

**Utah Lake Water Quality Study
Science Panel Call #14
Call Summary
August 28, 2020**

This document includes a list of future meetings, action items, and a brief summary of the discussions. Please review the action item list for tasks assigned to you and/or the Science Panel in general. A list of attendees can be found at the end of the document.

Upcoming Meeting/Call	When & Where	Suggested Agenda Items
SP Call #15	September 18: 11:00 a.m. to 2:00 p.m. Mountain	<ul style="list-style-type: none"> ○ Discuss EFDC/WASP model results and limitations ○ Revisit WFWQC atmospheric deposition project

I. Action Items

Meeting Summaries	Who	Due Date	Date Completed
1. Share draft meeting summary	Facilitation Team	Sept. 8	Sept. 8
2. Review and share comments on summary	Science Panel	Sept. 15	
3. Finalize summary and post to Dropbox	Facilitation Team	Sept. 16	
P-Binding RFP	Who	Due Date	Date Completed
4. Provide Science Panel with link to Littoral Sediment and P-Binding RFPs	UDWQ	Aug. 31	Aug. 31
5. Develop potential list of scientists to bid on Littoral Sediment and P-Binding RFPs	Science Panel	Aug. 31	Aug. 31
6. Forward P-Binding RFP (as approved by SP) to the SC for approval	Tetra Tech Team	Sept. 3	Sept. 3
7. Release final P-Binding RFP	UDWQ	TBD (<i>pending SC approval</i>)	
8. Send peer-reviewed literature related to midge and mussel	David Richards	Sept. 4	Aug. 31

influence on nutrient cycling/mineralogy			
Strategic Research Plan	Who	Due Date	Date Completed
9. Forward Final SRP to Steering Committee for discussion and approval	Tetra Tech Team DWQ	TBD (<i>pending final MG table and Framework</i>)	
Analysis Report	Who	Due Date	Date Completed
10. Review and share comments on Analysis Report with Dr. Salk	Science Panel	Sept. 10	
11. Address Science Panel comments on analysis report and implement related changes to the Utah Lake Data Explorer	Tetra Tech Team	TBD	
Updates on other ULWQS Elements	Who	Due Date	Date Completed
12. Share model-related materials for preparation of September 18 th Science Panel web-meeting	Facilitation Team	Aug. 31	Sept. 3
13. Coordinate and schedule call with the independent members of the Science Panel to evaluate Littoral Sediment proposals	Scott Daly	Sept. 11	

II. Decisions/Approvals

This section provides an overview of decisions made by the Science Panel during the call; related key discussion points can be found below in the document.

1. Approval to move forward with the P- Binding RFP. Decision: *Support of 9 of 10 SP member(NOTE: Greg Carling abstained from voting) – CONSENSUS APPROVAL*
2. Approval of SRP and forwarding to Steering Committee. Decision: *Support of 10 of 10 SP members – CONSENSUS APPROVAL*

III. Meeting Recording

Recordings of the meeting (also available on the DWQ website in the near future) can be found at the following [link](#).

IV. Key Discussion Points

P-Binding RFP

- Dr. Kateri Salk, Tetra Tech, provided an overview of the revised P-Binding RFP, which has undergone several previous rounds of Science Panel review. No comments were offered on the RFP during the discussion.
- Several members of the Science Panel asked questions related to the procurement process and suggested that the panel as a whole develop a list of potentially qualified scientists to increase the pool of proposals.
- Public discussion:
 - David Richards - “Researchers found in Lake Taihu, China that midge (chironomid) larvae, *Tanytus chinensis*, dramatically increased O₂ penetration depth in sediment. Larvae also decreased Fe (II) and SRP concentrations in pore water, and increased sediment O₂ uptake. Larvae inhibited SRP release from the sediment to the overlying water. This Fe- SRP- O₂ interaction in turn affects cyanobacteria blooms, as the Science Panel is well aware. Densities of *Tanytus* in Lake Taihu were a mere 737/m² compared to *Tanytus* sp. densities in Utah Lake which can often reach > 15,000/m². As I have stated to the Science Panel on many occasions, midge larvae (and oligochaete worms) are partially responsible for controlling cyanobacteria blooms in Utah Lake, spatially and temporally. I am still not sure why the Science Panel and DWQ ignore this important mechanism in their models and research initiatives whose goal is to control cyanobacteria blooms in the lake.”
 - Science Panel response. Pore water is included in this investigation. Also, RFP is geared toward quantifying the exchanges and does not specifically include a determination of the mechanisms. The SRP, however, does discuss research objectives related to mechanisms of sediment nutrient exchanges and does address the subject of this comment. The SP recognizes that midge larvae probably play an important role in the sediment biogeochemistry.

Strategic Research Plan

- Dr. Michael Paul presented the final Strategic Research Plan (SRP). No discussion was offered by the Science Panel on this topic.
- One member of the science panel recommended that the Littoral Sediment RFP be distributed to a broader group of potential bidders.
- Public discussion:
 - Theron Miller - "I hope that [referring to David Richards comment from the previous session] is the general consensus. This could be a very big deal in shallow eutrophic lake. I think we need to discuss this in the context of any sediment binding/recycle question."
 - Science Panel Response - Two members suggested that chironomids and mollusks could be explicitly discussed in the SRP. The SRP does not explicitly discuss these organisms but the mechanisms are implicitly discussed, particularly in the C, N, and P budget and the P-binding research priorities.
 - David Richards - "In Lake Taihu, China there is much research suggesting that there is high feasibility of using their native *Anodonta* sp., *A. woodiana* (pearl mussel) to control cyanobacteria blooms, particularly *Microcystis aeruginosa*. Lake Taihu's *Anodonta* mussel often prefers cyanobacteria its diet over some green algae, *Microcystis* supplies much energy to mussel growth, and the mussels are very tolerant to microcystin. Utah Lake until recently supported one of the highest densities of *Anodonta* sp. in the western U.S. Most likely this mussel was the dominant top-down controller of cyanobacteria blooms in the lake. If Chinese researchers are strongly considering using *Anodonta* as a biocontrol agent for cyanobacteria blooms in degraded Lake Taihu, I highly suggest that the Science Panel consider the role of mussels in controlling cyanobacteria blooms and the feasibility of this potential cost effective biomanipulation remedy in Utah Lake. yes"
 - Science Panel Response:
 - Hans Paerl - The internal cycling of nutrients significantly outweigh the benefits of biological biomass removal through biomanipulation.
 - Identification of management or remediation practices is not the focus of current work to develop NNC. This topic could be considered after NNC are developed.

Draft Analysis Report

- Dr. Kateri Salk gave an overview of several analyses included in the draft Analysis Report. The Science Panel offered several comments and questions during the discussion as well as several suggestions for improving the results.
- Dr. Salk requested that Science Panel members provide written comment on the draft document, to include comments offered during the meeting discussion.

Other Elements of ULWQS Project

- Scott Daly, DWQ, briefly described several related UWQS initiatives including updates related to the University of Utah model development effort, status of the Sediment Nutrient Interactions, Bioassay, and Paleolimnological research studies, status of the new RFPs and work plans, and Steering Committee discussions related to development of ULWQS management goals. Mr. Daly also discussed 2020 HAB monitoring efforts on Utah Lake and an unrelated effort to implement HAB treatment pilot projects on three local marinas.

- Several members of the Science Panel commented on the use of copper sulfate to manage HAB events and the potential for long term risks to aquatic life.

V. Public Comment

- David Richards – “Mollusk centric folks like me remind everyone that it is well-known that mussel beds (and to a much lesser but significant extent midge larval tubes) reduce shear. Draft Analysis Report seems to have omitted that macrophytes reduce algal turbidity via allelopathy. Zooplankton at high densities also affect light attenuation. There is a major Phragmites reduction program ongoing in Utah Lake which protected much of the shoreline areas of the lake. This has resulted in large amounts of TSS and nutrients to enter the lake. As far as I know, Phragmites reduction zealots haven’t been measuring any ecological effects. Until, hopefully, native plants return, there will be continued problems.”

VI. Participation

Members of the Science Panel:

- Janice Brahney, Utah State University
- Mike Brett, University of Washington
- Soren Brothers, Utah State University
- Greg Carling, Brigham Young University
- Mitch Hogsett, Forsgren Associates, Science Panel Chair
- Ryan King, Baylor University
- James Martin, Mississippi State University
- Theron Miller, Wasatch Front Water Quality Council
- Michael Mills, June Sucker Recovery Program
- Hans Paerl, University of North Carolina

Members of the Steering Committee:

- Eric Ellis, Co-Chair, Utah Lake Commission
- Erica Gaddis, Co-Chair, Utah Division of Water Quality

Members of the Public:

- Jeff DenBlyker, Jacobs
- Tina Laidlaw, EPA
- Renn Lambert, Limnotech
- David Richards, Oreo Helix Ecological

Utah Division of Water Quality Staff:

- Scott Daly
- Jodi Gardberg
- Nick von Stackelberg

Tetra Tech

- Michael Paul
- Kateri Salk

Facilitation Team:

- Dave Epstein, SWCA