



PUBLIC INFORMATION MEETING

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MEETING GOALS

1. Introduce project (background, purpose, objectives, approach, team).
2. Obtain stakeholder input on issues for the model to address, output necessary for them to make decisions, data sources that could augment model development, and future applications of the model.
3. Answer general inquiries.

Stakeholder input will be used to guide the development of the project. The following represents a summary of discussion. It is not intended to represent meeting minutes.

See presentation slides at:

http://ffsl.utah.gov/images/statelands/greatsaltlake/IWRM/Meetings/PubMtg20150625_final.pdf

INTRODUCTION

Meeting attendees and the project team were introduced. Laura Vernon provided a brief summary of the background and need for the project. This project is an inter-agency effort to understand the interaction of Great Salt Lake (GSL) and its watershed and how those interactions affect the lake's water level and salinity. The project is funded by FFSL but is managed by a Technical Team composed of members of FFSL, UDWR, UDWRi, Utah Division of Water Quality (UDWQ), Utah Division of Water Rights (UDWRi) and GSL Advisory Council.

PROJECT VISION & OBJECTIVES

See project Vision & Objectives summary at:

http://ffsl.utah.gov/images/statelands/greatsaltlake/Vision_Objectives_final.pdf

Carter Borden provided an overview of the project vision and objectives. The GSL watershed and the lake itself are a complex system of interdependent and independent variables. Understanding which and how these variables affect the water level and salinity of GSL has historically been a significant challenge. The intent of this project is to develop a core model that integrates these variables into a tool that state agencies and other stakeholders can use to evaluate scenarios, understand lake and watershed dynamics, be used in planning exercises, and communicate results to the public. This project will not set policy, but is intended to develop a tool that can be used to evaluate policy in the future.

There are many challenges this project needs to address, but the primary challenge will be to balance the level of detail required to appropriately describe the system with the flexibility and accuracy needed to answer the right management questions both currently and in the future. Furthermore, model output will provide valuable input for external socio-economic and ecological analyses important to management of GSL and its watersheds. The model will leverage existing data and models to form a core model that can be used to support current and future management decisions. The model will not include many details but will be built with the flexibility that additional detail can be added in the future. The purpose of the project is to develop a model that describes 1) how changes in the lake/watershed can impact GSL water levels and salinity, 2) how changes affect the lake's resources, 3) provide a foundation for addressing future challenges, and 4) serve as a communication tool.

The project team has been working with the Technical Team over the last few months to understand the issues of concern. Climate, future water diversions, and population changes are considered to be top issues for GSL's watersheds and mineral extraction, infrastructure changes, and ecological stressors are considered to be top issues for GSL. The Vision & Objectives document provides a more comprehensive list of the issues and questions that are foreseen by state agencies for management of GSL. Some key outputs for the model will be to provide a water and salt budget for GSL and its watershed and the water level and salinity for GSL. Help will be needed to confirm current and future needs so that this project's model can be flexible and provide output for other models. One example is a link to the GSL Comprehensive Management Plan and GSL Health Index.

Developing the technical infrastructure (model) is a key part of the project, but understanding the business infrastructure (i.e., how it will fit into the user's business processes) and social infrastructure (i.e., how it will fit into the user's needs and thought processes) are also important. Stakeholder input is critical so that this model provides value to eventual users and will serve as a foundation for future work and decisions. The project team will utilize the project website (<http://bit.ly/gslwrm>), quarterly newsletters via email, and a stakeholder group to keep the public informed and obtain input and feedback as the project progresses.

PROJECT APPROACH

Jeff DenBleyker provided an overview of the proposed approach toward developing the GSL Integrated Water Resources Management (IWRM) model. The GSL watershed is complex and includes many stakeholders with varied needs and opinions. The intent of this project is to distill the characteristics of GSL and its watershed into one core model that can be built upon in the future. Several models have been developed to both describe GSL and separately describe elements of its watershed. The intent of this project is to leverage and integrate these existing models and existing data into a resource that is acceptable for use by the community for making management decisions.

Jeff provided an overview of some of the technical challenges in characterizing GSL and its watershed and the proposed approach to focus initially on building a water balance model that can then be improved to include increasingly

complex water management scenarios. In the end, the intent is to have a model that will allow the user to evaluate various scenarios and understand the lake's response.

Phase I, including project scoping, will conclude this summer (2015). Phase II, including the development of the model), is projected to conclude by the end of summer 2016.

Jeff concluded with a summary of different means of being involved with the project. The public can get updates from the project website. The project team will send project updates to the public via email. Please sign up for the project mailing list via the project website. Stakeholders interested in participating and committing to attend meetings, review documents, and provide input for the length of the project can contact Jeff DenBleyker at jeff.denbleyker@ch2m.com.

QUESTIONS

Jeff fielded numerous questions.

WHAT WILL YOU USE TO CALIBRATE THE MODEL? We will be using available data describing historical patterns in flow and lake response. There are various statistical methods to calibrate/validate a model. We will evaluate the best methods to calibrate as we delve into available data.

WILL THIS PRESENTATION BE AVAILABLE FOR THE PUBLIC TO REVIEW? Yes, the presentation will be placed on the project website.

GIVEN QUESTIONS POSED ABOUT THE ADEQUACY OF WATER USE DATA, WHAT DATA WILL YOU USE? Two findings from the audit were: 1) we don't have enough data, and 2) we need to make an investment to get more and better data. Water agencies have been collecting data as best they can, following industry standards, with the resources they have. This project does not have a budget to obtain new data, thus we will have to rely on the best available data. As more and better data is obtained in the future, our intent is that this model could then be updated to represent the new data.

HOW WILL YOU REACH OUT TO PEOPLE LIVING NEAR THE LAKE? Up until now, we have set up a project website, issued a press release, sent an email to a consolidated email address list used by various state agencies for GSL stakeholders, and facilitated this public meeting. We have identified a number of issues, concerns, and questions that this model could possibly be used to help evaluate in the future. We hope this is a starting point for us to obtain feedback from future model users as to what information, output, or even locations they are interested in. What we hope is that people attending this meeting will help get the word out. We look forward to getting as much input regarding available data, information, ideas, needs, and concerns as possible. This will only make the model better.

WILL THE MODEL BE ABLE TO INCORPORATE AIR QUALITY ISSUES? The intent is for the model to capture rising and falling lake levels. With available bathymetry, the model could possibly be programmed to estimate exposed mudflats and lake area with various ranges of water depth. These could then in turn be used to address air quality and even habitat questions in the future.

WILL YOU INCORPORATE WATER USE DATA FOR IN-LAKE USES? Yes, the intent is to include that as part of the model. Additional data collected can be used in the model, but that is not part of this study and will need to come from another source/study. We are asking for any data that stakeholders can provide to help make the model more representative of the actual system and operations.

WILL YOU INCLUDE RESERVOIR OPERATIONS? Reservoir operations are very complex; they can vary daily depending upon circumstances in the watershed. We hope to characterize overall operations but how we do that will depend upon available data, input from stakeholders, circumstances in each river basin, and how they fit into the model.

HOW DETAILED WILL THE WATERSHED COMPONENT OF THE MODEL BE? We are working to define that right now. We hope to build upon existing water balance work that UDWR has developed for its planning areas. This work looks at what the available water is, how much of it is consumed and what returns to the river system. Using these planning area should allow us to address how climate, land use, and population dynamics affect stream flows and thus, inflows to GSL.

WILL YOU ADDRESS EVERY TRIBUTARY? Jurisdictional boundaries do not always follow watershed boundaries. Existing models typically include key locations where jurisdictions change or flow information is known or needed rather than incorporating every tributary. It is unlikely that we will include much more detail than existing models already do, however it would be helpful to know from stakeholders if specific areas need to be addressed. The intent of this model is to be a solid foundation for future work. We cannot incorporate all details nor do we want to. We do not want the model to become so complex that it becomes unwieldy. However, understanding what areas and needs are of interest up front will help us to try to build the model with the flexibility required to incorporate those in the future.

WHAT DO YOU EXPECT THE TEMPORAL RESOLUTION FOR THE MODEL TO BE? Available models and data are in many different resolutions spanning from daily to annual. The desire is to have a model that is useful at a daily level knowing that we will have to resolve differences among datasets.

ARE THE USGS GSL MODELS A GOOD STARTING POINT? Yes, we intend to build upon the most recent versions of the USGS model. The two 2014 versions, one built to evaluate the Union Pacific railroad causeway modifications and the other to evaluate proposed evaporation basin expansions as part of the U.S. Army Corps of Engineers Environmental Impact Statement, began from the same USGS model. Both of these 2014 models underwent significant review and scrutiny. While they are not perfect, they provide an excellent starting point.

WILL THE MODEL BE USEFUL FOR EDUCATING UPSTREAM USERS OF DOWNSTREAM IMPACTS? Yes, the model is intended to help the user understand these interactions.

DISCUSSION

Carter Borden led a guided discussion for the last segment of the meeting revolving around several questions asked of the audience. It was noted that this project entails the initial development of the model and thus the suggestions and requests offered by participants may not be realized in this instance of model development. That said, by knowing potential requests the development team can construct the tool to have the flexibility to accommodate future functionality.

WHAT OUTPUTS ARE DESIRED FROM THE MODEL?

- The model should provide an accurate response to changes in land use.
- The model should capture the timing of water delivery as a function of land use changes, potential changes in climate.
- The model should evaluate changes in water quality due to development. How much of the inflow to GSL is from effluent or storm water runoff vs. stream flow?
- The model should determine the quantity of exposed lakebed due to different water levels.
- The model should include documentation of the source and quality of data used for the model (metadata).
- The model should incorporate economic impacts of changes to GSL, e.g., fees, royalties, cost of water.
- The model should incorporate biochemical indicators for water in GSL. A particular example provided was the use of the GSL by migratory birds.
- Link model to GSL comprehensive management plan

HOW COULD MODEL RESULTS BE PRESENTED?

- Time series, i.e., hydrograph
- Annual average values
- Map of lake inundation that changes with changing water levels
- Daily time series output aggregated to monthly, seasonal, yearly values
- Probability of the aggregated values for comparison with average values
- Consult technical specialty groups (e.g. biologist) for their output needs

DATA, FUNCTIONALITY TO BE INCLUDED IN THE MODEL?

- Reservoir operations (physical dimensions and operations)
- The model should be able to look at evaporation rates as a function of salinity
- The model should consider hydrogeological impacts to the lake

- Question: how far up the river will the rivers in the watersheds be simulated? Answer: the intent is to attempt to capture the entire watershed.
- Standardized input format for introducing other data and simulation output into the model