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. X Change of Information: WDID# 9 37AP0001 C. ☐ Change of ownership or responsibility: WDID#

II. DISCHARGER INFORMATION

A. Name HELIX WATER DISTRICT			
B. Mailing Address 9550 LAKE JENNINGS PARK RD			
C. City LAKESIDE	D. County SAN DIEGO	E. State CA	F. Zip 92040
G. Contact Person JOHN CID	H. E-mail address john.cid@helixwater.org	I. Title BIOLOGIST	J. Phone 619-443-1031

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

A. Name HELIX WATER DISTRICT, ATTN: MELISSA WATT			
B. Mailing Address 9550 LAKE JENNINGS PARK RD			
C. City LAKESIDE	D. County SAN DIEGO	E. State CA	F. Zip 92040
G. E-mail address melissa.watt@helixwater.org	H. Title ADMIN. ASSISTANT	I. Phone 619-443-1031, EXT 1404	

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. X Directly to river, lake, creek, stream, bay, ocean, etc.
   Name of water body: LAKE JENNINGS

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

V. ALGAECIDE AND AQUATIC HERBICIDE APPLICATION INFORMATION

A. Target Organisms: ____

ALGA, TAMARIX spp., TYPHA spp., SCHOENOPLECTUS spp., MYRIOPHYLLUM SPICATUM

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

COPPER SULFATE PENTAHYDRATE
CAPTAIN XTR & CUTRINE PLUS - CHELATED COPPER
RENOVATE OTF & GARLON 3A - TRICLOPYR
AQUAPRO & GLYPHOSATE PRO 4 - GLYPHOSATE
LITTORA - DIQUAT
SONAR A.S. - FLURIDONE
PAK27 & GREENCLEAN - SODIUM CARBONATE PEROXYHYDRATE

C. Period of Application: Start Date AS NEEDED/SEASONAL End Date _____

D. Types of Adjuvants Used:
CITRIC ACID, MAGNIFY, TARGET PRO SPREADER ACTIVATOR

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: CARLOS V. LUGO

B. Signature: _____ **Date:** 5/22/2019

C. Title: GENERAL 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** _____

Aquatic Pesticide Application Plan (APAP)

Helix WATER DISTRICT

This Aquatic Pesticides Application Plan has been prepared in accordance with Water Quality Order No. 2013-0002-DWQ, General Permit No CAG990005 of the State Water Resources Control Board.

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Introduction

Helix Water District (HWD) in accordance with Water Quality Order No. 2013-0002-DWQ, General Permit No CAG990005 of the California State Water Resources Control Board (SWRCB), has prepared this Aquatic Pesticides Application Plan (APAP). This General Permit shall become effective on December 1, 2013. This APAP contains the following elements:

1. Description of the water system to which algaecides and aquatic herbicides are being applied;
2. Description of the treatment area in the water system;
3. Description of types of weed(s) and algae that are being controlled and why;
4. Algaecide and aquatic herbicide products or types of algaecide and aquatic herbicides expected to be used, the method in which they are applied, and the adjuvants and surfactants used;
5. Discussion of the factors influencing the decision to select algaecide and aquatic herbicide applications for algae and weed control;
6. Description of the control structure to be used to control the extent of receiving waters potentially affected by algaecide and aquatic herbicide application and the inspection schedule of the control structure to ensure that it is not leaking;
7. State Implementation Policy (SIP) Exception
8. Description of the monitoring program;
9. Description of procedures used to prevent sample contamination from persons, equipment, and vehicles associated with algaecide and aquatic herbicide application;
10. Description of the Best Management Practices (BMPs) to be implemented.
11. Examination of possible alternatives to algaecide and aquatic herbicide use to reduce the need for applying algaecides and herbicides.
12. Algaecide and Aquatic Herbicide Application Log information elements

1. Description of the water system to which algaecides and aquatic herbicides are being applied.

Helix Water District (HWD) operates as a public agency under Irrigation District Laws of the State of California. HWD's service area covers nearly 50 square miles in San Diego County and provides water to approximately 275,000 people. Less than 20% of HWD's water source is local runoff. The rest of the water source is a blend of water from the Colorado River and Northern California. HWD purchases this imported water from the San Diego County Water Authority, who in turn purchases its water from the Metropolitan Water District of Southern California.

HWD owns Lake Jennings, a 9,790 acre-foot reservoir (See **Figure 1.**) Lake Jennings is located within the boundaries of Regional Water Board 9, San Diego. Approximately 95 percent of Lake Jennings' volume is water imported from Northern California and the Colorado River via aqueducts. A small amount of inflow is from ephemeral, unnamed tributaries and surface rainfall. HWD created Lake Jennings by impounding water behind Chet Harritt Dam, constructed in 1962. Lake Jennings serves as a

short-term emergency storage reservoir for HWD's R. M. Levy Water Treatment Plant. The surface elevation of Lake Jennings is lowered when HWD uses water from the lake to produce potable water.

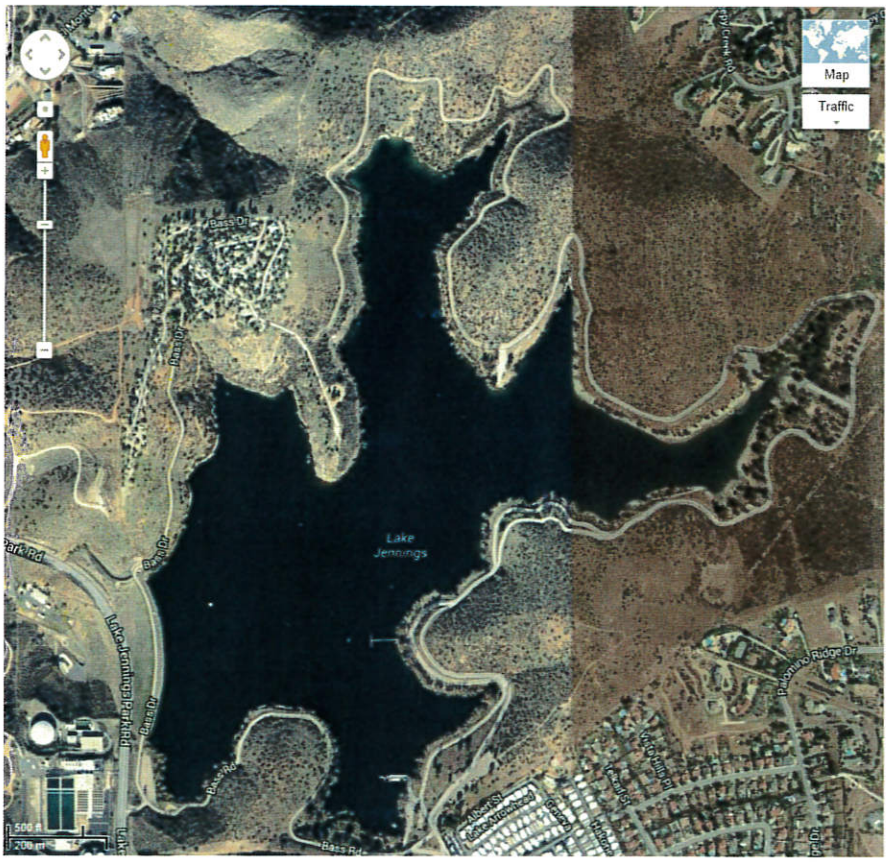

Figure 1. Lake Jennings

2. Description of the treatment area in the water system.

Aquatic weeds grow throughout Lake Jennings and will be treated with herbicide as necessary. Algaecide will be applied to the water in an area adjacent to Chet Harritt Dam and the intake tower to the water treatment plant; these points are in close proximity to each other.

3. Description of types of weeds and algae that are being controlled and why.

- Algae

  Algae are a very large and diverse group of simple, typically autotrophic organisms. Freshwater harmful algal blooms (HABs) can occur anytime water use is impaired due to excessive accumulations of algae. In freshwater, the majority of HABs are caused by cyanobacteria (also called blue-green algae). Cyanobacteria cause a multitude of water-quality concerns, including the potential to produce taste-and-odor causing compounds and toxins that are potent enough to poison animals and humans. Cyanobacterial toxins (cyanotoxins) have been implicated in human and animal illness and death in over fifty countries worldwide, including at least 35 U.S. States. Human toxicoses associated with cyanotoxins have most commonly occurred after

exposure through drinking water or recreational activities. Taste-and-odor compounds and toxins are of particular concern in lakes and reservoirs that are used for drinking water supplies, such as Lake Jennings. Taste-and-odor compounds cause malodorous or unpalatable drinking water, resulting in increased treatment costs. In addition, if great masses of algae are permitted to enter the water treatment plant, the algae can cause operational problems by increasing the amount of suspended material that must be settled out of the water, and excessive algae can lead to filter clogging. Filter clogging leads to shortened filter run times. Increases in the amount of material that must be settled in the water treatment process and shortened filter run times lead to increased electricity and chemical use in the water treatment plant. It is prudent to reduce the amount of algae in the water source, before it enters the drinking water treatment plant. Lake Jennings' primary use is as a drinking water reservoir; therefore, HWD must control algae blooms in the lake to comply with drinking water regulations set forth in Title 22, California Code of Regulations. HWD normally prevents and controls algae blooms by oxygenating and mixing Lake Jennings with a conventional aeration system, which is described in more detail in section 11(a)(iii). In the event that the aeration system is not able to prevent or control an algae bloom, Helix Water District must be able to control the algae bloom through the use of algaecide.

- *Tamarix spp.*

  Four species of invasive *Tamarix* have been identified in California: *T. ramosissima*, *T. chinensis*, *T. gallica*, and *T. parviflora*. All four are many-branched shrubs or trees less than twenty-six feet tall with small scale-like leaves, from which comes the name saltcedar. Leaves have salt glands, and salt crystals can often be seen on leaves.

  Soil salinities increase as a result of inputs of salt from glands on saltcedar leaves. The dome-shaped glands consist of at least two cells embedded in the epidermal pits (Decker 1961). Increased salinity inhibits growth and germination of native riparian species (Anderson 1996). Leaf litter from drought-deciduous saltcedar increases the frequency of fire. Saltcedar is capable of re-sprouting vigorously following fire and, coupled with changes in soil salinity, ultimately dominates riparian plant communities (Busch 1995).

  Invasive *Tamarix* will be controlled to prohibit disruption to the structure and stability of the native plant community and degradation of the native wildlife habitat at Lake Jennings.

- *Typha spp.*

  Commonly known as cattails, these native plants have long, slender, grass-like stalks that can grow up to 10 feet in height. Cattails can spread via seeds or root rhizomes. Through rhizomes, plants can form large, interconnected stands that can quickly grow to cover an area of lake bottom. Cattails can be beneficial by providing food and shelter to animals. Conversely, in shallow areas of the lake, they can dominate plant communities, reducing plant diversity and habitat for other organisms. Lake Jennings' primary use is as a drinking water reservoir; overgrowth of cattails and consequent plant decomposition must be controlled to prevent

eutrophication of the lake. Cattails must be controlled in areas where their growth would threaten the integrity of the earthen portion of Chet Harritt Dam. Cattails can also provide food and shelter to muskrats; muskrat burrowing activity is a threat to dam integrity. Cattails must also be controlled in areas which lead to the dam spillway.

- *Schoenoplectus spp.*

  Commonly called tules or bulrushes, two species of *Schoenoplectus* (synonym: *Scirpus*) are present at Lake Jennings.

  The California Bulrush, or California Tule, *Schoenoplectus californicus* has long, curved triangular stems from 5 to 8 feet in height. This plant can grow in water up to 36 inches or more. Plants tend to grow in a continuous colony parallel to the shore and colonies grow in somewhat circular stands. These plants have clonal growth, with stout rootstocks and long, thick, brown rhizomes.

  The Hardstem Bulrush, or Western Common Tule, *Schoenoplectus acutus* var. *occidentalis* has tall stems that are round in cross-section. The leaves are slender, v-shaped blades that are sheathed around the long stem. Bulrushes have clonal growth, with stout rootstocks and long, thick, brown rhizomes. Hardstem bulrushes grow best on sites with saturated soil or standing water for most of the year, but they are drought tolerant and can persist through several years of dry conditions.

  Lake Jennings' primary use is as a drinking water reservoir; overgrowth of tules and consequent plant decomposition must be controlled to prevent eutrophication of the lake. Tules must be controlled in areas where their growth would threaten the integrity of the earthen portion of Chet Harritt Dam. Tules can also provide food and shelter to muskrats; muskrat burrowing activity is a threat to dam integrity. Tules must also be controlled in areas that lead to the dam spillway.

- *Myriophyllum spicatum*

  Commonly known as Eurasian Watermilfoil (Milfoil), *Myriophyllum spicatum* is present at Lake Jennings. Eurasian Watermilfoil, an aggressive invasive plant, was first identified in Lake Jennings in 2018. The California Department of Fish and Wildlife and the US EPA consider Milfoil an invasive species.

  Milfoil is capable of rapid dispersion via fragmentation of the plant. Each individual fragment is capable of growing roots to develop into a new, complete plant. Milfoil is competitive with native species and may completely dominate its environment within a few years of introduction.

  Milfoil possesses the ability to form dense growths, which may potentially impair water use activities.

4. **Algaecide and aquatic herbicide products or types of algaecides and aquatic herbicides to be used, the method in which they are applied, and the adjuvants and surfactants used.**

- **Copper sulfate pentahydrate**

  An algaecide product, of which copper sulfate pentahydrate is the active ingredient, with citric acid as an adjuvant, will be used if algae control by chemical means is necessary.

- **Copper ethanolamine complex (chelated copper)**

  Algacide products, of which a copper ethanolamine complex is the active ingredient, such as Captain XTR and Cutrine Plus, liquid products, will be used if algae control by chemical means is necessary. Captain XTR or Cutrine Plus will be applied, in accordance with label directions, to the water using a spray rig from a boat.

- **Triclopyr**

  Herbicide products, of which triclopyr is the active ingredient, such as Renovate OTF and Garlon 3A, will be applied following label directions. Garlon 3A will be applied to *Tamarix* stumps using the cut surface method described on the product Specimen Label using a handheld sprayer. Garlon 3A will only be applied to *Tamarix* stumps that have been exposed to air and cut after the water level of Lake Jennings has been lowered.

- **Glyphosate**

  Herbicides, of which glyphosate is the active ingredient, such as AquaPro or Glyphosate Pro 4, will be used when control of *Typha spp.* and *Schoenoplectus spp.* by chemical means is necessary. The glyphosate containing herbicides will be applied to the target plants with a handheld sprayer in accordance with product label directions. The glyphosate containing herbicides will only be applied to the target plants when the bases of the plants have been exposed to air after the water level of Lake Jennings has been lowered. **Under no circumstances will glyphosate containing herbicides be applied to the water of Lake Jennings or to target plants that are emergent from the water.** After application of glyphosate containing herbicide, the water level of Lake Jennings will not be raised for a minimum of two weeks, so that treated stumps are left exposed to air. HWD does not normally raise the water level of Lake Jennings for about three months after the application of herbicide. The adjuvant Magnify will be used to apply Glyphosate Pro 4. Glyphosate Pro 4 and Magnify will be tank-mixed in accordance with product label directions.

- **Diquat**

  Herbicides, of which diquat is the active ingredient, such as Littora, will be applied following label directions. The primary target of a diquat application is Eurasian milfoil.

- **Fluridone**

  Herbicides, of which fluridone is the active ingredient, such as Sonar A.S., will be applied following label directions.

- **Sodium carbonate peroxyhydrate**

  Algaecides, of which sodium carbonate peroxyhydrate is the active ingredient, such as Pak27 or GreenClean, will be applied following label directions.

- **Other Aquatic Herbicides, Algaecides**

  HWD proposes the ability to use any other California State approved algaecide, aquatic herbicide, adjuvant, and/or surfactant deemed necessary and effective against nuisance weeds or algae.

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

   - Algaecide

     The normal method of algae bloom prevention and control in Lake Jennings is conventional aeration. Conventional aeration is extremely successful at preventing and controlling algae blooms in Lake Jennings. Algaecide was applied infrequently in the years before the aeration system was installed and activated. Algaecide use has not been necessary since HWD began to operate the aeration system. However, Lake Jennings is a water source for Helix Water District's water treatment plant to produce potable water; therefore, in the event that the aeration system is not able to control an algae bloom, HWD must possess the means to control an algae bloom that algaecide provides.

   - Herbicides

     In the case of invasive *Tamarix* control, it is sometimes difficult to physically remove the stumps and root systems of the trees without jeopardizing the safety of maintenance personnel. This can be due to size of the established root system and/or the location of the stump and root system. It is also essential that the integrity of the earthen portion of Chet Harritt Dam is not threatened by tree stump and removal operations.

     In the case of *Typha* and *Schoenoplectus* control, it is often difficult to physically unearth the extensive rhizomes systems of these plants. Use of herbicide allows control of overspreading of these plants and complete, effective control of the plants in areas leading to the dam spillway. In addition, use of herbicide allows control of these plants with minimal disturbance to the earthen portions of Chet Harritt Dam.

In the case of *Myriophyllum spicatum* control, it is not always possible to lower the lake surface elevation to expose the roots of the plants to air for physical removal. The use of herbicide allows the control of submerged plants.

6. **Description of the control structure to be used to control the extent of receiving waters potentially affected by algaecide and aquatic herbicide application and the inspection schedule of the control structure to ensure that it is not leaking.**

- Chet Harritt Dam is the control structure that will be used to control the extent of receiving waters potentially affected by algaecide or herbicide application.
- Chet Harritt Dam is inspected for leaks and structural integrity every Tuesday of the week.

7. **Exception Period**

Helix Water District has been granted short-term, seasonal exception under Section 5.3 of the State Water Board's *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries* (SIP) for applying copper sulfate to control taste and odor causing algae and cyanobacteria. The seasonal exception would cover intermittent, periodic discharges that may occur throughout the year. These discharges generally would be a single treatment and will dissipate within approximately one week. The frequency of discharge, based on water supply needs and occurrence or algae blooms, is not expected to be more than two times annually.

8. **Description of the monitoring program**

The General Permit requires that dischargers comply with the Monitoring and Reporting Program (MRP) outlined in the General Permit. The General Permit encourages Dischargers to form Coalitions with other Dischargers doing similar applications within the same watershed. However, Helix Water District is the only discharger within the Lake Jennings watershed. Therefore, HWD has prepared and implemented its own, individual MRP (HWD MRP). The MRP is designed to answer **two key questions**:

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

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

The HWD MRP has been written in accordance with the provisions set forth under General Monitoring Provisions contained in Attachment C of the General Permit.

HWD has established the monitoring locations identified in this APAP to demonstrate compliance with the receiving water limitations, discharge specifications, and other requirements in the General Permit. The number and location of samples have been selected to answer the two key questions. The established monitoring locations are shown in **Figure 2.**

Point 1 is an anchored buoy located at GPS coordinates 32.856565, -116.891122, is adjacent to Chet Harritt Dam, which is labeled **Dam** in **Figure 2.**

Point 2 is an anchored buoy located at GPS coordinates 32.858751, -116.88141.

For algaecide and herbicide applications in vicinity of Chet Harritt Dam, **Point 1** will be considered inside the application area, and **Point 2** will be considered outside of the application area.

For algaecide and herbicide applications on the eastern side of the lake, **Point 2** will be considered inside the application area, and **Point 1** will be considered outside of the application area.

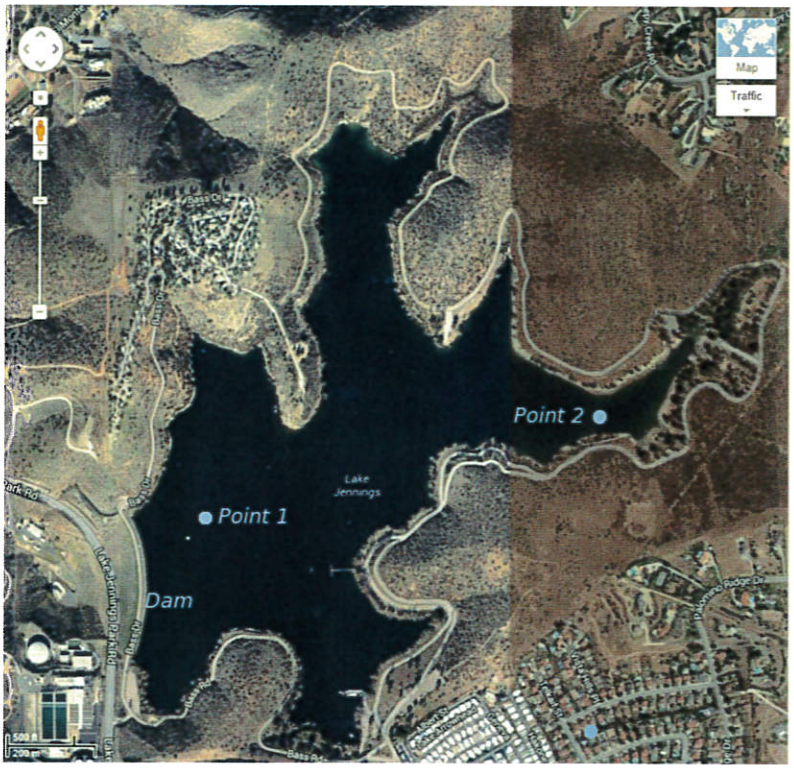

Figure 2. Monitoring Locations

Three types of monitoring will be performed for each sampling, as specified in the General Permit:

1. **Background Monitoring.** Background monitoring samples shall be collected in the application area just prior to (up to 24 hours in advance of) the application event.
2. **Event Monitoring.** Event monitoring samples shall be collected immediately outside of the treatment area, immediately after the application event, but after sufficient time has elapsed such that treated water would have exited the treatment area.

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

Records of monitoring information shall include the following:

1. The date, exact place, and time of sampling or measurements;
2. The individuals who performed the sampling or measurements;
3. The dates analyses were performed;
4. The individuals who performed the analyses;
5. The analytical techniques or methods used; and
6. Results of analyses.

The monitoring at each sample point will consist of the sample types listed in the following table, **Monitoring Requirements**, from Attachment C of the General Permit:

Sample Type	Constituent/Parameter	Units	Sample Method	Minimum Sampling Frequency	Sample Type Requirement	Required Analytical Test Method
Visual	1. Monitoring area description (pond, lake, open waterway, channel, etc.) 2. Appearance of waterway (sheen, color, clarity, etc.) 3. Weather conditions (fog, rain, wind, etc.)	Not applicable	Visual Observation	1	Background, Event and Post- event Monitoring	Not applicable
Physical	1. Temperature[2]	°F	Grab[4]	5	Background, Event and Post- event Monitoring	6
	2. pH[3]	Number				
	3. Turbidity[3]	NTU				
	4. Electric Conductivity[3] @ 25°C	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. DissolvedOxygen[2]	mg/L				

[1] All applications at all sites.

[2] Field testing.

[3] Field or laboratory testing.

[4] Samples shall be collected at three feet below the surface of the water body or at mid water column depth if the depth is less than three feet.

[5] Collect samples from a minimum of six application events for each active ingredient in each environmental setting (flowing water and non-flowing water) per year, except for glyphosate. If there are less than six application events in a year, collect samples during each application event for each active ingredient in each environmental setting (flowing water and non-flowing water). If the results from six consecutive sampling events show concentrations that are less than the receiving water limitation/trigger for an active ingredient in an environmental setting, sampling shall be reduced to one application event per year for that active ingredient in that environmental setting. If the yearly sampling event shows exceedance of the receiving water limitation/trigger for an active ingredient in an environmental setting, then sampling shall return to six application events for that active ingredient in each environmental setting. For glyphosate, collect samples from one application event from each environmental setting (flowing water and non-flowing water) per year.

[6] Pollutants shall be analyzed using the analytical methods described in 40 C.F.R. part 136.

[7] 2,4-D, acrolein, dissolved copper, diquat, endothall, fluridone, glyphosate, imazamox, imazapyr, penoxsulam, and triclopyr.

[8] It is required only when a surfactant is used.

Figure 3. Sampling/Monitoring Matrix

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

Measures will be taken to prevent sample collection contamination from persons,

equipment and vehicles associated with algaecide and aquatic herbicides application, as follows:

- Background monitoring sample collection will be carried out prior to application equipment or algaecides being loaded into a boat. Sampling equipment, with particular emphasis on cooler and sample bottles, will be transported separately from algaecides or aquatic herbicides and application equipment on the day of the application event. Background monitoring will take place immediately prior to the application event.

- For event monitoring, sampling will be carried out after application equipment and all application related equipment and devices including personal protection equipment (PPE) used during the application has been removed from the boat, if no other boats are available to support sampling efforts. Hands will be washed with soap and clean potable water before handling sampling equipment, cooler and sample bottle. During sample bottle handling and sample collection, disposable rubber gloves will be used to collect a water sample. The pre-labeled sample bottle will be completed with time and date of sample collection immediately after removing from the sample cooler and replaced in the cooler immediately after sample collection. Once sampling has been completed, water samples will be delivered immediately to the laboratory, if possible. If background and event samples cannot be delivered the same days, sample bottles will be stored in a laboratory refrigerator until the samples can be delivered the next business day.

10. Description of the BMP's to be implemented:

- Techniques that help reduce pesticide impacts include:
    - Non-algaecide/herbicide control methods as outlined below (section 11) have been attempted or considered.
    - Pre Treatment surveys are carried out to identify potential treatment areas and timing of pesticide application
    - Adjustments will be made to treatment protocols based upon survey results
    - Pesticide treatments will be performed when no water is being discharged from the lake system
    - Aquatic Pesticide use rates will be per the EPA label and will be limited to ensure compliance with Receiving Water Limitations
    - Partial waterbody treatments or split treatments will be utilized to minimize impacts that might otherwise occur
- From the aquatic herbicides available, the most effective and safest options have been selected for use in this program.
- In order to avoid inadvertent or accidental soil or water contamination with aquatic pesticides, application personnel follow the storage, transport, and spill control procedures per USEPA and DPR (Department of Pesticide Regulations) rules, regulations and label instructions.
- Over application is avoided by following the specific product labels for the aquatic pesticides used in the program. Algaecide and aquatic herbicide quantities required for each treatment are pre-calculated and only sufficient material to carry out the treatment is transported for an application event. Application equipment is routinely cleaned and maintained, and all label directions and Department of Pesticide Regulations guidelines are

followed as to acceptable application methods as well as weather conditions. Surface applications are not made in winds above 10 miles per hour.

- The various BMP's being implemented ensures that the APAP will meet the requirements of the general NPDES Permit for the use of aquatic pesticides.
- Licensing: Individuals who supervise the application of aquatic pesticides are certified and/or licensed by the Department of Pesticide Regulations.
- Site Evaluations: As has been detailed in this section and elsewhere, both preliminary and secondary site evaluations are a major aspect of the program, as represented by the extensive surveying carried out by the field crews.
- Alternative Treatments: Staff considers a number of potential alternative control strategies in every situation, and will make use of non-herbicide options when conditions are suitable.
- Treatment Conditions: Every application is made according to label directions, which not only specify the amounts and situations where pesticides may be applied, but the atmospheric and environmental conditions under which they may be applied. If there are conditions where it is determined that the treatment would be ineffective, application staff wait for other conditions.
- Post-treatment: Surveys are also carried out for post-treatment assessment of treatment efficacy and non-target impacts. Survey crews are instructed to look for possible non-target impacts that can be seen with the naked eye, such as dead fish or damage to plants on the shoreline.
- The applicator follows all pesticide label instructions and any Use Permits issued by a CAC (County Agricultural Commissioner);
- The discharger's applicators are licensed by DPR, or work with or under the supervision of someone who is licensed;
- The discharger's applicators comply with effluent limitations
- The discharger's applicators will follow this Aquatic Pesticide Application Plan (APAP);
- The discharger's applicators comply with applicable receiving water limitations; and
- The discharger's applicator will comply with the monitoring and reporting requirements outlined in this APAP.

Aquatic Pesticide Use Requirements:

- License Requirements. Discharger's applicators will be licensed by Department of Pesticide Regulations if such licensing is required for the aquatic pesticide application project
- Application Requirements. The pesticide will be consistent with FIFRA pesticide label instructions and any Use Permits issued by the County Agricultural Commissioner.
- Application Schedule. When requested, the discharger will provide a phone number to persons who request the discharger's application schedule. The discharger shall provide the requester with the most current application schedule and inform the requester if the schedule is subject to change. Information may be made available by electronic means.
- Public Notice Requirements. The Discharger and the affected public agency are one in the same, Helix Water District. Therefore, there is no need to notify other public agencies.

11. Examination of possible alternatives to algaecide and aquatic herbicide use to reduce the need for applying algaecides and herbicides.

a. Algae

Evaluation of alternative management options:

i. No action

With no action taken, algae blooms would be allowed to exist in Lake Jennings. If a taste or odor causing algae bloom is allowed to exist in Lake Jennings, Helix Water District cannot use water from Lake Jennings to produce potable water.

ii. Prevention

HWD's normal algae management strategy is to prevent algae blooms by use of a conventional aeration system, which is described in more detail under the following section, iii. Mechanical or physical methods.

Lake Jennings is fed with raw surface water, which contains algae cells. Prevention of raw water inflow is not feasible.

iii. Mechanical or physical methods

HWD's normal algae management strategy is to prevent algae blooms by use of a conventional aeration system. The aeration system consists of an air compressor located on Chet Harritt Dam, an air diffuser grid that is located on the lake bottom adjacent to the dam, and an air line that connects the air compressor & diffuser grid. The aeration system introduces air bubbles at the bottom of lake. The rising air bubbles push oxygen-poor water up to the surface, where it is reaerated through an exchange with atmospheric oxygen at the water's surface. Prevailing winds tend to push water that has been brought to the surface by the aerator towards the opposite end of Lake Jennings. This aeration system is powerful enough to turn over and oxygenate the entire lake. HWD places the aeration system in operation at the beginning of the season when algae blooms commonly occur and operates the system throughout the season. Algae blooms are extremely rare in Lake Jennings due to use of the aeration system.

The primary use of Lake Jennings is as source water for a potable water treatment plant; in the event that the aeration system is not able to prevent or control an algae bloom, Helix Water District must able to control unpalatable, harmful and/or malodorous algae blooms by other means.

iv. Cultural methods

Helix Water District strives to minimize potential nutrient sources for algae blooms by limiting overgrowth of cattails and tules, and removing fallen trees from the lake water whenever possible. In the event that minimizing nutrient sources does not control algae blooms, Helix Water District must be able to control algae blooms by other means.

v. Biological control agents

Lake Jennings contains a population of fish and zooplankton. Zooplankton and some fish consume algae, but it is unlikely that animal feeding activity would be able to control a rapidly growing algae bloom.

vi. Algaecides

Helix Water District will use the minimum amount of algaecide that is necessary to have an effective algae control program and is consistent with the algaecide product label requirements in the event that algaecide use is necessary.

b. *Tamarix spp.*

Evaluation of alternative management options:

i. No action

Invasive *Tamarix* would be allowed to proliferate. *Tamarix* would disrupt the structure and stability of the native plant community and degrade the native wildlife habitat at Lake Jennings

ii. Prevention

Tamarix seeds can be spread by water. Lake Jennings is filled with water transported from Northern California and the Colorado River. The banks of the Colorado River are infested with *Tamarix*. It would be difficult to prevent *Tamarix* from entering Lake Jennings without stopping the inflow of water from the Colorado River.

iii. Mechanical or physical methods

Mechanical controls include mowing, cutting, and root plowing. These methods rarely kill the plant and often stimulate shrubby regrowth. However, HWD will make the effort to remove roots through physical means before resorting to herbicide use.

iv. Cultural methods

Tamarix spreads aggressively, outcompeting native plant species, and often forms monoculture stands when growth is left unchecked. HWD will continually review literature for updated information regarding native plant species that have been found to compete against *Tamarix*.

v. Biological control agents

Diorhabda elongata, the Mediterranean tamarisk beetle (MTB), is a non-native, Old World species of beetle that has been successfully used to suppress *Tamarix*. Release of the MTB is Southern California, the location of Lake Jennings, has been delayed until concerns can be resolved regarding safety of *Tamarix* biological control to nesting habitats of the federally endangered southwestern willow flycatcher, *Empidonax traillii*. HWD will continue to seek information on other possible biological control agents, and if release of the MTB becomes permitted in Southern California.

vi. Aquatic herbicides

Helix Water District will use the minimum amount of herbicide that is necessary to have an effective control program and is consistent with the herbicide product label requirements in the event that herbicide use is necessary.

c. *Schoenoplectus spp.* & *Typha spp.*

Evaluation of alternative management options:

i. No action

Schoenoplectus spp. and *Typha spp.* would likely form monocultures, with dense, impenetrable stands in shallow areas of Lake Jennings. Naturally decaying plant material could lead to eutrophication of the lake and supply a nutrient source to taste and odor causing algae blooms. Additionally, the root systems of these species can compromise the integrity of the earthen dam when growing on the dam face or abutments, creating a safety hazard.

ii. Prevention

Schoenoplectus spp. and *Typha spp.* proliferate in the local environment. Their seeds can be spread by air and water from plants both at Lake Jennings and the surrounding local environment. Therefore, it would be difficult to prevent *Schoenoplectus* and *Typha* from growing at Lake Jennings. HWD's goal is to maintain a controlled population of *Schoenoplectus* and *Typha* at Lake Jennings, not to completely eradicate these species.

iii. Mechanical or physical methods

Mechanical or physical control methods are HWD's primary control methods of choice. Plants can be cut down to the base, so that leaves are not able to mature so that they can transport food to their root systems. In addition, plants with roots cut down to below the water level can drown. Anther physical method is to completely pull the roots out of the ground; this is more difficult, since the roots of these plants tend to form interwoven mats under ground.

iv. Cultural methods

There do not seem to be any plants that compete with *Schoenoplectus* and *Typha*. Each species only seems to compete with the other.

v. Biological control agents

Grass carp (white amur) fish have been mentioned as a potential biological control method, but success with using grass carp as a control method appears to be unproven. HWD does not wish to introduce this fish species to Lake Jennings.

vii. Aquatic herbicides

HWD will use the minimum amount of aquatic herbicide that is necessary to have an effective control program and is consistent with the herbicide product label requirements in the event that herbicide use is necessary.

d. *Myriophyllum spicatum*

Evaluation of alternative management options:

i. No action

Milfoil is currently isolated to two relatively small areas of Lake Jennings. With no action, milfoil plants spread via fragmentation and take root throughout the rest of the lake. Reports from other lakes have demonstrated that milfoil, once established, will tend to grow dense enough to impede the movement of boat traffic. Naturally decaying plant material could lead to eutrophication of the lake and supply a nutrient source to taste and odor causing algae blooms.

ii. Prevention

Milfoil is currently present in Lake Jennings. If milfoil were to be eradicated in Lake Jennings, a prevention technique could be to inspect boats for milfoil plant parts before launch in the lake.

iii. Mechanical or physical methods

Reports from other lake infested with milfoil indicate that, once milfoil is well established, it is extremely difficult to eradicate by cutting and removing parts of the plant, due to the plant's ability to spread via fragmentation. Therefore, cutting the plant is primarily a means of clearing channels for boats to navigate through dense milfoil overgrowth. HWD's preferred control method is to remove the roots from the ground, while keeping fragments of the plant from spreading in the water; this method requires lowering the lake surface elevation to below the level of the milfoil roots. This preferred control method, necessitating lowering of the lake surface elevation, is not always available, due to operational constraints.

iv. Cultural methods

Milfoil tends to overwhelm native plants with overgrowth. There are no known cultural methods to manage milfoil growth and spread.

v. Biological control agents

Grass carp has been mentioned as a potential biological control method, but HWD does not wish to introduce this fish species to Lake Jennings.

viii. Aquatic herbicides

HWD will use the minimum amount of aquatic herbicide that is necessary to have an effective control program and is consistent with the herbicide product label requirements in the event that herbicide use is necessary.

12. Algaecide and Aquatic Herbicide Application Log information elements

1. Date of application;
2. Location of the application, both stated and illustrated on diagram of Lake Jennings;
3. Name of the applicator;
4. Type and amount of algaecide or aquatic herbicide used;
5. Application details, such as level of Lake Jennings, time application started and stopped, algaecide and aquatic herbicide application rate and concentration;
6. Visual monitoring assessment; and
7. Certification that applicator(s) followed this APAP.