From: Kraus, Tamara <tkraus@usgs.gov>
Sent: Monday, January 5, 2026 5:57 PM
To: Delta Council ISB <disb@deltacouncil.ca.gov>
Cc: Christina Michelle Richardson <cmrichar@ucsc.edu>

Subject: Comments on Science to Inform Management of Subsided Lands in the Sacramento-San Joaquin Delta

Dear Delta ISB,

Please take into consideration the information in these papers to inform your review of "Science to Inform Management of Subsided Lands in the Sacramento-San Joaquin Delta". I apologize that we missed the Dec. 30, 2025 due date for comments.

Mercury:

Ackerman, J. T., Kraus, T. E. C., Fleck, J. A., Krabbenhoft, D. P., Horwath, W. R., Bachand, S. M., Herzog, M. P., Hartman, C. A., & Bachand, P. A. M. (2015). Experimental dosing of wetlands with coagulants removes mercury from surface water and decreases mercury bioaccumulation in fish. *Environmental Science & Technology, 49*(10), 6304–6311.

- Page 6310 compares THg concentrations in biota living in rice fields to wetland and canals "*This outcome highlights the potential for MeHg production within wetlands relative to canals, but it is also important to note that all the experimental treatment wetlands had significantly lower THg concentrations in mosquitofish than in the main drainage canal for Twitchell Island. Moreover, THg concentrations in mosquitofish were substantially lower (63% lower at field centers) in the experimental treatment wetlands than in the reference rice fields, which were the other main wetland habitat type at Twitchell Island. Indeed, fish within shallowly flooded rice fields are known to have elevated Hg concentrations relative to other wetland habitat types.(17) Overall, 62% of mosquitofish in rice fields at Twitchell Island exceeded a proposed dietary benchmark for behavioral impairment in piscivorous birds (0.10 μg/g ww29), and 27% exceeded a proposed dietary benchmark for reproductive impairment in piscivorous birds (0.18 μg/g ww29), compared to only 3% and <1%, respectively, of mosquitofish in the experimental wetlands.*"

Constituent exports from subsided islands - product of constituent conc and discharge

Carbon: Richardson, C. M., Fackrell, J. K., Kraus, T. E. C., Young, M. B., & Paytan, A. (2020). Lateral carbon exports from drained peatlands: An understudied carbon pathway in the Sacramento–San Joaquin Delta, California. *Journal of Geophysical Research: Biogeosciences, 125*(12), e2020JG005883.

Nutrients and race elements: Richardson, C. M., Fackrell, J. K., Kraus, T. E. C., Young, M., & Paytan, A. (2022). Nutrient and trace element contributions from drained islands in the Sacramento–San Joaquin Delta, California. *San Francisco Estuary and Watershed Science, 20*(2), Article 5.

Following publication of these two papers, the USGS in collaboration with Christina Richardson at UC Santa Cruz collected additional water quality and flow data from Twitchell and Staten Islands in 2022-2024 under a Prop 1 funded grant. We have not yet published papers on those results, but we presented preliminary findings at the 2024 Bay Delta Science Conference and IEP Workshops. For that study, we had hoped to capture land-use changes on Staten Island as it transitioned from corn production to wetlands and rice cultivation, but unfortunately the planned wetland construction was delayed. However, we were able to track the land use change to rice on Staten Island and compare it to more traditional farming (corn), which revealed a few interesting preliminary findings that may be of interest. Below are a few highlights :

-Prliminary analysis indicated dissolved inorganic and total organic carbon exports in drainage from Staten Island increased nearly two-fold with rice (this does not include dissolved CH4 fluxes), attributable largely to substantial increases in water discharge (drainage) from rice. As the Delta expands rice acreage, this could result in changes in carbon loading from islands to receiving waterways, which will also be quantitatively important to include in carbon accounting budgets in the Delta (but is currently missing). We expect this to impact other constituent fluxes as well.

-Pesticide profiles in drainage from Staten Island are shifting with rice as different types of pesticides are required compared to corn. More generally, we have found a few different pesticides at concentrations that exceed EPA benchmarks at our three drainage monitoring sites.

Let us know if you would like additional information for your report,

Tamara (Christina cc'd)

Tamara Kraus

Biogeochemistry Group | USGS California Water Science Center

Placer Hall | Sacramento State Campus | 6000 J Street | Sacramento, CA 95819

530-304-9260 | tkraus@usgs.gov