

## Shoemaker, Brianna@DWR

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**From:** Ben King <bking@pacgoldag.com>  
**Sent:** Monday, February 14, 2022 3:35 PM  
**To:** California Water Commission  
**Cc:** Ben King  
**Subject:** Comment for " A State Role in Supporting Groundwater Trading with Safeguards for Vulnerable Users: Finding and Next Step"  
**Attachments:** DWR and BOR Draft Water Transfer White Paper Excerpt.pdf; DWR 2013 US Geological Society Abstract Relating to Sacramento Valley Base of Fresh Water.pdf; USGS Sacramento Valley Ground Water Quality Status Report Table E5.pdf

Dear California Water Commission,

Thank you for all your work and effort in developing the Groundwater Trading White Paper of January 19, 2022. I wanted to submit a few comments on the White Paper from my perspective as the manager of a family farm based in the Colusa Subbasin that has been in operation since 1860.

I want to commend the California Water Commission and Staff for all the hard work and the development of the White Paper but I also wanted to highlight two very important issues that unfortunately are not addressed in the White Paper and unfortunately seem material to the findings and implementation Groundwater Trading in the Colusa Subbasin in particular.

One area that is not addressed is how the Groundwater Trading proposals is how groundwater extractions from groundwater substitution and conveyance under the Warren Act would be affected and how these existing programs may affect the long term sustainability and resilience of our fresh groundwater aquifers. I want to point out that some of the issues regarding groundwater substitution are addressed in the Draft Technical Information for Preparing Water Transfer Proposals dated December 2019 prepared by California Department of Water Resources and the Bureau of Reclamation, Mid-Pacific Region ("Draft Water Transfer Paper")

The other area that is not addressed in the White Paper is a mechanism for ensuring that water quality sold and purchased via extraction is of sufficient quality such as the system can not be gamed or arbitrated and/or will not have adverse consequences. A working market can not exist unless the good or service has minimum quality standards otherwise economic and/or environmental consequences will either result in unpaid windfalls or adverse social costs. Groundwater Trading markets must also have minimum quality standards and a mechanism to monitor and enforce these standards. Perhaps the monitoring and measurement water quality standards in the Draft Water Transfer Paper would be informative for the water quality discussion. I want to point out that the DWR has been working on new Base of Fresh Water contour maps for the Sacramento Valley at least since 2013 which were not made publicly available for the development of the Groundwater Sustainability Plans in the Sacramento Valley ( see attached Abstract). The DWR mentions the observation of "**artesian pressures and upward vertical gradients in deep aquifers**" and "**that migration of poor quality water into continental sediments that previously contained freshwater has occurred over geologic time. This finding has implications for brackish and saline water upconing beneath areas of prolonged groundwater pumping in the Sacramento Valley.**" To the extent that Groundwater Trading increases extraction in areas where there is vulnerability due to the observed upconing of degraded water the adverse outcomes will be material and irreversible. To the extent this process is gradual in the context of geologic time the long term sustainability of the Sacramento Valley subbasins are at risk because Measurable Objectives and Minimum Thresholds will be increasingly more difficult to maintain. The Measurable Objective for the Colusa Subbasin is 700 umhous/cm and the Minimum Threshold is 900 umhous/cm. The Draft Water Transfer Paper water quality standard is the same 700 umhous/cm.

Another subpart of the water quality issue concerns is the effect of Redox as the result of upconing of previously anoxic groundwater. One exposed to oxygen, naturally occurring contaminants such as arsenic desorb from the salt water solution in a high pH environment and the contamination is irreversible. As a point of observation I have included Table E5 from the USGS report "Status of Groundwater Quality in the Southern, Middle and Northern Sacramento Valley Study Units, 2005-08: California GAMA Priority Basin Project , Scientific Investigations Report 2011-5002. Finally although not directly water quality related , I would like to mention that parts of the Colusa Subbasin is experiencing subsidence which is assumed to be connected with over pumping – some discussion of how to incorporate the subsidence risk is also included in the Draft Water Transfer Paper.

Thank you for your time and consideration.

Sincerely,

Ben King