

## REVIEW CHARGE

### Lake Tahoe Periphyton Monitoring Program Methods and Findings

#### Background

The accumulation of periphyton (attached algae) on natural rock surfaces, piers, boats and other substrates is perhaps the most striking indicator of Lake Tahoe's water quality for the largely shore-bound population (Heyvaert et al., 2013). The State Water Resources Control Board, Lahontan Region (Lahontan Water Board) has funded periphyton monitoring in Lake Tahoe since 1982. Monitoring occurred for select periods in the 1980s (1982-85) and 1990s (1989-93). Near-continuous monitoring has occurred since 2000 with a one-year gap in 2004 (Hackley et al., 2016).

In 2015, the UC Davis Tahoe Environmental Research Center (TERC) prepared an analysis of existing periphyton data for the Tahoe Regional Planning Agency (TRPA) to inform the evaluation of the threshold standard related to nearshore attached algae. Statistical analyses found no significant lake-wide trends in periphyton biomass during the 1982-2015 monitoring period. (Hackley et al., 2016).

The Lake Tahoe Nearshore Evaluation and Monitoring Framework (Heyvaert et al. 2013) recommended that periphyton monitoring using the methodology and intensity consistent with historic efforts should be continued. In anticipation of updating monitoring contract language, UC Davis provided the Lahontan Water Board with a series of program improvement suggestions to enhance periphyton monitoring effectiveness.

#### Review Need

Resource management agencies seek an 'engaged review' (see TSAC Guidance for External Peer Review Document) of the existing periphyton monitoring program to assess its efficacy to track lake-wide periphyton status and trends. Review findings will be used to guide investment in the most cost-effective and defensible periphyton monitoring methods to evaluate ongoing periphyton biomass status and trends at representative locations around Lake Tahoe.

#### Documents for Review

Lahontan Water Board Agreement 16-076-160 (Task 5 only)

Lahontan Water Board Agreement 19-024-160 (Task X only)

Schladow, S.G., Sadro, S., Hackley, S.H. 2018. Suggested Changes to Lahontan and TRPA Monitoring Contracts. Tahoe Environmental Research Center University of California, Davis, Incline Village, NV. (pages 4 and 5)

Hackley S.H., Watanabe S., Senft K.J., Hymanson Z., Schladow S.G., Reuter, J.E. 2016. Evaluation of Trends in Nearshore Attached Algae: 2015 Threshold Evaluation Report. Tahoe Environmental Research Center University of California, Davis, Incline Village, NV.

<https://laketahoeinfo.org/FileResource/DisplayResource/ceefbfc-f672-4d45-bdec-253aac4c203f>

#### Additional Background Documents

Heyvaert, A.C., Reuter, J.E., Chandra, S., Susfalk, R.B., Schaldow, S.G. Hackley, S.H. 2013. Lake Tahoe Nearshore Evaluation and Monitoring Framework. Final Report prepared for the USDA Forest Service Pacific Southwest Research Station.

[https://www.dri.edu/images/stories/centers/cwes/Lake\\_Tahoe\\_Nearshore\\_Evaluation\\_and\\_Monitoring\\_Framework.pdf](https://www.dri.edu/images/stories/centers/cwes/Lake_Tahoe_Nearshore_Evaluation_and_Monitoring_Framework.pdf)

Hackley S.H., Allen B., Hunter, D. 2012. Lake Tahoe Water Quality Investigations: 2012 Annual Report. Tahoe Environmental Research Center University of California, Davis, Incline Village, NV.

Hackley S.H., Allen B., Hunter, D., Reuter, .. 2004. Lake Tahoe Water Quality Investigations: 2004 Annual Report. Tahoe Environmental Research Center University of California, Davis, Incline Village, NV.

### **Review Questions and Charge**

1. Are the established sample locations, collection methods, and analytical procedures sufficient for assessing lake-wide status and trends for periphyton at Lake Tahoe?
2. Would the suggested monitoring program changes (Schladow et al., 2018) improve the program's efficacy at tracking periphyton status and trends?
3. Are the established monitoring methods and/or suggested program changes consistent with periphyton monitoring best practices for similar mountain lakes?

Three reviewers and a review chair (from the TSAC Peer Review Committee, PRC) will be selected by the Tahoe Science Advisory Council. The reviewers will have no affiliation with ongoing work in the Basin. The reviewers will work with review chair and authors to provide early feedback and direction. The product of this work will be a report compiling the reviewer's assessment of existing practices as defined by the review questions above. A report will be released to the public two weeks after receipt of the final work product. This report will inform the future direction of resource management agency monitoring programs.

### **Timeline**

November – December 2019 – Select reviewers and chairperson. Agree upon review format and meetings. Gather available in-basin periphyton monitoring program descriptions and data (agency staff to provide material for review).

Early January 2019 – Virtual meeting with review committee and periphyton monitoring program implementers/authors

January 2020 – Compile report with reviewers and chairperson

February 2020 – Publicly release review and present initial findings to the full Council for review.

### **Personnel & Budget**

Project TSAC lead: Peer Review Committee (A. Harpold, Chair)

Project agency lead: TBD

Contributing scientists: TBD

Total project allocation not to exceed:

Total cost for this task is estimated not to exceed \$6000 (with 40 hours of effort at a TSAC median rate of \$100/hour). Work will be provided on a Time and Materials basis not to exceed the estimated total.