CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION

RESOLUTION R6T-2022-0002 ATTACHMENT A

FINDINGS OF FACT AS A LEAD AGENCY UNDER THE
CALIFORNIA ENVIRONMENTAL QUALITY ACT FOR THE
TAHOE KEYS LAGOONS AQUATIC WEED CONTROL METHODS TEST
JANUARY 2022

I. INTRODUCTION

The California Environmental Quality Act (CEQA) (Pub. Res. Code § 21000 et seq.) and Guidelines for the Implementation of CEQA (Cal. Code Regs, tit. 14, § 15000 et seq.; hereafter CEQA Guidelines), provide that no public agency shall approve or carry out a project for which an environmental impact report (EIR) has been certified when one or more significant environmental effects of the project have been identified, unless the public agency makes one or more written findings for each of those significant effects, accompanied by a brief explanation of the rationale for each finding. (CEQA Guidelines, § 15091, subd. (a); hereafter Section 15091(a)). These findings explain the disposition of each of the significant effects, including those that will be less than significant with mitigation. The findings must be supported by substantial evidence in the record.

There are three possible findings under Section 15091(a). The public agency must make one or more of these findings for each significant effect. The Section 15091(a) findings are:

1. Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effects as identified in the Final Environmental Impact Report/Environmental Impact Statement (Final EIR/EIS) for the Tahoe Keys Lagoons Aquatic Weed Control Methods Test (Proposed Project).
2. Such changes or alterations are within the responsibility and jurisdiction of another public agency and not the agency making the finding. Such changes have been adopted by such other agency or can and should be adopted by such other agency.
3. Specific economic, legal, social, technological, or other considerations, including provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or project alternatives identified in the Final EIR.

These findings are also intended to comply with the requirement that each finding by the Lahontan Water Board be supported by substantial evidence in the administrative record of proceedings, as well as accompanied by a brief explanation of the rationale for each finding. (Cal. Code Regs., tit. 14, § 15091, subds. (a), (b); see also Discussion following CEQA Guidelines, § 15091.) To that end, these findings provide the written, specific reasons supporting the Lahontan Water Board's decision under CEQA to implement the Proposed Project described in the Final EIR/EIS (SCH No. 2019060152).

These findings are not merely informational, but rather constitute obligations that will become binding when the Lahontan Water Board approves the Proposed Project.

II. MITIGATION MONITORING AND REPORTING PROGRAM

Consistent with CEQA and the CEQA Guidelines, the Lahontan Water Board has prepared a mitigation monitoring and reporting program (MMRP) for the Project. (Pub. Resources Code, § 21081.6, subd. (a)(1); CEQA Guidelines, § 15097.) The Lahontan Water Board will use the MMRP to track compliance with mitigation measures imposed by the Lahontan Water Board.

III. FINDINGS

The Lahontan Water Board makes the following findings discussing the significant direct, reasonably foreseeable indirect, and cumulative effects of the Proposed Project. The Lahontan Water Board has analyzed the environmental effects of the Project as shown in the Final EIR/EIS (CEQA Guidelines, § 15091). The Lahontan Water Board's specific findings for potentially significant impacts and how the impacts may be reduced by mitigation are set forth in the Final EIR/EIS.

The following findings address each of Proposed Project's potentially significant effects in their order of appearance in the Draft EIR/EIS. For the purposes of CEQA Guidelines, Section 15091, the documents and other materials that constitute the record of proceedings upon which the Lahontan Water Board based its decision are held by the Lahontan Water Board, 2501 Lake Tahoe Blvd, South Lake Tahoe, CA 96150.

Mitigation measures are described in Section IV, following the Findings. There are no significant and unavoidable impacts nor cumulative impacts from implementation of the Project.

A. LESS THAN SIGNIFICANT IMPACTS WITH MITIGATION

The Final EIR/EIS identified potentially significant environmental impacts that absent mitigation would result from the implementation of the Proposed Project. Having considered the whole record, including comments received during the public review process, the Lahontan Water Board has eliminated or substantially reduced all significant environmental effects through the adoption of various mitigation measures and makes the following findings:

i. Impact EH-1 Herbicide Applicator Exposure and Health

Herbicide applicators could suffer health effects due to exposure during application of herbicides. Only the risks of acute exposure are pertinent since the limited testing period would ensure that no chronic exposures would occur.

Finding

Changes or alterations have been required in, or incorporated into, the Proposed Project that avoid or substantially lessen the significant effects on the environment. (Pub. Resources Code, § 21081, subd. (a)(1); CEQA Guidelines, § 15091, subd. (a)(1).)

Rationale

There is a risk to the health of workers handling and applying herbicide products unless precautions are taken to protect them. Endothall is toxic if inhaled, may be harmful if swallowed, and may cause skin irritation or serious eye damage. Triclopyr is not metabolized by humans but is excreted unchanged in the urine. Triclopyr does not pose an inhalation risk but can cause skin irritation or eye corrosion.

Given that the Proposed Project includes a one-time application of herbicides at several test sites, only the risks of acute exposure to the herbicides were evaluated since no chronic exposures over months or years are likely to occur as part of the Proposed Project. The potential acute effects of the herbicides were determined by a review of the available literature, as well as Safety Data Sheets from the herbicide manufacturers.

The registration labels and Safety Data Sheets for each herbicide product specify the proper methods for handling and applying the chemicals, personal protective clothing requirements, and other precautions to protect workers, all of whom must be certified by the State as qualified applicators.

Mitigation Measure EH-1, which is described following the Findings, would reduce potentially significant impacts by requiring that aquatic herbicide applications will be made only by a Qualified Applicator License holder and in accordance with label restrictions.

ii. Impact EH-2 Detectable Concentrations of Herbicides and Degradants in Receiving Waters

Significant impacts could occur if detectable concentrations of active ingredients and chemical degradants of herbicides proposed for testing persisted in lagoon waters. There is also a potential for excess discharge concentrations if an herbicide product were spilled.

Finding

Changes or alterations have been required in, or incorporated into, the Proposed Project that avoid or substantially lessen the significant effects on the environment. (Pub. Resources Code, § 21081, subd. (a)(1); CEQA Guidelines, § 15091, subd. (a)(1).)

Rationale

Water quality degradation defined by detectable concentrations of discharged aquatic herbicides and their degradants could be significant if it persisted beyond weeks to months. Persistence of herbicides and their degradants could occur if excess herbicides were applied or if their breakdown was slower than expected based upon review of available literature. When an herbicide is applied to areas of dense aquatic vegetation, it rapidly kills the treated plants, and the decay of the dead vegetation results in oxygen depletion, which, in turn, can result in a loss of microbial activity and longer half-lives.

There is a potential for spills and accidents to occur which could result in excess discharge to waterways during transportation, handling, and application of herbicides.

As described in Section IV, potential impacts from accidental spills or overapplication are reduced to less than significant through Mitigation Measure EH-2, which requires preparation and implementation of a spill prevention and response plan, and through Mitigation Measure EH-6b which requires implementation of aeration technologies to improve low dissolved oxygen conditions and enhance aerobic decomposition of herbicide active ingredients.

iii. Impact EH-5 Short Term Increases in Aluminum Concentrations

Aluminum in sediments of the lagoons could be mobilized into the water column by project activities. If mobilized, it could affect aquatic life. The USEPA defines acute and chronic water quality criteria for the protection of aquatic life.

Finding

Changes or alterations have been required in, or incorporated into, the Proposed Project that avoid or substantially lessen the significant effects on the environment. (Pub. Resources Code, § 21081, subd. (a)(1); CEQA Guidelines, § 15091, subd. (a)(1).)

Rationale

The sediments in the Tahoe Keys lagoon bottom have pre-existing high concentrations of aluminum. Short-term increases of aluminum concentrations in lagoon water may occur in treatment areas during sediment disturbance caused by project activities such as installation, startup and removal of aeration systems, or installation and removal of bottom barriers and turbidity curtains. The potential for concentrations of aluminum to reach levels associated with toxicity to aquatic life is a function of the amount of turbidity in the water from disturbed sediment. Samples analyzed as part of the baseline study showed that disturbance of sediments could potentially result in total recoverable aluminum concentrations that exceed the short-term exposure criteria and cause harm to aquatic life.

As described in Section IV, potential impacts from elevated aluminum are reduced to less than significant through Mitigation Measures EH-5a that requires implementation of best management practices to reduce turbidity caused by sediment disturbance and conducting real-time turbidity monitoring during project activities.

iv. Impact EH-6 Harmful Algal Blooms

A risk exists that the dieback and decay of aquatic weeds from project activities, and subsequent release of nutrients to the waters of the lagoons could stimulate harmful algal blooms (HABs). The potential for impacts to occur depends on a host of conditions, the timing of herbicide applications, volume of plant biomass, water and nighttime air temperatures, stratification of the lagoons, and plant photosynthesis and respiration levels. If the Proposed Project increases HABs it would be considered a significant impact.

Finding

Changes or alterations have been required in, or incorporated into, the Proposed Project that avoid or substantially lessen the significant effects on the environment. (Pub. Resources Code, § 21081, subd. (a)(1); CEQA Guidelines, § 15091, subd. (a)(1).)

Rationale

Environmental conditions in freshwater environments can lead to rapid increases in the biomass of single-celled photosynthetic bacteria (cyanobacteria), resulting in a HAB. HABs have been reported in Tahoe Keys lagoons in recent years, including 2017 to 2019. Past detections of cyanotoxins have reached caution levels at Tahoe Keys.

As a result of the Proposed Project, conditions may become increasingly favorable or less favorable for HABs. Because HABs are not always predictable and because the conditions that cause cyanobacteria to produce cyanotoxins are not well understood, there remains some uncertainty about whether the release of nutrients from aquatic weed treatments could increase the risk of HABs and potentially affect people and the environment. Continuation of the existing programs to monitor and warn people at Tahoe Keys when cyanotoxins are present will continue to be effective in protecting against any additional risks of exposure to cyanotoxins.

As described in Section IV, potential impacts from HABs are reduced to less than significant through Mitigation Measure EH-6a the timing and size of treatment areas, Mitigation Measure EH-6b use of aeration, and Mitigation Measure EH-6c use of lanthanum clay.

v. Impact WQ-5 Changes in Dissolved Oxygen

Rapid dieback of dense aquatic weed beds from herbicide applications or ultraviolet light (UV light) could result in significant changes to Dissolved Oxygen (DO) conditions within and near test sites. This could cause biochemical oxygen demand (BOD) from decomposing plants to decrease DO concentrations during the normal growing season for aquatic plants. Herbicide products could also create short-term chemical oxygen demand during applications. Thresholds of concern for DO are established by several

WQOs: minimum criteria of 8.0 mg/L at all times, a 9.5 mg/L minimum based on seven-day mean concentrations, an 80 percent saturation minimum, and a limit that DO shall not be depressed by more than 10 percent saturation.

Finding

Changes or alterations have been required in, or incorporated into, the Proposed Project that avoid or substantially lessen the significant effects on the environment. (Pub. Resources Code, § 21081, subd. (a)(1); CEQA Guidelines, § 15091, subd. (a)(1).)

Rationale

Rapid dieback of dense aquatic weed beds from testing herbicide applications or UV light could result in significant changes to DO conditions within and near test sites. The primary concern is that biochemical oxygen demand (BOD) from decomposing plants could decrease DO concentrations during the normal growing season for aquatic plants, particularly given the lack of DO contributed from the photosynthesis of living plants. There is also a potential for herbicide products to create a short-term chemical oxygen demand during applications, although this is determined to be less of a concern than BOD from decomposing plants.

Based on information from other studies, any measurable changes in lagoon DO from herbicide applications would likely be restricted to within and adjacent to the test sites, and no effect would be expected on DO in Lake Tahoe. Laminar Flow Aeration (LFA) tests sites may also have improved DO conditions due to increased water circulation and improved low oxygen conditions that characterize the deep portions of the water column during summer thermal stratification.

As described in Section IV, potential impacts from changes in dissolved oxygen concentrations are reduced to less than significant through Mitigation Measure WQ-5a the timing and limited extent of treatment areas, and Mitigation Measure WQ-5b requiring the use of aeration after plant dieback.

vi. Impact WQ-6 Increases in Total Phosphorous

Short-term increases in lagoon water total phosphorus (TP) concentrations could result from Proposed Project activities such as aeration system installation and operation, and from decaying aquatic plants during and after UV light or herbicide treatments. WQOs specify an annual average or 90 percent maximum criterion of 0.008 mg/L for total phosphorus.

Finding

Changes or alterations have been required in, or incorporated into, the Proposed Project that avoid or substantially lessen the significant effects on the environment. (Pub. Resources Code, § 21081, subd. (a)(1); CEQA Guidelines, § 15091, subd. (a)(1).)

Rationale

Short-term increases in lagoon water total phosphorus concentrations could result from sediment disturbance during LFA installation, or during the initial operation of LFA

systems circulating deep waters to the surface. A temporary increase in TP in the water column is expected during the weeks following aquatic plant dieback from herbicide treatment. Release of phosphorus from decaying aquatic plants to the water column could also be accelerated during and after UV light application, which could increase concentrations during those periods.

Increased TP in the water column within and adjacent to treatment areas is expected due to remineralization processes that are likely to occur concurrent with the decomposition of plants at test sites. While not all of the TP content of decomposing plants would be available in the water column, it is likely that perhaps 50 percent of the TP would transition into the water column during decomposition, with most of this remineralization likely occurring within the first 20 days after plant dieback (Walter 2000). The potential internal increases in TP from project activities would be a concern in the lagoons both for compliance with WQO criteria and also for increased productivity of phytoplankton and risk of HABs.

Because herbicide and UV light treatments would prevent the plants from reaching full biomass, there would be a reduction in the transfer of TP from plant tissues to the lagoon water that would otherwise occur when the plants naturally die back in the fall, so overall TP loading from decomposing plants would not increase, accumulate with impacts from other projects, or contribute to a declining trend or affect an already degraded resource.

As described in Section IV, potential impacts from changes in total phosphorus concentrations are reduced to less than significant through Mitigation Measure WQ-6a the timing and limited size of treatment areas.

vii. Impact WQ-7 Increases in Total Nitrogen

Short-term increases in lagoon water total nitrogen (TN) concentrations could result from Proposed Project activities such as aeration system installation and operation, and from decaying aquatic plants during and after UV light or herbicide treatments. The WQOs specify an annual average or 90 percent maximum criterion of 0.15 mg/L for total nitrogen.

Finding

Changes or alterations have been required in, or incorporated into, the Proposed Project that avoid or substantially lessen the significant effects on the environment. (Pub. Resources Code, § 21081, subd. (a)(1); CEQA Guidelines, § 15091, subd. (a)(1).)

Rationale

Short-term increases in lagoon water total nitrogen concentrations could result from sediment disturbance during LFA installation, or during the initial operation of LFA systems circulating deep waters to the surface. Release of nitrogen from decaying aquatic plants to the water column could also be accelerated during and after weed control treatments, which could increase concentrations during those periods but lead to lower concentrations from aquatic plant dieback in the fall. Long term, a reduction in

nitrogen release from decaying plants would be accomplished if dense aquatic weed beds are successfully treated.

Increased TN in the water column is expected due to remineralization processes that are likely to occur concurrent with the decomposition of plants at test sites. While not all of the TN content of decomposing plants would be available in the water column, it is likely that perhaps 60 percent of the TN would transition into the water column during decomposition, with most of this remineralization likely occurring in the first two to three weeks. In the West Lagoon, increases in TN in the water column would likely occur, and as a colimiting nutrient with phosphorus, TN increases would be expected to increase the abundance of phytoplankton in the water column. The degree of phytoplankton response is likely to correlate with the amount of nutrient uplift associated with plant decomposition and TN remineralization, and the amount of TN remineralization is expected to correlate with the amount of aquatic plant biomass that is treated at any given time. With herbicide treatments proposed to occur in the late spring when aquatic plants are early in their growth and biomass is minimal, and when the water is still cool from snowmelt runoff and low nighttime temperatures, the risk of nutrient uplift resulting in algal blooms (including HABs) can be minimized. Similar to TP, the lack of correlation between TN concentrations and indicators of phytoplankton biomass in Lake Tallac suggests that an uplift in TN concentrations from plant decay presents less of a risk for algal blooms than in the West Lagoon.

A temporary increase in TN in the water column is expected during the weeks following aquatic plant dieback from herbicide treatment.

Because herbicide and UV light treatments would prevent the plants from reaching full maturity, there would be reduction in the release of nitrogen from plant tissues to the lagoon water compared to when full-grown plants naturally die back in the fall, so overall TN loading from decomposing plants would not increase, accumulate with impacts from other projects, or contribute to a declining trend or affect an already degraded resource.

As described in Section IV, potential impacts from changes in TN concentrations are reduced to less than significant through Mitigation Measure WQ-7a the timing and limited extent of treatment areas.

viii. Impact AQU-1 Effects to Non-Target Macrophytes

Non-target macrophyte (aquatic plant) species could be affected by direct contact with herbicides, through exposure to UV light treatments, or through implementation of some

Group B methods that will be implemented following Group A treatments. The threshold of significance for this issue area would be a substantial change or reduction in the diversity or distribution of the non-target macrophyte community.

Finding

Changes or alterations have been required in, or incorporated into, the Proposed Project that avoid or substantially lessen the significant effects on the environment. (Pub. Resources Code, § 21081, subd. (a)(1); CEQA Guidelines, § 15091, subd. (a)(1).)

Rationale

Native aquatic plant species in the West Lagoon include leafy pondweed (Potamogeton foliosus), nitella (Nitella sp., a macroalga), elodea (Elodea canadensis), and Richard's pondweed (P. richardsonii) (TKPOA 2019). Native aquatic plants in Lake Tallac include most of the same species (Richard's pondweed is not known to occur); in addition, watershield (Brasenia schreberi) is found along the margins.

The application of aquatic herbicides can directly affect non-target plant species due to direct contact with the herbicide within the designated treatment site or adjacent open water areas. Existing information on the selectivity of the proposed aquatic herbicides, including manufacturer's labels and peer reviewed literature, was used to evaluate their potential to impact non-target aquatic plants. The magnitude of short-term impacts to these species from herbicides depends on the herbicide applied, with endothall being a less-selective contact herbicide that would likely result in the greatest impacts to non-target species. Tryclopyr herbicide is selective to Eurasian watermilfoil and is not reported to have lethal effects on the non-target macrophytes known to occur in the lagoons. The extent of herbicide-only sites is 13.3 acres, or 7.7percent of the lagoons, of which 8.2 acres or less than five percent are proposed for application of endothall.

Potential direct effects to non-target macrophyte species could occur through the use of UV light treatments and implementation of some Group B methods. The use of UV light and bottom barriers can be non-selectively lethal to non-target aquatic plants and could result in changes to community composition.

As described in Section IV, potential impacts to non-target aquatic macrophytes are reduced to less than significant through Mitigation Measure AQU-1 spring macrophyte surveys. These surveys will result in adjustment of the test sites to avoid areas dominated by native or non-target plant communities.

ix. Impact AQU-3 Effects on Sensitive Aquatic Macrophyte

Watershield, a 2B.3 CRPR sensitive species, is known to occur in Lake Tallac where endothall herbicide treatments are proposed. The threshold of significance for this issue area would be a substantial reduction in watershield biovolume in Lake Tallac below levels measured in the most recent pre-project surveys.

Finding

Changes or alterations have been required in, or incorporated into, the Proposed Project that avoid or substantially lessen the significant effects on the environment. (Pub. Resources Code, § 21081, subd. (a)(1); CEQA Guidelines, § 15091, subd. (a)(1).)

Rationale

No aquatic plant species occur in the vicinity of the Tahoe Keys lagoons that are identified by TRPA as sensitive, or which are listed under federal or state Endangered Species Acts (ESA). The primary sensitive macrophyte species of concern in the Project area is watershield, a California Native Plant Society (CNPS) 2B.3 ranked sensitive plant species that is known to occur in Lake Tallac. Plants ranked 2B are

considered rare, threatened or endangered in California but more common elsewhere, and plants with a threat rank of 3 are considered “not very threatened in California.” Watershield has not been found in the Tahoe Keys lagoons. There is potential for herbicides to impact watershield in Lake Tallac. The abundance of watershield in macrophyte surveys from Lake Tallac has ranged from 0-percent to 32- percent since monitoring began in 2015.

As described in Section IV, potential impacts to sensitive aquatic macrophyte communities are reduced to less than significant through Mitigation Measure AQU-1 spring macrophyte surveys. Spring macrophyte surveys are required to adjust testing locations to better target dense beds of target species and avoid native, non-target and sensitive plant communities.

x. Impact AQU-4 Changes in Aquatic Macrophyte Community Composition

Potential direct and indirect effects to the aquatic macrophyte community could occur as the result of the Project, including both Group A and Group B methods. The threshold of significance for this issue area would be a substantial change or reduction in the diversity or distribution of the non-target macrophyte community.

Finding

Changes or alterations have been required in, or incorporated into, the Proposed Project that avoid or substantially lessen the significant effects on the environment. (Pub. Resources Code, § 21081, subd. (a)(1); CEQA Guidelines, § 15091, subd. (a)(1).)

Rationale

Native aquatic plant species in the West Lagoon include leafy pondweed (Potamogeton foliosus), nitella (Nitella sp., a macroalga), elodea (Elodea canadensis), and Richard’s pondweed (P. richardsonii) (TKPOA 2019). Native aquatic plants in Lake Tallac include most of the same species (Richard’s pondweed is not known to occur); in addition, watershield (Brasenia schreberi) is found along the margins of Lake Tallac.

The application of aquatic herbicides can directly affect non-target plant species due to direct contact with the herbicide within the designated treatment site or adjacent open water areas. Existing information on the selectivity of the proposed aquatic herbicides, including manufacturer’s labels and peer reviewed literature, was used to evaluate their potential to impact non-target aquatic plants. The magnitude of short-term impacts to these species from herbicides depends on the herbicide applied, with endothall being a less-selective contact herbicide that would likely result in the greatest impacts to non-target species. Tryclopyr herbicide is selective to Eurasian watermilfoil and is not reported to have lethal effects on the non-target macrophytes known to occur in the lagoons. The extent of herbicide-only sites is 13.3 acres, or 7.7percent of the lagoons, of which 8.2 acres or less than five percent are proposed for application of endothall.

Potential direct effects to non-target macrophyte species could occur through the use of UV light treatments and implementation of some Group B methods. The use of UV light and bottom barriers can be non-selectively lethal to non-target aquatic plants and could result in changes to community composition.

As described in Section IV, potential impacts to non-target macrophyte community composition are reduced to less than significant through Mitigation Measure AQU-1 spring macrophyte surveys. These surveys will result in adjustment of the test sites to avoid areas dominated by native or non-target plant communities.

IV. MITIGATION MEASURES

A. Environmental Health

Mitigation Measure EH-1 Applicator Qualifications

Herbicide applications must be performed only by Qualified Applicator License (QAL) holders. QAL holders have completed extensive annual training to minimize any potential risks, including the use of proper personal protective equipment, and they would follow NPDES permit requirements and product label specifications.

Mitigation Measure EH-2 Spill Prevention and Response Plan

A spill prevention and response plan developed by a QAL holder must be implemented by a QAL holder to minimize and contain any spills during herbicide mixing and application. The spill prevention and response plan must be submitted for review as required by permitting agencies and implemented at the work sites.

Mitigation Measure EH-5a Best Management Practices

Best management practices to minimize sediment disturbance must be implemented. Turbidity will be monitored to ensure that sediment disturbance and the consequent potential for mobilization of aluminum into the water column is minimized.

Mitigation Measure EH-6a Timing and Size of Treatments

Spring aquatic plant surveys are required to select final treatment times and locations. The locations of test sites would be adjusted as needed to ensure that the targeted species are present for each herbicide application and ultraviolet light test, and areas dominated by native plant communities are avoided. The treatment area would be as small as possible given the objectives of the Proposed Project. The herbicide and UV treatment areas represent a small percentage of the total lagoon area in the Tahoe Keys.

Herbicides must be applied in the late-spring or early summer when the plants are in their early stages of growth so that the volume of decomposing plant material is minimized. To minimize the biomass of plants killed by UV light treatment, an initial round of UV light treatment would be conducted in the spring to stunt plant growth so that plants would only be a few feet tall when they are treated again in the summer. Minimizing the volume of aquatic weeds that are killed will reduce the risk of HABs.

Mitigation Measure EH-6b Aeration

Aeration technologies such as LFA must be implemented at each herbicide test site after target aquatic weeds die back from the herbicide application. Aeration during plant decomposition would increase aerobic microbial degradation and reduce the risk of HABs by breaking up thermal stratification, reducing near-surface water temperature,

and stabilizing pH conditions. The aeration systems would be continually operated until herbicide active ingredients and degradants are no longer detected above background concentrations.

Mitigation Measure EH-6c Lanthanum Clay

A bentonite clay product containing lanthanum (e.g., Phoslock) will be used to control cyanobacteria if a HAB is confirmed at a test site following dieback from herbicide or UV-C light treatment. Lanthanum clay will be applied if a HAB is confirmed at caution levels or higher, total phosphorus is elevated above control sites, and alkalinity of the water in the treatment area to be treated is greater than 20 mg/L. Lanthanum is a rare earth mineral with a strong affinity to bind with phosphorus. The product would be applied to the water surface at the test site where it would strip the water column of available phosphorus molecules while it settles to the bottom. The phosphorus would remain bound in the surface sediments and unavailable for growth of cyanobacteria or other phytoplankton, effectively starving the HAB of an essential nutrient.

B. Water Quality

Mitigation Measure WQ-5a: Timing and Limited Extent of Testing (changes in DO)

Treatments must be implemented in limited areas of the lagoons and early in the growing season, when plants are small, to minimize biomass decomposition and short-term DO impacts. Pre-treatment plant monitoring is required to select final treatment size and locations.

Herbicide applications must occur in the late spring or early summer when target weed species are in their early stages of growth and plant biomass is minimal, and the timing would be adjusted based on pre-application macrophyte surveys. This timing is expected to minimize the biomass of decaying vegetation, mitigating the effects of oxygen depletion and nutrient release that could occur from dieback of mature plants. Similarly, UV light applications would include an early-season treatment to stunt plant growth, reducing the decaying biovolume that could contribute to reduced DO in the summer.

The overall reduction in aquatic weed biomass from testing control methods is generally expected to reduce oxygen depletion at test sites.

Mitigation Measure WQ-5b Aeration

LFA or other aeration systems must be deployed in herbicide test sites after plant dieback to increase aerobic microbial degradation and offset the potential for BOD from plant decomposition that could cause low DO impacts. If real-time monitoring indicated that DO was not meeting permit requirements at an ultraviolet light test site, an LFA system would be deployed to aerate during the period of plant decay and ensure that DO impacts were not significant.

Mitigation Measure WQ-6a: Timing and Limited Extent of Testing (changes in TP)

Timing treatments to cause weed dieback early in the growing season when the plants are small, and the small portion of the lagoons to be treated will minimize biomass

decomposition and short-term TP impacts. Pre-treatment plant monitoring is required to select final treatment size and locations.

Herbicide applications must occur in the late spring when target weed species are in their early stages of growth and plant biomass is minimal, and the timing would be adjusted based on pre-application macrophyte surveys. This timing is expected to minimize the biomass of decaying vegetation, mitigating the effects of nutrient release (phosphorus and nitrogen) that could occur from dieback of mature plants. Similarly, UV light applications would include an early-season treatment to stunt plant growth, reducing the decaying biovolume that could contribute to reduced TP in the summer.

The overall reduction in aquatic weed biomass from testing control methods is generally expected to reduce TP release from macrophytes at test sites.

Mitigation Measure WQ-7a: Timing and Limited Extent of Testing (increases in TN)

Timing treatments to cause weed dieback early in the growing season when the plants are small, and the small portion of the lagoons to be treated will minimize biomass decomposition and short-term TN impacts. Pre-treatment plant monitoring is required to select final treatment size and locations.

Herbicide applications would occur in the late spring when target weed species are in their early stages of growth and plant biomass is minimal, and the timing would be adjusted based on pre-application macrophyte surveys. This timing is expected to minimize the biomass of decaying vegetation, mitigating the effects of oxygen depletion and nutrient (nitrogen and phosphorus) release that could occur from dieback of mature plants. Similarly, UV light applications would include an early-season treatment to stunt plant growth, reducing the decaying biovolume that could contribute to reduced TN in the summer.

The overall reduction in aquatic weed biomass from testing control methods is generally expected to reduce the release of TN from macrophytes at test sites.

C. Aquatic Biology and Ecology

Mitigation Measure AQU-1 Macrophyte Surveys

Mitigation Measure AQU-1 requires surveys of macrophytes in the spring prior to implementation of the treatments. Given that plant species occurrence and distribution varies from year to year in the lagoons and Lake Tallac, spring macrophyte surveys are required to adjust testing locations to better target dense beds of target species and avoid native, non-target and sensitive plant communities. Mitigation Measure AQU-1 is used as mitigation for Impacts AQU-1, AQU-3, and AQU-4.

<u>To address Impact AQU-1</u>

Information on species composition from spring macrophyte surveys would facilitate necessary adjustments to treatment locations to avoid non-target macrophytes. If it is necessary to relocate treatment sites, areas would be selected that are of similar size

and depth and that maximize the percent cover of target aquatic weeds with minimal non-target macrophytes.

To address Impact AQU-3

Although the drift of endothall from the treatment sites in Lake Tallac may contact watershield, there is no published evidence that it would cause substantial adverse effects. Pre-treatment surveys will result in avoidance of watershield in Lake Tallac

To address Impact AQU-4

Information on species composition from spring macrophyte surveys would facilitate necessary adjustments to treatment locations to avoid non-target macrophytes. If it is necessary to relocate treatment sites, areas would be selected that are of similar size and depth and that maximize the percent cover of target aquatic weeds with minimal non-target macrophytes.