Utah Lake Water Quality Study (ULWQS)
Steering Committee
December 14, 11:00 AM to 1:00 PM
Virtual Meeting
Meeting Summary - FINAL

ATTENDANCE:
Steering Committee Members and Alternates: David Barlow, Scott Bird, Sam Braegger, Gary Calder, Chris Cline, Eric Ellis, Erica Gaddis, Heidi Hoven, Chris Keleher, Rich Mickelsen, Jay Olsen, George Parrish, Cory Pierce, Mike Rau, David Richards, Dennis Shiozawa, Brad Stapley, Jesse Stewart, Ben Sitreman,

Science Panel Members: Mitch Hogsett

Members of the Public: Jeff DenBleyker, Morgan Faulkner, Renn Lambert, and Soren Simonsen

Utah Division of Water Quality (DWQ) staff: Jodi Gardberg and John Mackey

Technical Consultants: Kateri Salk

Facilitation Team: Samuel Wallace

ACTION ITEMS

Who	Action Item	Due Date	Date Completed
Samuel Wallace	Follow up with Jay Olsen after the meeting to identify some of the proposed revisions around agriculture in the NNC Technical Framework document.	Jan. 7	Jan. 5
	Distribute the Implementation Planning Framework and a tracking spreadsheet for Steering Committee members to leave additional comments and feedback.	Dec. 21	Dec. 21
	Send out the interim charge reports and provide a tracking spreadsheet for Steering Committee members to leave their comments and questions.	Dec. 17	Dec. 17
	Send the Science Panel update document via email to the Steering Committee.	Jan. 7	Dec. 21
DWQ	Incorporate Steering Committee revisions into the Implementation Planning Framework.	Jan. 12	
ULWQS Steering Committee	Review and provide any additional feedback on the Implementation Planning Framework.	Jan. 7	

Who	Action Item	Due Date	Date Completed
ULWQS Steering Committee	Review and provide feedback and questions on the interim charge question reports.	Jan. 12	

DECISIONS AND APPROVALS
No decisions or approvals were made at this meeting.

PHASE 3 IMPLEMENTATION PLANNING FRAMEWORK OVERVIEW
Erica Gaddis, DWQ, provided an overview of the Phase 3 Implementation Planning Framework. Her overview is summarized below.

Overview

- The DWQ has committed to pursuing implementation planning in parallel with developing the numeric nutrient criteria (NNC). Scott Daly, DWQ, developed the Implementation Planning Framework with input from Steering Committee members and the publicly owned treatment work (POTW) community.
- The Implementation Planning Framework is similar to NNC Technical Framework in that each framework outlines the steps and process for developing the implementation plan and NNC, respectively. The Implementation Planning Framework can also be used to develop requests for proposals (RFP) if the work is contracted out to the consultant.
- Samuel Wallace, Peak Facilitation Group, distributed the Implementation Planning Framework to Steering Committee members before the meeting.
- The framework begins with an executive summary, which will be written once the Steering Committee members approve the rest of the document.
- The next section of the framework outlines the objectives of the Utah Lake Water Quality Implementation Program. These objectives were created using input from Steering Committee members and the POTW community. The objectives of the Utah Lake Water Quality Implementation Program are to:
    - Develop a practical, feasible, and effective nutrient management program through the evaluation of a suite of implementation scenarios that address all significant sources;
    - Incorporate all significant nutrient sources to Utah Lake, including nonpoint, point, and atmospheric sources;
    - Evaluate the most cost-effective in-lake and watershed strategies to improve water quality in Utah Lake with the goal to see measurable improvements as quickly as feasible;
    - Develop an adaptive management approach to address changing watershed conditions and respond to the effectiveness of the implementation program;
    - Utilize flexible regulatory tools for implementation of point source discharge permits, e.g., water quality trading and/or watershed-based permits;
    - Engage all management partners; and
    - Leverage federal, state, and local funding
- Significant federal dollars are coming to the state for water quality in the form of stimulus funds and infrastructure dollars. There may be an opportunity to leverage those funding sources for implementation.
- The plan is organized into a traditional watershed planning construct and modified to incorporate several Steering Committee and POTW considerations. There are seven steps to the plan: 1) ULWQS phase 2 work elements, 2) build partnerships, 3) watershed

characterization, 4) assess potential nutrient management implementation strategies, 5) permit implementation, 6) cost and feasibility, and 7) assemble the implementation program.

- The seven steps of the plan are organized into seven tables. In each table, there is a column for the projects/components, objective, approach, dependencies (i.e., what other projects need to be completed before this project can begin), lead and partners, start date, end date, and estimated cost or level of effort.

Table Overview

- The first table outlines the projects for the ULWQS phase 2 work elements. Phase 2 involves developing the NNC, so many of the projects in this table are focused on modeling and analysis. Phase 2 will occur in parallel with phase 3 work. In some cases, information from phase 2 is needed to inform elements of implementation planning. For example, there need to be in-lake and watershed models to analyze different implementation scenarios.
- The second table outlines the projects for watershed characterization. This table focuses on source identification and quantification (i.e., the major sources of nutrients to Utah Lake that should be addressed in an implementation plan). Characterizing the watershed is also dependent on the Science Panel completing some of their ongoing studies. Other projects under the watershed characterization step include critical source area prioritization, which involves identifying the major nonpoint sources for nutrients, and evaluating future growth and land-use scenarios as the county changes over the next several decades.
- The next table outlines the process for assessing potential nutrient management implementation strategies. This table addresses the scenario planning elements of the implementation plan. The Steering Committee will need to articulate enough scenarios and use the results to optimize the implementation plan without being paralyzed by overanalyzing too many scenarios. The scenarios are broken out by source: point source, stormwater, nonpoint source, atmospheric deposition, and ecological restoration. Some of the scenario analyses depend on ongoing research to be completed. The table also highlights a first-cut approach on how to develop the scenarios. For example, there are four draft scenarios for the wastewater treatment plants (WWTP) that came from the POTW community. The last row of the table outlines how scenarios might be combined to evaluate a multi-strategy implementation plan. Evaluating scenarios in combination facilitates the potential for a water quality trading program.
- The next table outlines the process for analyzing permit implementation. This table helps answers questions around how new standards will be incorporated into a permit. Many considerations go into developing a permit system, including accounting for seasonality, determining whether a permit is based on loads or concentrations, determining how to capture future growth, and developing a monitoring plan.
- The next table outlines the process for assessing cost and feasibility. Once the scenarios are developed, consultants can use the in-lake and watershed models to determine how various scenarios will impact water quality in the lake. Consultants will also analyze the cost and feasibility for each scenario. The Steering Committee member can then use the results of these analyses to discuss the implementation plan. This analysis will occur in parallel with the NNC development, which can serve as the third decision point for the Steering Committee.
- The last table involves assembling the implementation program. One goal for this step is to include a water quality trading element in the implementation program for the long term.

Appendix
There is one appendix to the document, which summarizes the POTW's and Steering Committee's preliminary input on the implementation framework.

Funding
- There is a $25 million allocation in the Governor's budget for Utah Lake preservation. If allocated, that funding would go to DWQ to commit to water quality improvement projects by 2024. The funding would have to be used by 2026. That funding may be useful for implementing low-hanging fruit projects. Due to the timing of the funding, there may be an interim phase when the Steering Committee can decide on clear implementation measures that they can implement today without the NNC or implementation plan being completed.
- The federal infrastructure bill will also result in significant funding to the state to distribute via the state's revolving loan program through grants or low-interest loans.

Steering Committee Member Clarifying Questions
Steering Committee members asked clarifying questions. Questions are indicated in italics, with the corresponding response in plain text.

Is there anything in the Implementation Planning Framework on sediment reflux?
Sediment recycling is mentioned under the ecological restoration row in Table 4: Assess Potential Nutrient Management Implementation Strategies. If it is not clear in the Implementation Planning Framework that there will be an evaluation of sediment recycling and reflux as a major source of nutrients to Utah Lake, DWQ will make it more clear.

One scenario in the appendix summary identifies a "no human" scenario. Is that scenario included in the approach?
The "no human" scenario is included. This scenario is part of setting the boundary condition for Utah Lake. The models can be used to identify that boundary condition.

Does the "no human" scenario refer to no point source and nonpoint source loading into Utah Lake?
- The scenario is about differentiating the anthropogenic load from the natural background load. This scenario can be done by running a watershed model without point source loads, agricultural loads, stormwater loads, and replacing impervious surfaces in the model with natural vegetation. The model is an estimate.
- The "no humans" scenario in the Framework document is described as "reference" and defined as "minimal anthropogenic nutrient loads." The phrase "no humans" is a shorthand and not the official way this scenario is described. It is not accurate or socially acceptable to describe this scenario as the "no human" scenario as people have lived and impacted Utah Lake for a long time.

One important question to consider in this document is "how clean is clean?" How does this Implementation Planning Framework address that question?
The "how clean is clean" question is at the center of the ULWQS. DWQ is committed to answering this question in parallel with the cost and feasibility analysis. The expectation is that there will be a range of potential criteria, a range of whether certain scenarios will achieve those criteria, and the cost and uncertainty associated with those scenarios.

Can the models determine "how clean is clean enough" (vs. "how clean is clean") based on where stable desirable conditions can be attained? Has a "stable desirable condition" been defined?
The ULWQS management goals table is the first attempt at describing stable desirable conditions. The models will help project the expected water quality result for each implementation scenario. The models will help answer Steering Committee questions, including how clean is clean enough. The goal of the Clean Water Act is not to get to pristine conditions; it is to determine what is clean enough to support the beneficial uses of Utah Lake.

Will the ULWQS in-lake and watershed models account for mixing, wind blowing, and stirring of the sediment?
Yes, those dynamics will be included in the model.

The implementation framework identifies adaptive management, but it does not discuss how monitoring will feed into adaptive management. Will the monitoring be tailored depending on what strategy or scenarios are pursued? Is there baseline monitoring that needs to occur, and are people monitoring now to establish baseline data as the Steering Committee moves into implementation?

- The Implementation Planning Framework does not give the details of the adaptive management program; it only outlines the type of elements that would need to be included. There will be time to get into the details of the work.
- DWQ is collecting baseline data on water quality in Utah Lake. The ULWQS Science Panel is also gathering data on sediment chemistry and sediment-water column interface data. DWQ has also been working with partners to gather watershed data, including stormwater data. The watershed model will be calibrated to that data.
- Line 29 in Table 7: Assemble the Implementation Program references the monitoring associated with milestones to track progress.

Is there a deadline for comments on the implementation plan?
The goal of today's conversation is not to finalize this plan. After the meeting, there will be more time for Steering Committee members to provide additional comments and feedback.

Is it premature for the Steering Committee to begin implementation planning, considering that many of the Science Panel studies are not yet completed? Will these incomplete studies impact how the Steering Committee develops the implementation plan?
The NNC development and implementation planning will occur in two parallel but separate paths. In 2023, the NNC and the implementation planning will be brought together. The elements of the implementation planning that the Steering Committee is pursuing now will be helpful regardless of the results of those scientific studies. There are deadlines for finishing the ULWQS in 2024, so implementation planning cannot wait until the NNC is developed.

When will the study on the historical conditions of Utah Lake be completed?
The paleolimnology and paleoecology studies that will identify the historical condition of Utah Lake have been delayed. The labs that process the core data were not operating due to COVID. The expected completion date for the studies is the end of 2022.

The atmospheric deposition scenario indicates that there will be implementation strategies outside the Utah Lake Watershed. How should the Steering Committee members anticipate implementing projects outside of the watershed for that scenario?
Atmospheric deposition is one of the scenarios identified in the Implementation Planning Framework. The ULWQS Steering Committee will have to evaluate optimal approaches for addressing those sources. Ultimately, it will likely come down to a cost-benefit analysis to

determine the relative benefit of wetting dry lake beds to reduce atmospheric sources of dust. These types of projects will be evaluated within the context of the other scenarios.

There is a lot of emphasis in the Implementation Planning Framework on addressing human population growth. How flexible and adaptable is the timeline for developing the Implementation Plan? What happens once the plan is developed, particularly regarding future population growth?

- In terms of population growth, there is a set year for planning purposes (either 2040 or 2060). The timeline needs to be within an appropriate planning horizon for wastewater treatment plants.
- Most of the growth in Utah County is likely to happen in the southern part of the county, where there are smaller treatment plants. If DWQ were to set load limits without accounting for future growth, southern Utah County wastewater treatment facilities would have a higher burden for managing nutrients. One idea to address human population growth is to have a mechanism to give a placeholder load for that growth so that the cost does not fall on the southern facilities. There are also options for impact fees or water quality trading programs as appropriate. These topics are all for future discussion. There is also the option to use new infrastructure funding to incentivize or prepare utilizes within the county to accommodate growth and protect water quality. These incentives can also extend to nonpoint sources and stormwater. Trading has been an effective tool where there are many sources. There are many details to explore to figure out what a trading program could look like. The Implementation Planning Framework recognizes that these elements and programs need to be considered within the implementation plan.

Sediments coming from wildfires in south Utah County are high in phosphorus and resulting in sediment deposition in Utah Lake. These sediments could result in nutrient spikes. There should be mitigation strategies to address these sediment flows into Utah Lake. Are the increased sediment flows from the recent fires in south Utah County included in the Implementation Planning Framework?

- Sediment flows would fall under the nonpoint scenario. However, it may need its own bucket with its own mitigation strategies. DWQ staff will consider how to incorporate and account for increased sediment flows from fires into the Implementation Planning Framework.
- Numerous projects are currently being implemented under the Watershed Restoration Initiative to reduce the sediment flows going to Utah Lake.

Will the ULWQS modeling be used to evaluate Utah Lake management proposals, such as the Utah Lake Islands proposal? Considering that new scenarios will come up over the next couple of years, how will the models address those new scenarios?

- DWQ is not evaluating the Utah Lake Islands proposal at this time because DWQ has not yet received a proposal or technical work.
- The ULWQS models could be used to evaluate future proposals or stressors in the watershed. Maintaining and updating the ULWQS models should be a component of the adaptive management framework so that they have an application beyond the ULWQS.
- The ULWQS models are very complicated, so there may be a need to meet with the technical consultants to simplify the models so that they can continue to be updated and used in the future.
- There is a proposal to establish the Utah Lake Authority. There may be an opportunity to have that body maintain and manage the models depending on its charter. The Utah Lake Authority, if established, will also have funding to potentially spend on implementation.

Steering Committee Member Comments
Steering Committee members provided comments on the Implementation Planning Framework. Their comments are summarized below.

- Table 5: Permit Implementation identifies the need to determine whether permits are based on loads or concentrations. There is interest in pursuing load-based trading over concentration-based trading. The Steering Committee will have the opportunity to discuss these types of considerations at future meetings, including the timeline for load-based trading and permits (e.g., annual, seasonal, etc.).
- There should be a consideration of preserving perennial flows into the Great Salt Lake ecosystem in the Implementation Planning Framework.
- The Great Salt Lake Ecosystem Program continuously updates its ecosystem model. Moving forward, there should be a nding or organizational commitment to maintain and update the ULWQS models to be used in the future.
- Unrelated to the Implementation Planning Framework, the language on agriculture in the introduction of the Steering Committee NNC Technical Framework does not correspond with what is in the management tables. After the meeting, Samuel Wallace will follow up with Jay Olsen to identify some of the proposed revisions around agriculture in the NNC Technical Framework document.

Identified Revisions to Make to the Implementation Planning Framework
The following revisions will be incorporated into the Implementation Planning Framework:

- Clarify that there will be an evaluation of sediment recycling and reflux as a major source of nutrients to Utah Lake as part of the ecological restoration scenarios
- Clarify the monitoring components are necessary and connected to the adaptive management component of the implementation plan in Table 7: Assemble the Implementation Program
- Consider how to incorporate and account for increased sediment flows from fires into the Implementation Planning Framework
- Add language into the adaptive management/monitoring section of the Implementation Planning Framework to consider how to maintain and update the ULWQS models so that they can be used in the future

Public Comment
Members of the public provided comments on the Implementation Planning Framework. Their comments are summarized below.

- Wasatch Front Water Quality Council (WFWQC) is developing a food web model, which will be completed in several months. This food web model could help identify the difference between water column primary production and benthic primary production.
- Restoration efforts that may be of interest to the Steering Committee members are occurring near Timpanogos Special Service District (TSSD).

Steering Committee Polling Results
Steering Committee members filled out a poll to indicate their preliminary level of support for the framework. This poll does not indicate approval for the report.

Based on what you know now, what is your preliminary level of support for the framework?

Response	*Number of Responses*	*Percentage of Responses*
The framework generally seems good.	12	86%
Not sure yet. I would like more time to review the document.	2	14%
I have some concerns with the framework that I would like to discuss.	0	0%

Next Steps for the Framework

- Steering Committee members will have more time to review the document. Samuel Wallace will distribute the Implementation Planning Framework and a tracking spreadsheet for Steering Committee members to leave additional comments and feedback. Additional feedback will be due in early January.
- Steering Committee members should think about what an interim implementation strategy looks like if the legislator allocates funding for Utah Lake management in the short term.

INTERIM CHARGE QUESTION REPORT OVERVIEW

Samuel Wallace, Peak Facilitation Group, presented an overview of the interim charge question reports. His comments are summarized below.

- The purpose of the charge questions is to take stock of the available and forthcoming information that will inform responses to the charge questions, develop preliminary responses to the charge questions, and assess the confidence in their responses based on the quality, amount, and agreement of available evidence sources.
- From late August to late October, Science Panel members volunteered and participated in six subgroups according to their expertise. The six groups developed interim responses to the charge questions by topic. The six subgroups were:
    - Macrophytes and diatoms
    - Historical conditions
    - Sediments
    - Harmful algal blooms
    - Fish, aquatic life, and birds
    - Criteria development
- Tetra Tech provided support to all six charge question subgroups by compiling information to help the subgroups develop responses and assess the confidence of those responses based on existing evidence.
- Most subgroups met twice, and some met three times to develop the interim charge question reports. The Science Panel then received an overview of all the interim charge question reports on October 20.
- Each report begins with a background and approach section that gives an overview of the report's content and the process for developing them. The report will then list the charge questions that the subgroup was responsible for. The next section in the report is the evaluation of the charge questions. The last two sections in each report identify what studies were used to evaluate the charge questions and what forthcoming studies will provide more information to help develop responses.
- For each charge question, there is an evidence evaluation narrative, confidence narrative, and interim synthesis statement. The evidence evaluation narrative describes the technical

analysis for each charge question. The confidence narrative outlines how confidence was evaluated for the response. The interim synthesis statement combines the evidence evaluation and confidence narrative to provide an overview response to the charge question given the available information.

- The Science Panel will revisit the charge question responses in 2023 after completing future studies.
- The Steering Committee will have the opportunity to review the interim charge question reports and provide their feedback and questions. Samuel Wallace will send out the interim charge reports over the next several days and provide a tracking spreadsheet for Steering Committee members to leave their comments and questions. The Steering Committee and Science Panel will then convene for a joint meeting to discuss the reports in mid to late January.

Steering Committee Member Clarifying Questions

Steering Committee members asked clarifying questions. Questions are indicated in italics, with the corresponding response in plain text.

Some of the topics and charge questions overlap with each other. How did the charge question subgroups address overlapping topics?

There is overlap in some of the questions. The subgroups aired on the side of providing more information. If an analysis was relevant to two groups, the analysis was included in both reports. There may be some repetition across the charge question reports because of that. For some questions, the response will refer the reader to another report.

OTHER STEERING COMMITTEE ANNOUNCEMENTS AND UPDATES

Jodi Gardberg, DWQ, provided other updates and announcements relevant to the Steering Committee. Her comments are summarized below.

- Nancy Mesner, Utah State University, retired and left her role on the ULWQS Steering Committee as the alternate for the academia seat.
- Jamie Barnes, Forestry, Fire, and State Lands, has been promoted and left her role on the ULWQS Steering Committee as the alternate for the recreation, fishing, and sovereign lands seat. Ben Stireman, Forestry, Fire, and State Lands, will serve as the alternate for that seat.
- Soren Brothers stepped down from his position on the Science Panel to take a new job in Toronto. As the ULWQS begins to tackle implementation planning, there may be a need for additional expertise on the Science Panel to help inform those efforts.

NEXT STEPS

- Samuel Wallace will send the science panel update document via email to the Steering Committee.
- The next Steering Committee meeting will be a joint meeting between the Steering Committee and Science Panel in mid to late January. The Steering Committee may also meet in February to discuss state legislation and opportunities for interim implementation strategies.