# EXHIBIT A

## Executive Summary

We propose a collaborative investigation of blooms of the toxic, cyanobacteria *Microcystis* in the San Francisco Estuary Delta including how blooms develop, identification of toxic species and strains, controls on toxin production, and foodweb effects. The research will address Delta Science Program Priority Research Topic 2 and Research Topic 5 in the CALFED-funded analysis of ammonium issues in the Estuary. The appearance of *Microcystis* in the Delta was coincident with the POD, suggesting a link. The spatial and temporal scales of *Microcystis* blooms was identified with their environmental covariates but a mechanistic analysis of the conditions that distinguish bloom periods and locations, which are critical for ecosystem modeling and management, are still lacking. Our objectives are to determine: **1-** the biotic and abiotic factors controlling *Microcystis* bloom formation and toxin production; **2-** how *Microcystis* strains and microbial associations influence toxicity; **3-** the role of *Microcystis* in the Delta pelagic food web and its effect on the POD through zooplankton grazing. Our 3-year work plan comprises 2 years of laboratory and field work (contrasting bloom and non bloom locations). Experiments will be conducted to determine mechanisms driving observed *in situ* patterns. We will synthesize the results and clarify the environmental-bloom-food web effects in a useable format for management efforts aimed towards water supply, fisheries and recreational use of the Delta.