Public Comment
Desalination Amendments
Deadline: 8/19/14 by 12:00 noon

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SWRCB Clerk

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EVERY DROP MATTERS and every desal site is individual and needs to be fully analyzed as per CEQA for environmental impacts.  A site that can not work with Alternative 1 in Biological section should not be considered; should be ruled out as a place to put a desalination plant.

Every, absolutely every! other means of increasing water supply must be exhausted before desal even looked at as option. All strategies for conserving and recycling water along with storm water , off-stream storage and rainwater cachement must be deployed before we get into exploiting and further degrading
the nearshore environment.

All the questions raised by the following  need to be answered before we expedite desal:

**8.6.1 Effects of Brine**

Waste discharges from desalination facilities have the potential to form dense, non-buoyant
plumes that settle and spread along the seafloor.  Passive discharge of raw or undiluted brine is
highly discouraged because of how slowly it will mix in the receiving waters, if at all. (Roberts et
al. 2012)  Studies have shown exposure to the brine and other potentially toxic constituents in
the desalination effluent can have deleterious effects on bottom-dwelling marine life. (Crockett
1997, Talavera and Ruiz 2001; Gacia et al. 2007; Latorre 2005; Del Pilar Ruso et al. 2007;
Riera et al. 2012; Roberts et al 2010)  These effects include: osmotic stress or shock, the
potential formation of hypoxic or anoxic zones, endocrine disruption, compromised immune
function, acute or chronic toxicity, and in extreme conditions, death.  Some organisms may
move away from areas with high salinity or hypoxia, which will change the structure of the local
community (Roberts et al. 2010), but sessile organisms will not be able to move away from the
impaired water body and may experience more severe effects.

Other organisms have physiological or behavioral changes that occur as a result of environmental cues like changes in salinity.  Migratory fish like anadromous salmonids begin their lifecycle in freshwater and move into seawater as juveniles. Increases in salinity concentrations trigger morphological, biochemical, physiological, and behavioral changes in the fish to prepare them for their pelagic life stage. (Björnsson et al. 2011) These fish also rely on lower salinity concentrations as a cue to adapt to freshwater conditions when returning to their nascent spawning habitat. Brine discharges into salmonid habitat have the potential to interfere with the normal salinity adaptations that occur in the fish. (Roberts et al. 2012) Another study showed that flatfish generally avoided hypoxic environments and would only utilize habitats within a restricted range of suitable temperatures and salinities. (Switzer et al. 2009)

Monitoring studies have found that salinity can have a range of localized environmental effects, particularly when brine is discharged into poorly flushed areas like coastal lagoons or embayments. However, there is a need for additional field and laboratory data to measure the

environmental effects associated with brine discharges. Most laboratory studies have focused on short-term chronic salinity toxicity associated with Whole Effluent Toxicity testing (WET), for which there is limited information on sub-lethal endpoints associated with reproduction, endocrine disruption, development, and behavior of benthic invertebrates and vertebrates. Additionally, existing WET studies have focused on the salinity of brine discharges, but have not addressed acute and chronic effects from different types of concentrates and mixtures of membrane treatment chemicals (antiscalants) associated with RO. (Roberts et al. 2012; Phillips et al. 2012) Antiscalants are typically used in desalinating seawater; however, chlorine or other chemicals may also be used at facilities to reduce biofouling. (Roberts et al. 2012)