. County Sonoma	E. State California	F. Zip 95492
G. Contact Person Tyler Fowler	H. E-mail address tyler@waterworksindustries.com	I. Title Regulatory Compliance Manager	J. Phone (707) 837-7900

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: See Attachment below

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

V. ALGAECIDE AND AQUATIC HERBICIDE APPLICATION INFORMATION

A. Target Organisms: _____ See Attachment Below

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

Diquat Dibromide (Reward, Tribune)
Sodium Carbonate Peroxyhydrate (PAK27, GreenClean, Phycomycin)
Hydrogen Dioxide, Peroxyacetic Acid (GreenClean Liquid)
Fluridone (Sonar Formulations)
Endothall (Aquathol K, Hydrothol 191)
Glyphosate (Aquapro, Rodeo)
Triclopyr (Renovate 3)
Imazapyr (Habitat)
Imazamox (Clearcast)
Penoxsulam (Galleon SC)
Flumioxazin (Clipper)
Copper Formulations (Cutrine Plus, Captain, Nautique, Komeen, Earthtec, SeClear)

C. Period of Application: Start Date January 1st (For life of permit) End Date December 31st (For life of permit)

D. Types of Adjuvants Used: Surfactants, (Agri-Dex, Competitor, Cygnet Plus, LI-700, Liberate, MSO Concentrate)
Adjuvants containing ingredients represented by the surrogate nonylphenol will not be used

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: Tyler Fowler

B. Signature: _____ **Date:** 3-22-2019

C. Title: Regulatory Compliance and Aquatics Manager

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** _____

IV. RECEIVING WATER INFORMATION

3. Directly to river, lake, creek, stream, bay, ocean, etc.

Name of water body:

Shiloh Lake

Green Valley Lake (Cordelia Slough to Suisun Bay)

Point Tiburon Lagoon (Richardson Bay)

Marin Lagoon (Galinas Creek to San Pablo Bay)

Sonoma Greens Lake and Pond (Sonoma Creek to San Pablo Bay)

Fountain Grove Lake (Piner Creek to Russian River)

Vineyard Club Lake (Gill Creek to Russian River)

Lake Alhambra (Unnamed creek to San Joaquin River)

Sun City Lincoln Hills Community Association in arrangement with Lincoln Hills Golf Club

(Ingram Slough to Sacramento River)

Marin Country Club (Arroyo De San Jose seasonal creek to San Pablo Bay

M-24 Ranch Association (McKinney Creek to Calaveritas Creek into the south fork of the Calaveras River which then eventually flows into the New Hogan Reservoir)

V. ALGAECIDE AND AQUATIC HERBICIDE APPLICATION INFORMATION

A. Target Organisms: ____

Eurasian Water Milfoil (*Myriophyllum spicatum*), Sago Pondweed (*Potamogeton pectinatus L.*), American Pondweed (*Potamogeton nodosus*), Brazilian Elodea (*Egeria densa*), Widgeon Grass (*Ruppia spp.*), Curly-leaf pondweed (*Potamogeton crispus*), Coontail (*Ceratophyllum demersum*), Mosquito Fern (*Azolla spp.),* Duckweed (*Lemna minor),* Cattails (*Typha spp.*), Parrot Feather (*Myriophyllum aquaticum*), Watershield (*Bresenia shreberi*), Creeping Water Primrose *(Ludwigia),* Bulrush (*Schoenoplectus californicus*), Coontail (*Ceratophyllum demersum*), Filamentous Algae, and Planktonic Algae.

WATERWORKS INDUSTRIES INC.
AQUATIC PESTICIDE APPLICATION PLAN (APAP)

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

Submitted To:

Trinh Pham, Water Resource Control Engineer
State Water Resources Control Board
Division of Water Quality
1001 I Street, 15th Floor
Sacramento, CA 95814

Prepared By:

Waterworks Industries Inc.
930 Shiloh Rd, Bldg. 38, Suite D
Windsor, CA 95492

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March 2019

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Board President – William Rothe
Shiloh Homeowners Association
C/o Steward Property Services, Inc.
1415 N. McDowell Blvd., Ste. B
Petaluma, CA 94954

Tyler Fowler
Waterworks Industries Inc.
930 Shiloh Rd., Bldg. 38, Suite D

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Nathan Condie – Director
Varenna at Fountain Grove
1401 Fountaingrove Parkway
Santa Rosa, CA 95403

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Waterworks Industries Inc.
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Richard Cardosi
C&C Property Management
500 Merchant St, Suite A
Vacaville, CA 95688

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Laurence Sylvester (Board President)
Point Tiburon Lagoon Owners Association
C/o Charles Property Services, Inc.
35 Mitchell Blvd, Suite 5A
San Rafael, CA 94903

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Board President – Mara Kahn
Sonoma Greens Community Association
C/o Steward Property Services, Inc.
1415 N. McDowell Blvd., Ste. B
Petaluma, CA 94954

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Bob Haar – President
Marin Lagoon Homeowners Association
C/o Steward Property Services, Inc.
1415 N. McDowell Blvd., Ste. B
Petaluma, CA 94954

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Bert Sandell
The Vineyard Club, Inc.
P.O Box 44
Geyserville, CA 95441

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_____, AGENT FOR LAKE ALHAMBRA.

Sommer Perry
Lake Alhambra Homeowners Association
C/o Homeowners Management Company, LLC
2151 Salvio Street Ste 250
Concord, CA 94520

_____

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DocuSigned by:
Tony D. C. 6/8/2018
B71385D8715544F...

Tony D. Cianci – Sr. VP, Operations
Lincoln Hills Golf Club
1405 E. Joiner Parkway
Lincoln, CA 95648

Erik Rosales – Facility Manager
Sun City Lincoln Hills Community Association
965 Orchard Creek Lane
Lincoln, CA 95648

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Kevin Pryseski
Marin Country Club
Golf Course Superintendent
500 Country Club Drive
Novato, CA 94949

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Erik Olofson, Lake Committee Chairman
M-24 Ranch Association
110 Royal Ridge Drive
Mountain Ranch, CA 95246

Tyler Fowler
Waterworks Industries Inc.
930 Shiloh Rd., Bldg. 38, Suite D

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BACKROUND

On March 12, 2001, the Ninth Circuit Court of Appeals held that discharges of pollutants from the use of aquatic pesticides in waters of the United States require coverage under an NPDES permit. (*Headwaters, Inc. v. Talent Irrigation District).3* The *Talent* decision was issued just prior to the major season for applying aquatic pesticides.

Because of the serious public health, safety, and economic implications of delaying pesticide applications, in 2001 the State Water Board adopted Water Quality Order (Order) No. 2001-12-DWQ, Statewide General NPDES Permit for Discharges of Aquatic Pesticides to Waters of the United States on an emergency basis to provide immediate NPDES permit coverage for broad categories of aquatic pesticide use in California.

Order No. 2001-12-DWQ expired on January 31, 2004. In 2004, it was replaced by two general permits: a vector control permit for larvicides (Order No. 2004-0008-DWQ) and a weed control permit (Order No. 2004-0009-DWQ). The State Water Board determined that adoption of these two permits was consistent with the Ninth Circuit decisions.

The 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. Water Quality Order No. 2013-0002-DWQ General Permit No. CAG990005 was adopted by the State Water Resources Control Board on March 5, 2013 and became effective on December 1, 2013. This supersedes Order No. 2004-0009-DWQ except for enforcement purposes, and in order to meet the provisions contained in division 7 of the Water Code (commencing with §13000) and regulations adopted thereunder, and the provisions of the CWA and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order.

GENERAL PERMIT COVERAGE

This General Permit covers the point source discharge to waters of the United States of residues resulting from pesticide applications using products containing 2,4-D, acrolein, calcium hypochlorite, copper, diquat, endothall, flumioxazin, fluridone, glyphosate, hydrogen peroxide, imazamox, imazapyr, penoxsulam, peroxyacetic acid, sodium carbonate peroxyhydrate, sodium hypochlorite, and triclopyr-based algaecides and aquatic herbicides, and adjuvants containing ingredients represented by the surrogate nonylphenol.

This General Permit covers only discharges of algaecides, and aquatic herbicides that are currently registered for use in California, or that become registered for use and contain the above-listed active ingredients and ingredients represented by the surrogate of nonylphenol

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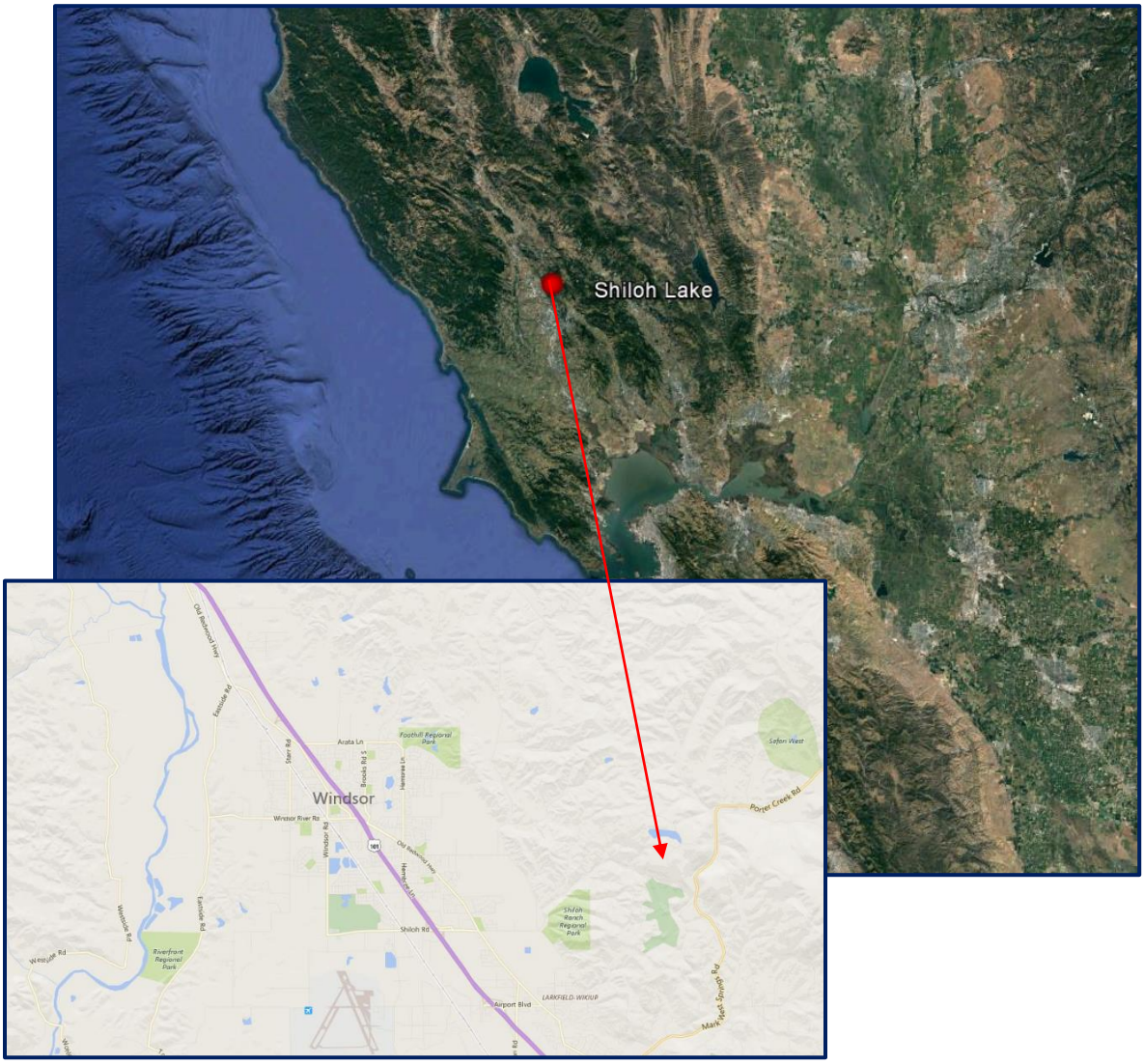
AQUATIC PESTICIDE APPLICATION PLAN

The following Aquatic Pesticide Application Plan (APAP) includes several Waterworks Industries Inc. clients including The Shiloh Homeowners Association, Varenna at Fountaingrove, Green Valley Lake Association, Point Tiburon Lagoon Owners Association, Marin Lagoon Homeowners Association, Sonoma Greens Community Association, The Vineyard Club Inc., The Lake Alhambra Homeowners Association, Sun City Lincoln Hills Community Association in arrangement with Lincoln Hills Golf Club, Marin Country Club and the M-24 Ranch Association. The APAP outlined below is designed 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.

DESCRIPTION OF THE SYSTEMS

Shiloh Homeowners Association Lake - REGION 1



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Shiloh Lake is a 19.3 acre lake located in Santa Rosa, California approximately five miles east of downtown Windsor off of Shiloh Ridge. There are several estates surrounding the lake which make up the Shiloh Homeowners Association. The beneficial uses of the lake include habitat for fish and waterfowl, recreational activity such as swimming, non-motorized boating and fishing, and aesthetics for the surrounding homes and community.

The lakes maximum depth is forty foot at the dam and the average depth when full is ten foot. The water that fills the lake is from runoff of the surrounding watershed. The association also has a well that they use to fill the lake, only when necessary to add additional water if the winter runoff is not sufficient to fill the lake to the minimal level.

If water exits the lake through the overflow pipe, it travels down an unnamed waterway approximately four and a half miles until it intersects Pool Creek which then connects with Windsor Creek which then runs into Mark West Creek, which then flows into the Russian River which eventually empties into the Ocean.

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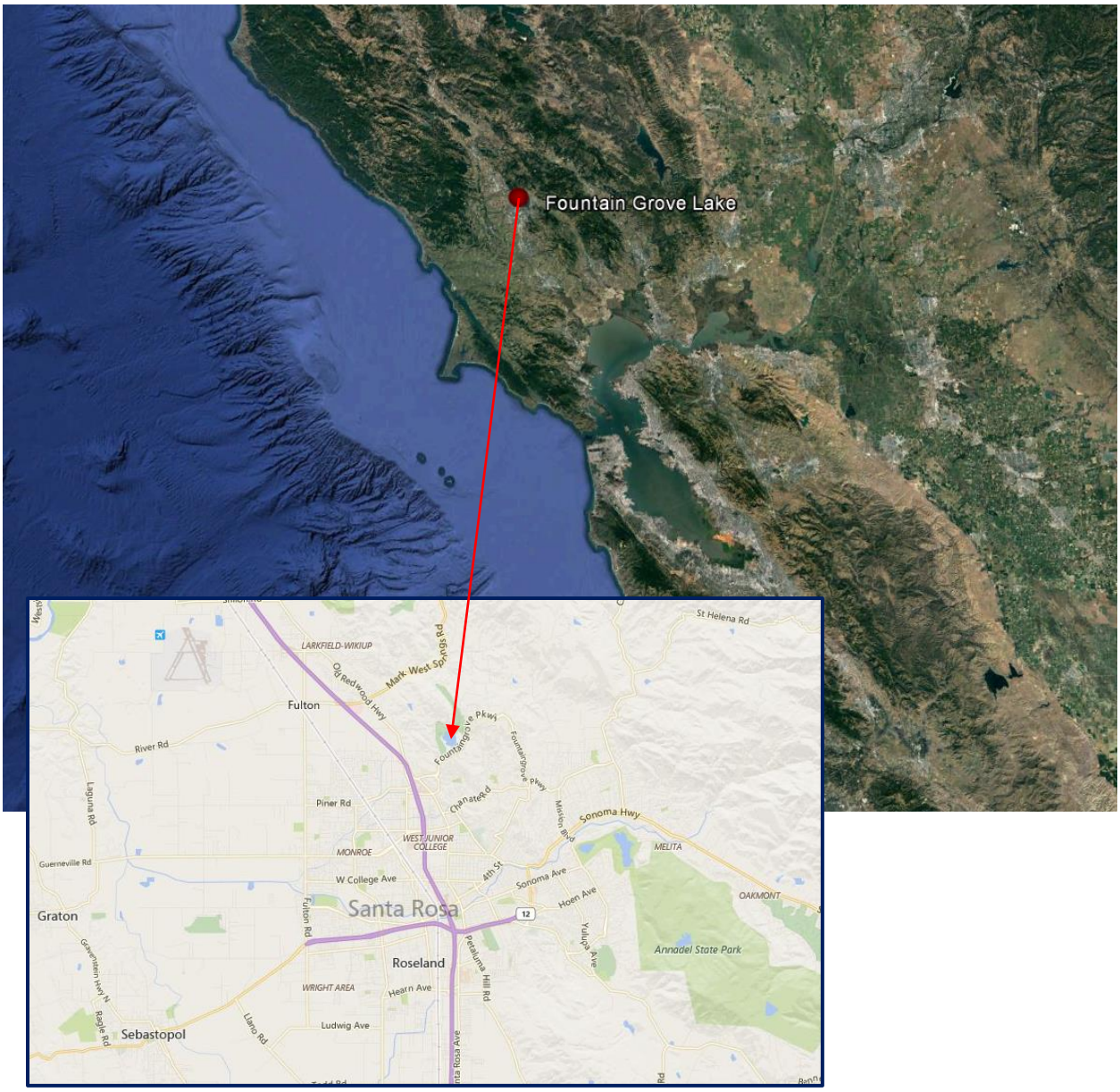
Varenna at Fountaingrove – Fountaingrove Lake - REGION 1



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Fountaingrove Lake is a 25 surface acre lake located just northeast of downtown Santa Rosa, CA. The lake is shared with the City of Santa Rosa and the Fountain Grove Golf and Athletic Club. Varenna at Fountaingrove is an exclusive Senior Living community. The beneficial uses of the lake include fishing, swimming, boating, flood control, wildlife habitat, and aesthetics.

Fountaingrove Lake is approximately 28 feet at its deepest with an average depth of approximately 12 to 13 feet. Fountaingrove Lake is fed by storm water and if water leaves the lake in winter its primary outlet is Piner Creek. Piner Creek originates in the lower Mayacmas Mountains at Fountaingrove Lake. From its outlet at Fountaingrove Lake, Piner Creek flows down a relatively steep gradient, initially over a riprap lined channel, which has been modified in association with some alterations to lower Fountaingrove Lake. Thence Piner Creek flows northerly of an upscale modern office park before crossing under Redwood Highway and U.S. Highway 101. West of the U.S. 101 Freeway, Piner Creek winds through a retail and commercial/industrial area, before crossing under Piner Road near Coffey Lane. Piner Creek terminates at its confluence with Santa Rosa Creek, which watercourse discharges to the Laguna de Santa Rosa; the Laguna de Santa Rosa ultimately forms a confluence with the Russian River, which flows into the Pacific Ocean.

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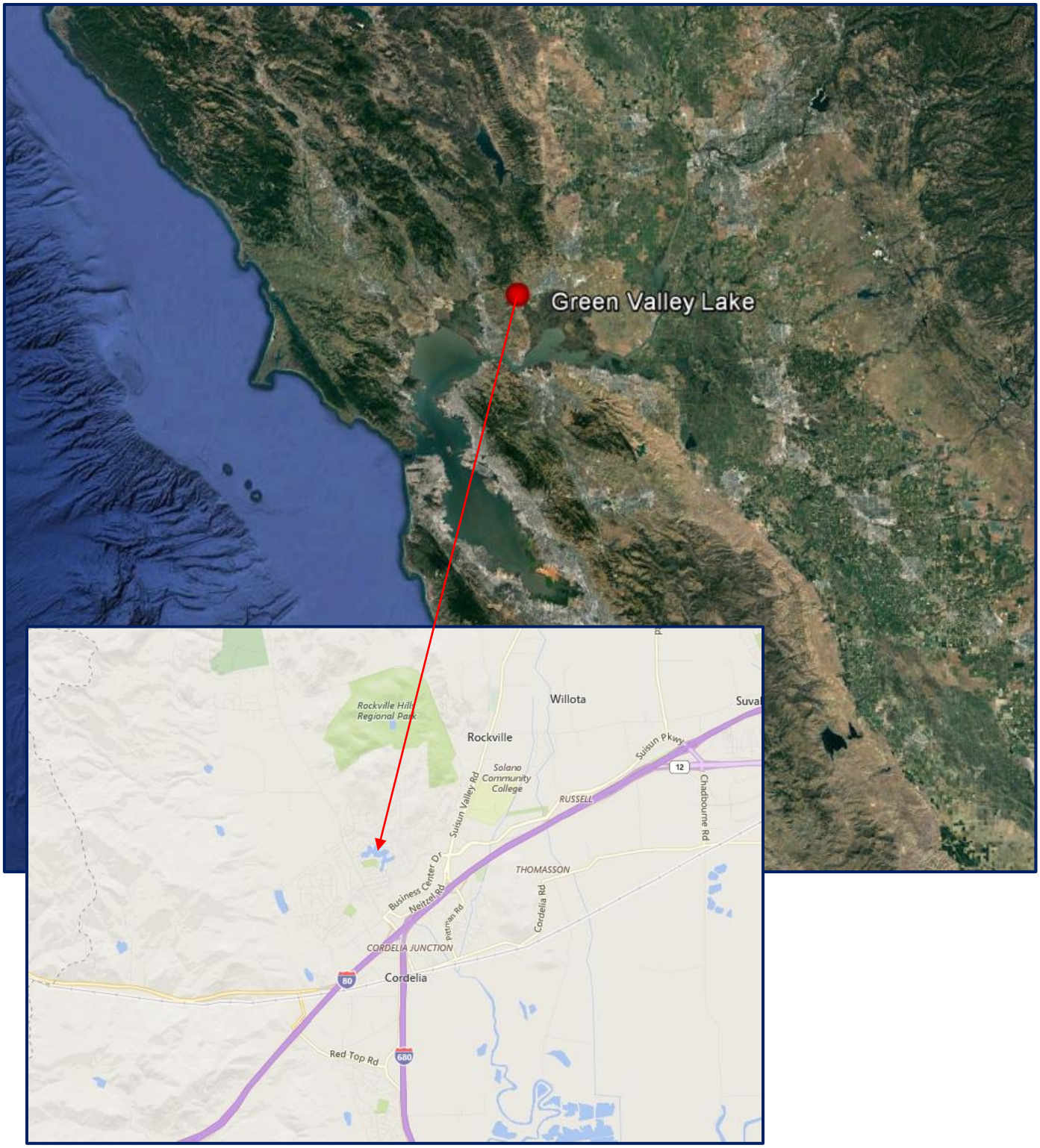
Green Valley Lake Home Owners Association Lake – REGION 2



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Green Valley Lake is a manmade lake in Fairfield, CA (Solano County) built in the 1990's, designed to be a water feature for the surrounding Green Valley Lake community. The lake was also designed as a storm water detention device that the City of Fairfield Department of Public Works uses to control and prevent flooding from storm events for the surrounding area. The lake is managed by the Green Valley Lake Association with the assistance of the C&C Property Management company.

Water enters Green Valley Lake via a well located adjacent to the boat ramp at the south end of the lake. Water also enters the lake via the City of Fairfield storm drain system if water levels reach a certain level of capacity. Most storm water does not enter the lake, only the overflow during heavy rains and flood events.

Water exits the lake system out of the city controlled sluice gate located at the southernmost end of the lake that is connected to the City storm drain system. Water leaving the lake travels through a series of storm drain pipes which eventually drain into Green Valley Creek. Water from Green Valley Creek drains into Cordelia Slough which eventually drains into Suisun Slough which then drains into Suisun Bay.

Water does not leave the lake unless the outflow sluice gate is opened to release water or if the lake completely overflows. During the spring and summer months the lake level is maintained at a level that does not release water into the storm drain system. Therefore Green Valley Lake is operated as closed / static system and not a flow through system.

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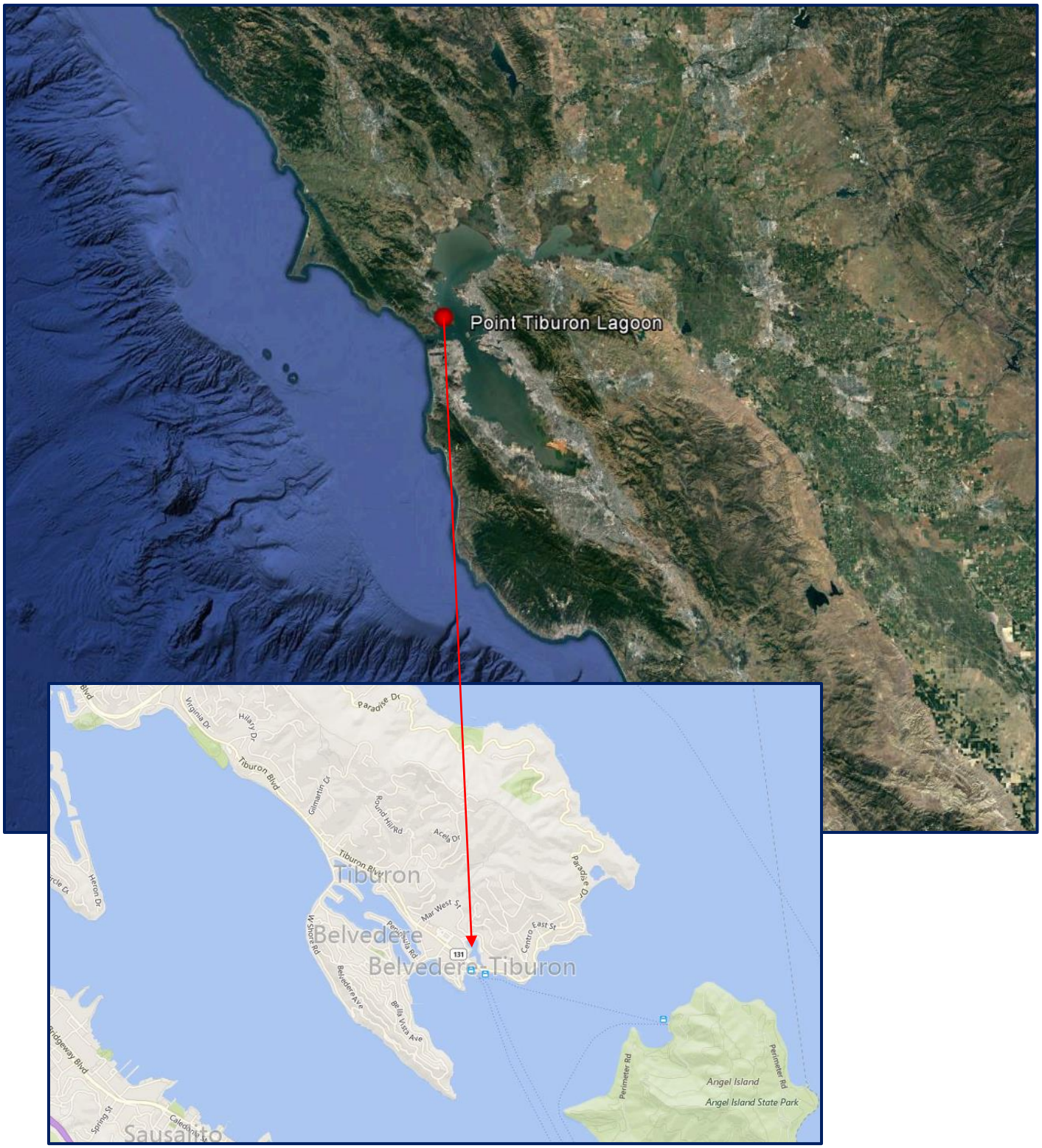
Point Tiburon Lagoon Owners Association Lagoon - REGION 2



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Point Tiburon Lagoon is a 3.5 acre lagoon with a surrounding master planned development of 54 condominiums which was built on San Francisco Bay in 1987 in the City of Tiburon. Within walking distance of Point Tiburon Lagoon is Tiburon's main street, the ferry to San Francisco and numerous public amenities including a shoreline park, tennis courts, wildlife sanctuary and public library. The primary beneficial use of the lagoon is aesthetics for the surrounding owners and the Town of Tiburon.

The lagoon is approximately six foot deep and has a total volume of approximately twenty one acre feet. The lagoon has an overflow weir structure which only allows for release of water during major storm events. Therefore the lagoon is operated as a closed / static system. When water does overflow from the weir structure the water leaving the lagoon goes directly into San Francisco Bay.

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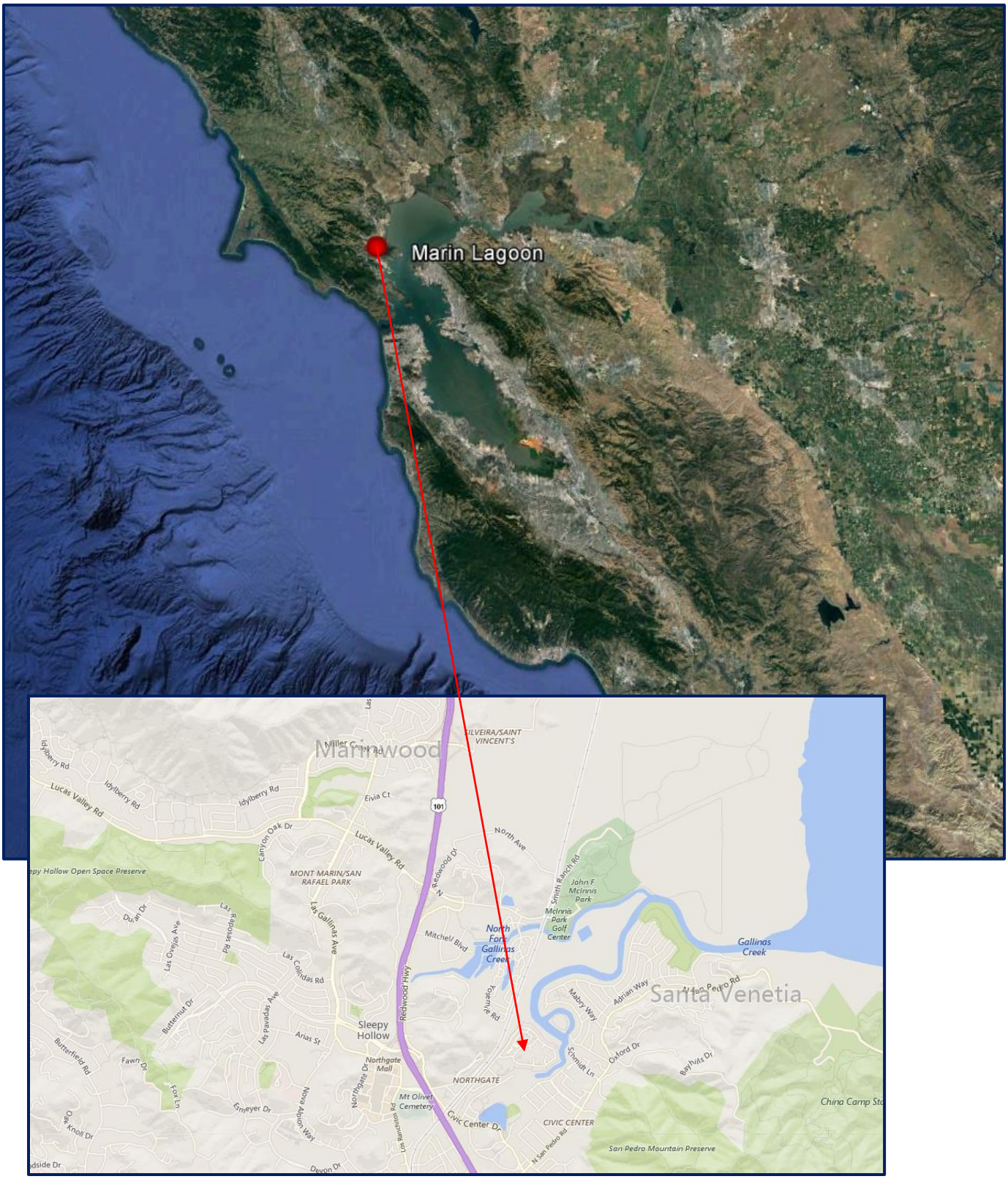
Marin Lagoon Association Lagoon - REGION 2



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Marin Lagoon is a 40.5 acre single and multi-family residential development located southeast of the Marin County Civic Center in the City of San Rafael. The site is bounded on the west by McInnis Parkway, on the north and east by the South Fork of Gallinas Creek, and on the south by a man-made channel designated as Auditorium Channel. The lagoon, around which the homes are built, is approximately 5 acres in area. Its primary purpose is to store storm water runoff during periods of high tide and discharge the runoff to Gallinas Creek via the Railroad Channel, which parallels McInnes Parkway, during low tides. It also contributes to the aesthetic setting of Marin Lagoon and offers the following beneficial uses: aesthetics for the surrounding homes and community, use as a storm water detention basin, and limited recreational activity such as kayaking. The lagoon's maximum and average depth varies depending on tidal water level fluctuations. The maximum depth averages around five to six foot and the average depth around three to four feet.

Water entering the lagoon comes from surrounding storm drains of the development as well as bay water from Gallinas Creek. Water leaving the lagoon flows into the Railroad Channel, then flows back into Gallinas creek and eventually drains into San Pablo Bay. The flow through the system is controlled by an inflow control structure, a junction structure, and two outlet structures as can be seen in the diagram to the left. The system was designed to monitor tidal water flow into and out of the lagoon at a controlled rate to and from Gallinas Creek. The outlet structures can be closed for aquatic pesticide treatments creating a static system for treatments.

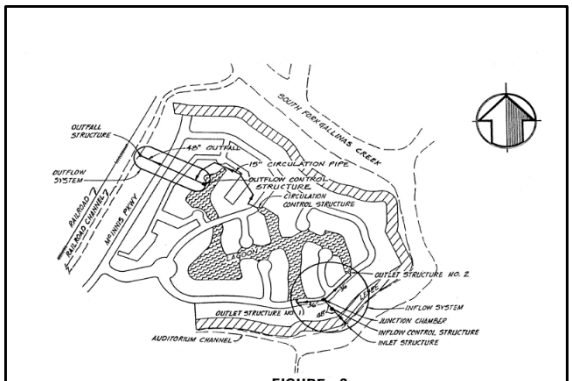

FIGURE 2
SCHEMATIC LOCATION
HYDRAULIC CONTROL STRUCTURES

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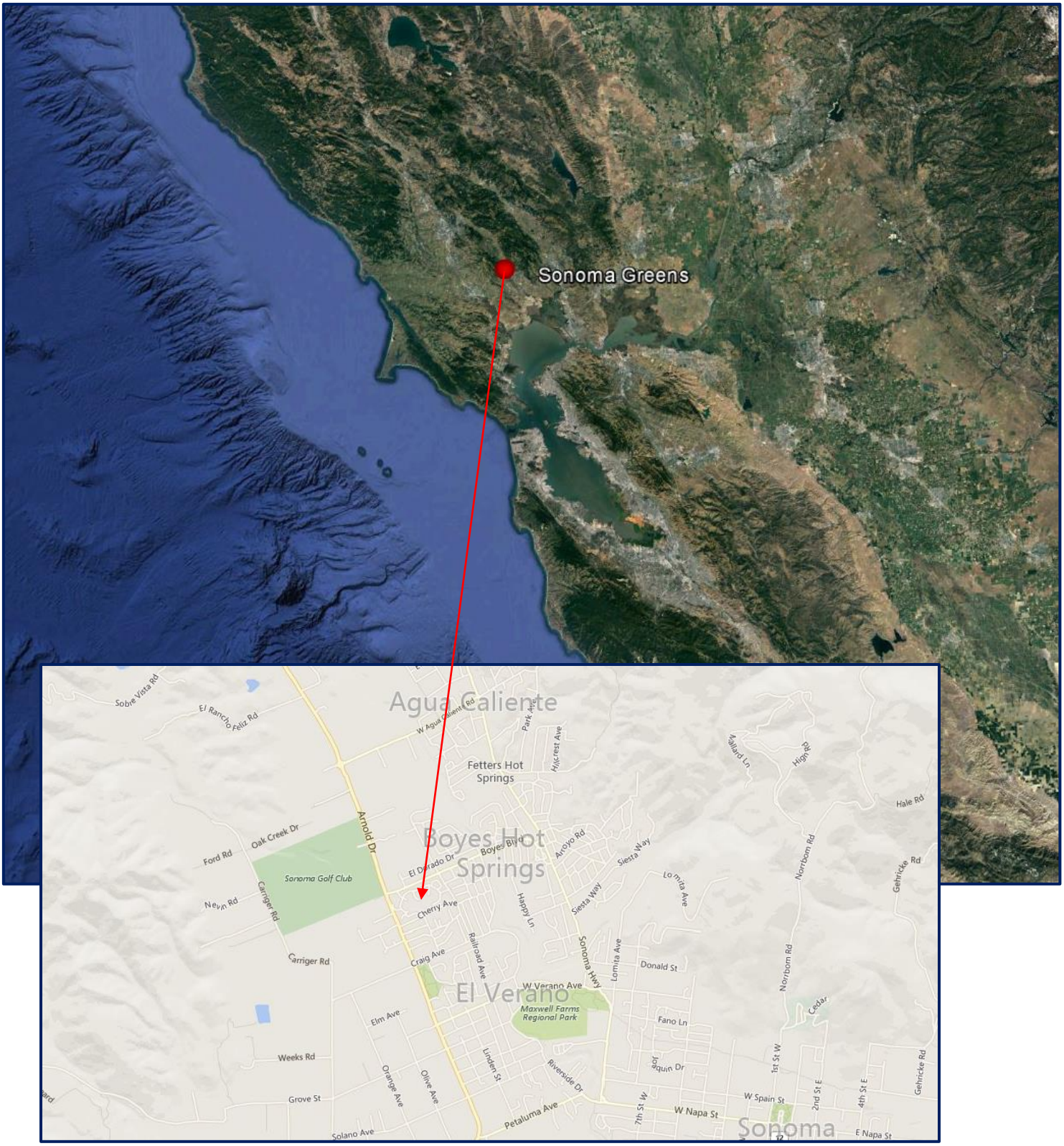
Sonoma Greens Community Association Lake and Pond – REGION 2



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Sonoma Greens Lake is a 1.11 acre lake and Sonoma Greens Pond is a 0.18 acre pond located in Sonoma, California approximately two and a half miles north west of downtown Sonoma between Princeton Ave. and Cherry Ave. There are several homes and walking trails surrounding the lake and pond all of which are part of the Sonoma Greens Community Association. The beneficial uses of the lake and pond include habitat for fish and waterfowl, fishing, aesthetics for the surrounding homes and community, and irrigation for the surrounding common property.

The lakes maximum depth is fourteen foot and the average depth when full is seven foot. The ponds maximum depth is nine foot and the average depth when full is five foot. The water that fills the lake and pond is from runoff of the surrounding watershed as well as from the Associations well which is used to keep the lake and pond full year round. Use of the well is only necessary when winter runoff is not sufficient to fill the lake and pond to the desired level.

The water if it leaves the lake and pond over the spillway travels down an unknown unnamed waterway until it runs into Sonoma Creek. Once in Sonoma Creek it flows downstream and eventually empties into San Pablo Bay

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The Vineyard Club Inc. – Vineyard Club Lake – REGION 1

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The Vineyard Club Lake is approximately twenty three (23) surface acres. The lake was constructed by creating a levee in 1963 by using natural materials taken from the lake bed. The lake is part of The Vineyard Club Inc. which is a private club located approximately three (3) miles north of downtown Geyserville, CA off Rockmound Rd.

The beneficial uses of the lake include swimming, fishing, boating, habitat for fish and waterfowl and a resource for firefighting.

The maximum depth in Vineyard Club Lake is twenty (20') foot and the average depth when full is approximately ten (10') foot. Water enters Vineyard Club Lake primarily from rainfall and runoff from the surrounding watershed which is approximately twenty (20) to thirty (30) acres. The Vineyard Club Inc. management installed constructed wetlands to slow and filter the water that comes in from approximately fifteen (15) acres of this watershed. The secondary source of water entering the lake is a two (2) mile four (4") inch diversion pipeline from Oat Flat Creek. This diversion is operated under a license with the State Water Resources Control Board and has seasonal, bypass and other restrictions. The map located on the following page (page 31) shows the diversion pipe location and other information associated with the license.

If water leaves the lake it does so over a small spillway at the southeast corner of the lake. The outflow does not occur every year and is dependent upon the amount of rainfall received. Once water does go over the spillway the outflow travels via Gill Creek to the Russian River which is located approximately three (3) miles away. Water also leaves the lake through evaporation and use by Cal Fire for seasonal firefighting using helicopter catch buckets.

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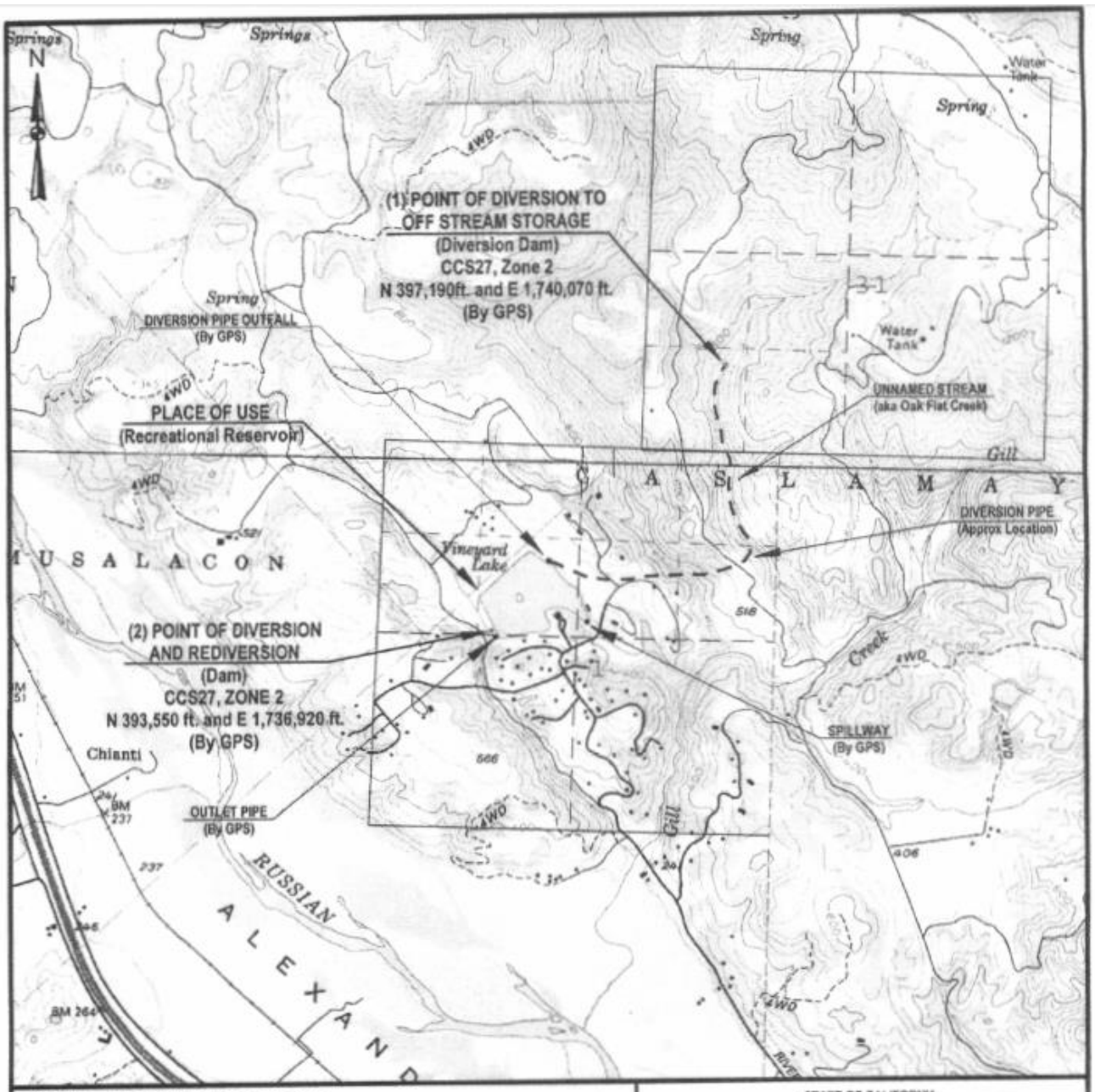

OWNER THE VINEYARD CLUB, INC.

SOURCE (1) UNNAMED STREAM (AKA OAK FLAT CREEK)
(2) UNNAMED STREAM
(1)(2) TRIBUTARY TO GILL CREEK THENCE RUSSIAN RIVER

POINTS OF DIVERSION
WITHIN (1) SW 1/4 OF SW 1/4 OF
(2) SE 1/4 OF NW 1/4

PROJECTED SECTION (1) 31 T11N, R 9W, MDB&M
(2) 1 T10N, R10W, MDB&M

COUNTY OF SONOMA

U.S.G.S. QUAD ASTI and GEYSERVILLE DATE GIS SCALE 1:24,000

STATE OF CALIFORNIA
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
STATE WATER RESOURCES CONTROL BOARD
DIVISION OF WATER RIGHTS

APPLICATION NO. 26224

LICENSE NO. 12831

COMPLIANCE

DATE	DRAWN	CHECKED
5/4/2005	L. Lindsay	

Note: This map does not constitute a public land survey as defined by California Business & Professions Code section 8726. It has been prepared for descriptive purposes only.

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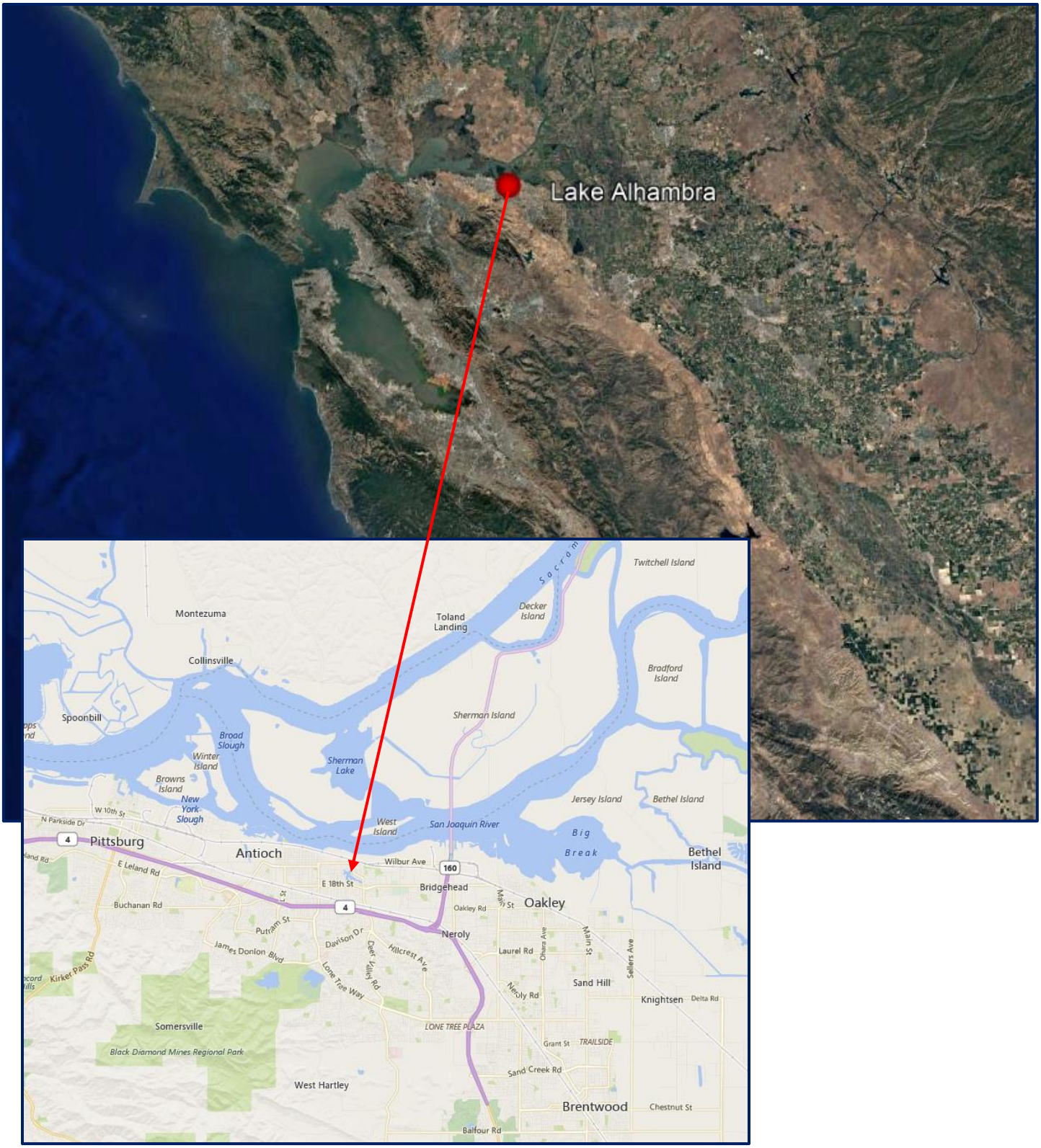
Lake Alhambra Homeowners Association – Lake Alhambra – REGION 5



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Lake Alhambra is an approximately eighteen (18) surface acre urban lake located within the Lake Alhambra Homeowners Association in Antioch, CA which was built thirty five (35) years ago in 1983. Lake Alhambra has a maximum depth of approximately twelve (12) foot with an average depth of approximately six (6) foot.

Rainfall and watershed runoff are the primary sources of water that fill the lake. During rain events, water runs from the surrounding watershed through various flood control channels into the lake. Water leaves the lake if the control gates are opened during rain events to discharge excess water into a channel that leads to the San Joaquin River.

The beneficial uses of the lake include acting as a drainage impoundment, recreational activities such as boating, fishing, and swimming and aesthetics for the surrounding community.

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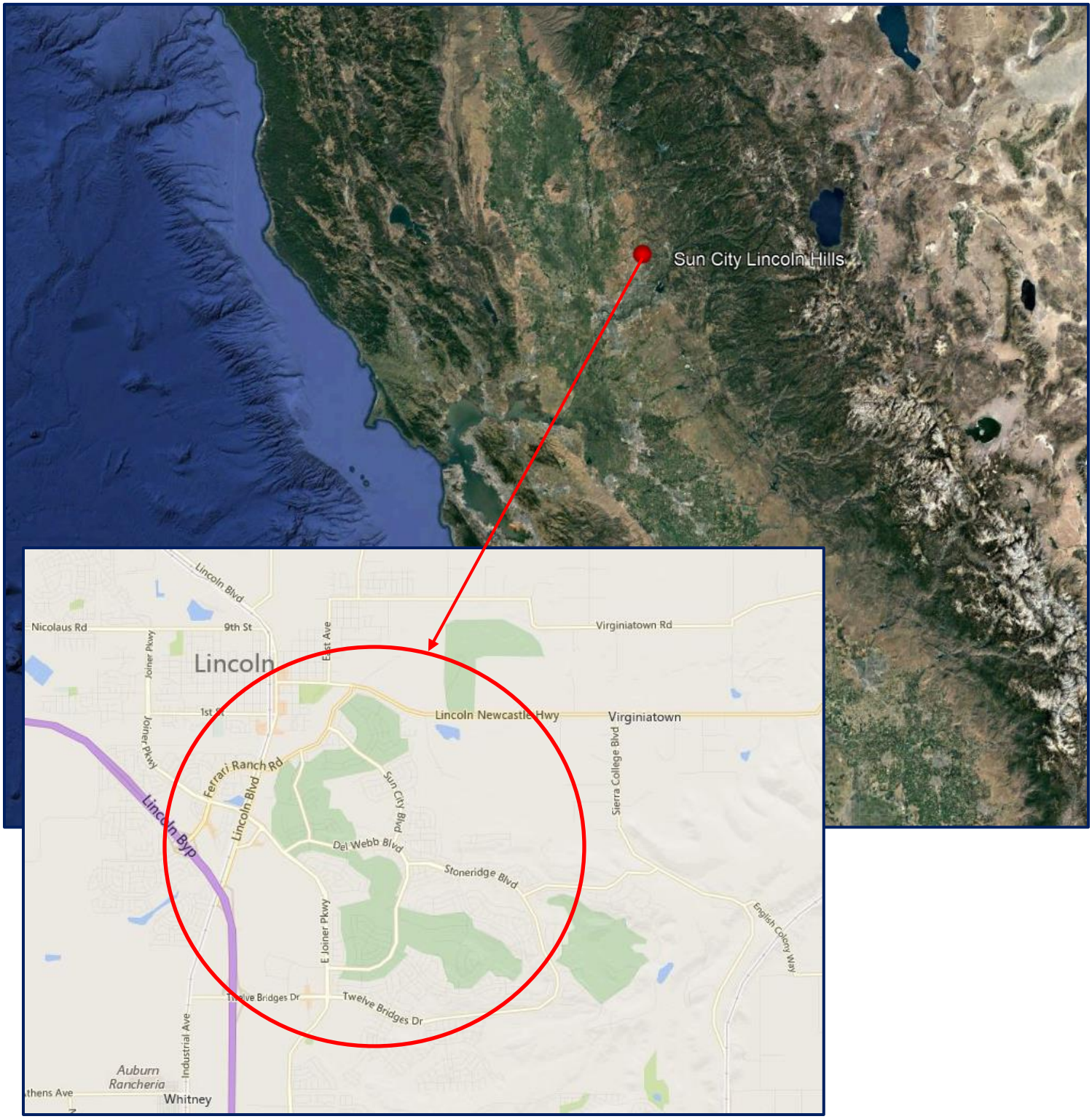
Sun City Lincoln Hills Community Association in arrangement with Lincoln Hills Golf Club – Shared water system which includes Upper Ferrari Pond, Hidden Hills Pond, and nine golf course ponds - REGION 5



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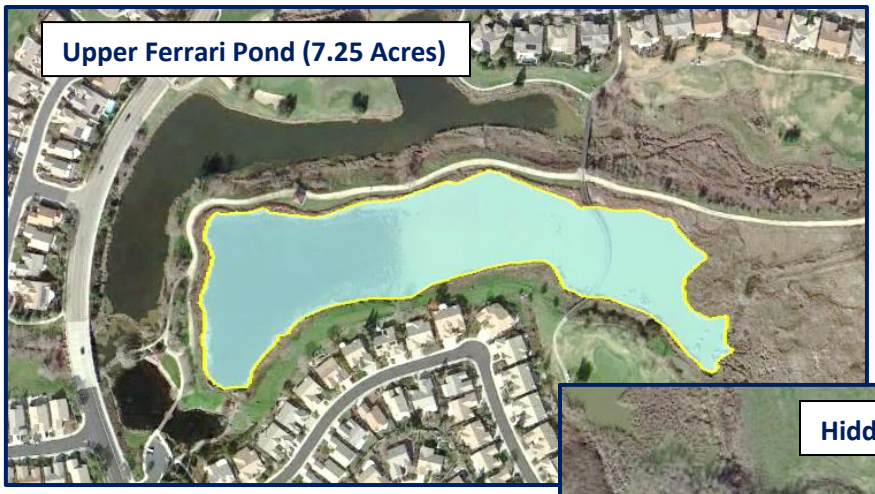
The Sun City Lincoln Hills Community Association is an adult community for residents fifty five (55) years or older that was opened for residence in 1999. The community has 6,783-homes and is spread across 2,992 acres which includes two (Lincoln Hills Golf Course) 18-hole golf courses and several other amenities for the community. The Sun City Lincoln Hills Community Association and Lincoln Hills Golf Course share a large system of connected waterways that consist of several lakes, ponds, and streams that are spread throughout the community and golf course.

Sun City Lincoln Hills Community Association Ponds



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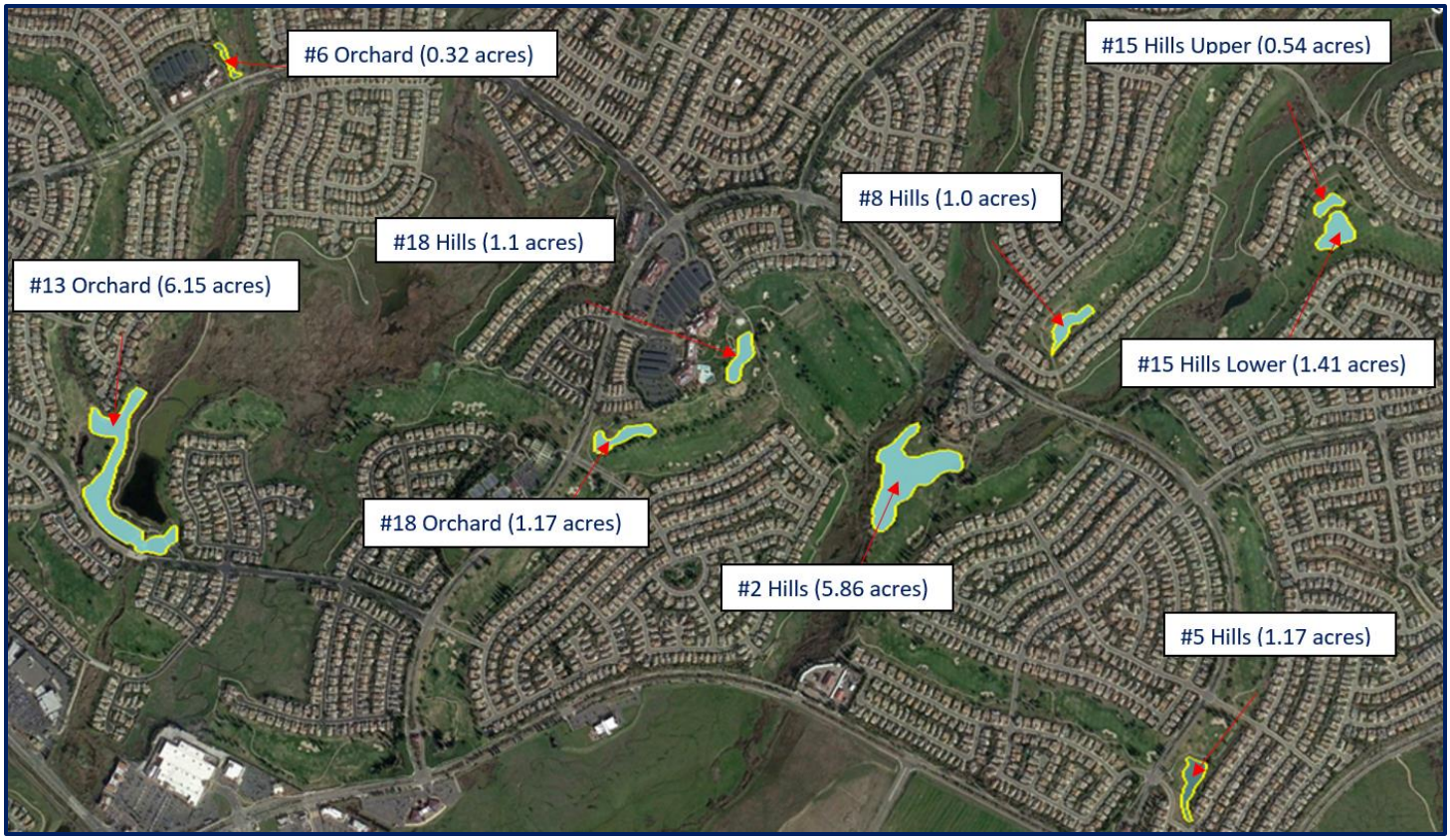
Lincoln Hills Golf Club Ponds



Nevada Irrigation District (NID) and Placer County Water Agency (PCWA) canals introduce water into the system as does rainfall and runoff from the Placer Nevada South Sutter North Sacramento Sun Watershed. Water that flows through the system fills Upper Ferrari pond, Hidden Hills pond, and all nine golf course ponds. Some of the ponds operate in a static state and others are flow through systems. Water that flows through the system or flows due to rain events leaves the system via Ingram Slough which heads west to the cross canal collection system, ultimately discharging into the Sacramento River near its confluence with the Feather River in Sutter County.

The beneficial uses of the lakes and ponds include stormwater detention and recreation (fishing, golfing, and aesthetics) for the surrounding community.

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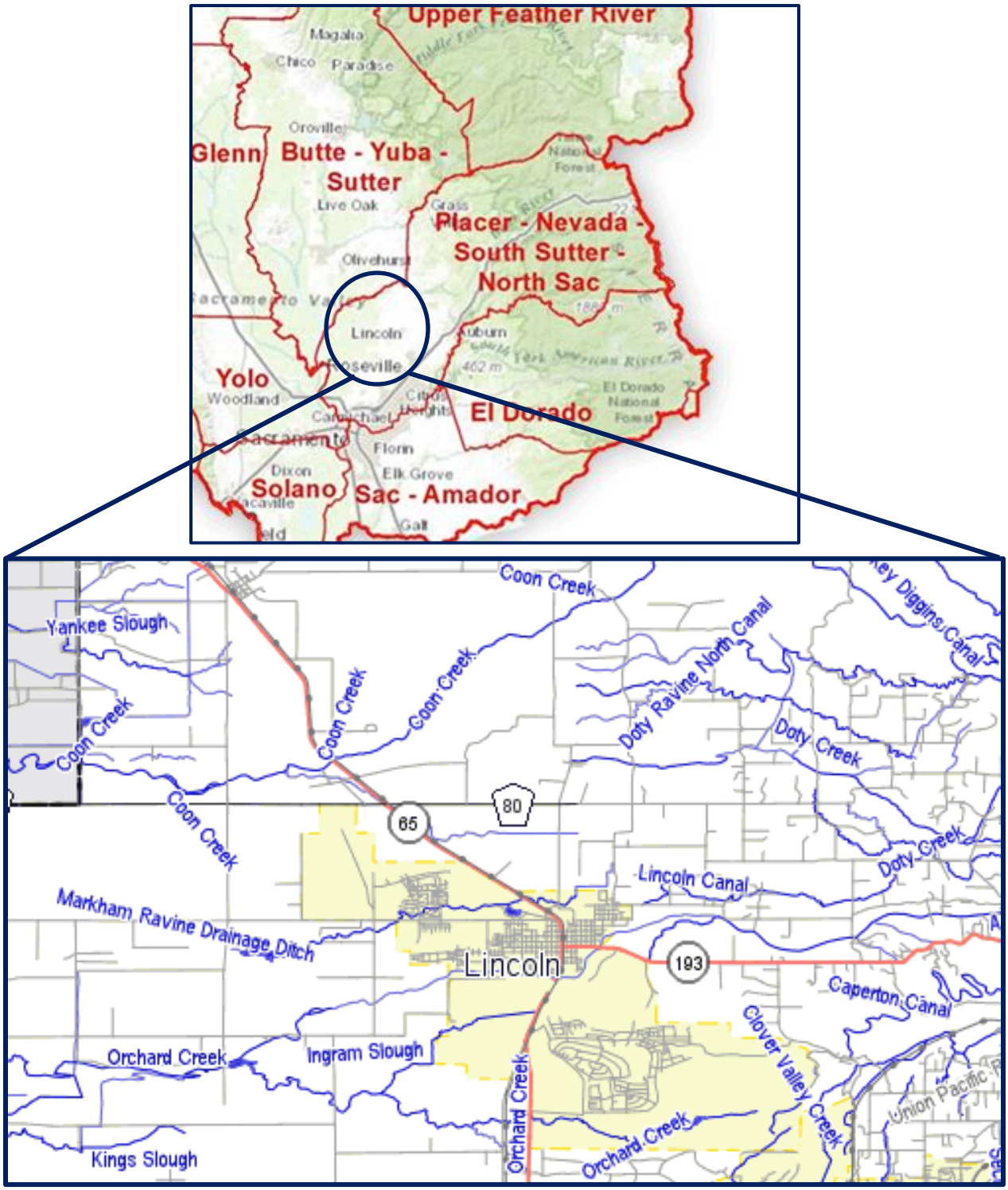

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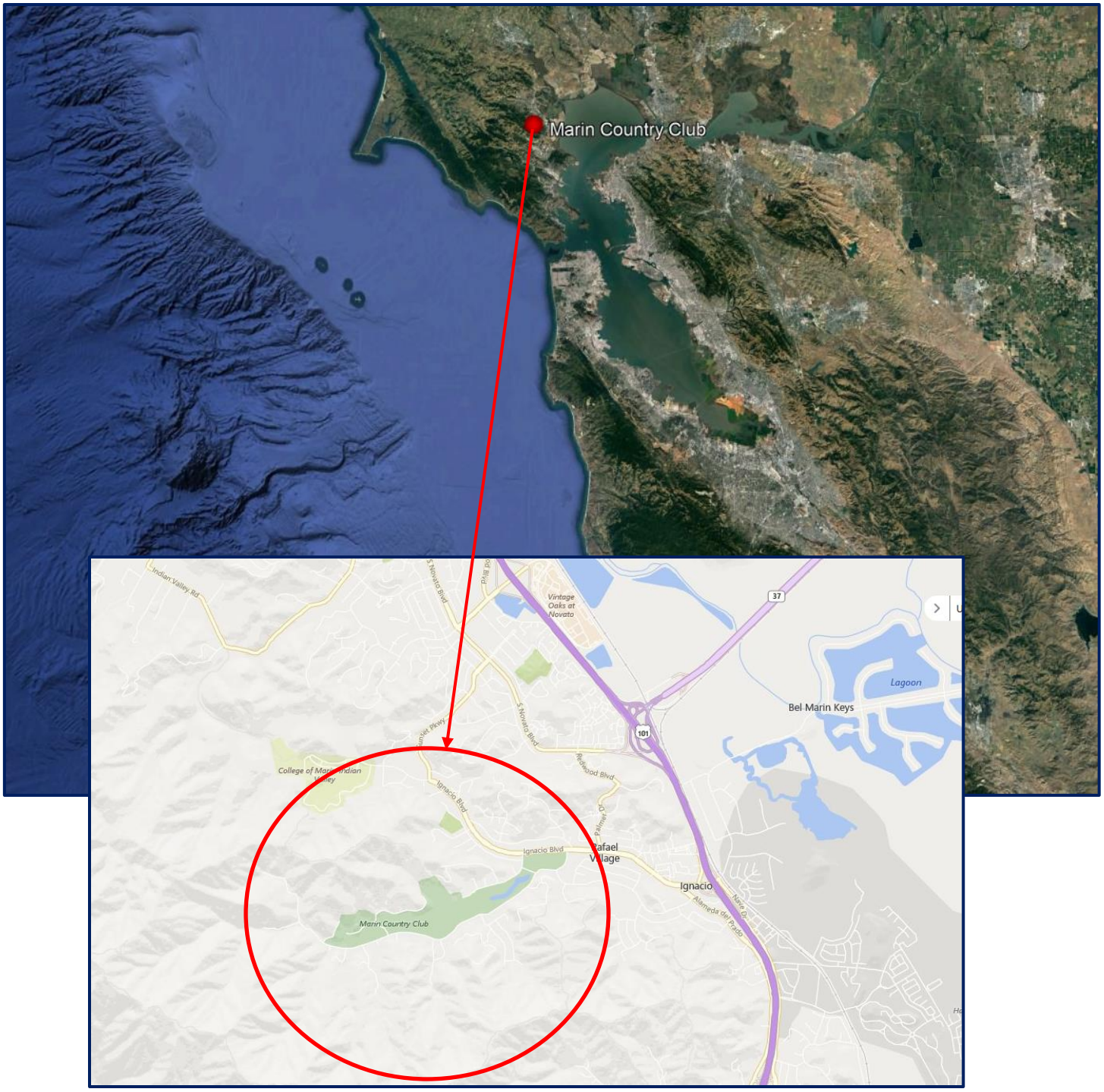
Marin Country Club Golf Course Ponds - REGION 2



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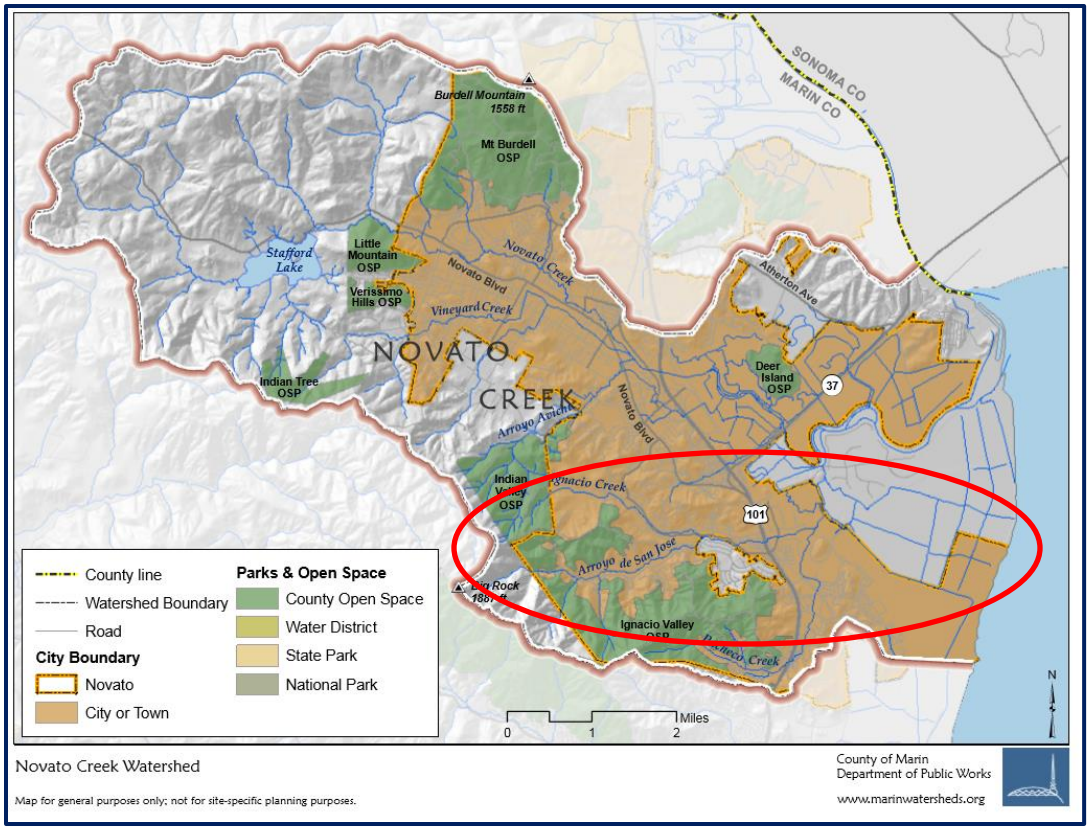
Marin Country Club

Marin Country Club is a private golf and country club located at 500 Country Club Dr. in Novato, CA approximately three miles south of downtown Novato. Marin Country Club opened in 1957 with amenities that include an 18-hole championship golf course, tennis courts, swimming pools, fitness area, kid's camps and dining. The golf course ponds were also constructed in the late 1950's for golf course irrigation and continue act as storage for irrigation presently.

Water enters the Marin Country Club Ponds via the Arroyo De San Jose seasonal creek as well as from thirteen (13) street culverts and two onsite wells. Water that leaves the ponds exits into the Arroyo De San Jose seasonal creek which eventually drains into San Pablo Bay.



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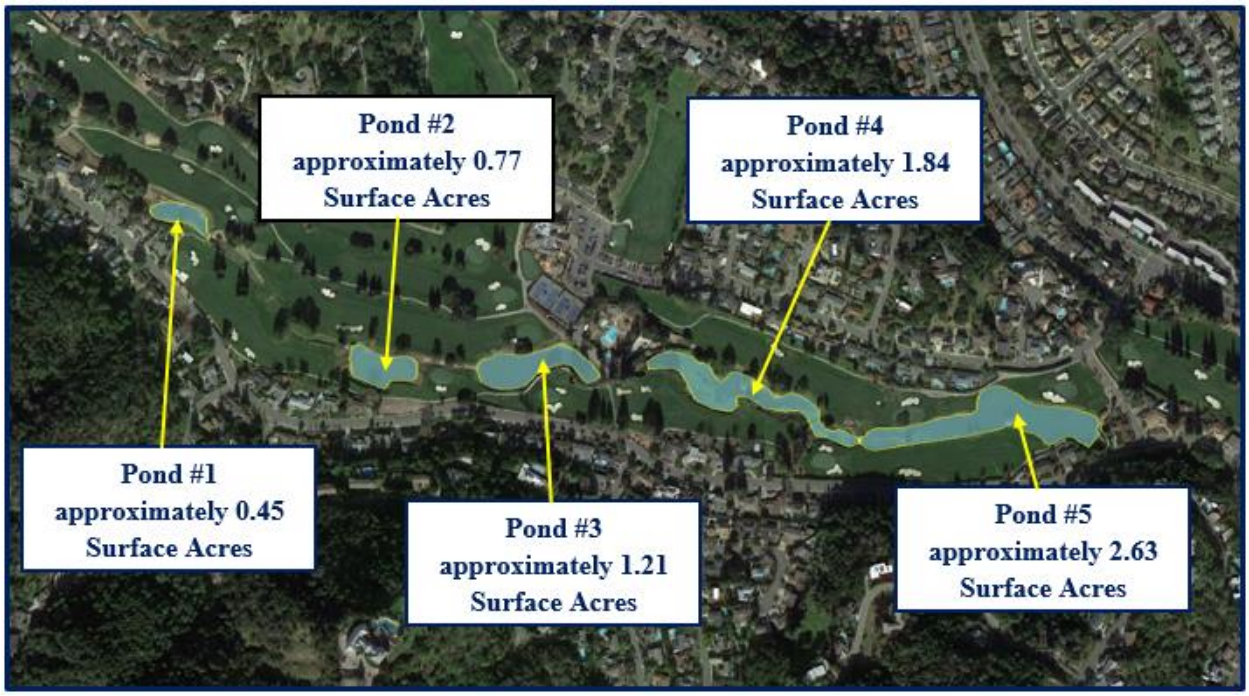

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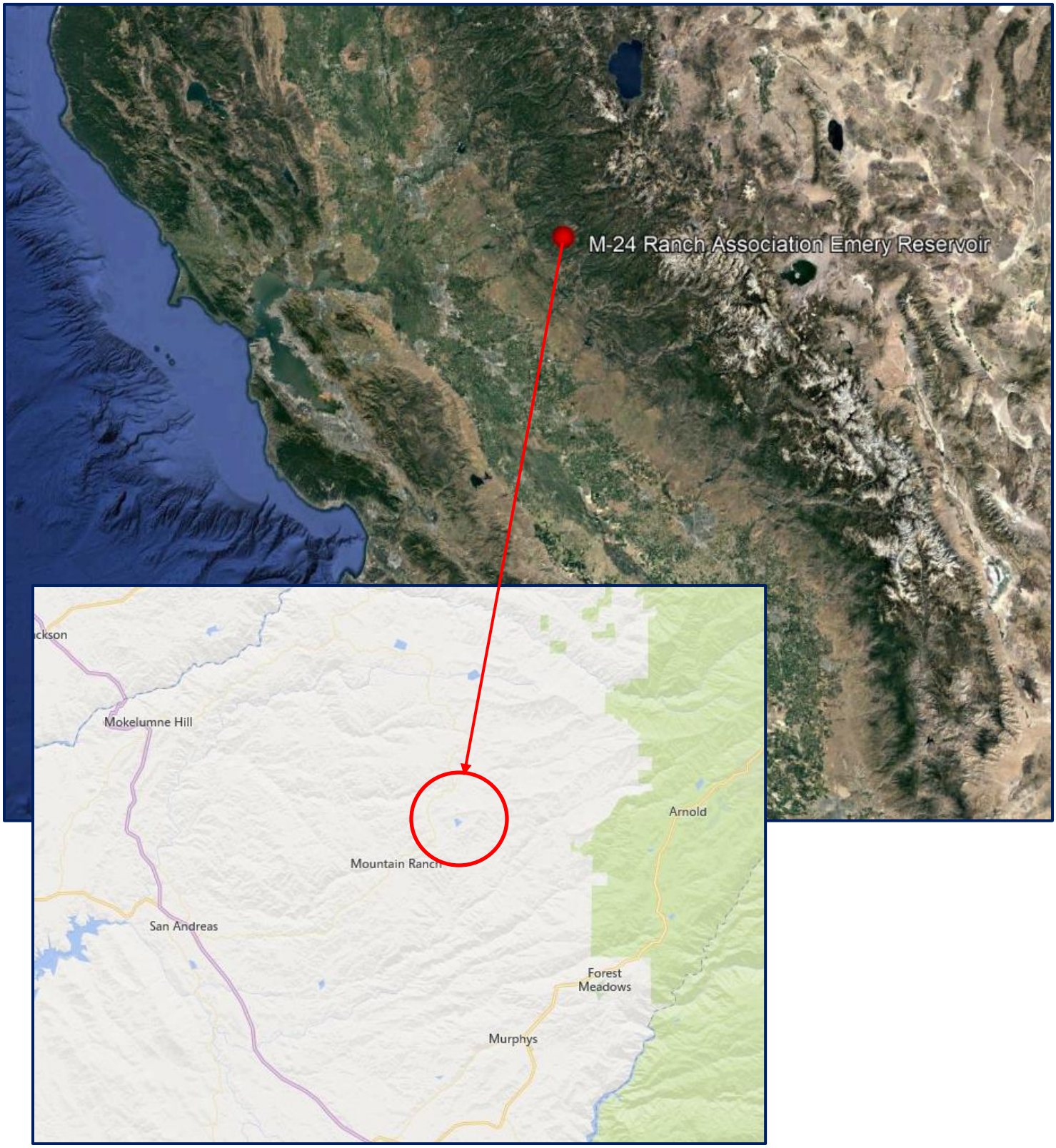
M-24 Ranch Association – Emery Reservoir - REGION 5S



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The M-24 Ranch Association is a small gated community located in Mountain Ranch, CA in the Sierra Nevada foothills. The centerpiece of the community is Emery Reservoir which is an approximately 30.8 surface acre privately owned and manmade reservoir. The residents of M-24 Ranch use Emery Reservoir primarily for recreation which includes boating, swimming and fishing.

Water enters Emery Reservoir primarily from McKinney Creek into what is called Coots Cove which is the cove on the northeast end of the reservoir. There are also a few small seasonal unnamed streams that flow into the reservoir as well as seasonal springs. Water leaving the reservoir flows south via McKinney Creek to Calaveritas Creek into the south fork of the Calaveras River which then eventually flows into the New Hogan Reservoir.

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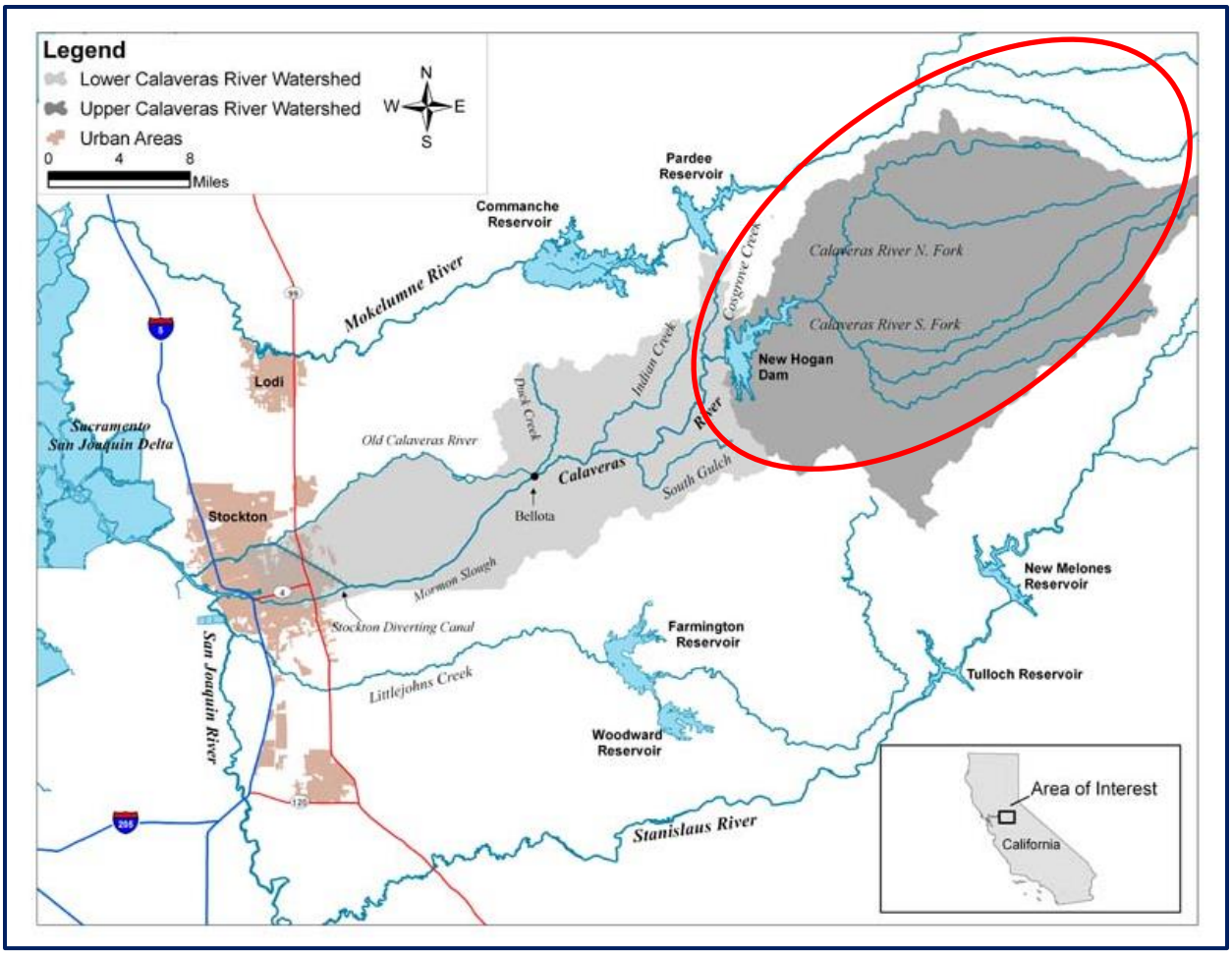

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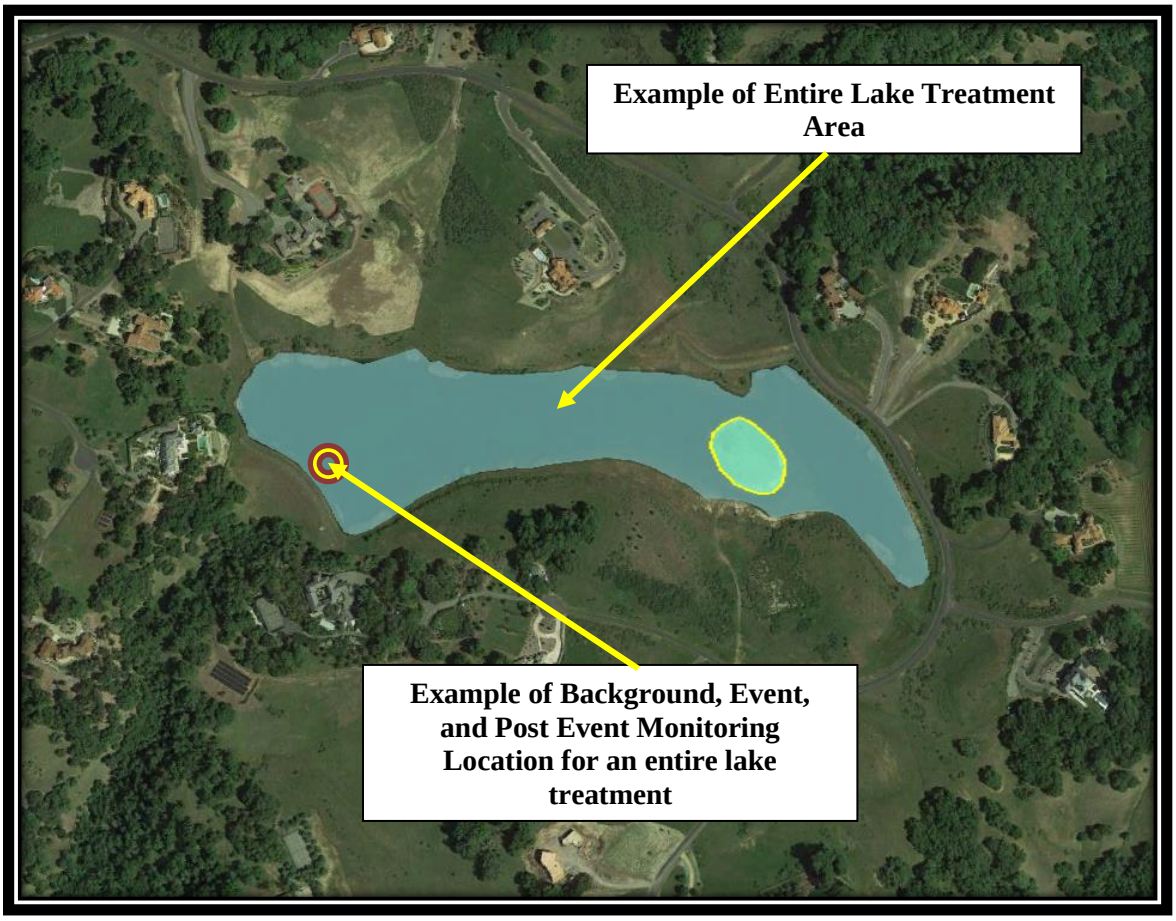
DESCRIPTION OF THE TREATMENT AREAS

Shiloh Homeowners Association Lake

The treatment area in Shiloh Lake can be the entire lake for control of aquatic weeds and algae or the treatment area could be a spot or partial lake treatment. The two maps below show examples of an entire lake treatment area and a spot or partial lake treatment area.



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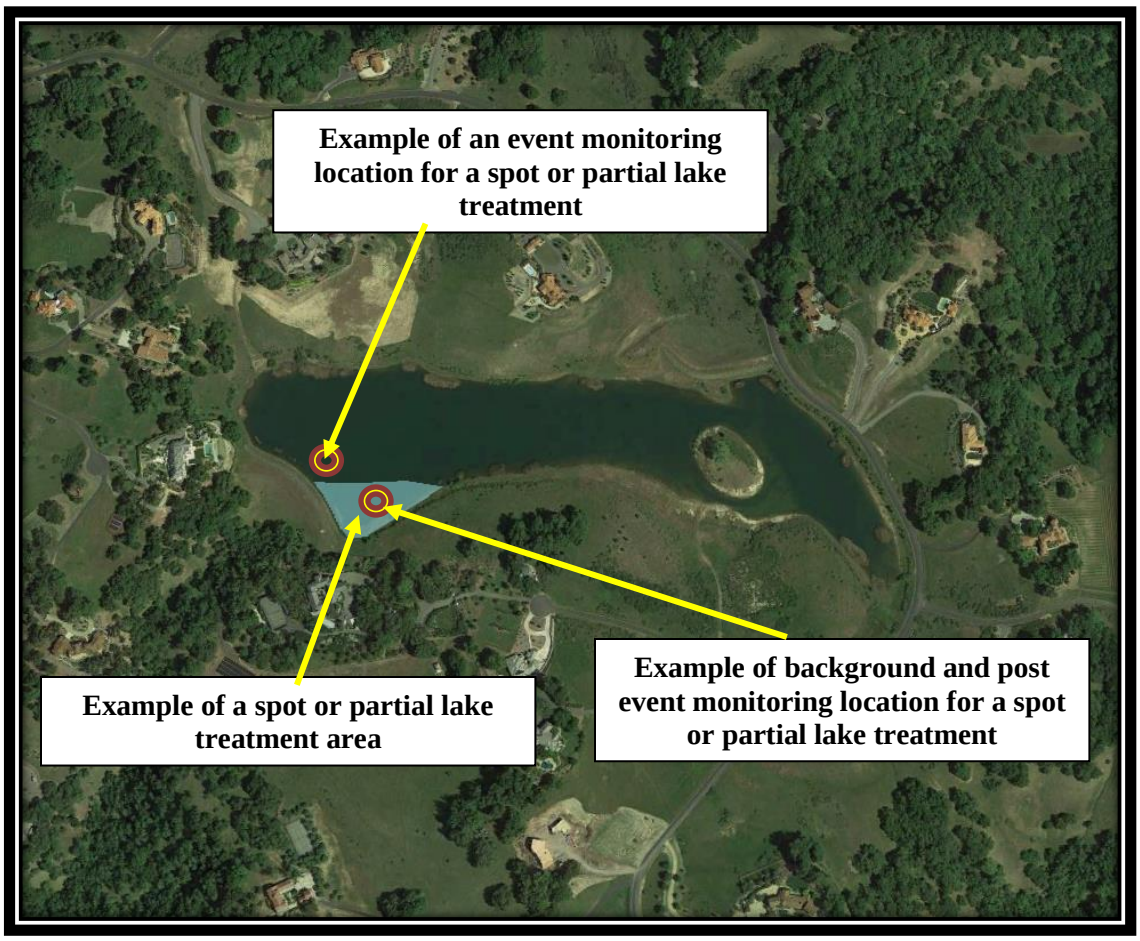

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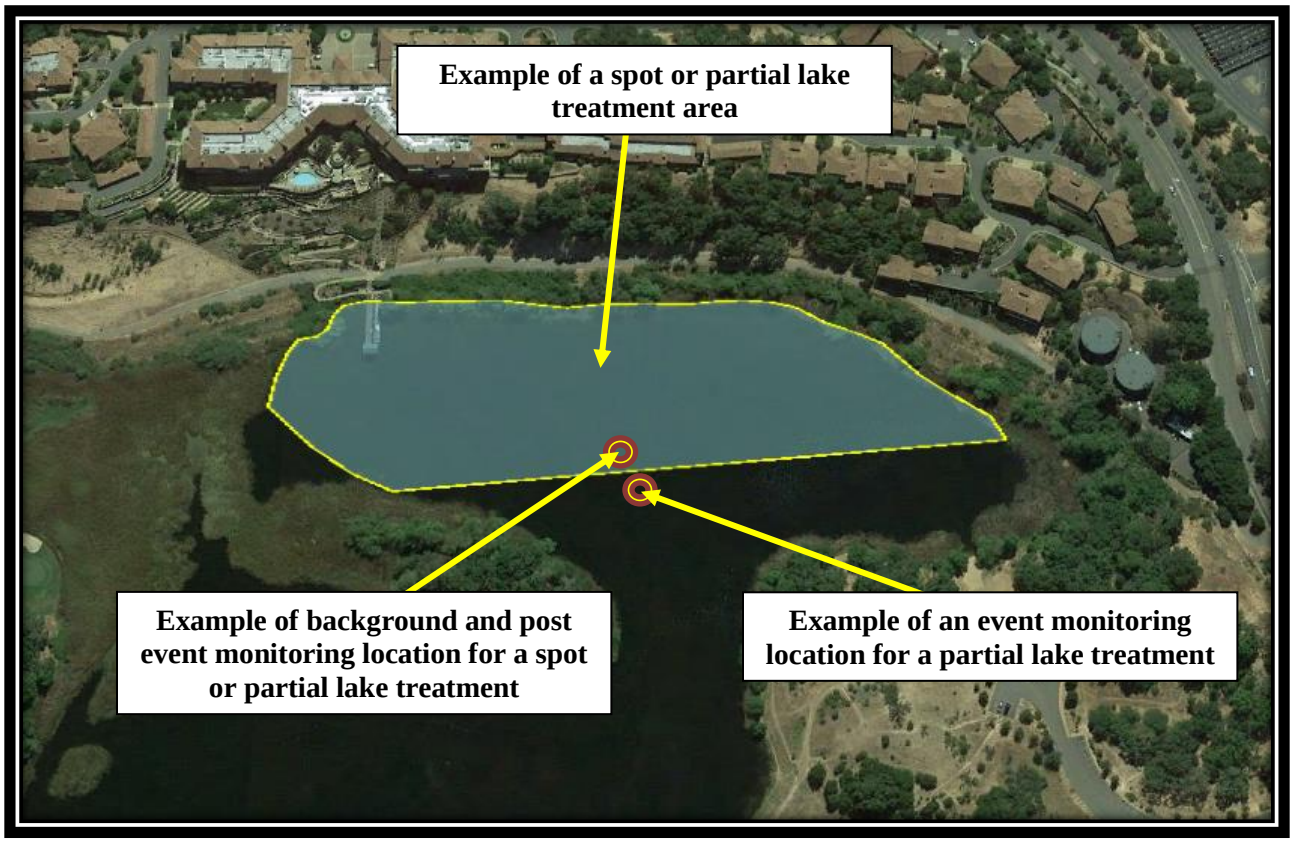
Varenna at Fountaingrove – Fountaingrove Lake

The treatment areas in Fountaingrove Lake will be partial lake treatments. The map below shows an example of a partial lake treatment area.



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Green Valley Lake Home Owners Association Lake

The treatment area in Green Valley Lake can be the entire lake for control of aquatic weeds and algae or the treatment area could be a spot or partial lake treatment. The two maps below show examples of an entire lake treatment and a spot or partial lake treatment. The maps also include example monitoring locations for each treatment.

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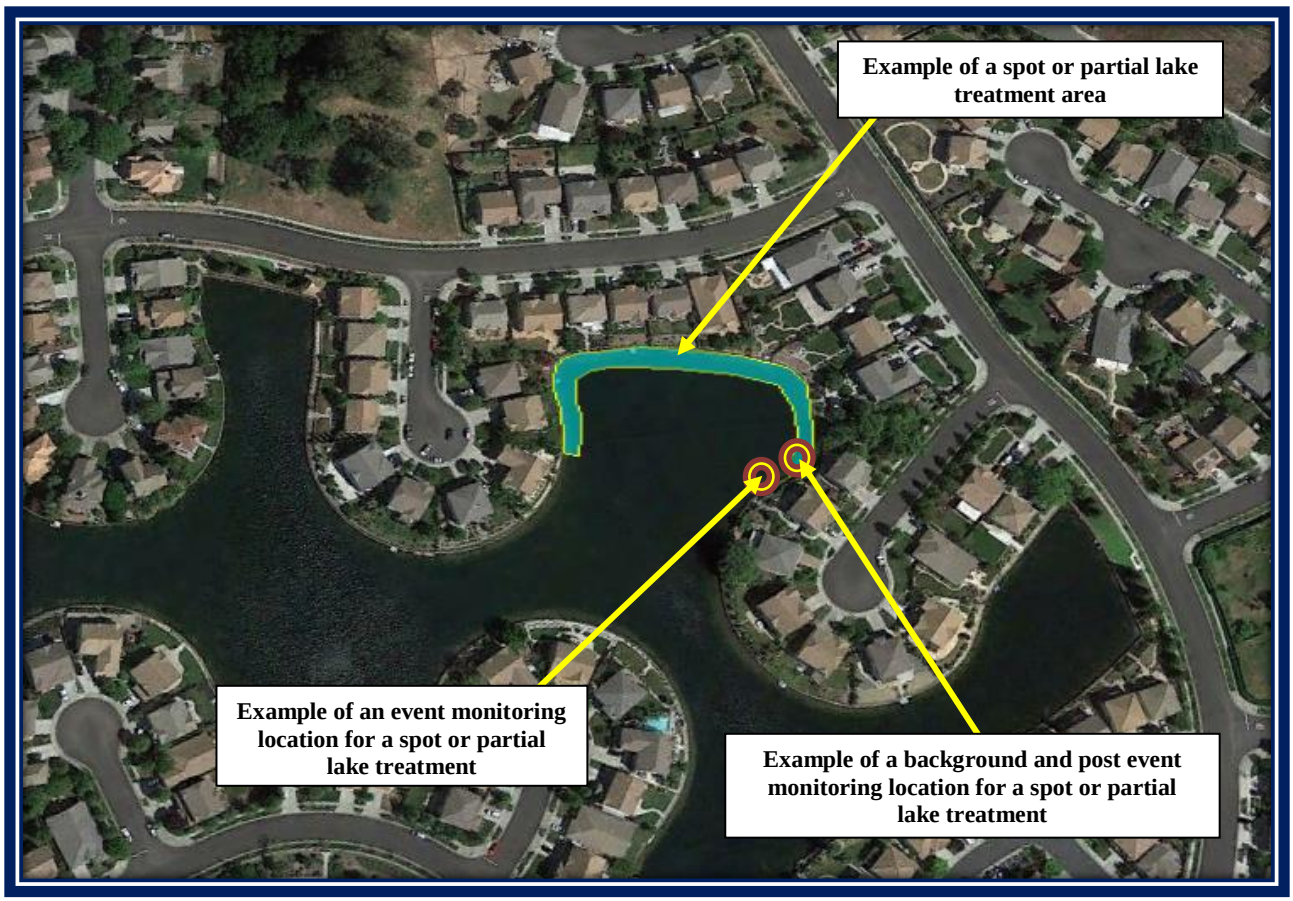

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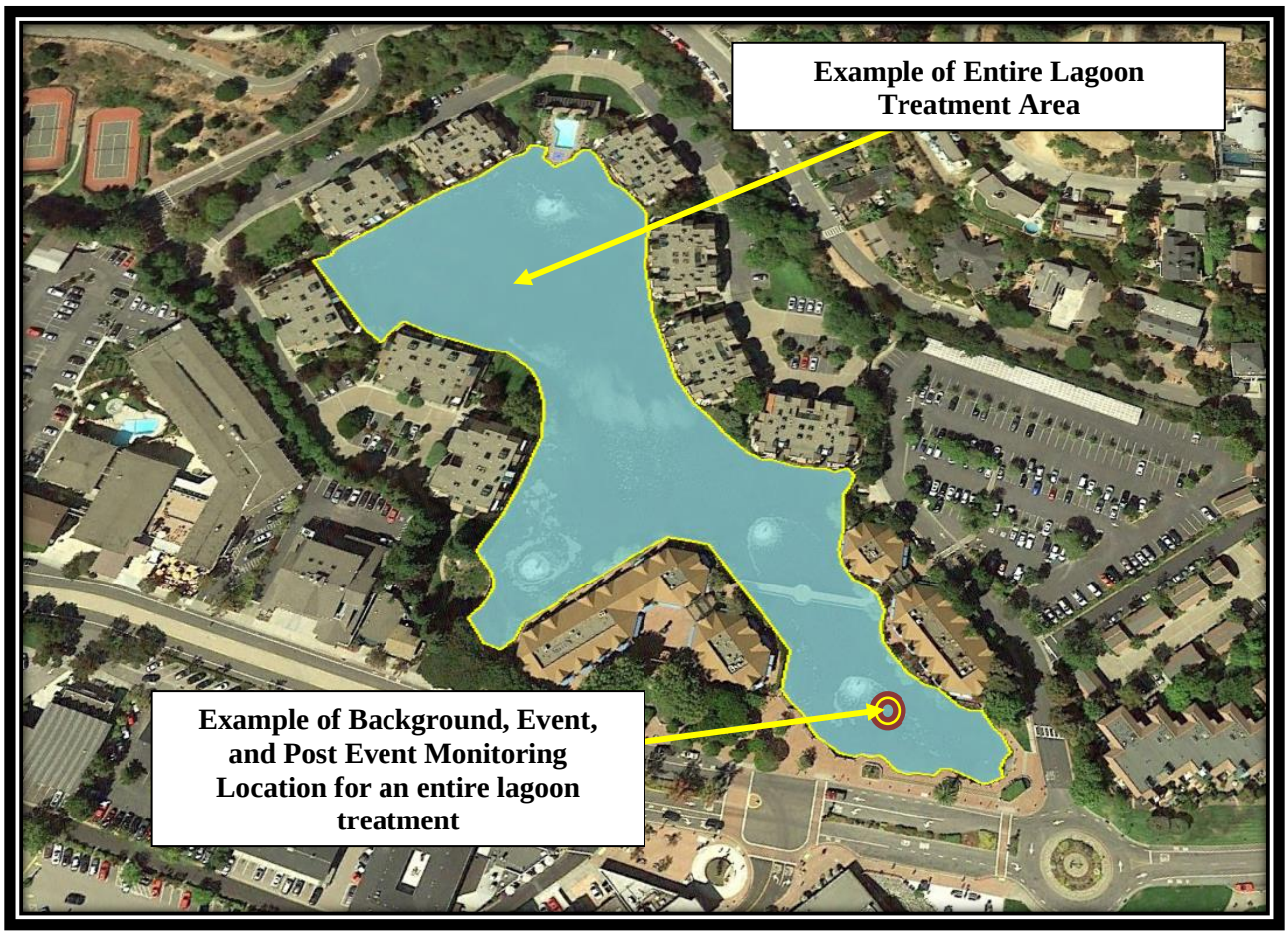
Point Tiburon Lagoon Owners Association Lagoon

The treatment area in Point Tiburon Lagoon can be the entire lagoon for control of aquatic weeds and algae or the treatment area could be a spot or partial lagoon treatment. The two maps below show examples of an entire lagoon treatment and a spot or partial lagoon treatment. The maps also include example monitoring locations for each treatment.



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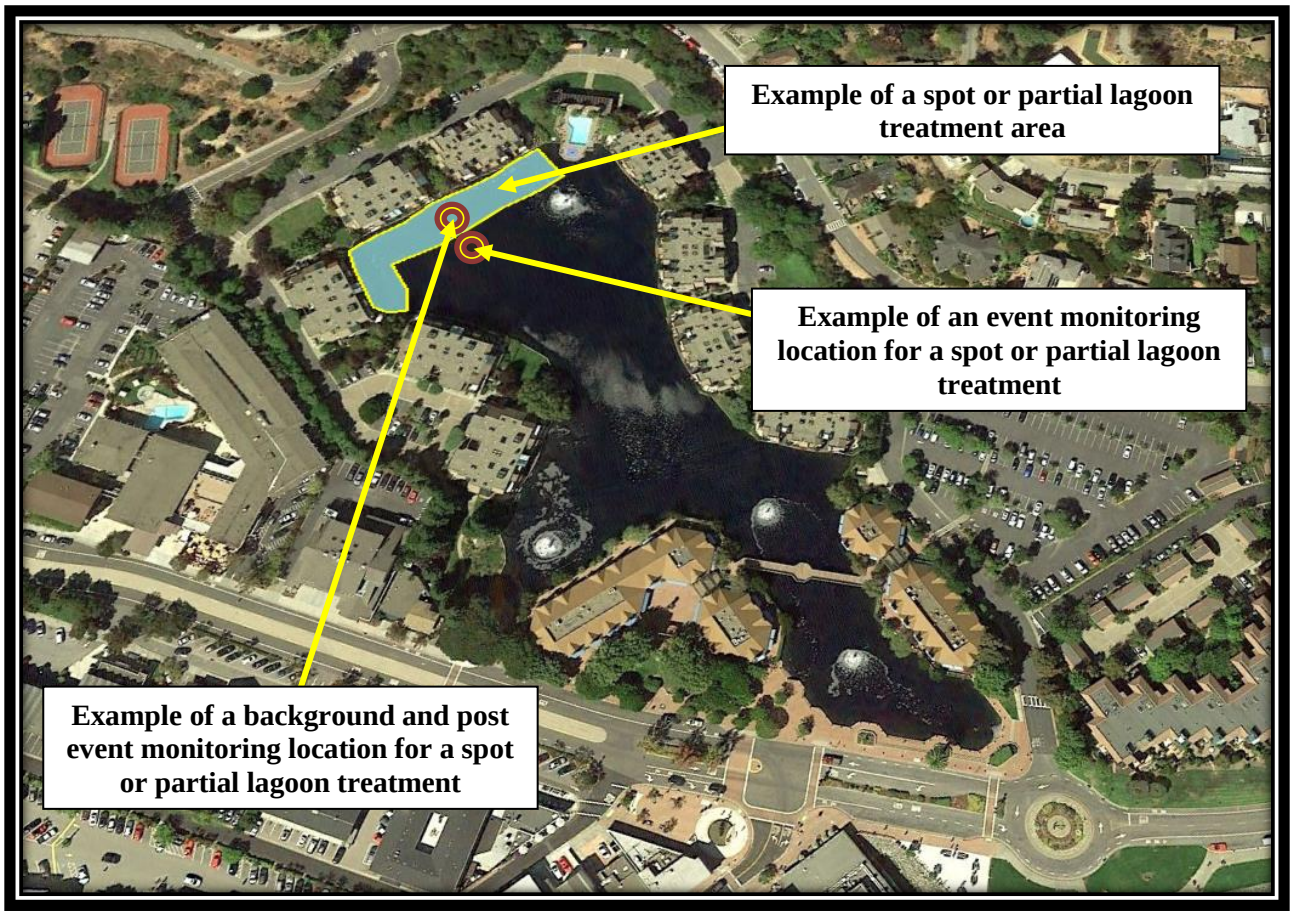

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Marin Lagoon Association Lagoon

The treatment area in Marin Lagoon can be the entire lagoon for control of aquatic weeds and algae or the treatment area could be a spot or partial lagoon treatment. The two maps below show examples of an entire lagoon treatment area and a spot or partial lagoon treatment area.

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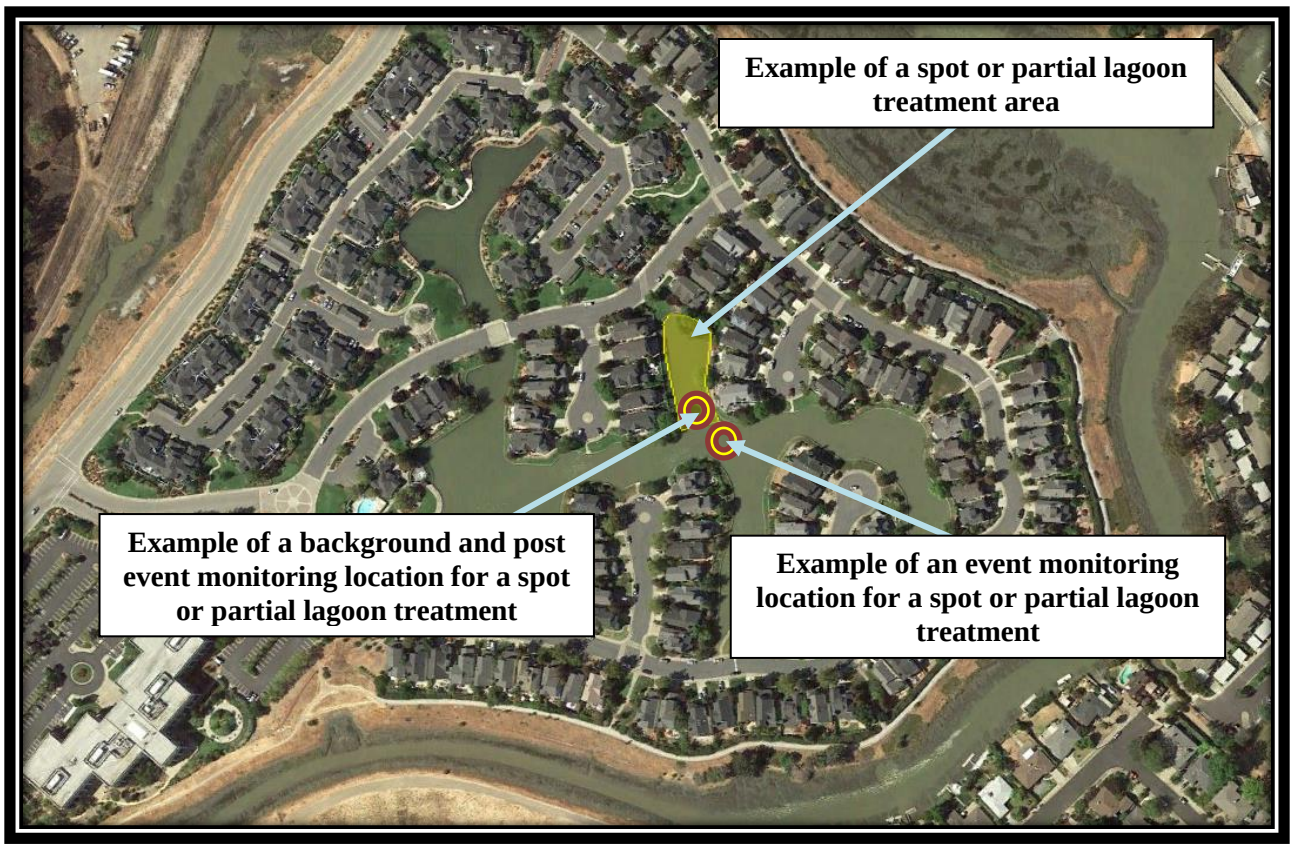

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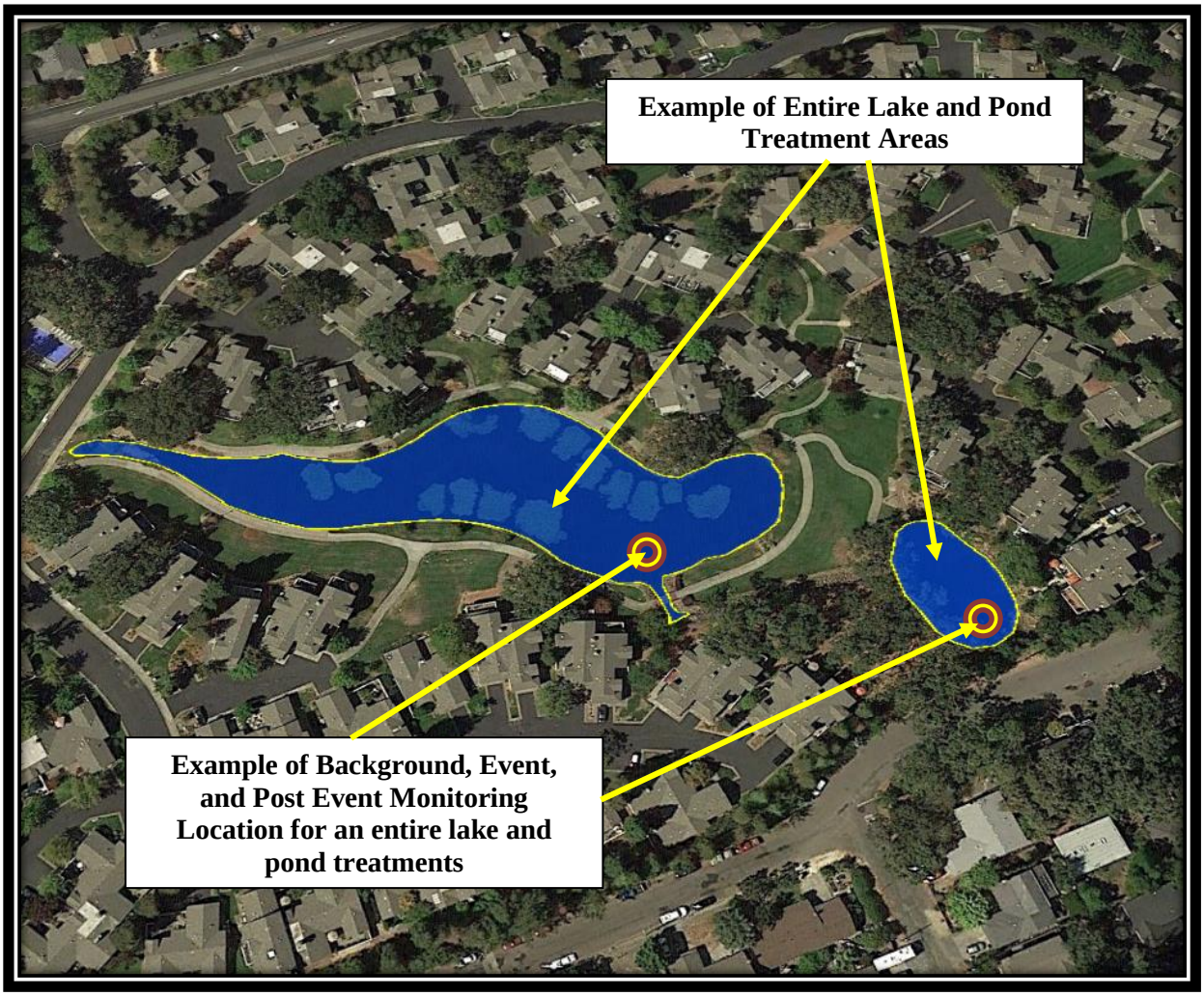
Sonoma Greens Community Association Lake and Pond

The treatment area in Sonoma Greens Lake and Pond can be the entire lake and pond for control of aquatic weeds and algae or the treatment area could be a spot or partial lake or pond treatment. The two maps below show examples of an entire lake or pond treatment area and a spot or partial lake or pond treatment area.



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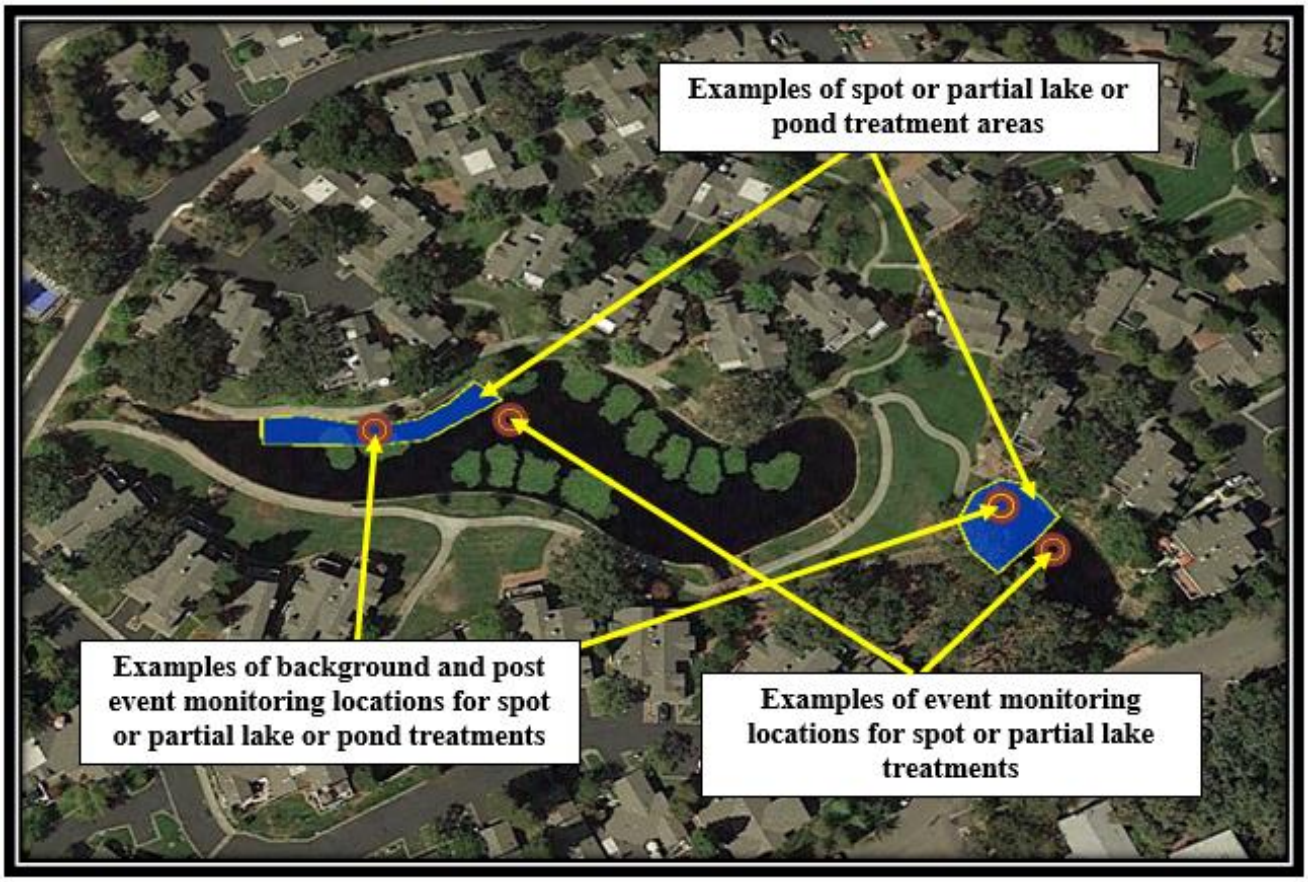

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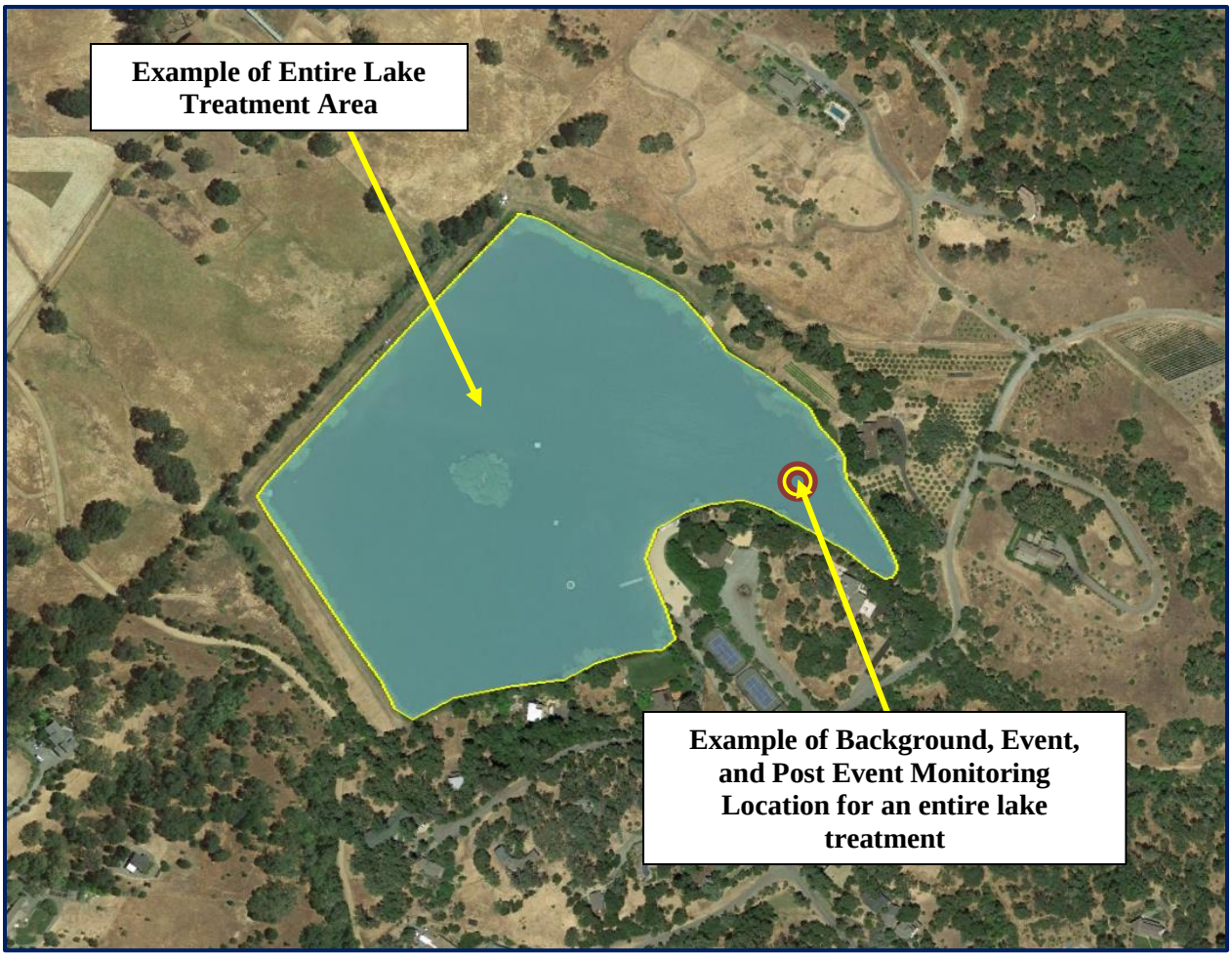
The Vineyard Club Inc. – Vineyard Club Lake

The treatment area in Vineyard Club Lake can be the entire lake for control of aquatic weeds and algae or the treatment area could be a spot or partial lake treatment. The two maps below show examples of an entire lake treatment area and a spot or partial lake treatment area.



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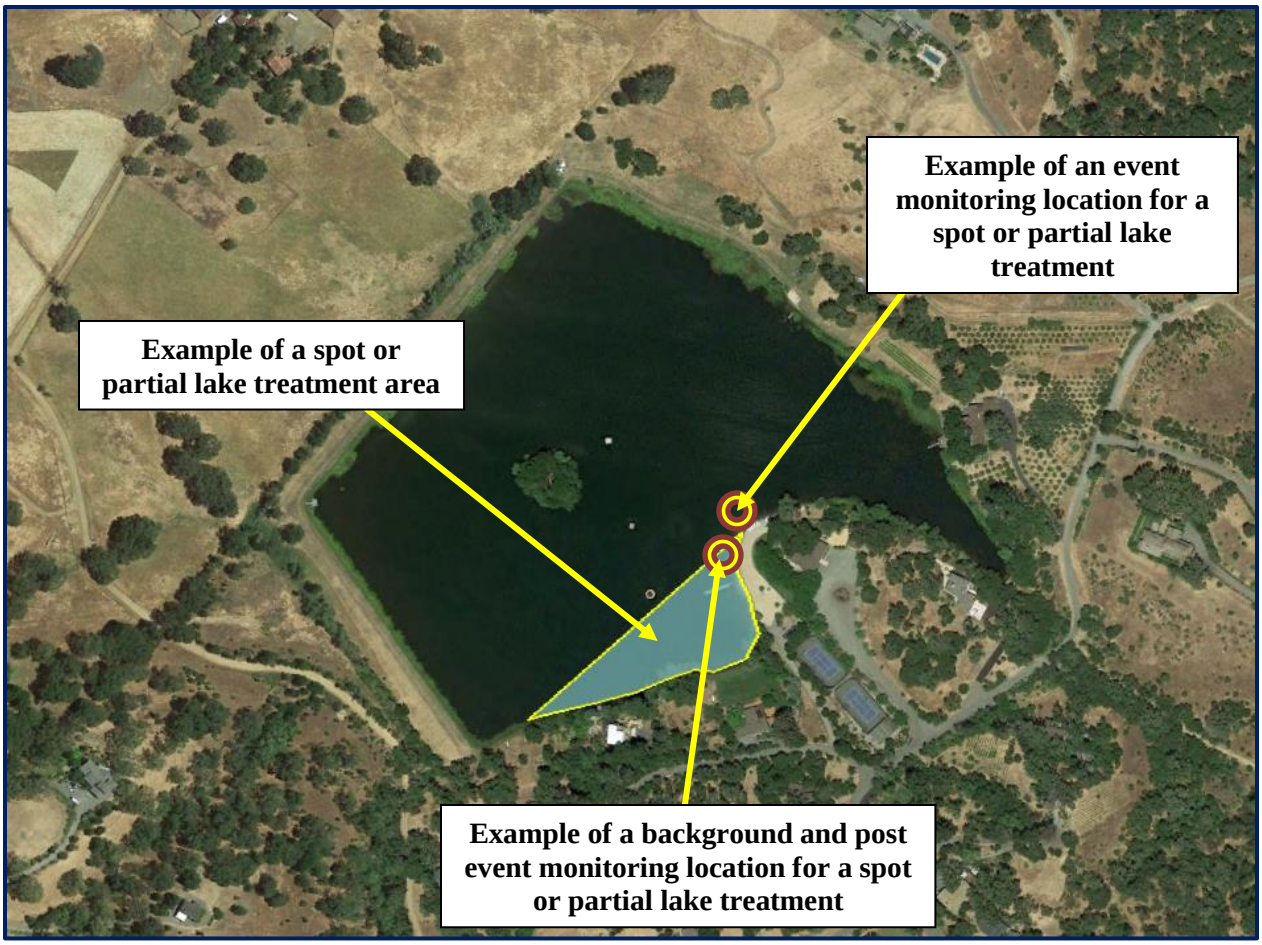

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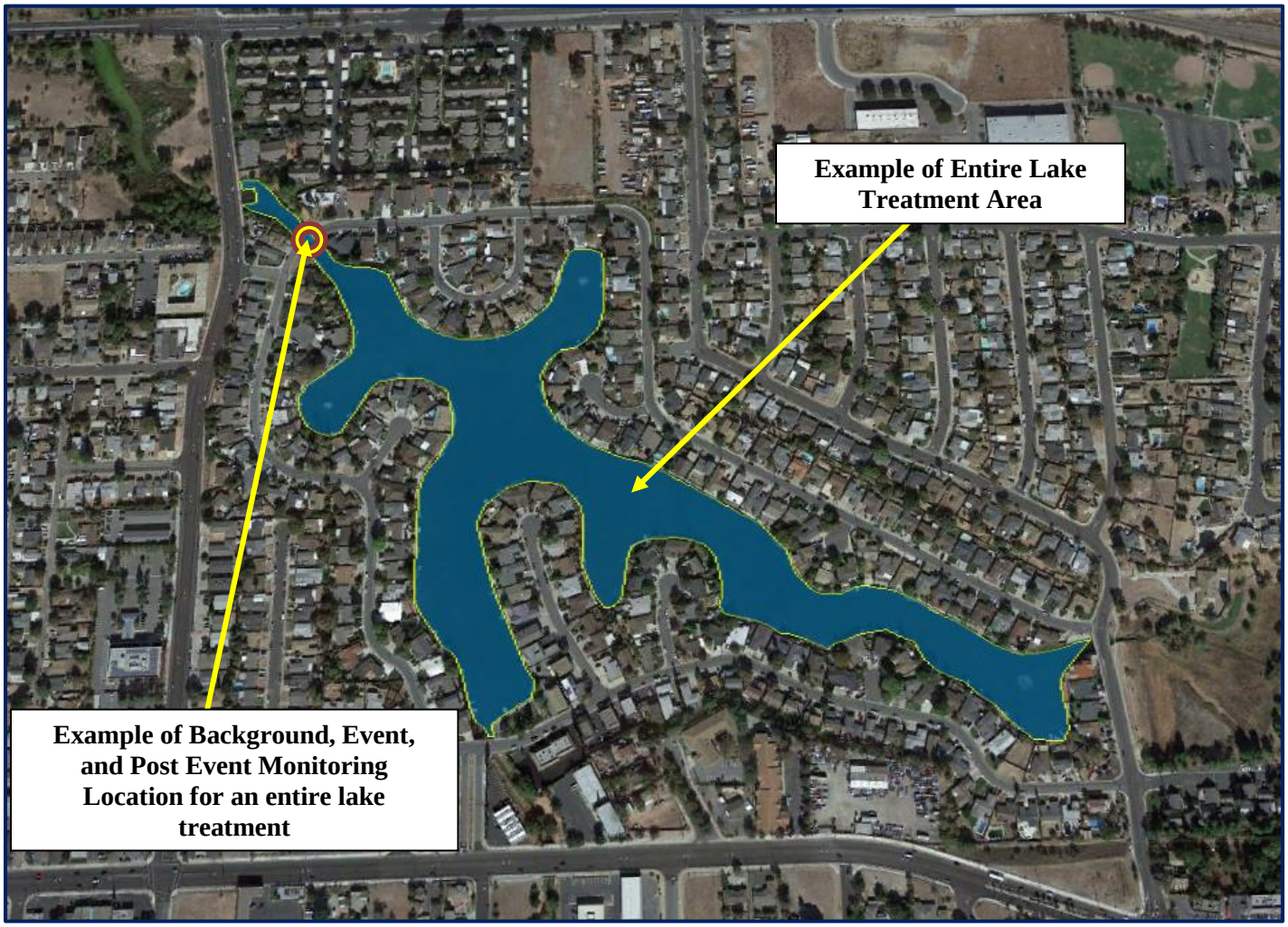
Lake Alhambra Homeowners Association – Lake Alhambra

The treatment area in Lake Alhambra can be an entire lake for control of aquatic weeds and algae or the treatment area could be a spot or partial lake treatment. The two maps below show examples of an entire lake treatment area and a spot or partial lake treatment area



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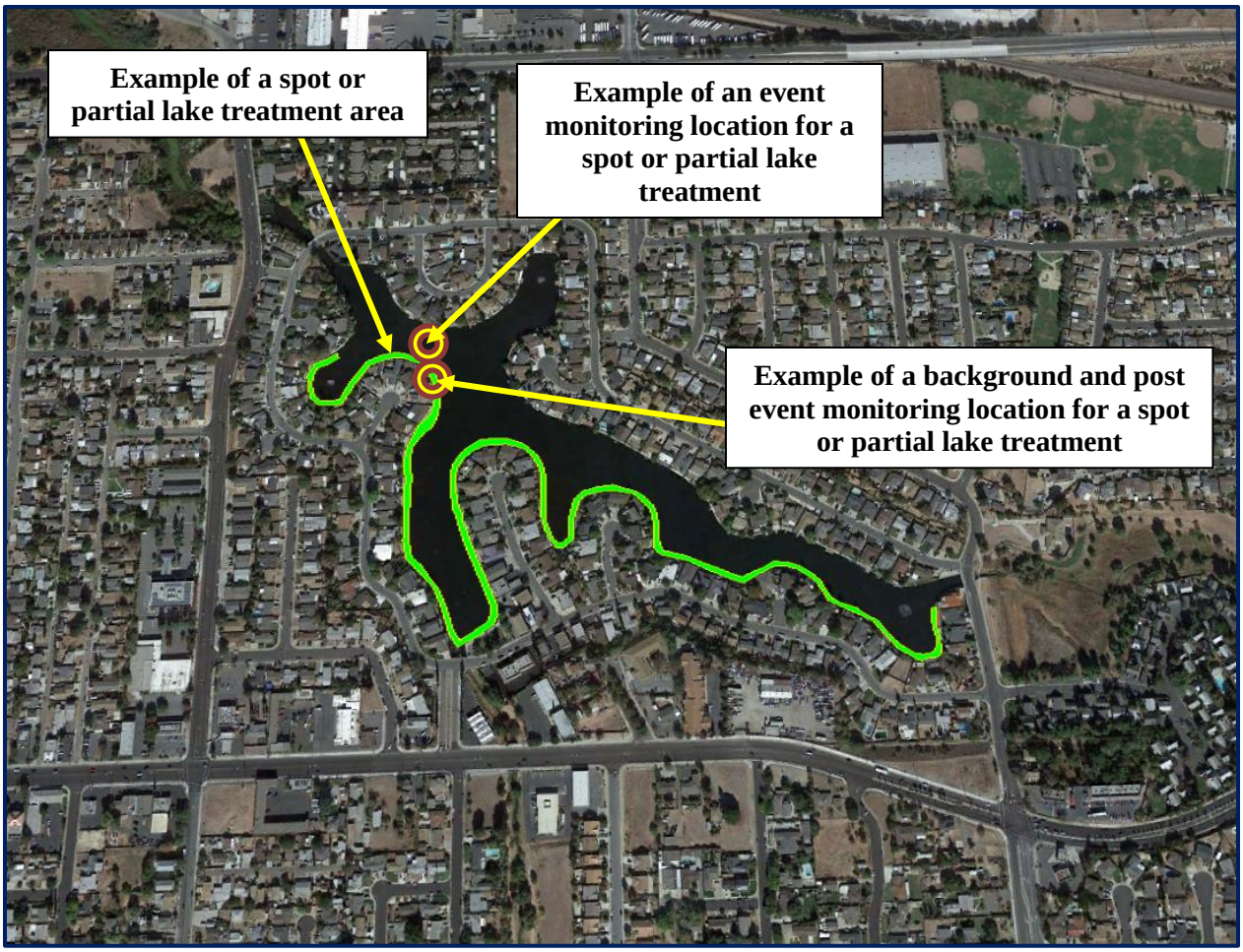

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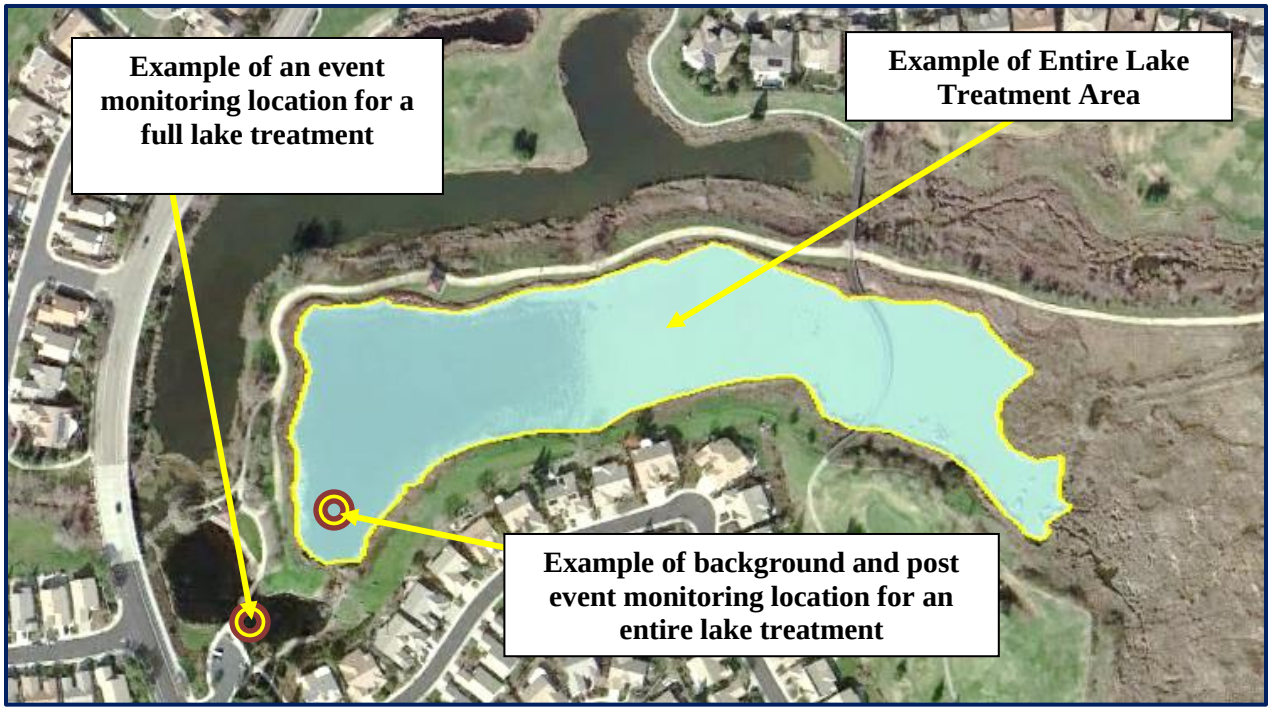
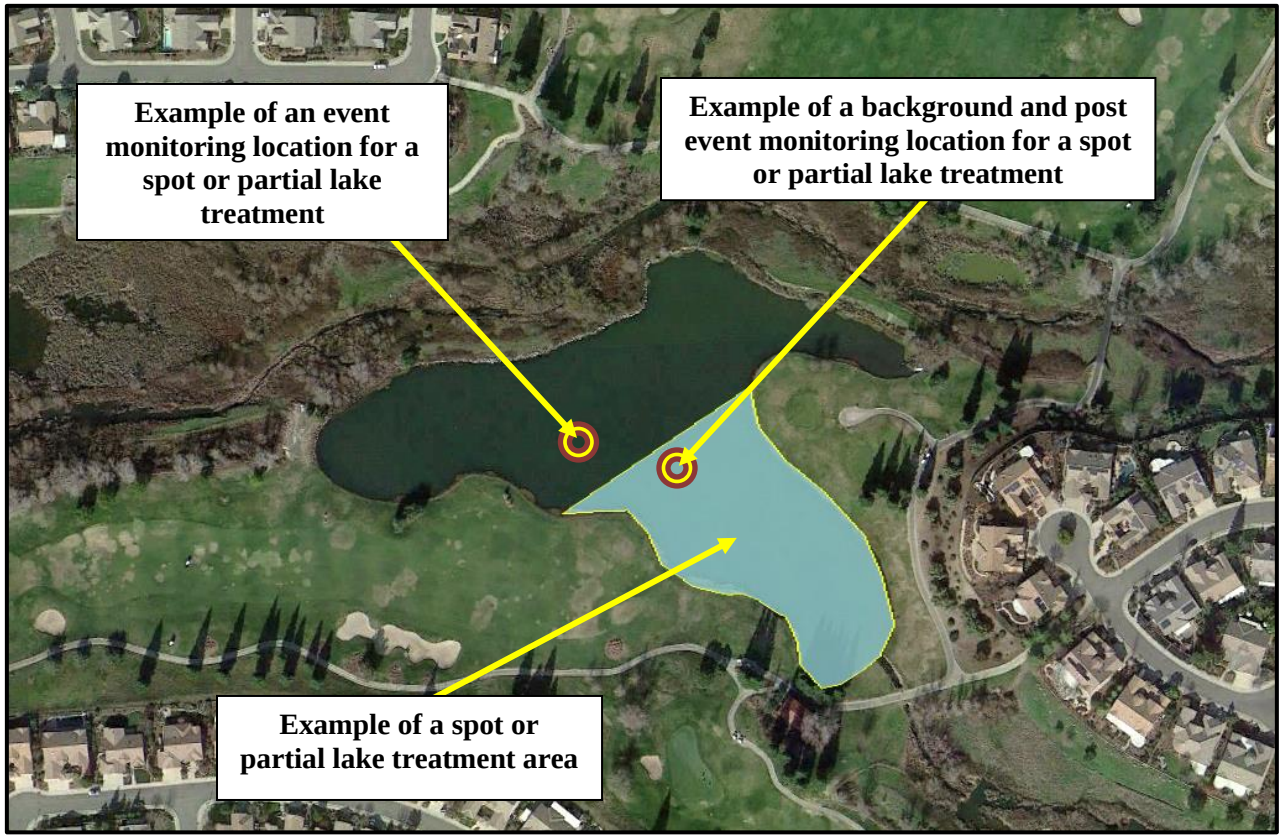
Sun City Lincoln Hills Community Association in arrangement with Lincoln Hills Golf Club - Upper Ferrari Pond, Hidden Hills Pond, and nine golf course ponds





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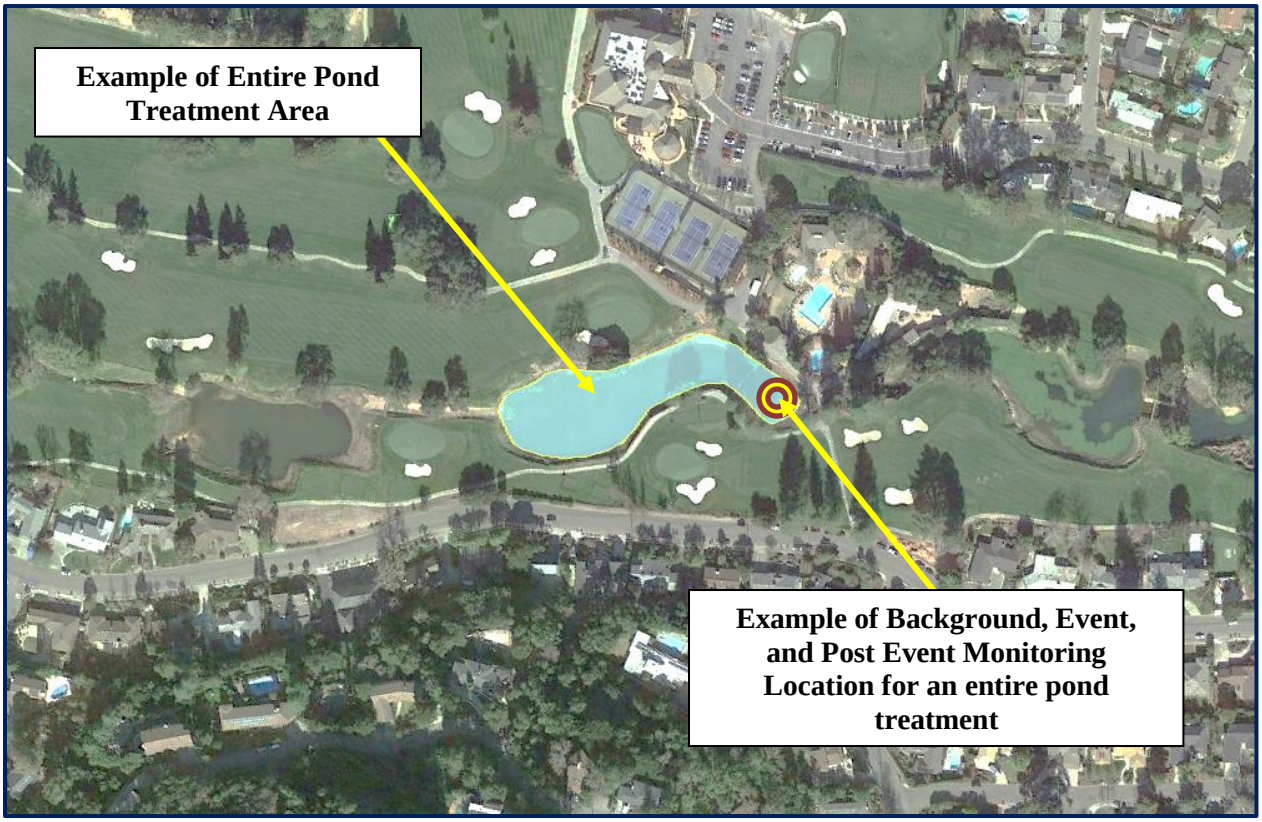
Marin Country Club Golf Course Ponds

The treatment area in Marin Country Club Golf Course Ponds can be an entire pond for control of aquatic weeds and algae or the treatment area could be a spot or partial pond treatment. The two maps below show examples of an entire pond treatment area and a spot or partial pond treatment area.



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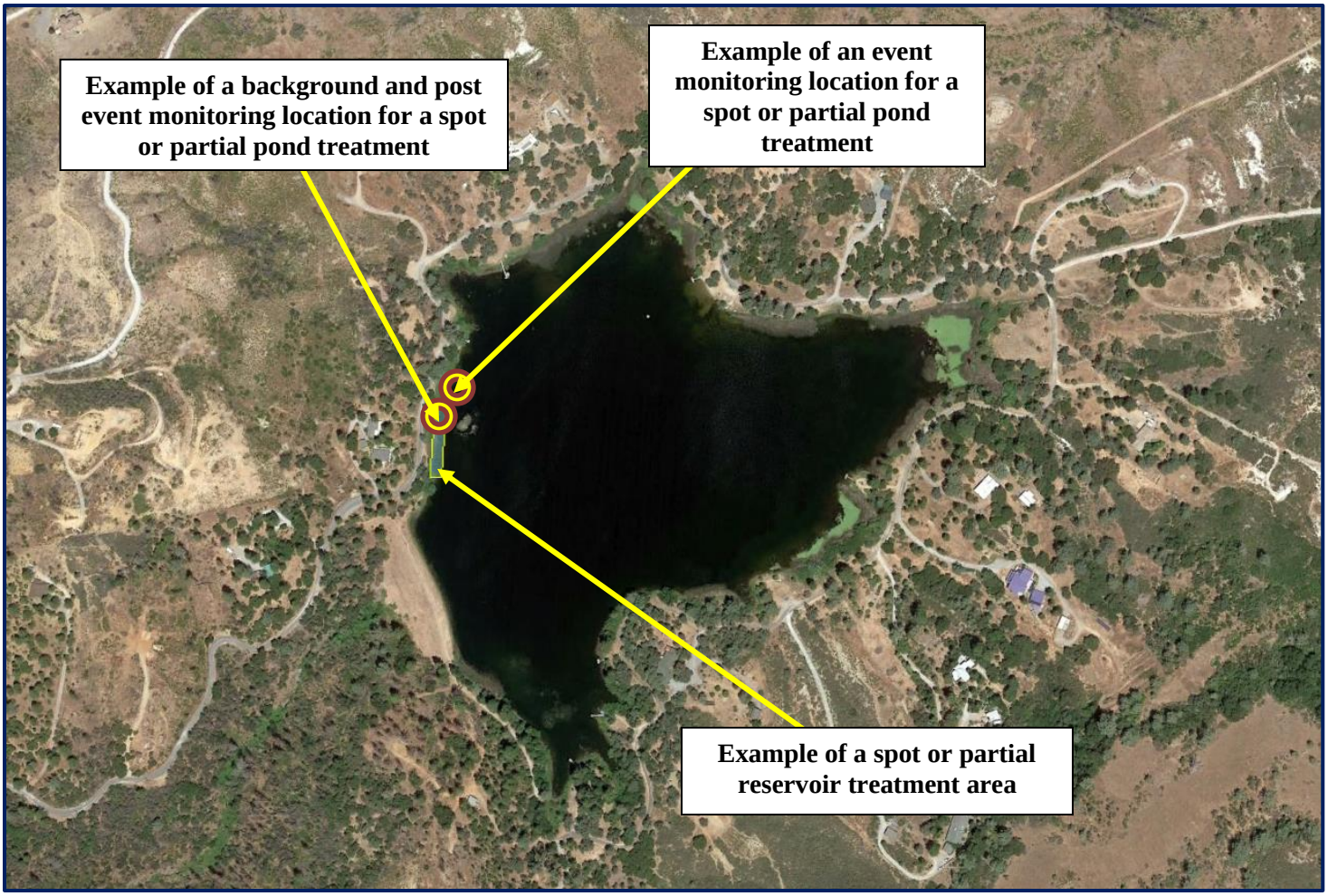
M-24 Ranch Association – Emery Reservoir

The treatment areas in Emery Reservoir will be partial reservoir treatments. The map below shows an example of a partial reservoir treatment area.



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AQUATIC VEGETATION AND ALGAE BEING CONTROLLED

Shiloh Homeowners Association Lake

Shiloh Lake currently and historically has had nuisance growths of Eurasian Water Milfoil (*Myriophyllum spicatum*), Sago Pondweed *(Potamogeton pectinatus L.),* American Pondweed (*Potamogeton nodosus*), Cattails (*Typha spp.),* Bulrush (*Schoenoplectus californicus)* Filamentous Algae, and Planktonic Algae. The aquatic weed and filamentous algae growth primarily impacts the recreational activities such as swimming, non-motorized boating, and fishing. It also has an impact on the aesthetics for the surrounding homes and community. The planktonic algae can impact aesthetics, and has potential health hazards for human and animal contact with the lake.

Varenna at Fountaingrove – Fountaingrove Lake

Fountaingrove Lake currently and historically has had nuisance growths of Eurasian Water Milfoil (*Myriophyllum spicatum*), Mosquito Fern (*Azolla spp.),* Duckweed (*Lemna minor),* Bladderwort *(Utricularia),* Cattails (*Typha spp.),* Bulrush (*Schoenoplectus californicus)* Filamentous Algae, and Planktonic Algae. The aquatic weeds and filamentous algae growth primarily impacts the recreational activities such as swimming, boating, and fishing. It also has an impact on the aesthetics for the Varenna residents. The planktonic algae can impact aesthetics, and has potential (Harmful Blue Green Algae Blooms) health hazards for human and animal contact with the lake.

Green Valley Lake

Green Valley Lake currently and historically has had nuisance growths of Brazilian Elodea (*Egeria densa*), Filamentous Algae, and Planktonic Algae. The submerged aquatic weeds, and filamentous algae growth primarily impact the recreational uses of the lake which include boating and fishing. Nuisance growths also result in aesthetic issues for the surrounding area as the lake is a focal point of the surrounding community. The planktonic algae primarily impacts aesthetics, and has potential (Harmful Blue Green Algae Blooms) health hazards for human and animal contact with the lakes.

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Point Tiburon Lagoon Owners Association Lagoon

Point Tiburon Lagoon currently and historically has had nuisance growths of Widgeon Grass *(Ruppia spp.),* Filamentous Algae, and Planktonic Algae. The aquatic weed and filamentous algae growth primarily impacts maintenance of the lagoon systems as well as aesthetics. The planktonic algae can impact aesthetics, and has potential health hazards for human and animal contact with the lagoon.

Marin Lagoon Association Lagoon

Marin Lagoon currently and historically has had nuisance growths of Widgeon Grass *(Ruppia spp.),* Filamentous Algae, and Planktonic Algae. The aquatic weed and filamentous algae growth primarily impacts maintenance of the lagoon system as well as aesthetics. The planktonic algae can impact aesthetics, and has potential health hazards for human and animal contact with the lagoon.

Sonoma Greens Community Association Lake and Pond

Sonoma Greens Lake and pond currently and historically has had nuisance growths of Sago Pondweed *(Potamogeton pectinatus L.),* Curly-leaf pondweed *(Potamogeton crispus),* Coontail (*Ceratophyllum demersum*) Cattails (*Typha spp.),* Filamentous Algae, and Planktonic Algae. The aquatic weed and filamentous algae growth primarily impacts fishing, aesthetics for the surrounding homes and community, and maintenance of the irrigation system for the common property. The planktonic algae can impact aesthetics, and has potential health hazards for human and animal contact with the lake.

The Vineyard Club Inc. – Vineyard Club Lake

The Vineyard Club Lake currently and historically has had nuisance growths of Eurasian Water Milfoil (*Myriophyllum spicatum*), Coontail (*Ceratophyllum demersum*) American Pondweed (*Potamogeton nodosus*), Creeping Water Primrose *(Ludwigia peploides),* Filamentous Algae, and Planktonic Algae. The aquatic weed and filamentous algae growth primarily impact fishing, boating, swimming and aesthetics for the members. The planktonic algae can impact aesthetics, and has potential health hazards for human and animal contact with the lake.

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Lake Alhambra Homeowners Association – Lake Alhambra

Lake Alhambra currently and historically has had nuisance growths of Duckweed (*Lemna minor),* Curly-leaf pondweed *(Potamogeton crispus),* Eurasian Water Milfoil (*Myriophyllum spicatum*), Sago Pondweed *(Potamogeton pectinatus L.),* Filamentous Algae, and Planktonic Algae. The aquatic weed and filamentous algae growth primarily impact fishing, boating, swimming and aesthetics for the association. The planktonic algae can impact aesthetics, and has potential health hazards for human and animal contact with the lake.

Sun City Lincoln Hills Community Association in arrangement with Lincoln Hills Golf Club

The lakes and ponds throughout the system currently and historically have had nuisance growths of Mosquito Fern (*Azolla spp.),* Duckweed (*Lemna minor),* Curly-leaf pondweed *(Potamogeton crispus),* Eurasian Water Milfoil (*Myriophyllum spicatum*), Sago Pondweed *(Potamogeton pectinatus L.),* Cattails (*Typha spp.),* Bulrush (*Schoenoplectus californicus),* Filamentous Algae, and Planktonic Algae. The aquatic weed and filamentous algae growth primarily impact fishing, irrigation, organic sediment buildup and aesthetics for the association. The planktonic algae can impact aesthetics, and has potential health hazards for human and animal contact with the lakes and ponds. And the emergent vegetation is causing issues with storm water capacity for flood control.

Marin Country Club Golf Course Ponds

The ponds throughout the system currently and historically have had nuisance growths of Parrot Feather (*Myriophyllum aquaticum*), Duckweed (*Lemna minor),* Eurasian Water Milfoil (*Myriophyllum spicatum*), Sago Pondweed *(Potamogeton pectinatus L.),* Cattails (*Typha spp.),* Bulrush (*Schoenoplectus californicus),* Filamentous Algae, and Planktonic Algae. The aquatic weed and filamentous algae growth primarily impact irrigation, organic sediment buildup and aesthetics for the country club. The planktonic algae can impact aesthetics, and has potential health hazards for human and animal contact with the ponds. And the emergent vegetation is causing issues with storm water capacity for flood control.

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M-24 Ranch Association – Emery Reservoir

Emery Reservoir currently and historically has had nuisance growths of Watershield (*Bresenia shreberi*), Creeping Water Primrose (*Ludwigia*), Coontail (*Ceratophyllum demersum*), Curly-leaf pondweed *(Potamogeton crispus)*, Cattails (*Typha spp.)*, Bulrush (*Schoenoplectus californicus)*, Filamentous Algae, and Planktonic Algae. The aquatic weed and filamentous algae growth primarily impact fishing, boating, swimming and aesthetics for the association. The planktonic algae can impact aesthetics, and has potential health hazards for human and animal contact with the lake. And the emergent vegetation is growing into and taking over the recreational beaches and coves.

AQUATIC HERBICIDES AND ALGAECIDES TO BE USED, THEIR DEGREDATION BYPRODUCTS, METHODS OF APPLICATION. AND ADJUVANTS AND SURFACTANTS TO BE USED

On the following page (page 67) is a table of the herbicides and algaecides that would be utilized for control of the plant and algae species listed in the paragraphs above. Various adjuvants and surfactants labeled for aquatic use may be used in combination with these herbicides and algaecides. Adjuvants containing ingredients represented by the surrogate nonylphenol will not be used in the lakes ponds, and lagoons.

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Herbicide Active Ingredient	Degradation Byproducts	Application Technique	Shiloh Lake HOA	Fountain-grove Lake	Green Valley Lake HOA	Point Tiburon Lagoon	Marin Lagoon	Sonoma Greens	Vineyard Club Lake	Lake Alhambra	Sun City Hills Community Association in Lincoln arrangement with Lincoln Hills Golf Club	Marin CC Ponds	M-24 Ranch – Emery Reservoir
Fluridone	n-methyl formamide (NMF) 3-trifluoromthyl benzoic acid	Boom, Spreader	√	√	√	√	√	√	√	√	√	√	√
Endothall	Glutamic acid	Boom, handgun	√	√	√			√	√	√	√	√	√
Diquat Dibromide	Diquat binds with organic matter in the sediment indefinitely. It does not degrade and will accumulate in sediments	Boom, handgun	√	√	√	√	√	√	√	√	√	√	√
Glyphosate	Aminomethyl phosphonic acid, carbon dioxide	handgun, backpack sprayer	√	√	√			√	√	√	√	√	√
Triclopyr	TCP (3,5,6-trichloro-2-pyridinol) and TMP (3,5,6-trichloro-2-methoxypridine).	Boom, handgun	√	√	√			√	√	√	√	√	√
Imazapyr	Pyridine hydroxyl-dicarboxylic acid and nicotinic acid	Handgun, backpack sprayer	√	√	√			√	√	√	√	√	√
Imazamox	nicotinic acid and di- and tricarboxylic acids	Boom, handgun, backpack sprayer	√	√	√	√	√	√	√	√	√	√	√
Penoxsulam	BSTCA (half-life 67-770 days), 2-amino-TCA, 5-OH-penoxsulam, SFA, sulfonamide, and 5,8-di-OH	Boom, handgun	√	√	√	√	√	√	√	√	√	√	√
Flumioxazin	APF (6-amino-7fluoro-4-(2-propynyl)-1,4,-benzoxazin-3(2H)one) and THPA (3,4,5,6-tetrahydrophthalic acid	Boom, handgun, backpack sprayer	√	√	√	√	√	√	√	√	√	√	√
Algaecide Active Ingredient													
Sodium Carbonate Peroxyhydrate	Breaks down to sodium carbonate and hydrogen peroxide in water. Hydrogen Peroxide breaks down into water and oxygen.	Spreader	√	√	√	√	√	√	√	√	√	√	√

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Hydrogen Dioxide	Water and Oxygen	Boom, handgun	√	√	√	√	√	√	√	√	√	√	√
Peroxyacetic Acid	Water, oxygen and carbon dioxide	Boom, handgun	√	√	√	√	√	√	√	√	√	√	√
Copper Formulations	Copper is an element and is not broken down like other herbicides into byproducts	Boom, handgun, spreader	√	√	√	√	√	√	√	√	√	√	√
Adjuvants and surfactants could be used based on recommendations and the label. Adjuvants and surfactants containing nonylphenol will not be used.													

FACTORS INFLUENCING THE DECISION TO USE HERBICIDES AND ALGAECIDES

The factors influencing the use of herbicides and algaecides are based on the nuisance threshold of the aquatic weed infestations or algae blooms. Shiloh Lake, Fountaingrove Lake, Green Valley Lake, Point Tiburon Lagoon, Marin Lagoon, Sonoma Greens, Vineyard Club Lake, Lake Alhambra, Sun City Lincoln Hills Community Association in arrangement with Lincoln Hills Golf Club, Marin Country Club, and M-24 Ranch are all managed with an Integrated Pest Management (IPM) approach that includes a variety of alternative strategies. When these alternative measures are not taking care of the nuisance growth of aquatic weeds or algae, aquatic herbicides and algaecides would be used to achieve the desired control before the growth has a chance to impact the beneficial uses of the system.

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GATES AND CONTROL STRUCTURES

Shiloh Homeowners Association Lake

Shiloh Lake has a dam with an overflow with no gate or control structures. The only manner water exits the lake is if it fills to a level where it reaches the overflow. From there it drains to a large marsh area. Due to the fact that there is not a very large watershed feeding the lake, only once in the last ten years did the lake reach capacity and release water down the overflow.

Shiloh Lake Overflow Structure Inspection Schedule	Prior to every treatment	Weekly	Monthly	Annually
For algaecide or herbicide treatment check for any leaks or damage	X			
Remove any obstructions and trash	X			
Check Structure for Damage				X
Check Concrete for Deterioration				X

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Varenna at Fountaingrove – Fountaingrove Lake

Two dams at Fountaingrove Lake impound water of sufficient volume to be regulated by the California Division of Safety of Dams. The City of Santa Rosa has both dams inspected annually by the state at which time the valves are exercised. These valves are exercised quarterly. Additionally, Fountaingrove Lake has an overflow spillway. The spillway is inspected prior to the onset of winter rains (prior to the spillways or pipe running) and after flow has ceased, generally in late spring. The table below identifies the structures, their location and inspection frequency at each site

Fountaingrove Lake Inspection Schedule	Quarterly	Bi-Annually
Spillway (West end of dam #1)		X
Drain Valve #1 (Lake)	X	
Drain Valve #2 (Base of Dam)	X	
Drain Valve #3 (15 feet west of #2)	X	

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Green Valley Lake

Water flow leaving the Green Valley Lake system is controlled by a sluice gate located at the south end of the lake. Water level is maintained by the City of Fairfield, who lowers the lake level each fall, and restores it in the spring each year. In addition to the weekly inspections the sluice gate will be inspected prior to any herbicide or algaecide applications.

There is also a well located near the boat ramp at the southern end of the lake that has a float switch as a control mechanism for introducing water to the system to keep it at an adequate level.

Green Valley Lake Sluice Gate Inspection Schedule	Prior to every treatment	Weekly	Monthly	Annually
For algaecide or herbicide treatment check for any leaks or damage	X			
Remove any obstructions and trash	X			
Check Structure for Damage			X	
Check Gate to make sure it is operating correctly and that there are no malfunctions.				X

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Point Tiburon Lagoon Owners Association Lagoon

Point Tiburon Lagoon has overflow weir structure in place. The overflow weir structure is inspected and maintained following the inspection schedule below. This is to ensure that it is functioning correctly, structurally sound, and not leaking. In addition to the weekly inspections the weir will be inspected prior to any herbicide or algaecide applications.

Point Tiburon Lagoon is not tidally influenced and does not have a flow in which residual (treated water) would move. The Lagoon is maintained as a static system not a flow through or flowing system. The only way water leaves the system is during an overflow event such as a large winter storm.

Point Tiburon Lagoon Weir Inspection Schedule	Prior to every treatment	Weekly	Monthly	Annually
For algaecide or herbicide treatment	X			
Remove any obstructions and trash	X	X		
Check Weir for Damage			X	
Check Concrete for Deterioration				X
Remove Sediment and debris				X

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Marin Lagoon Association Lagoon

Marin Lagoon has an inflow control structure, a junction structure, and two outlet structures. All gate structures are inspected and maintained following the inspection schedule on the following page (page 74) to ensure they are functioning correctly, structurally sound, and not leaking. In addition to the inspection schedule the gate structures will be inspected prior to any herbicide or algaecide applications.

Marin Lagoon is a (controlled) tidally influenced system. The lagoon is managed with an electronic gate system that allows tidal influence when in automatic mode. Automatic mode allows for the water levels in the lagoon to fluctuate with high and low tide. The automated system will allow the water at high tide to reach a maximum of three foot (3') above the mean surface elevation and at low tide allows the water level to settle out at zero point five feet (0.5'). The outflow gate system also has a backup air bladder system in place just in case of a gate failure. In regards to doing herbicide or algaecide treatments Waterworks Industries Inc. would modify the electronic inflow and outflow system to completely shut down the system prior to any treatment. This would lock the existing water in the system for the duration of the treatment and for as long after until post treatment samples show residue levels below the threshold. Therefore during treatments there is no flow in which residual (treated water) would move. The Lagoon would be treated as a static system not a flow through or flowing system.

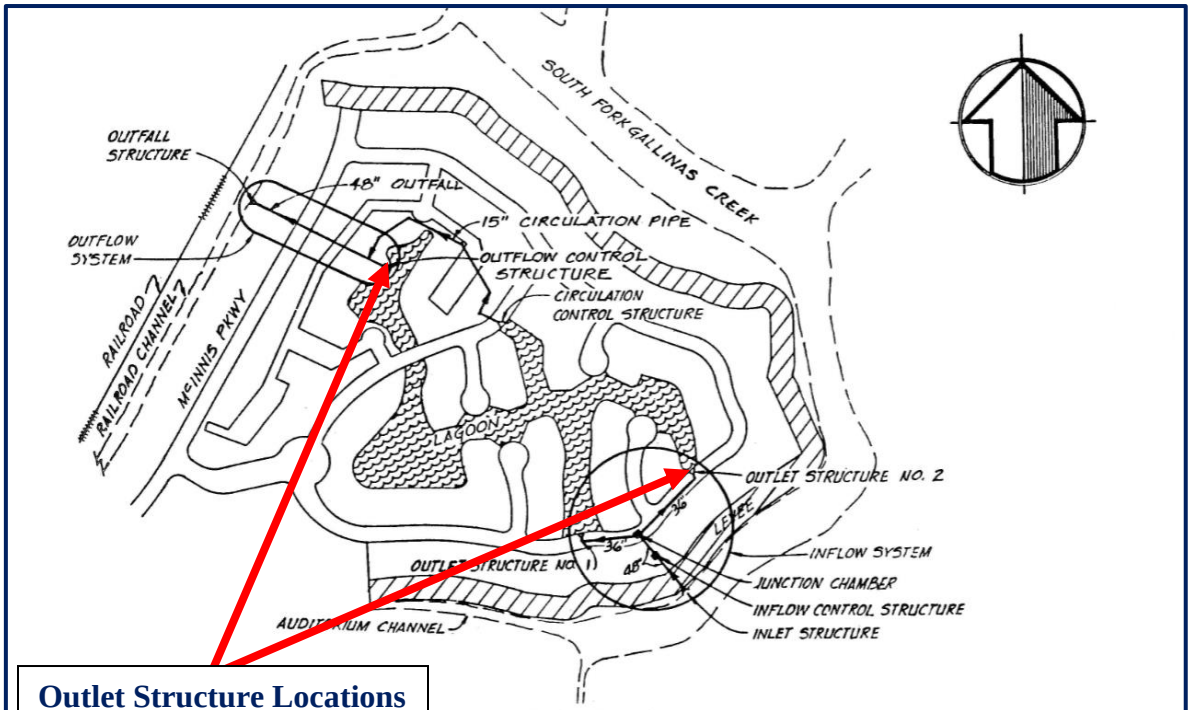

FIGURE 2
SCHEMATIC LOCATION
HYDRAULIC CONTROL STRUCTURES

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INSPECTION SCHEDULE

Inflow Control System

	Weekly	Monthly	Annually
Inflow Control Structure			
Bubbler Operating	X		
Simulate Lagoon Levels		X(1)	
Drain Air Filter Regulator		X(1)	
Check Grating	X		
Grease Sluice Gate Operator		X(1)	
Check Air Compressor and Controls	X		
Remove Sediment and Debris			X(1)
Check Sluice Gate Opening			X(1)
Check Concrete for Deterioration			X
Check Inlet Structure for Erosion			X
Junction Structure			
Inspect Interior for Blockages or Debris		X	
Outlet Structures			
Check Flap Gate for Leakage			X(1)
Check Flap Gate for Obstruction			X(1)
Clean Flap Gate Seat for Barnacles			X(1)
Remove Sediment and Debris			X

Outflow Control System

Outflow Control Structure			
Check Weir Elevation and Alignment	X		
Clean Weir	X		
Exercise Slide Gate			X
Check Slide Gate for Leakage			X
Check Slide Gate for Corrosion			X
Remove Sediment and Debris			X(1)
Check Concrete for Deterioration		X	
Outfall Structure			
Check Flap Gate for Leakage			X(1)
Check Flap Gate for Obstruction			X(1)
Clean Flap Gate Seat			X(1)
Check Outfall Structure for Erosion			X
Circulation Control Structure			
Check Weir Elevation		X	
Clean Weir		X	

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Sonoma Greens Community Association Lake and Pond

Sonoma Greens Lake water exits into a small manmade stream that flows in Sonoma Greens Pond. Sonoma Greens Pond has a pumping system that recirculates the water from the lower pond back up into the upper lake. As both of these water bodies are connected they both share a spillway that is on the lower pond. The only manner water leaves the pond is if it fills to a level above the spillway.

Sonoma Greens Spillway Inspection Schedule	Prior to every treatment	Weekly	Monthly	Annually
For algaecide or herbicide treatment check for any leaks or damage	X			
Remove any obstructions and trash	X			
Check Structure for Damage			X	
Check Concrete for Deterioration				X

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The Vineyard Club Inc. – Vineyard Club Lake

The Vineyard Club Lake has a small dam with a spillway that has no gate or control structures. The only manner water exits the lake is if during storm events it fills to a level where it spills over the spillway

Vineyard Club Lake Spillway Inspection Schedule	Prior to every treatment	Weekly	Monthly	Annually
For algaecide or herbicide treatment check for any leaks or damage	X			
Remove any obstructions and trash			X	
Check Structure for Damage			X	
Check Concrete for Deterioration				X

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Lake Alhambra Homeowners Association – Lake Alhambra

Water flow leaving the Lake Alhambra system is controlled by a sluice gate located at the North West end of the lake. Water level is maintained by the City of Antioch in coordination with the Home Owners Association. In addition to the monthly inspections the sluice gate will be inspected prior to any herbicide or algaecide applications.

Lake Alhambra Spillway Inspection Schedule	Prior to every treatment	Weekly	Monthly	Annually
For algaecide or herbicide treatment check for any leaks or damage	X			
City of Antioch Inspection Schedule				
Remove any obstructions and trash			X	
Check Structure for Damage			X	
Check Concrete for Deterioration				X

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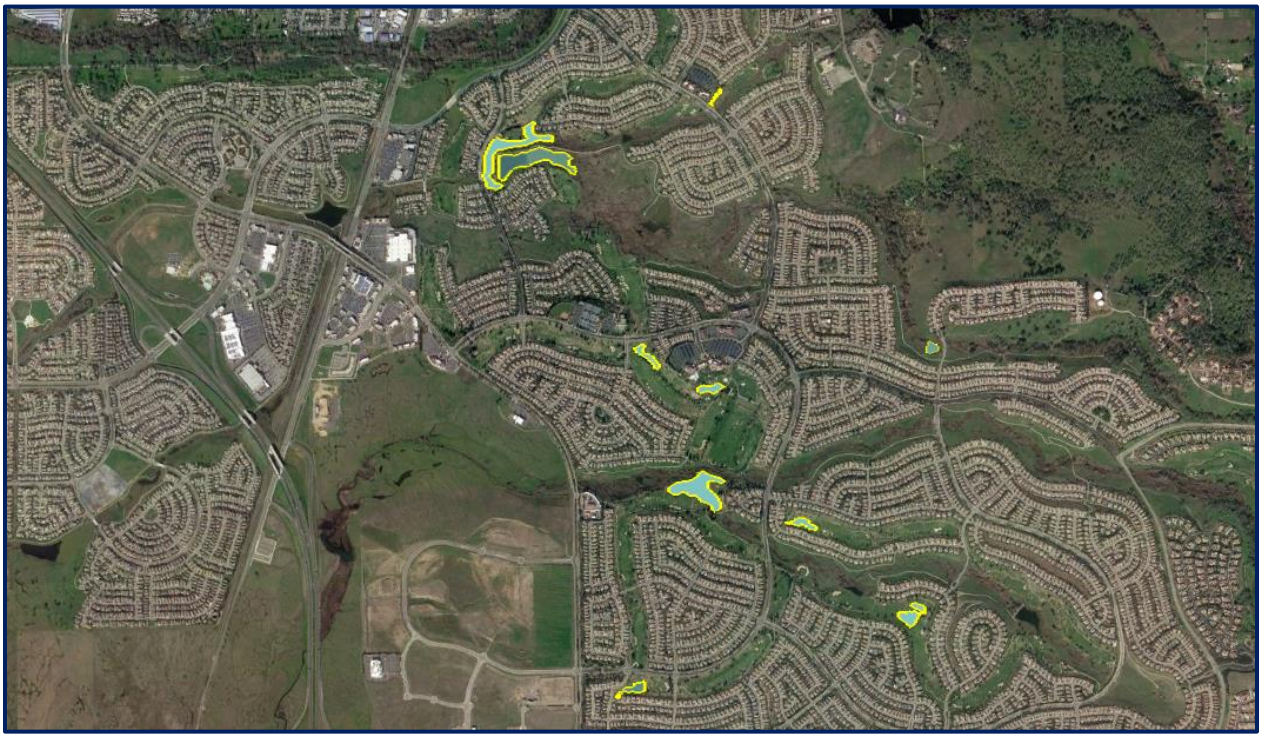
Sun City Lincoln Hills Community Association in arrangement with Lincoln Hills Golf Club

There are several overflow spillways throughout the Sun City Association and Lincoln Golf Club system and there are no gate or control structures. Several of the waterbodies operate as a constant flow through while several others only spill during storm events.



Sun City Lincoln Hills Community Association in arrangement with Lincoln Hills Golf Club Inspection Schedule	Prior to every treatment	Weekly	Monthly	Annually
For algaecide or herbicide treatment check for any leaks or damage	X			
Remove any obstructions and trash		X		
Check Structure for Damage				X

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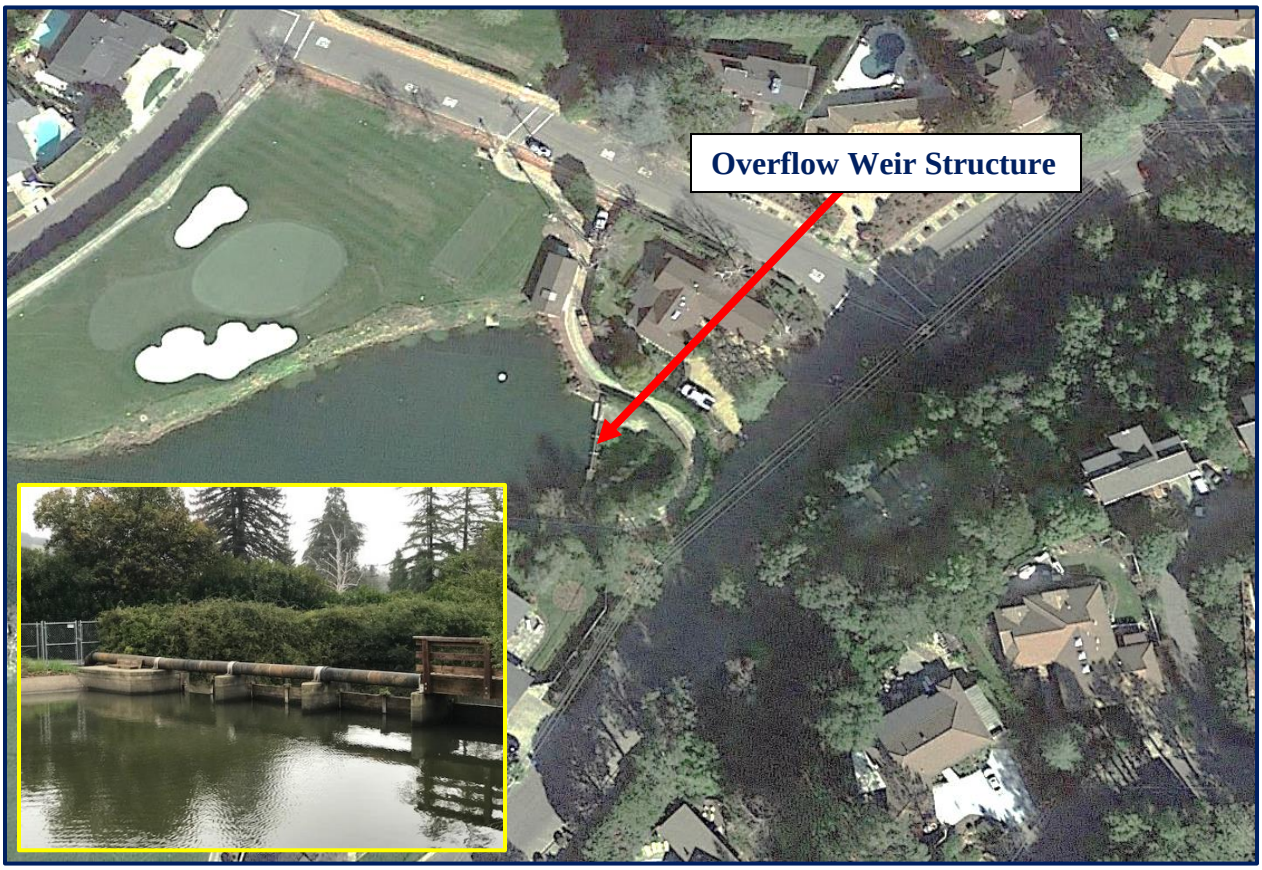
Marin Country Club Golf Course Ponds

The Marin Country Club Golf Course ponds have an overflow weir structure in place. The overflow weir structure is inspected and maintained following the inspection schedule below. This is to ensure that it is functioning correctly, structurally sound, and not leaking. In addition to the weekly inspections the weir will be inspected prior to any herbicide or algaecide applications.



Marin Country Club Weir Inspection Schedule	Prior to every treatment	Weekly	Monthly	Annually
For algaecide or herbicide treatment	X			
Remove any obstructions and trash	X	X		
Check Weir for Damage	X		X	
Check Concrete for Deterioration				X

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M-24 Ranch Association – Emery Reservoir

Emery Reservoir has a spillway that has no gate or control structures. The only manner water exits the lake is if during storm events it fills to a level where it spills over the spillway

Shiloh Lake Overflow Structure Inspection Schedule	Prior to every treatment	Weekly	Monthly	Annually
For algaecide or herbicide treatment check for any leaks or damage	X			
Remove any obstructions and trash	X			
Check Structure for Damage				X
Check Structure for Deterioration				X

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STATE IMPLEMENTATION POLICY (SECTION 5.3) EXCEPTIONS

The Shiloh Homeowners Association, Varenna at Fountaingrove, Green Valley Lake Association, Point Tiburon Lagoon Owners Association, Marin Lagoon Homeowners Association, Sonoma Greens Community Association, The Vineyard Club Inc., The Lake Alhambra Homeowners Association, Sun City Lincoln Hills Community Association in arrangement with Lincoln Hills Golf Club, Marin Country Club and M-24 Ranch Association have not applied for or been granted a short-term or seasonal exception under State Water Board Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California.

DESCRIPTION OF MONITORING AND REPORTING PROGRAM (MRP)

Section 122.48 of title 40 of the Code of Federal Regulations (40 C.F.R. §122.48) requires that all NPDES permits specify monitoring and reporting requirements. As such the following monitoring and reporting program has been developed for the Shiloh Homeowners Association, Varenna at Fountaingrove, Green Valley Lake Association, Point Tiburon Lagoon Owners Association, Marin Lagoon Homeowners Association, Sonoma Greens Community Association, The Vineyard Club Inc., The Lake Alhambra Homeowners Association, Sun City Lincoln Hills Community Association in arrangement with Lincoln Hills Golf Club, Marin Country Club and M-24 Ranch Association under the guidance of Attachment C –Monitoring and Reporting Program as well as MRP guidelines table attached on the following page (Page 82)

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Table C-1. 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]	ºF	Grab[4]	[5]	Background, Event and Post-event Monitoring	[6]
	2. pH[3]	Number				
	3. Turbidity[3]	NTU				
	4. Electric Conductivity[3] @ 25°C	µmhos/cm				
Chemical	1. Active Ingredient[7]	µg/L	Grab[4]	[5]	Background, Event and Post-event Monitoring	[6]
	2. Nonylphenol[8]	µg/L				
	3. Hardness (if copper is monitored)	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 of monitoring from six consecutive application 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. To support a reduction in monitoring frequency, the six sampling events showing concentrations that are less than the receiving water limitation/trigger for an active ingredient must be consecutive and can span more than one year or application season. The reduction in monitoring frequency under this provision applies to all listed active ingredients including SIP listed active ingredients 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, chlorine, dissolved copper, diquat, endothall, flumioxazin, fluridone, glyphosate, imazamox, imazapyr, penoxsulam, and triclopyr.
[8] It is required only when a surfactant is used.

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MONITORING FREQUENCY AND LOCATIONS

Shiloh Lake, Fountaingrove Lake, Green Valley Lake, Point Tiburon Lagoon, Marin Lagoon, Sonoma Greens, Vineyard Club Lake, Marin Country Club golf course ponds, Emery Reservoir and Lake Alhambra are all small water bodies that have the same environmental setting throughout the systems. All of the waterbodies are also operated in static conditions. Therefore monitoring locations will be selected to represent the two types of treatments performed. The monitoring locations for entire lake, reservoir or lagoon treatments will be selected from a location close to the lake, pond or lagoon outlet. The background and post event monitoring locations for spot lake or lagoon treatments will be within the treatment areas. The event monitoring locations for spot lake or lagoon treatments will be collected immediately outside of the treatment areas.

Sun City Lincoln Hills Community Association in arrangement with Lincoln Hills Golf Club are all small water bodies that have two different environmental settings with some lakes and ponds operating in a static condition and some operating as flow through systems. Therefore the lakes and ponds that are operated in static conditions will be monitored the same as those outlined in the paragraph below. The monitoring locations for the flow through systems will be as follows

- Background monitoring samples will be collected upstream at the time of the application event or in the application area just prior to (up to 24 hours in advance of) the application event.

- Event monitoring samples will be collected immediately downstream of the treatment area

- Post-event monitoring samples will be collected within the treatment area within one week after application.

Samples will be collected from a minimum of six application events for each active ingredient in each environmental setting. If there are less than six application events in a year, samples will be collected at each application event for each active ingredient in each environmental setting. 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.

Background Monitoring: Background monitoring samples will be collected upstream at the time of the application event or in the application area just prior to (up to 24 hours in advance of) the application event.

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Event Monitoring: Event monitoring samples will be collected immediately downstream of the treatment area in flowing waters or immediately outside of the treatment area in non-flowing waters, immediately after the application event, but after sufficient time has elapsed such that treated water would have exited the treatment area.

Post-Event Monitoring: Post-event monitoring samples will be collected within the treatment area within one week after application.

The background, event, and post event monitoring samples for Shiloh Lake, Fountaingrove Lake, Green Valley Lake, Point Tiburon Lagoon, Marin Lagoon, Sonoma Greens, Vineyard Club Lake, Lake Alhambra, Sun City Lincoln Hills Community Association in arrangement with Lincoln Hills Golf Club, Marin Country Club golf course ponds and Emery Reservoir will have the sampling location identification labels as outlined in the below table. The XXX will be replaced by the specific location in the waterbody which will be accompanied by GPS coordinates.

	Background	Event	Post Event
Shiloh Lake	SL-BGXXX	SL-EXXX	SL-PEXXX
Fountaingrove Lake	FL-BGXXX	FL-EXXX	FL-PEXXX
Green Valley Lake	GVL-BGXXX	GVL-EXXX	GVL-PEXXX
Point Tiburon Lagoon	PTL-BGXXX	PTL-EXXX	PTL-PEXXX
Marin Lagoon	ML-BGXXX	ML-EXXX	ML-PEXXX
Sonoma Greens	SG-BGXXX	SG-EXXX	SG-PEXXX
Vineyard Club Lake	VCL-BGXXX	VCL-EXXX	VCL-PEXXX
Lake Alhambra	LA-BGXXX	LA-EXXX	LA-PEXXX
Sun City Lincoln Hills Community Association in arrangement with Lincoln Hills Golf Club	SCLH-BGXXX	SCLH-EXXX	SCLH-PEXXX
Marin Country Club	MCC-BGXXX	MCC-EXXX	MCC-PEXXX
Emery Reservoir	ER-BGXXX	ER-EXXX	ER-PEXXX

SAMPLE COLLECTION METHODS

Samples will 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. A horizontal / vertical Van Dorn sampler, Kemmerer sampler, or a telescopic / long handled sampling pole will be used to collect the samples at the depths greater than two foot.

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All steps will be taken to prevent samplers from physically entering the water body to collect samples. If it is required because a sampling location cannot be reached by shoreline, boat, dock, etc.… the following steps will be taken:

- The sampler will enter the waterbody downstream or down flow of the water body to prevent disturbance in the sampling location.
- All personal protection equipment, (PPE's) including a life vest will be worn to protect the sampler

Sampling personnel who collect samples will be required to wear powder free plastic or nitrile gloves when preparing the sample bottles and equipment, washing or decontaminating sampling equipment and while performing the following procedures:

When collecting an unpreserved sample with a water bottle sampler (by hand) the following steps will be followed:

- The sample container will be lowered to mid water column depth if the depth is less than three feet. The capped end of the container will be placed away from the flow of water to minimize potential debris from entering the sample.
- Once the container is at the correct depth and positioned correctly the cap will be removed to allow the sample container to fill. Once full the cap will be replaced and the pre-labeled container will be removed from the water and placed in a cooler.

When collecting samples with a water bottle sampler (by hand) with bottles containing preservatives, a clean unpreserved sample bottle will be used to collect the sample. The collection procedure will be the same steps outlined above with the additional following step:

- Remove the cap and immediately transfer the sample from the unpreserved sample bottle to the pre-labeled sample bottle containing the appropriate preservative. Cap the bottle and place in the cooler.

When collecting samples with a telescopic / long handled sampling pole the instrument will be thoroughly washed with appropriate cleaner and distilled water before use. The sampler will then be washed once again with the water from the new sampling location before samples are collected. Once the sampler is ready the following steps will be followed

- Invert and lower the telescopic / long handled sampling pole sampler to three feet below the surface of the water body or at mid water column depth if the depth is less than three feet.
- Turn the inverted telescopic / long handled sampling pole sampler upright at the desired depth to fill the sample and then remove from the water.
- Immediately transfer the sample from the telescopic / long handled sampling pole sampler to the pre-labeled unpreserved or preserved sample bottle. Cap the new bottle and place in the cooler.

When collecting a sample with a subsurface water sampler (Horizontal / Vertical Van Dorn sampler, Kemmerer sampler) the following steps will be followed:

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- Lower the subsurface water sampler to three feet below the surface of the water body or at mid water column depth if the depth is less than three feet
- Once it is confirmed that the sampler is at the correct depth, release the weighted messenger or comparable trigger device to close the sampling device
- Raise the sampler back to the shoreline or collection vessel and immediately transfer the sample to the pre-labeled unpreserved or preserved sample bottle. Cap the new bottle and place in the cooler.

FIELD SAMPLING EQUIPMENT CHECKLIST

- NPDES treatment and monitoring forms
- Chain of Custody (COC) forms
- Non-powdered plastic or nitrile gloves
- Boots or waders if needed
- Appropriate sampling bottles and labels from or approved by the certified laboratory being used for analysis.
- Ice Chest / Cooler with ice or ice packs
- YSI data sonde or equivalent - for onsite field measurements such as electric conductivity, dissolved oxygen, pH, turbidity, and temperature.
- Backup batteries
- Field logbook and QA/QC manual
- Sampling devices for collecting subsurface samples
- Distilled and deionized water
- Eyewash
- GPS for recording sampling locations
- Plastic bags to separate out samples and protect forms and manuals
- Tape
- Shipping labels
- Secchi Disk

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All laboratory analyses will be conducted at a laboratory certified for such analyses by the California Department of Public Health in accordance with California Water Code section 13176. The chosen Laboratory that will perform sample analyses will be identified in all monitoring reports. The receiving water limitations and monitoring triggers listed in the permit that may be sampled for are listed in the tables 3 and 4 below.

Table 3. Receiving Water Limitations

Constituent/ Parameter	BENEFICIAL USE[1]				Basis
	MUN, µg/L	WARM or COLD, µg/L	Other than MUN, WARM, or COLD, µg/L	All Designations	
2,4-D	70				U.S. EPA MCL
Acrolein[2]	320	21	780		U.S. EPA Water Quality Criteria, 1986.
Copper[2]				Dissolved Freshwater[3] Copper Chronic = 0.960exp{0.8545 [ln(hardness[4])] – 1.702}[5, 6] Dissolved saltwater[3] Copper Chronic = 0.83exp{0.8545 [ln(hardness[4])] – 1.702}[5,6]	California Toxics Rule
Diquat	20				U.S. EPA MCL
Endothall	100				U.S. EPA MCL
Fluridone	560				U.S. EPA Integrated Risk Information System
Glyphosate	700				U.S. EPA MCL
Nonylphenol				Freshwater Chronic Criterion = 6.6 µg/L Saltwater Chronic Criterion = 1.7 µg/L	U.S. EPA National Recommended Ambient Water Quality Criteria
Toxicity	Algaecide and aquatic herbicide applications shall not cause or contribute to toxicity in receiving water(s).				Regional Water Boards' Basin Plans

Notes:
1. See Regional Water Boards' Water Quality Control Plans (Basin Plans) for beneficial use definitions.
2. Public entities and mutual water companies* listed in Attachment G are not required to meet these limitations in receiving waters during the exception period described in the APAP and Section VIII.C.10 below.
3. For waters in which the salinity is equal to or less than 1 part per thousand 95% or more of the time, the freshwater criteria apply. For waters in which the salinity is equal to or greater than 10 parts per thousand 95% or more of the time, saltwater criteria apply. For waters in which the salinity is between 1 and 10 parts per thousand, the applicable criteria are the more stringent of the freshwater or saltwater criteria.
4. For freshwater aquatic life criteria, waters with a hardness 400 mg/L or less as calcium carbonate, the actual ambient hardness of surface water shall be used. For waters with a hardness of over 400 mg/L as calcium carbonate, a hardness of 400 mg/L as calcium carbonate shall be used with a default Water-Effect Ratio of 1.
5. Values should be rounded to two significant figures.
6. This limitation does not apply to the Sacramento River and its tributaries above the State Highway 32 Bridge at Hamilton City. See Table III-1 of the Basin Plan for the Sacramento and San Joaquin River Basins for copper limitation.

RECEIVING WATER MONITORING TRIGGERS

In the absence of Receiving Water Limitations, the Receiving Water Monitoring Triggers shown in Table 4 below (page 88) will be used to assess compliance with the narrative receiving water toxicity limitation. However, exceeding the monitoring trigger does not constitute a violation of this General Permit as long as the Discharger (Waterworks Industries Inc.) performs the following actions: (1) initiates additional investigations for the cause of the exceedance; (2) implements additional BMPs to reduce the algaecide and aquatic herbicide residue concentration to be below the monitoring triggers in future applications; and (3) evaluates the appropriateness of using alternative products.

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Table 4. Receiving Water Monitoring Triggers

Ingredient	Unit	Instantaneous Maximum Monitoring Trigger	Basis
Imazapyr	mg/L	11.2	U.S. EPA Office of Pesticides *Ecotoxicity Database*
Triclopyr Triethylamine	mg/L	13.0	U.S. EPA Office of Pesticides *Ecotoxicity Database*
Flumioxazin	mg/l	0.23	U.S. EPA Office of Pesticides *Ecotoxicity Database*

SAMPLE PRESERVATION AND DELIVERY

Based on sample requirements samples will either be collected in preserved or unpreserved containers. Samples collected in unpreserved containers will be preserved at the laboratory when the sample(s) are delivered if required.

All samples will be placed on ice in a cooler immediately following the collection of the sample(s). Background, Event, and Post Event monitoring samples will be separated and properly labeled in plastic bags within the cooler to avoid any cross contamination. Delivery of the sample(s) will occur following the sampling event if feasible. If samples cannot be delivered on the day of the sampling event they will remain on ice in a cooler until delivered to the lab within the appropriate holding time.

CHAIN OF CUSTODY

All samples collected and submitted to the lab for analysis will be accompanied by a chain of custody (COC) record. The COC form will include at a minimum:

- A unique field sample number which identifies each individual sample to be analyzed
- Location
- The method/parameter for analysis
- Collection date and time
- Sampler information
- Custody transfer signatures

When transferring the samples into the custody of the laboratory the individuals relinquishing and receiving the samples will sign, date, and record the time the transfer was made on the COC form. The original COC form will remain with the lab and a copy will be given to the individuals delivering the samples which will be placed with the monitoring forms in the project folder or binder. If samples are shipped to the laboratory a signed copy of the COC will be included with the shipment and a signed copy will be requested from the lab. The shipping information and COC copy would also be placed with the monitoring forms in the project folder or binder.

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SAMPLE CONTAMINATION PREVENTION PROCEDURES

Personal decontamination will be done in an area detached from sampling locations in order to prevent contamination at sampling points. All personal protective equipment (PPE) such as coveralls, disposable gloves, and respirators used in the application process will be removed and disposed of in this area using sealed bags / containers for proper disposal. Sampler(s) will wash hands and face with soap and clean water. New boots and safety glasses will be worn for sampling. The used boots and glasses will be containerized until they are washed with an appropriate solution offsite.

New PPE's will be worn for sampling and disposable gloves will be changed at each sampling location.

Samples will be collected away from any equipment, containers, or PPE's that were used as part of the application process. After each sampling event all sampling collection and water quality monitoring equipment will be thoroughly washed with appropriate cleaner and distilled water. All equipment will be washed once again with the water from the new sampling location before samples or readings are collected.

FIELD SAMPLING PROCEDURES

Visual parameters including the monitoring area description, appearance of the waterway, weather conditions, and notes on receiving water conditions will be summarized on the NPDES Monitoring Data Form below on page 90.

In conducting the receiving water sampling, a log will be kept of the receiving water conditions throughout the reach bounded by the treatment area. Attention shall be given to the presence or absence of:

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

All monitoring and treatment forms will be placed in a project logbook or binder designated for all project documentation.

Field measured water quality parameters including Temperature, pH, Turbidity, Dissolved Oxygen and Electrical Conductivity will be measured in the field as grab samples with a multi-parameter data logging meter. (YSI, Horiba, or equivalent) Field personnel will be properly trained on how to operate the meter to ensure quality control. The meter will be calibrated regularly following manufacturer's specifications. Methods will conform to United States

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Environmental Protection Agency (U.S. EPA) guidelines or to procedures approved by the State Water Board and the appropriate Regional Water Board.

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NPDES Monitoring Data Form

Application and Monitoring area location:	Sampler	Herbicide or Algaecide (pesticide used, surfactant used)

Sampler Certification: I [ ] certify that the Aquatic Pesticide Application Plan has been followed

Signature: _____ Date: _____

Background Monitoring - Background monitoring samples shall be collected upstream at the time of the application event or in the application area just prior to (up to 24 hours in advance of) the application event.

Date:	Time:	GPS Coordinates:	
Visual Monitoring			
Weather: (fog, rain, cloudy, etc.)			Wind Speed: (mph)
Appearance of waterway: (sheen, color, clarity, films, coatings, etc.)			
Floating / Suspended Matter:		Bottom Deposits: Yes ☐ No ☐	
Aquatic Life: Yes ☐ No ☐ Description:		Nuisance Conditions Yes ☐ No ☐	
Fungi , Slimes, Objectionable Growth:		Water Clarity: (Secchi)	
Water Sampling Parameters (Physical an Chemical Monitoring)			
Temp (F°)	pH (Number)	Electric Conductivity (µmhos / cm)	Turbidity (NTU)
Active Ingriedient	Hardness (mg $CaCO_3$) / Sal (ppt)	Nonylphenol (µg/l)	DO (mg/l)

Event Monitoring - Event monitoring samples shall be collected immediately downstream of the treatment area in flowing waters or immediately outside of the treatment area in non-flowing waters, immediately after the application event, but after sufficient time has elapsed such that treated water would have exited the treatment area.

Date:	Time:	GPS Coordinates:	
Visual Monitoring			
Weather: (fog, rain, cloudy, etc.)			Wind Speed: (mph)
Appearance of waterway: (sheen, color, clarity, films, coatings, etc.)			
Floating / Suspended Matter:		Bottom Deposits: Yes ☐ No ☐	
Aquatic Life: Yes ☐ No ☐ Description:		Nuisance Conditions Yes ☐ No ☐	
Fungi , Slimes, Objectionable Growth:		Water Clarity: (Secchi)	
Water Sampling Parameters (Physical an Chemical Monitoring)			
Temp (F°)	pH (Number)	Electric Conductivity (µmhos / cm)	Turbidity (NTU)
Active Ingriedient	Hardness (mg $CaCO_3$) / Sal (ppt)	Nonylphenol (µg/l)	DO (mg/l)

Post-Event Monitoring - Post-event monitoring samples shall be collected within the treatment area within one week after application.

Date:	Time:	GPS Coordinates:	
Visual Monitoring			
Weather: (fog, rain, cloudy, etc.)			Wind Speed: (mph)
Appearance of waterway: (sheen, color, clarity, films, coatings, etc.)			
Floating / Suspended Matter:		Bottom Deposits: Yes ☐ No ☐	
Aquatic Life: Yes ☐ No ☐ Description:		Nuisance Conditions Yes ☐ No ☐	
Fungi , Slimes, Objectionable Growth:		Water Clarity: (Secchi)	
Water Sampling Parameters (Physical an Chemical Monitoring)			
Temp (F°)	pH (Number)	Electric Conductivity (µmhos / cm)	Turbidity (NTU)
Active Ingriedient	Hardness (mg $CaCO_3$) / Sal (ppt)	Nonylphenol (µg/l)	DO (mg/l)

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QUALITY ASSURANCE-QUALITY CONTROL

Waterworks Industries Inc. will keep a Quality Assurance-Quality Control maintenance and calibration manual for any onsite field measurements such as electrical conductivity, dissolved oxygen, pH, turbidity, and temperature. The Quality Assurance-Quality Control Program must conform to United States Environmental Protection Agency (U.S. EPA) guidelines or to procedures approved by the State Water Board and the appropriate Regional Water Board. The manual containing the steps followed in this program will be kept by Waterworks Industries Inc. and will be available for inspection by the State Water Board and the appropriate Regional Water Board staff.

DATA AND RECORDS MANANGEMENT

All sampling, treatment, and reporting records will be filed and stored at Waterworks Industries Inc.'s main office in Windsor, CA which will be available for inspection by the State Water Board and the appropriate Regional Water Board staff.

REPORTING REQUIREMENTS

Annual Report

Waterworks Industries Inc. will submit to the Deputy Director and the appropriate Regional Water Board Executive Officer an annual report consisting of a summary of the past year's activities, and 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, Waterworks Industries Inc. shall provide the Deputy Director and the appropriate Regional Water Board Executive Officer a certification that algaecide and aquatic herbicide application activities did not result in a discharge to any water body. The annual report will contain the following information:

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 best management practices (BMPs)] and monitoring program based on the monitoring results.

3. All receiving water monitoring data will be compared to receiving water limitations and receiving water monitoring triggers.

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4. Identification of BMPs currently in use and a discussion of their effectiveness in meeting the requirements in this General Permit. And if needed, a discussion of BMP modifications addressing violations of the General Permit.

5. A map showing the location of each treatment area which will include all sampling and monitoring areas and their GPS coordinates.

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 will indicate the name of the sampling agency or organization, detailed sampling location information (including latitude and longitude) 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.

9. Summary of algaecide and aquatic herbicide application log.

10. Waterworks Industries Inc. will submit the annual report before March 1st of the following year. The annual report will contain all data from January 1st through December 31st of the previous year.

Twenty Four Hour Report

Waterworks Industries Inc. will report to the State Water Quality Control Board and appropriate Regional Water Quality Control Board any noncompliance, including any unexpected or unintended effect of an algaecide or aquatic herbicide use that may endanger health or the environment.

Any information will be provided orally within 24 hours from the time Waterworks Industries Inc. becomes aware of the circumstances and will 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 a contact person;
e. How and when Waterworks Industries Inc. became aware of the noncompliance;
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 the noncompliance;

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h. Description of any steps that Waterworks Industries Inc. took or will take to correct, repair, remedy, cleanup, or otherwise address any adverse effects. If Waterworks Industries Inc. is unable to notify the State and the appropriate Regional Water Board within 24 hours, Waterworks Industries Inc. will do so as soon as possible and also provide the rationale for why Waterworks Industries Inc. was unable to provide such notification within 24 hours.

Five-Day Written Report

Waterworks Industries Inc. will also provide a written submission within five (5) days of the time Waterworks Industries Inc. becomes aware of the noncompliance. The written submission will contain the following information:

a. Date and time Waterworks Industries Inc. 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.

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 Coalition or Discharger believes the noncompliance could not have been caused by exposure to the algaecides or aquatic herbicides from Waterworks Industries Inc. application;

i. 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.

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BEST MANAGEMENT PRACTICES TO BE IMPLEMENTED

Measures to prevent algaecide and aquatic herbicide spill and for spill containment during the event of a spill

The following preventative measures will be taken to prevent algaecide and herbicide spills.

- Applicators applying herbicides and algaecides will have State of California Department of Pesticide Regulation (DPR) issued Qualified Applicator Licenses, (QAL) Qualified Applicator Certificates, (QAC) or be under the supervision of a licensed applicator.
- Applicators receive annual and project specific safety training that includes spill prevention and containment procedures.
- Labels and MSDS sheets are reviewed before arriving for treatments and are on site during treatments. Information on the labels and MSDS sheets are followed to insure the proper transportation, handling, and loading of the pesticides used.
- Regular maintenance of all application and herbicide transfer equipment is performed to prevent or correct leaks.
- Herbicide containers are tied down or secured when transporting to prevent them from falling from vehicles.

The following containment measures will be taken in the event of a spill

- Applicators will have training in spill response and containment and will follow label and MSDS instructions to insure spill containment and cleanup is done properly and to completion.
- Spill kits will be located on all vehicles which contain an assortment of containment booms and absorbent materials. (Ex: manufacturer recommended materials, pads, mats, sawdust, sand, etc.)
- In the event of a spill the materials from the spill kits will be used to cover and contain the spill area in order to prevent the spill from spreading and to soak up the herbicide. The used absorbent materials would then be cleaned up with brooms and shovels and placed into properly contained drums specifically designated for this use.
- Any spill will be reported as required by State and Federal laws.

Measures to ensure that only an appropriate rate of application is used

A Licensed Pest Control Advisor (PCA) will provide recommendations for the appropriate rate of application based on their review of the treatment area to determine if thresholds have been reached or exceeded. If it is determined that a threshold has been reached and aquatic herbicides or algaecides are the most appropriate method of control, the PCA will provide a written recommendation for control. PCA recommendations include precise rates of application and include potential impacts on the surrounding environment, non-target organisms, and human health.

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The PCA written recommendation as well as the licensed applicators will follow product labels to insure applications are performed in accordance with California DPR regulations and guidelines.

Education on Potential Adverse Effects from algaecide and aquatic herbicide applications

Licensed applicators receive annual and project specific training on all potential herbicides being used. The training includes review of the current labels and material safety data sheets which outline the potential adverse effects that can occur from applications with each specific herbicide or algaecide. In addition PCA's, QAL's, and QAC's are required to complete continued education hours every two years to remain licensed with the DPR. The approved continued education courses and seminars educate PCA's, QAL's, and QAC's in a wide variety of topics including pesticide laws, regulations, and pest control methods.

Coordination with nearby water users and agencies so that beneficial uses of the water are not impacted during the treatment period

Waterworks Industries Inc. will ensure that all control gates and weirs are closed and that the water level is well below the overflow structures prior to herbicide and algaecide application. These structures will also be inspected for damage or leaks prior to any application of herbicides and algaecides to prevent any residues from leaving the water bodies into waters of the United States.

As required by law Waterworks Industries Inc. will follow and adhere to all approved aquatic herbicide and algaecide labels to determine the potential impacts to downstream water users (agencies, farms, etc.) If there are potential impacts to the beneficial uses of the water such as irrigation, drinking water supply, domestic stock water, etc. Waterworks Industries Inc. will contact all potentially affected downstream water users before application of the algaecide and or herbicide to coordinate a treatment plan to ensure that there are no negative impacts to the beneficial uses of their water.

The outreach and coordination will begin immediately after identification of the target species, and determination if the product selected for use has any potential downstream impacts. This will ensure a high level of communication and organization.

<u>Shiloh Homeowners Association Lake</u>

There are no agencies, farms, or downstream water users within miles of the Shiloh Lake overflow. Therefore no downstream water users need to be contacted for Shiloh Lake treatments.

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Varenna at Fountaingrove – Fountaingrove Lake

Waterworks Industries Inc. will notify the City of Santa Rosa – Recreation and Parks Department prior to aquatic herbicide and algaecide applications that have potential impacts to the beneficial uses of the water such as irrigation, drinking water supply, domestic stock water, etc. as they are the agency that manages the flow and gate structures associated with Fountaingrove Lake.

Green Valley Lake Home Owners Association Lake

Waterworks Industries Inc. will notify the City of Fairfield prior to any herbicide and algaecide applications that have potential impacts to the beneficial uses of the water such as irrigation, drinking water supply, domestic stock water, etc. Other than the City of Fairfield there is no downstream water users within miles of the lake sluice gate discharge.

Point Tiburon Lagoon Owners Association Lagoon

If Point Tiburon Lagoon discharges it discharges directly into Richardson Bay / Belvedere Cove. There are no downstream water users drawing bay water for miles in all directions. Therefore no downstream water users need to be contacted for Point Tiburon treatments.

Marin Lagoon Association Lagoon

There are no downstream water users from the Marin Lagoon discharge gates through Gallinas Creek to San Pablo Bay as well as for miles along the shores of San Pablo Bay. Therefore no downstream water users need to be contacted for Marin Lagoon treatments.

Sonoma Greens Community Association Lake and Pond

Waterworks Industries Inc. investigated two (2) miles downstream of Sonoma Greens Community Association and Pond and no agencies, farms, or other downstream water users were located on Sonoma Creek. Therefore no downstream water users need to be contacted for Sonoma Greens treatments.

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The Vineyard Club Inc. – Vineyard Club Lake

Waterworks Industries Inc. will notify Gill Creek Mutual Water Co. prior to any herbicide and algaecide applications that have potential impacts to the beneficial uses of the water such as irrigation, drinking water supply, domestic stock water, etc.

Lake Alhambra Homeowners Association – Lake Alhambra

Waterworks Industries will notify the City of Antioch prior to aquatic herbicide and algaecide applications that have potential impacts to the beneficial uses of the water such as irrigation, drinking water supply, domestic stock water, etc. as they are the agency that manages the flow and gate structures associated with Lake Alhambra. From the control structure to the San Joaquin River there are no downstream water users need to be contacted for Lake Alhambra treatments.

Sun City Lincoln Hills Community Association in arrangement with Lincoln Hills Golf Club

Waterworks Industries Inc. will contact the Nevada Irrigation District (NID) and Placer County Water Agency (PCWA) prior to aquatic herbicide and algaecide applications that have potential impacts to the beneficial uses of the water such as irrigation, drinking water supply, domestic stock water, etc. Currently both agencies have been contacted and we plan to coordinate closely to insure that all downstream water users are properly notified.

Marin Country Club Golf Course Ponds

Waterworks Industries Inc. investigated Arroyo San Jose and followed it 1.7 miles downstream of Marin Country Club and no agencies, farms, or other downstream water users were located on Arroyo San Jose as it travels through residential and industrial areas then into wetlands then the bay. Therefore no downstream water users need to be contacted for Marin Country Club.

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M-24 Ranch Association – Emery Reservoir

There are no agencies, farms, or downstream water users within miles of the Emery Reservoir overflow. Therefore no downstream water users need to be contacted for Emery Reservoir treatments.

A description of measures that will be used for preventing fish kills

Herbicide and algaecide applications will be performed at an action threshold that will prevent a significant amount of decomposing algae and plants which can contribute to oxygen depletion and cause fish kills.

Dissolved Oxygen (DO) measurements taken pre-treatment as part of the MRP will be analyzed and if levels are low, partial treatments may be performed at appropriate intervals to limit the amount of decomposing algae or plants at a given time. Or an alternative method of control will be used if the levels are extremely low.

Aquatic herbicides and algaecides will be applied by licensed applicators that will have specially designed application equipment that is calibrated to insure proper treatment rate and distribution, so that herbicides and algaecides are not highly concentrated in any given area of the treatment plot.

The PCA and licensed applicators will review and follow the current labels and material safety data sheets which outline the potential adverse effects (Potential impacts on fish) that can occur from applications with each specific herbicide or algaecide.

ALTERNATIVES TO AQUATIC HERBICIDES AND ALGAECIDES

Waterworks Industries Inc. will follow an Integrated Pest Management Program (IPM) to ensure that the pest management strategy concentrates on long term prevention of aquatic pests.

"Integrated Pest Management (IPM) is an effective and environmentally sensitive approach to pest management that relies on a combination of common-sense practices. IPM programs use current, comprehensive information on the life cycles of pests and their interaction with the environment. This information, in combination with available pest control methods, is used to manage pest damage by the most economical means, and with the least possible hazard to people, property, and the environment." (EPA IPM Principles)

Action threshold levels will be developed so that when pest levels reach a certain growth point, action will be taken to ensure that the beneficial uses of the water bodies are not impacted. Waterworks Industries Inc.'s IPM program will insure that all alternative methods will be discussed and if feasible will be implemented in order to minimize the use of herbicides and algaecides in the lake or lagoon systems. Herbicides and algaecides will be considered if the

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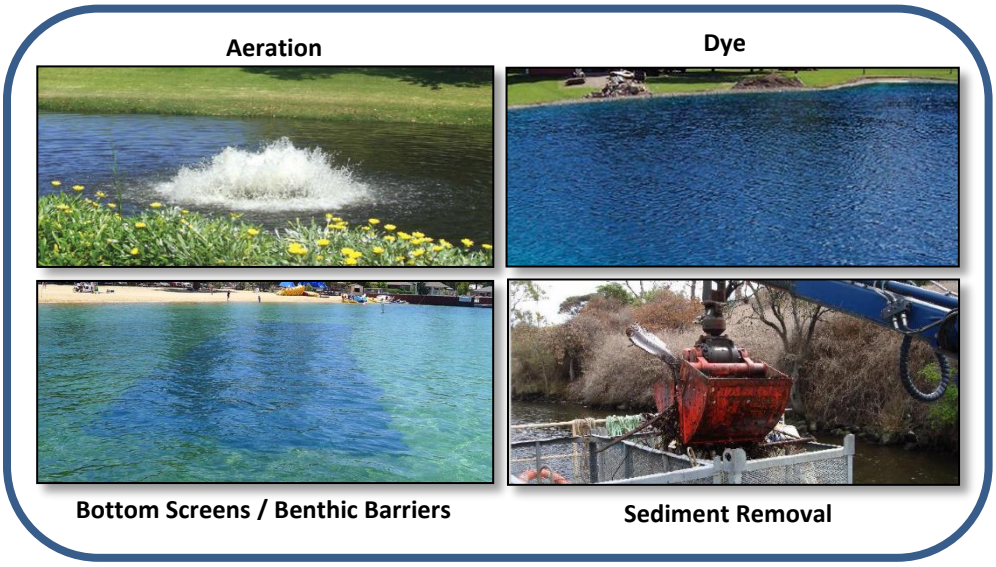
feasible alternative methods do not provide sufficient control or if herbicides and algaecides are determined to be the most feasible option.

There are situations where herbicides and algaecides may be used before an action threshold is met. One example of this would be when treating early aquatic weed growth with an herbicide that is most effective in controlling the plant species in this early growth stage. This type of treatment can minimize herbicide use by treating small infestations before they spread, thus reducing the amount of herbicide needed if the plants were allowed to reach mature levels.

NO ACTION

There are times when no action may be the most feasible option, and will be the first option discussed in Waterworks Industries Inc.'s IPM Plan. No action can result in the pest species naturally dying back or dissipating before reaching nuisance levels based on water quality parameters and weather conditions. However if the pest species reaches the action threshold other management and control options will be considered.

PREVENTION / CULTURAL METHODS



Early Detection

Early detection of invasive species by regular monitoring of water bodies can be a very effective preventative measure by removing the invasive(s) before they become established and have sufficient time to spread. Managing early infestations has a significant environmental and

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economic advantage over managing extensive infestations as much fewer resources such as equipment, herbicide, and manpower are needed.

Circulation and Aeration

Circulation can be used in lakes and lagoons to physically mix the water column, and aeration systems can be installed to intersperse the water with surface air. Both of these methods help maintain oxygen levels throughout the water column in order to potentially help reduce algae production by reducing the rate of nutrient recycling into the water.

Beneficial Bacteria

Beneficial bacteria and enzyme solutions can be used to increase the bacterial populations in lakes and lagoons. This option can be applied to create competition with potential pests, which in theory limits nutrient availability essential for macrophyte and algal growth and reproduction.

Dye / Shading

Aquatic dyes can be used in lakes and lagoons to reduce the depths to which light penetrates down into the water column, thus decreasing the availability to aquatic plants and algae which are essential for photosynthesis.

Sediment Removal

Sediment removal can be implemented throughout water bodies to remove nutrient rich sediments from the benthic zone. This is done to reduce the overall nutrient load available for aquatic weeds and algae in the system, as well as maintain desired depths.

Bottom Screens / Benthic Barriers

Bottom screens and benthic barriers can be applied to the sediment like a blanket in water bodies, constricting aquatic plants while blocking out light. There are several materials that have been used as bottom screens with some common materials being plastics and burlap. Benthic barriers have been proven to be successful in controlling aquatic plants but due to high costs are usually only feasible around docks and swimming areas and not for large scale control areas.

A few other disadvantages of benthic barriers are they require regular maintenance and inspection to insure safety and proper performance. If benthic barriers are not regularly maintained sediment can quickly build up on top of the barrier, providing adequate conditions for aquatic weeds to reestablish. If benthic barriers are not properly anchored they can become a hazard for swimmers and boaters. It is also important that recreational and maintenance personnel are aware of barriers that are in place because they can be damaged or displaced from the bottom by activities like fishing, boating, mechanical harvesting and dredging.

The Shiloh Homeowners Association, Varenna at Fountaingrove, Green Valley Lake Association, Point Tiburon Lagoon Owners Association, Marin Lagoon Homeowners Association, Sonoma Greens Community Association, The Vineyard Club Inc., The Lake Alhambra Homeowners Association, Sun City Lincoln Hills Community Association in

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arrangement with Lincoln Hills Golf Club, Marin Country Club and M-24 Ranch Association are currently applying several of the management strategies outlined above such as early detection, beneficial bacteria treatments, circulation/aeration, aquatic dye treatments and sediment removal.

MECHANICAL AND PHYSICAL

Mechanical Harvesting

Mechanical Harvesters are large machines that use cutter bars and conveyor belts to cut and collect aquatic weeds to depths of approximately five to ten feet depending on the size of the harvester. Plants are then transferred or offloaded onto the shore where they can be properly disposed of. Mechanical harvesting is effective in removing aquatic weeds instantaneously and can clear large areas fairly quickly. However mechanical cutting does not provide long term reduction of the plant species, therefore regular maintenance is needed. Due to the regular maintenance required and potential need for hauling and disposal of the cut vegetation this method can become costly. When reviewing the use of mechanical harvesting, it is important to analyze the potential impacts on water quality, fish populations, and the potential to spread invasive plants. There are several species of aquatic plants that can regrow from fragmentation, which can spread and start new infestations.

Hand Pulling, Cutting, and Raking

Cutting, hand pulling, and weed raking can be effective in removing and controlling aquatic plants. This is especially the case in small scale situations such as eliminating early infestations that have not reached levels where other methods would be more cost effective and efficient. The downside to these methods is they are labor intensive, slow, and require regular maintenance which can be costly depending on the size of the infestation and if it is required to haul and dispose of the vegetation offsite.

Rotovation

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Rotovation is a method for cutting and disturbing the base and submerged portions of aquatic plants. Rotovation is usually done from a large piece of equipment such as an aquamog or barge equipped with a hydraulic powered rototilling head that can be lowered to the water body bottom and penetrate up to ten inches into the sediment where it is then activated to cut and destroy the root system. Rotovation is best implemented in large lake and river systems that have adequate access and depths. Rotovation can be an expensive option especially if it is required to remove and dispose of the rotovated vegetation with mechanical harvesters or other equipment. . When reviewing the use of rotovation it is important to analyze the potential impacts on water quality (sediment disturbance could result in unwanted contaminants being released and nutrients that have settled into the sediment can be re-suspended throughout the water column), fish populations, and the potential to spread invasive plants.

Excavating

Excavation can be used to remove emergent, floating and submerged aquatic plants as well as the surface sediment that contains seeds, fragments, rhizomes, stolons, and tubers. This method is frequently used in irrigation canals and water bodies that have openly accessible shorelines. Excavation can be costly especially when it comes to the disposal of the excavated aquatic vegetation and sediment. When reviewing the use of excavation it is important to analyze the potential impacts on water quality (sediment disturbance could result in unwanted contaminants being released and nutrients that have settled into the sediment can be re-suspended throughout the water column), fish populations, and the potential to spread invasive plants.

Diver Suction Dredging

Diver suction dredging is a method that is implemented by using trained divers to use suction dredge pump systems to pull aquatic plants and their root systems from the sediment. The divers use long vacuum hoses with a cutting attachment to detach the vegetation from the sediment and transfer it through the hoses that are attached to the pumps and dredging equipment that is secured to work boats or barges. This equipment is designed to retain the vacuumed vegetation and discharge the sediment and water back into the system. This method has shown to work well for removal of early infestations on invasive weeds and follow up removal following alternative methods for larger infestations. Diver dredging can be an expensive control option as it is a slow process and trained and certified dive teams generally have high prevailing wage and regulation requirements.

The Shiloh Homeowners Association, Varenna at Fountaingrove, Green Valley Lake Association, Point Tiburon Lagoon Owners Association, Marin Lagoon Homeowners Association, Sonoma Greens Community Association, The Vineyard Club Inc., The Lake Alhambra Homeowners Association, Sun City Lincoln Hills Community Association in arrangement with Lincoln Hills Golf Club, Marin Country Club and M-24 Ranch Association are currently applying a few of the management strategies outlined above such as mechanical Harvesting, hand pulling, cutting, and raking.

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BIOLOGICAL CONTROL METHODS

Biological control methods are based on selecting and introducing biological organisms such as animals, plants, and insects that have an impact on target plants. The objective of this method is to have the organism reduce the density, growth, reproduction, and overall survival of the target plants. Usually these biological control organisms are found in the native area of where the aquatic plants originated. Extensive research is done before any biological control agent is allowed or approved to insure that the biological control organisms are host specific and only go after the species of concern.

Due to the plant species in the lakes, reservoirs and lagoons, regulatory requirements, costs, and the uncertainty of the potential for success, these methods of control are not practical for use in Shiloh Lake, Fountaingrove Lake, Green Valley Lake, Point Tiburon Lagoon, Marin Lagoon, Sonoma Greens, Vineyard Club Lake, Lake Alhambra, Sun City Lincoln Hills Community Association in arrangement with Lincoln Hills Golf Club, Marin Country Club golf course ponds and Emery Reservoir.

ALGAECIDES AND AQUATIC HERBICIDES

If preventative control measures do not hold back nuisance algae blooms or aquatic weed infestations all control methods will be reviewed. Waterworks Industries Inc. and a PCA will analyze the various methods and will provide a recommendation that could include any of the methods outlined above or a combination of several of these methods. If it is determined that algaecides and aquatic herbicides are the most feasible option they would be implemented.

The Shiloh Homeowners Association, Varenna at Fountaingrove, Green Valley Lake Association, Point Tiburon Lagoon Owners Association, Marin Lagoon Homeowners Association, Sonoma Greens Community Association, The Vineyard Club Inc., The Lake Alhambra Homeowners Association, Sun City Lincoln Hills Community Association in arrangement with Lincoln Hills Golf Club, Marin Country Club and M-24 Ranch Association would like to use herbicides and algaecides to control nuisance aquatic weed and algae growth and want to have them as a tool in their IPM plan.

USING THE LEAST INTRUSIVE METHOD OF AQUATIC HERBICIDE APPLICATION

Waterworks Industries Inc. and a PCA will evaluate each treatment zone to determine the least intrusive method of aquatic herbicide or algaecide treatment. When evaluating which method will be the least intrusive the group will discuss which method will have the least impact on the

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surrounding environment, non-target organisms, and human health. The trained applicator(s) will also follow the PCA recommendations, pesticide label(s), and safety plan to ensure successful applications.

DECISION MATRIX CONCEPT FOR CHOOSING THE MOST APPROPRIATE FORMULATION

When it comes to deciding what the most appropriate formulation is, Waterworks Industries Inc. will rely on the expertise of the PCA to determine the formulation and write a recommendation after reviewing the following:

- Species present in the lake(s)
- Water quality parameters
- Which formulation has the least impact on the surrounding environment, non-target organisms, and human health
- Review of product labels and material safety data sheets

AQUATIC HERBICIDE AND ALGAECIDE APPLICATION LOG

The aquatic herbicide and algaecide application log form (below on page 105) was designed based on the following criteria listed in the General Permit.

The Discharger shall maintain a log for each algaecide and aquatic herbicide application. The application log shall contain, at a minimum, the following information:

- Date of application;
- Location of application;
- Name of applicator;
- Type and amount of algaecide and aquatic herbicide used;
- Application details, such as flow and level of water body, time application started and stopped, algaecide and aquatic herbicide application rate and concentration;
- Visual monitoring assessment; and
- Certification that applicator(s) followed the APAP.

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NPDES AQUATIC HERBICIDE AND ALGAECIDE APPLICATION LOG FORM

Location of Application:	**Weather:**
Applicator(s)	**Date of Application:**
Species Controlled:	

Discharge Gates / Control Structures		
Date and time inspected:	Date:	Time:
Inspection Performed By: Notes:		
Date and Time Opened	Date:	Time:
Date and Time Closed	Date:	Time:

Applicator Certification:

I [ ] certify that the Aquatic Pesticide Application Plan has been followed

Signature: _____ Date: _____

Application Start Time: **Application Stop Time:**

Application details: (surface acres treated, flow, level of water body, depth, type and amount of algaecide and aquatic herbicide used, application rate, concentration)

Treatment Area	Acres treated (Surface Acres)	Water level / Flow	Depth (Average depth of treatment area)	Herbicide or Algaecide Used	Amount	Application Rate	Concentration

Visual Monitoring assessment – See NPDES Monitoring Data Form

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REFERENCES

The below references were used as guidelines when developing this Aquatic Pesticide Application Plan.

WATER QUALITY ORDER NO. 2013-0002-DWQ

GENERAL PERMIT NO. CAG990005

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

http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2013/wqo2013_0002dwq.pdf

EPA Standard Operating Procedure: Surface Water Sampling PDF

http://www2.epa.gov/region8/standard-operating-procedure-surface-water-sampling

Wisconsin Department of Natural Resources Chemical Fact Sheets

http://dnr.wi.gov/lakes/plants/factsheets/

United States Environmental Protection Agency Integrated Pest Management (IPM) Principles

http://www.epa.gov/opp00001/factsheets/ipm.htm

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