



Tahoe Keys Property Owners Association

September 17, 2015

Subject: Draft Integrated Weed Management Program for the Tahoe Keys Lagoon

Dear Members of the Tahoe Keys Property Owners Association:

The Friends of the West Shore appreciates this opportunity to provide comments on the draft Integrated Weed Management Program for the Tahoe Keys Lagoon (WMP). Friends of the West Shore (FOWS) works toward the preservation, protection, and conservation of the West Shore, our watersheds, wildlife, and rural quality of life, for today and future generations. FOWS represents community interests from Tahoma to Tahoe City. FOWS is extremely concerned with the proposed use of herbicides in Lake Tahoe.

Alternatives:

FOWS believes the health of the entire Lake must be prioritized. Although we understand the need for additional actions to mitigate the impacts of invasive weeds, the use of chemicals in Lake Tahoe, and in areas where active groundwater sources are used for drinking water, requires careful consideration. FOWS is extremely concerned that non-chemical options that may involve temporary closures of the Lagoon or other inconveniences have been dismissed or were not considered. Examples include, but are not limited to:

- De-watering is apparently dismissed because it may impede recreational boat access and use: *"Restricting access and use of the area during treatment...may not be acceptable." (p. 50), and "Actively dewatering the Tahoe Keys lagoon could interfere with the recreational use of the facility." (p. 51).*
- Removing nutrient laden sediments is apparently dismissed due to cost, the need to obtain a permit, and the temporary impairment of use of the cove during operations.¹
- The increased use of bottom barriers are acknowledged as suitable, but then discouraged because the wave action from boats may dislodge them.²

In all of these examples, there is no consideration of options that involve the temporary (e.g. months to multiple seasons, as necessary) closure of the Keys lagoon to boat traffic.

¹ "The cost of removing nutrient-laden sediments is high, would require permits, and impair the use of the coves during operations." (p. 53)

² "Bottom barriers are a suitable method to control aquatic plants in the Tahoe Keys Lagoon... There are limitations to the use of bottom barriers in the Tahoe Keys lagoons. As compared to Emerald Bay, the water is relatively shallow and there is often a high level of recreation boat traffic. Bottom barriers can be readily dislodged by wave action even in areas where the boat speeds are slow..." (p. 40)

Prioritization of Lake Tahoe:

As the TRPA notes: “*Lake Tahoe is one of the largest, deepest, and clearest lakes in the world. Its cobalt blue appearance, spectacular alpine setting, and remarkable water clarity is recognized worldwide...Recreational opportunities and scenic vistas have made Lake Tahoe a top national and international tourist destination.*” Lake Tahoe is a federally-designated Outstanding National Resource Water,³ and the Lake Tahoe Basin has been labeled a National Treasure.⁴ Due to the unique beauty of the Lake and surrounding Basin, Congress created the TRPA Compact, establishing an agency whose primary purpose is to ensure the protection of Lake Tahoe’s unique environment.⁵ Millions of people visit Lake Tahoe each year.⁶ Clearly, it is important to protect the Lake. Options that may inconvenience a few in order to protect and preserve a Lake that is treasured by millions around the world need to be considered.

Risks associated with herbicide use:

FOWS understands several technical experts have expressed support for the use of herbicides in the Keys lagoon,⁷ however numerous cautions surround the use of chemicals, and information gathered to date regarding water movements has not considered many factors that are known to affect the environmental fate of herbicides, “such as photolysis and microbial degradation, hydrolysis, or adsorption.”⁸ However, information does clearly show the movement of water between the Lake and the Keys lagoon.⁹ In addition, as the WMP clearly notes, the use of herbicides does not come without risk:

- The environmental fate of herbicides is variable;¹⁰
- Groundwater contact is not impossible (“unlikely” does not mean impossible);¹¹
- Although the risk may be “low,” there is still a risk of acute impacts to the aquatic ecosystem;¹²

³ <http://www.trpa.org/tahoe-facts/>

⁴ <http://www.dri.edu/news/2194-preserving-lake-tahoe-a-national-treasure>

⁵ <http://www.trpa.org/bi-state-compact/>

⁶ <http://www.trpa.org/tahoe-facts/>

⁷ https://uploads.strikinglycdn.com/files/405828/9551fc30-4a83-4b84-bc37-93c8bf164d5c/Expert%20Panel%20Report_Final.pdf

⁸ Schladow 2014; (p. 8)

⁹ Anderson 2001a; (p. 7)

¹⁰ “There are many physical and biological variables that can affect the environmental fate of herbicides. Physical processes such as diffusion and dispersion can be influenced by wind or water currents as the compound moves from the application area where it is in high concentration to areas of low concentration...Herbicides can be affected by chemical processes of volatilization, hydrolysis, and adsorption to soil or sediment particles as well as degradation by ultraviolet light and microbes. These processes impact how well the herbicide works on the target plant.” (p. 62); “As discussed above, physical variables can cause an herbicide to move from the site of application.” (p. 64)

¹¹ “It is unlikely that herbicide residues will contact groundwater sources in the area...” (p. 63) [Emphasis added]

¹² “There is a low risk of acute impacts to the aquatic ecosystem when aquatic herbicides are applied by trained applicators following the herbicide label criteria. The aquatic herbicide registered for use in the US and in California are relatively non-toxic to fish and humans because their modes of action affect plant processes, such as photosynthesis, which are not found in animal organisms.” (p. 64) [Emphasis added]

- Herbicides must be handled very specifically in order to avoid harm to fish or benthic organisms, wildlife, or humans;^{13,14}
- Herbicides can impact benthic organisms and/or persist in the water;¹⁵ and
- The existence of setback distances from potable water intakes and water use restrictions is evidence of the potential harm associated with the application of herbicides.¹⁶

Even with properly trained applicators and successful consideration of weather, water movements, and other environmental parameters, there is still no guarantee that negative impacts won't occur. However, the extensive reliance on proper application to avoid impacts is of concern, especially when environmental factors can vary. As noted by an expert panel convened by the Idaho State Department of Agriculture (ISDA)¹⁷ – notably experts referred to Idaho's herbicide application as an example during the August 11, 2015 panel¹⁸ - there are many problems and risks associated with herbicide use:

“Idaho has well trained and experienced weed staff/county superintendents for terrestrial weeds, but aquatic weed management is significantly different. Compared to terrestrial weed control,

- Aquatic weed control is usually more costly
- Public has great concern over pesticides in water
- Public can contact pesticides in water
- Control options are usually very limited
- Visibility of plants is poor and often weeds are undetected
- Identification and taxonomy of plants are difficult and often not clear
- Herbicides can move off site due to various weather events
- Monitoring success or failure of treatments is much more difficult
- Control failures do occur.” (p. 20-21)

It is also notable that herbicide application would not be a one time or temporary method – it is anticipated that ongoing application would be required,¹⁹ even if it is required ‘less frequently’ in

¹³ “When properly used by trained applicators, herbicides effectively control aquatic plants without harming fish or benthic organisms, wildlife, or humans. Proper use of approved aquatic herbicides can result in sustained control of aquatic plants lasting over several growing seasons...” (p. 64) [Emphasis added]

¹⁴ “These approved herbicides pose no significant threat to the environment or public health when used in accordance with labeling instructions.” (p. 64-65); “Herbicides must be handled carefully. Applications must be made by trained crews that are under the supervision of state-certified applicators to ensure that herbicides are handled safely and applied at the proper dose.” (p. 65).

¹⁵ “Some herbicides have non-target effects on benthic organisms...Some herbicides can persist in the water.” (p. 65).

¹⁶ Table 6: Proposed herbicides by active ingredients. P. 78-79.

¹⁷ <http://www.agri.idaho.gov/Categories/PlantsInsects/NoxiousWeeds/Documents/Milfoil/ISDAEWM20dec.pdf>

¹⁸ “Getsinger: A number of large lakes that have had Eurasian Milfoil, in Idaho, opted for whole-lake application and they got 90 percent control in one treatment.”

¹⁹ “Q: What’s the opinion of the panel on the retreatment cycle?”

A: DiTomaso: I would hope it wouldn't be an ongoing program. I would hope that through adaptive management that the weed population would drop down to where harvesting or diving would be affordable. It may not eliminate the need for applications, but you wouldn't be treating every year or every other year. That's the goal.

Chandra: These plants are here to stay. I see this as analogous to forest management for quite some time to come.

That's just what it takes. In small bodies you can eradicate, but in Lake Tahoe you have to manage. Akers: It is often found that if you push hard at first (to remove and manage weeds) you can then work on much smaller numbers you can handle mechanically. Sometimes it takes a couple of years of hard effort to get to that point.” (August 11, 2015

the future. **FOWS requests that all alternatives dismissed or not considered by the TKPOA be carefully considered before any such risks are taken with Lake Tahoe’s health (as well as the humans, aquatic organisms, and wildlife that rely upon the lake).**

It is also unclear whether the August 11 panel experts were able to consider alternative options that were generally dismissed by the TKPOA, including those that would require temporary closures and/or limits on boat access.

UV light as an alternative:

The use of UV light appears to provide a potential option for weed removal.²⁰ While the expert panel acknowledged that UV light can be successful, it appears that getting the UV light low enough in the water has presented an impediment to its use. It is FOWS’ understanding that a new device that uses UV light to target milfoil, and provides more flexibility in its treatment, has been presented to TRPA and the TKPOA.²¹ This option is not presented or discussed anywhere in the WMP. **We request this be evaluated for its possible use in the lagoons.**

Nutrient Reduction/Removal:

The report also fails to take a hard look at reducing the amount of nutrients released into the channels (which causes more weeds to grow), like firmly addressing fertilizer use. “Asking” people to use less may not be sufficient.²² In addition, reducing the use of phosphorous-containing fertilizers fails to account for the impacts of nitrogen. As presented by Lake Tahoe researchers at the Tahoe Environmental Research Center (TERC), both nitrogen and phosphorus play a role in the Lake’s health and clarity.²³ **FOWS requests the TKPOA evaluate stronger options for reducing phosphorous and nitrogen entering the lagoons. In addition, as vegetative uptake is one of the most effective ways to remove nitrogen from systems, alternatives which remove sediments that contain too much nitrogen should be considered** (the WMP briefly discusses this option in the context of temporary de-watering, but as noted previously, dismisses it due to cost and impacts to recreational boating access).

Expert Panel). https://uploads.strikinglycdn.com/files/405828/9551fc30-4a83-4b84-bc37-93c8bf164d5c/Expert%20Panel%20Report_Final.pdf

²⁰ “Q: Have you looked at any type of light to kill the weeds? A: Lars: Obviously plants need light to grow, but these plants are adapted to extremely low light. (Regarding light exposure) In some cases you can increase light on top but doesn’t help down lower. In the Potomac River turned lights on in middle of the night to stop a biological process. We had about a 40 percent success rate, which is not enough. It’s a clever idea that didn’t work in the field. UV light is interesting but the depth you get is a problem. Getting UV light down low is difficult.” (August 11, 2015 Expert Panel).

²¹ <https://www.youtube.com/watch?v=iSXXINFIZII&feature=youtu.be>; Innovative Resources, Inc. 7/13/2015 Presentation by John Paoluccio.

²² “Larson: We are working with Lahontan, the TKPOA has negotiated requirements for lagoons regarding nutrients. Education of our members and outreach to members and their contractors they use for landscaping, asking them to use non-phosphorous fertilizer at appropriate levels. The State of California required us to reduce water usage so we met that and reduced overwatering and the issues that have come with that. A couple projects are underway to offset some of the discharges from stormwater facilities. We killed our medians, and are planting native plants and low water use plants.”

https://uploads.strikinglycdn.com/files/405828/9551fc30-4a83-4b84-bc37-93c8bf164d5c/Expert%20Panel%20Report_Final.pdf

²³ <http://terc.ucdavis.edu/stateofthelake/>; See 2008- 2015 State of the Lake Reports

FOWS hopes these comments will assist the TKPOA in considering all possible methods to eliminate the problems posed by invasive aquatic weeds in the Keys lagoon while also prioritizing the protection of Lake Tahoe and local groundwater sources. Please feel free to contact Jennifer Quashnick at jqtahoe@sbcglobal.net if you have any questions.

Sincerely,



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Cc: Tahoe Water Suppliers Association
Lahontan Regional Water Quality Control Board
Tahoe Regional Planning Agency Governing Board