DELTA STEWARDSHIP COUNCIL
A California State Agency

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May 26, 2015

Felicia Marcus, Chair
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812-0100

Re: Science for the Emergency Drought Barrier and Bay-Delta Drought Activities

Dear Ms. Marcus:

Thank you for the opportunity to address the Board at the May 20, 2015 workshop on Drought Activities in the Bay-Delta. As mentioned at the meeting, the Delta Science Program is in discussions with the Department of Water Resources, the U.S. Geological Survey and others regarding the opportunities to augment currently planned monitoring of the Emergency Drought Barrier installation at West False River in the Delta. The installation of this barrier and the unusual Delta flows anticipated for the remainder of this year present a unique opportunity to advance our understanding of the Delta, to provide critically needed information now and to guide barrier installation in future years. The Delta Science Program offers the following recommendations for enhancing the currently planned Emergency Drought Barrier monitoring program:

1) Require development and implementation of a monitoring program specifically designed to assess the occurrence and abundance of *Microcystis* and other harmful algae in the Delta with a focus on areas affected by altered flows from the Emergency Drought Barrier.
2) Require a plan for application of advanced multidimensional models utilizing high frequency data to study the effects of drought activities on Delta flows and water quality. This will provide detailed information on altered water quality (including salinity), residence time of water and flow patterns due to the Barrier. These studies should aim to understand the location, dynamics, and characteristics of the low salinity zone and "X2" and to obtain more accurate estimates of Delta outflow. A collaborative structured modeling effort using a range of simple and sophisticated models could give you guidance in future years for management decisions as well as for the level of monitoring and modeling sophistication necessary for these decisions. This collaborative effort could be used to make predictions of conditions later in the summer and generate quantitative estimates of uncertainty. This plan should describe supplemental monitoring such as additional transects guided by the modeling results that are

essential for predicting the change in the low salinity habitat and Delta outflow. Innovative ideas or critical questions for management could be explored as this plan is executed. For example, *could salinity intrusion to the Delta in the current drought be controlled more effectively through a strategic pulse release of flow compared to a steady constant release?* Current understanding of the physics of the flows indicates that a smaller total volume of water would be required, but modeling is needed to quantify this potential savings in water. The analysis would determine whether pulse releases might be more effective during neap or spring tides and how pulse releases could be timed to be most beneficial to fish responses. A collaborative modeling approach would allow a consolidated analysis, recommendations from a range of models with estimates of uncertainty, and if necessary, an explanation of differing model findings.

3) Require support for rapid access to critical flow, water quality, and ecosystem data while the Emergency Drought Barrier is in place and for timely synthesis of the information gathered in the form of a report designed to inform future management decisions.

The Delta Science Program will continue working with the agencies, institutions, and stakeholders interested in learning from the drought conditions to identify opportunities to add to the body of scientific knowledge supporting Bay-Delta management decisions including the Board's updates to the Bay-Delta Plan. We stand ready to assist the Board in this extremely challenging period in the history of the Bay-Delta system.

If there are questions about these recommendations please contact Sam Harader, Program Manager, Delta Science Program at (916) 445-5466.

Sincerely,

Peter Goodwin, Ph.D.
Lead Scientist, Delta Science Program
Delta Stewardship Council

cc: Diane Riddle