

**Utah Lake Water Quality Study  
Science Panel Meeting #6  
Tuesday, December 10, 2019; 9:00 a.m. – 5:00 p.m. Mountain  
Wednesday, December 11, 2019; 9:00 a.m. – 5:00 p.m. Mountain**

**Agenda**

**Utah Department of Water Quality  
Four Corners Conference Room (4<sup>th</sup> Floor)  
195 N 1950 W  
Salt Lake City, UT 84114**

Adobe Connect Link: <https://resolv.adobeconnect.com/pdemorqan/>

**Meeting Objectives:**

- Discuss progress and initial results for each of the near-term research projects;
- Discuss approach for operationalizing the ULWQS uncertainty guidance;
- Discuss Science Panel feedback on Technical Framework;
- Explore case study application of the ULWQS Technical Framework;
- Hear a brief update of ongoing efforts to develop Utah Lake and watershed models;
- Prioritize information gaps for inclusion in the Strategic Research Plan;
- Provide a brief update on status and next steps for the Conceptual Models;
- Discuss efforts underway to characterize atmospheric deposition of nutrients to Utah Lake;
- Hear presentations from and interact with Utah Lake researchers; and
- Discuss approach and progress for revising the Utah Lake mass balance.

**Day 1 – Tuesday, December 10, 2019**

- 9:00 – 9:15     Welcome, Introductions, and Agenda Review
- Review the agenda and ground rules – *Paul De Morgan, RESOLVE*
- 9:15 – 10:15     Near-Term Research Work Plan Update
- Utah Lake-sediment water nutrient interactions – *Ramesh Goel, U of U; and Greg Carling, BYU [20 min.]*
  - Bioassays to investigate nutrient limitation of Utah Lake – *Zach Aanderud, BYU; Michelle Baker, USU; and Ben Abbott, BYU [20 min.]*
  - Paleolimnology and paleoecology of Utah Lake – *Janice Brahney, USU; Soren Brothers, USU; and Mitch Power, U of U [20 min.]*
- 10:15 – 12:45     Operationalizing the ULWQS Uncertainty Guidance (Break Included)
- Approaches relevant to the guidance as a whole – *Michael Paul, Tetra Tech [60 min.]*
    - Uncertainty associated with consensus-based decision making
  - Approaches for characterizing mechanistic modeling uncertainty – *Michael Paul with Michael Brett, University of Washington, and James Martin, Mississippi State University [60 min.]*
    - Explain additional mechanistic modeling uncertainty methods

- Discuss recommendations to DWQ modeling team
  - Public discussion (opportunity for members of the public in attendance during the session to ask questions and offer perspectives) [15 min.]
- 12:45 – 2:15    **Lunch** (*Walk or drive to a nearby restaurant*)
- 2:15 – 4:30    Numeric Nutrient Criteria Technical Framework (*Break Included*)
- Summarize one-on-one Science Panel member conversations – *Michael Paul* [30 min.]
  - Mock decision-making exercise – *Science Panel Breakout* [45 min.]
    - Consideration of multiple lines of evidence case study
    - Develop recommendation with consideration of associated risk and uncertainty
  - Report out on Science Panel Breakout session [30 min.]
  - Public discussion (opportunity for members of the public in attendance during the session to ask questions and offer perspectives) [15 min.]
- 4:30 – 4:45    Utah Lake Model Development Update
- Progress update on University of Utah model development – *Nick Von Stackelberg, DWQ*
  - DWQ approach for implementation of Utah Lake models and development of watershed models
- 4:45 – 4:55    Public Involvement  
*Members of the public will be given an opportunity to comment on the Utah Lake Water Quality Study efforts. The amount of time given to each individual will depend on the number of people wishing to provide comment. Additional comments can be submitted in writing to the Division of Water Quality.*
- 4:55 – 5:00    Wrap Up
- Final thoughts from the previous sessions
  - Confirm action items and assess plan for day 2
- 5:00            **Adjourn**

## Day 2 – Wednesday, December 11, 2019

- 9:00 – 9:15    Welcome and Agenda Review
- Review agenda for day – *Dave Epstein, SWCA*
- 9:15 – 11:00    Strategic Research Plan Development
- Information mapping and identification of information gaps – *Michael Paul* [30 min.]
  - Research need prioritization – *Science Panel Breakout* [40 min.]
    - Discuss and prioritize research needs
  - Report out on Science Panel Breakout session [20 min]

- Public discussion (opportunity for members of the public in attendance during the session to ask questions and offer perspectives) [15 min.]
- 11:00 – 11:15 **Break**
- 11:15 – 11:30 Recap Connections/Interactions/Gaps between Framework, Uncertainty, and Strategic Research Plan
- Revisit framework, uncertainty, or research plan based on discussions – *Michael Paul* [15 min.]
- 11:30 – 12:30 Data Characterization Analysis Plan Results and Discussion
- Present and discuss recent analysis plan results – *Michael Paul*
    - Update on Utah Lake Data Explorer
- 12:30 – 12:45 Update and discussion on Conceptual Models
- Brief update and next steps – *Michael Paul*
- 12:45 – 2:15 **Lunch** (*Walk or drive to a nearby restaurant*)
- 2:15 – 3:00 Atmospheric Deposition of Nutrients to Utah Lake
- Discuss and, as appropriate, seek approval of the white paper estimates of nutrient loading to Utah Lake for purposes of moving forward with models – *Paul De Morgan, RESOLVE* [10 min.]
  - Update on external expert review of atmospheric deposition products – *Mitch Hogsett, Science Panel* [20 min.]
    - Address any questions or comments from the Science Panel
  - Public discussion (opportunity for members of the public in attendance during the session to ask questions and offer perspectives) [15 min.]
- 3:00 – 3:30 Utah Lake Research Presentations: Ongoing Research to Inform SP Work – Part I
- Factors effecting the ecological health and integrity of Utah Lake with a focus on the relationships between water column regulators, benthic ecosystem engineers, and cyanoHABs: Progress Report to WFWQC – *David Richards, Oreo Helix Ecological* [20 min.]
    - Initial thoughts from the Science Panel on the relevance to the SP charge, conceptual model, and the strategic research plan [10 min.]
- 3:30 – 3:45 Utah Lake Mass Balance Analysis Update
- Review progress and next steps for ongoing action items – *Michael Brett and Scott Daly, UDWQ*
  - Questions and discussion
- 3:45 – 4:00 **Break**
- 4:00 – 4:30 Utah Lake Research Presentations: Ongoing Research to Inform SP Work – Part II

- Introduction to Timpanogos Special Service District In-lake Nutrient Cycling Studies – *Jeff DenBleyker, Jacobs* [20 min.]
  - Initial thoughts from the Science Panel on the relevance to the SP charge, conceptual model, and the strategic research plan [10 min.]

4:30 – 4:40 Public Involvement

*Members of the public will be given an opportunity to comment on the Utah Lake Water Quality Study efforts. The amount of time given to each individual will depend on the number of people wishing to provide comment. Additional comments can be submitted in writing to the Division of Water Quality.*

4:40 – 5:00 Wrap Up

- Final thoughts from the previous sessions
- Confirm action items
- Schedule for remainder of 2019 and early 2020
- Closing thoughts for the day

5:00 **Adjourn**