

CHATFIELD STORAGE REALLOCATION PROJECT

TECHNICAL ADVISORY COMMITTEE (TAC)

TAC RECOMMENDATION DOCUMENT – No. 10

SUBJECT: Reservoir Water Quality Model Annual Report Schedule

Date: October 19, 2018, Revised December 17, 2018

Purpose:

This document provides the reasoning for requesting the CSRP TAC to change the submittal schedule for the annual water quality modeling report. This revision to Recommendation Document No 10 incorporates changes to the annual water quality modeling report schedule based on comments made at the October 19, 2018 TAC meeting. The TAC's concern was that October was too late in the year to make adjustments in management actions to correct any water quality problems identified and directed the RMCC to consider other options.

Background:

The FVEIS Adaptive Management Plan states: *Water quality monitoring would be implemented at Chatfield Reservoir to allow for initial and ongoing application of a dynamic water quality model and assessment of reservoir water quality conditions for compliance with water quality standards.* (AMP, p. 19). Specifically, Modeling Objective 1 notes that:

Modeling Objective 1 – *Annually apply the dynamic Water Quality Model to Chatfield Reservoir to assess water quality impacts from Reallocation and report the findings.*

- *Water quality monitoring, modeling, and results will be included in an Annual Water Quality Modeling Report...that includes the results from data obtained from the monitoring and modeling, assess the information, and identifies potential water quality impacts resulting from reallocation.*
- *The modeling report shall be presented to the TAC by no later than March 1 of the year following the year the monitoring report addresses [emphasis added]. The TAC will review the report and make recommendations to the PCT regarding water quality assessment findings, significant impacts, and potential mitigations measures.*

Requested TAC Action

The CRMC requests TAC review and approval of a schedule change for the modeling report due date (see underlined text above) to allow time for the monitoring data to be checked for quality assurance, the reservoir model to incorporate the data and evaluate the results, and the annual water quality monitoring and modeling report to be prepared.

Request Rationale

Submittal of the annual water quality modeling report requires compilation of the data, incorporation of the data into the model, and preparation of the report, which is discussed further below.

Annual Water Quality Data. Considerable amounts of water quality data is collected by several agencies throughout the calendar year, which needs to be compiled into a single Excel spreadsheet. The data then goes through an extensive quality assurance and quality control evaluation. In addition, when new data is collected for the purpose of reservoir modeling, the new data needs to be correlated with other past results to allow the new data to be incorporated into the model, which takes additional time. As the result for instance, the 2016 and 2017 data was not available until April and late May, respectively, of the following year.

Reservoir Model Analysis. The reservoir modeler will then incorporate the new annual data into the reservoir model, make several computer runs, then analyze the results by comparing to previous results. Analysis includes evaluating changes in water quality parameter trends and values.

Annual Water Quality Monitoring and Modeling (WQM&M) Report. Once the reservoir model analysis is complete, the chapter in the Annual WQM&M report must be prepared by the CRMC incorporating Hydros Consulting analysis and reviewed by the RMCC before submitting to the CRMC TAC.

Reservoir Model Coordinating Committee (RMCC) Recommendations. The RMCC considered the TAC request made at the October 25, 2018 RMCC meeting. The RMCC determined that the purpose of the modeling report was to identify possible management action(s) in response to the following conditions:

- A water quality standard was not met in the prior year and was the result of the CSRPs;
- A trend in water quality parameter(s) indicates that a standard may not be met in future years and was the result of the CSRPs.

To meet these objectives, the RMCC evaluated four options:

1. Provide an interim report by March 1st based on provisional data, then a final report by October 1st
2. Use the most current data in the model and provide a “projection” of water quality parameters in an interim report by March 1st, then a final report by October.
3. Analyze the most current data, without the model, and provide an interim report by March 1st, then a final report by October 1st using the model.
4. Change monitoring and modeling report schedule based on water quality data from November 1st through October 31st of the previous year.

Option 4 is recommended by the RMCC as follows:

Change the monitoring and modeling reporting schedule to a monitoring-year¹ (i.e.: November 1st through October 31). Water quality data will be made available to Hydros as early as possible, but no later than January 1st and the Monitoring/Modeling report will be submitted to the TAC as early as possible, but no later than May 1st.

In making this recommendation, the RMCC considered the following:

¹ Since the proposed schedule is based on monitoring data from November 1st through October 31st to capture possible late reservoir turn over events, the time period is not a water-year and, hence is referred to as a monitoring year.

- Water quality uncertainties identified by the FR/EIS (i.e.: increased internal loading, shoreline erosion, and vegetation in the fluctuation Zone) may increase nutrients and negatively impact water quality standards for Chlorophyll a, total phosphorus, and total maximum annual load. The reservoir water quality model was specifically developed to address these uncertainties. However, the model can address these concerns based on data that does not include the entire calendar year.
- Water quality uncertainties identified by the FR/EIS (i.e.: expanded hypoxic area related to metals and e-coli) are addressed by the monitoring data collected for these parameters, and not the reservoir model. Therefore, these uncertainties are addressed by the monitoring data, not the modeling results.
- Runoff season typically starts around May 1st, so having model results using the previous year's data by this date is a reasonable compromise and is still timely for evaluating management actions in the AMP, if needed.
- Reservoir model sensitivity analysis suggests that water quality may be degraded by the CSRП during the first year or two, but conditions may be unaffected or even improved during the following 2 to 3 years. Therefore, over time and after storage begins the reservoir model will have incorporated sufficient monitoring data to evaluate possible water quality impacts from the CSRП.

Referenced Documents

FR/EIS, Appendix GG (Adaptive Management Plan), July, 2013

RMCC October 25, 2018. *RMCC Meeting Notes*.

Hydros Consulting August 9, 2018. *Chatfield Reservoir Water-Quality Modeling Project Task 5: Sensitivity Analysis Results – Draft*.

Requested TAC Action

The TAC is requested to approve the change in submittal date for the annual water quality modeling² report from March 1st to no later than May 1st of the year following the year the modeling report addresses.

TAC Recommendation

The TAC recommends changing the required submittal date for the annual water quality modeling report from March 1 to May 1st of the year following the year the modeling report addresses.

TAC Voting

The TAC members in attendance voted on this Recommendation, in accordance with the TAC Charter Section C. The vote tally was 11 votes to “agree”; 0 votes to “accept”; and 0 votes to “reject” the

² Effective 2018, the CRMC annual water quality monitoring and annual water quality modeling reports are combined into one report called the Annual Water Quality Monitoring and Modeling Report.

Recommendation. The recommendation is based on the total votes for “agree” and “accept”. TAC adopted voting procedures also require that any Member voting to “reject” a recommendation to propose alternative(s) for consideration to move the issue forward.

TAC Rationale

The believes that there will be sufficient data available to assess potential impacts of the CSRP on reservoir water quality by analyzing data from November 1st through October 31st from the previous year and that there will be sufficient time to consider and evaluate management strategies should the reservoir model analysis suggest water quality impacts from the CSRP.

On behalf of the TAC:



Kris Wahlers

Chair

Barbara Biggs

Vice-Chair

Recommendation. The recommendation is based on the total votes for “agree” and “accept”. TAC adopted voting procedures also require that any Member voting to “reject” a recommendation to propose alternative(s) for consideration to move the issue forward.

TAC Rationale

The believes that there will be sufficient data available to assess potential impacts of the CSRP on reservoir water quality by analyzing data from November 1st through October 31st from the previous year and that there will be sufficient time to consider and evaluate management strategies should the reservoir model analysis suggest water quality impacts from the CSRP.

On behalf of the TAC:

Kris Wahlers
Chair



Barbara Biggs
Vice-Chair