J. Thompson (presenting), U.S. Geological Survey, 345 Middlefield Rd., MS 496, Menlo Park, CA 94025 650-329-4364 Office 650-329-4327 Fax jthompso@usgs.gov, K. Gehrts, Division of Environmental Services, California Department of Water Resources, 3500 Industrial Blvd, West Sacramento, CA 95691 (916) 375-4825; (916)-376-9688 Fax kagehrts@water.ca.gov, Fax. Parchaso, U.S. Geological Survey, 345 Middlefield Rd., MS 496, Menlo Park, CA 94025, (650)-329-4586 Office (650)-329-4327 Fax parchaso@usgs.gov, and H. Fuller, Division of Environmental Services, California Department of Water Resources , 3500 Industrial Blvd, West Sacramento, CA 95691 (916) 376-9821; 916-376-9688 Fax hfuller@water.ca.gov

Going with the flow: the distribution, biomass and grazing rate of *Corbula* and *Corbicula* with varying freshwater flow (May and October 2009-2011)

Abstract: Biomass and grazing rate have been estimated for bivalves from more than 200 stations throughout the North Bay and Delta in spring and fall 2009-2011. The distribution and magnitude of *Corbicula* and *Corbula* biomass in the estuary showed that at least one of these species was found at most locations. The two species overlapped within the eastern end of the low salinity zone (LSZ) in spring, with the exact location of the overlap being determined by freshwater outflow. *Corbicula* had slightly higher biomass in the LSZ in 2011 than in 2009 and *Corbula* had lower biomass in 2011 than in 2009 as expected if the distributions are determined by salinity. Coincident with increased freshwater flow in spring 2011 was an increase in *Corbicula* biomass in the Cache Slough region but the rest of the Delta had either a slight decrease or similar *Corbicula* biomass in spring 2011 relative to spring 2009 and 2010. *Corbula* declined in spring 2011 in Montezuma Slough in particular, but maintained low biomass beyond the confluence into both the Sacramento and San Joaquin Rivers. *Corbicula* biomass in fall was slightly higher in 2010 than in 2009 and was higher in the lower San Joaquin River and throughout the Sacramento River in 2010, the wetter year. *Corbula* had larger biomass values and occurred further up the rivers in 2009, the drier year, than in 2010. Fall 2011 samples are being processed and will be presented. Grazing rates, derived from biomass, were sufficient to reduce and possibly limit phytoplankton biomass accumulation throughout the LSZ in fall 2009 and in the central and western region of the LSZ in fall 2010. Spring grazing rates had the potential to limit phytoplankton in the eastern LSZ in 2009 (*Corbicula* grazing) and in the western LSZ in 2010 (*Corbula* grazing).

Statement of Relevance: Understanding when and where bivalve grazing on phytoplankton, bacteria and microzooplankton may limit the food for and the number of larvae of secondary producers in the pelagic food web is critical to our understanding of food web function and of how grazing by bivalves may contribute to the POD.