ELKHORN SLOUGH
NATIONAL ESTUARINE RESEARCH RESERVE
1700 Elkhorn Road, Watsonville, CA 95076
Phone (831) 728-2822, Fax (831) 728-1056

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Peter Kozelka
U.S. EPA, WTR-2
75 Hawthorne St.
San Francisco, CA 94105

Dear Mr. Kozelka

This letter provides comment on the proposal to de-list Tembladero Slough ("Salinas Reclamation Ditch", Northern Monterey County, Region 3) as nitrate-impaired (303d).

I wish to make a few simple points relative to this proposal.

1) Nitrate concentrations in Tembladero Slough are the highest, on average, of 24 stations we sample monthly for water quality (see attached figure showing this).

2) Annual nitrate maxima at Tembladero Slough must be extremely high; we only spend five minutes per month at each site and thus are unlikely ever to be present during the true annual maximum, especially since we avoid heavy rainstorms. Yet even the annual maxima we document are very high (see attached figure).

3) The waters of Tembladero Slough empty into south Moss Landing Harbor at Potrero Road. Recent studies by K Johnson et al. of the Monterey Bay Aquarium Research Institute using an array of in-situ nitrate sensors have clearly shown that spikes of nitrates detected after rainstorms near Potrero Road can be traced up the length of Elkhorn Slough in subsequent hours, and are still clearly detectable at their farthest station near Kirby Park about a day later.

4) Modeling of nitrate sources to the Slough by Johnson and colleagues suggests that the waters entering at the Potrero tidegates (which include Tembladero Slough waters as a main constituent) comprise by far the majority of nitrate entering the Elkhorn Slough proper.

5) Elkhorn Slough is an extremely rich yet threatened ecosystem. It hosts rare habitat types such as salt marsh and mudflats, migratory shorebirds, flatfish nurseries, and hundreds of invertebrates and fish. It also supports human uses, including kayaking, birdwatching, hiking, fishing, and clam-harvesting.

6) There is an extensive literature demonstrating negative effects of nitrate enrichment on estuarine ecosystems and their human uses. These can include increased algal biomass that in turn decreases infaunal invertebrate abundance and in shorebird feeding. Increased nitrate concentrations have also been shown to harm eelgrass beds and in turn the commercially valuable flatfish that use them. These studies have been conducted almost entirely in systems with much lower levels of anthropogenic nitrate enrichment than is found in Elkhorn Slough.

7) Tembladero Slough itself does not currently host much rich wildlife, given its high nitrate concentrations, but we have ample historical evidence that this was once a thriving estuarine channel, hosting waterfowl, marsh plants, and fish. It is now treated as an agricultural ditch, but it has potential to eventually be restored to its prior ecosystem function.

8) There are proposals under serious consideration to build a desalination plant in Moss Landing. The proposals have involved using the intake of the power plant cooling system, but timing operation of the desalination plant to maximize freshwater intake; e.g. at low tide. The freshwater that this refers to comes largely from Tembladero Slough, emptying into Moss Landing Harbor at Potrero Road, as described above. Thus drinking water standards may be extremely relevant to this water body, and yet they are clearly exceeded.

Based on the above, I strongly recommend that Tembladero Slough continue to be listed as nitrate-impaired, and that efforts continue to focus on improving water quality in this region.

Cordially,

Kerstin Wasson

Kerstin Wasson
Research Coordinator, Elkhorn Slough National Estuarine Research Reserve and
Adjunct Professor, Ecology and Evol. Biology, University of California, Santa Cruz