

1 I, Erik Ringelberg, do hereby declare:

2 I reviewed relevant publicly available documents associated with the California WaterFix
3 Petition for a change in point of diversion. I assessed these documents for their description of
4 potential project impacts on Discovery Bay and its water quality.

5 In my opinion that the Petition is deficient in several regards as it applies to demonstrating
6 that there would not be impacts to users of water in Discovery Bay. In general the Petition fails to
7 adequately identify the full range of project's potential significant impacts on those water resources;
8 and, failed to examine those impacts at a sufficient level of detail to understand the project impacts
9 on those resources.

10 The project would shift the point of diversion-, subject to an undisclosed management plan,
11 and as yet described adaptive management from the current southern intakes to the proposed
12 northern intakes. The timing and relationship of that shift is not clear, but appears to be predicated
13 on fisheries issues and water quality for export drinking water standards. Since the operational
14 diversion ratios and timing are not clearly defined it is difficult to determine project impacts but
15 several of the key project elements lead to obvious water quality conclusions.

16 CWF proposes to remove significant percentages of Sacramento River influence in the
17 central and south Delta by shifting diversions to new north Delta intakes from the existing south
18 Delta intakes. This has two effects: removing that fraction of Sacramento River-derived outflow to
19 the west which forms a salinity barrier, and reducing the freshening influence of the internally
20 circulated flow. By reducing freshwater circulation and changing other flow dynamics in the South
21 Delta, residence times will increase, and salinity intrusion will likely become a factor based on the
22 Rock Slough data identified by the Petition and the CCWD Settlement.

23 These conditions seem likely to create or exacerbate a backwater effect that reduces the
24 beneficial mixing from the Sacramento River which then alters sediment deposition creating ideal
25 conditions for fish predation, aquatic weed promotion, and consequently reduced dissolved oxygen
26 and increased temperature, while diminishing water quality.

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1 The Petition completely fails to identify or analyze the potential for the project to create or
2 to exacerbate impacts to human health and the environment from blue-green algae (cyanobacteria)
3 and their toxins, within Discovery Bay.

4 Blooms of cyanobacteria can create toxicity and also reduce the dissolved oxygen content in
5 a water body, and block sunlight needed by other living organisms. The spread of cyanobacteria
6 presents public health issues because potent toxins found in many strains of cyanobacteria cause
7 symptoms in both animals and humans, ranging from vomiting, rashes, headaches, and diarrhea to
8 liver failure and even death.

9 Although not addressed at all in the Petition (DWR 1-3) the project is likely to create
10 localized flow conditions that are likely to significantly exacerbate algal and aquatic weed growth.
11 Toxic (and non-toxic) aquatic invasive plants can lead to many potential environmental problems
12 created by the project both in the near-term and cumulatively. Reducing the flow of Sacramento
13 River water through the Delta and concentrating the drainage of the San Joaquin River affects the
14 dilution and the mixing of nutrients. Nutrient-rich agricultural return flow from central valley farms
15 is highly concentrated in the San Joaquin River. The nutrient load of waters in and around
16 Discovery Bay will increase. These project-generated effects amplify conditions that are suitable for
17 toxic and non-toxic invasive aquatic plants. Several weeds that could be, and are likely to be,
18 increased by this project, such as Spongeplant^{1,2} (*Limnobium laevigatum*), Tamarisk (*Tamarix*
19 spp.); and perennial pepperweed (*Lepidium latifolium*), (Brazilian water weed, arundo,
20 water-milfoil, Himalayan blackberry, etc.) and other species that clearly also pose a potentially
21 significant impact to water quality, but not identified in the analysis of impacts.

22 Reducing the amount of Sacramento River water that flows through the Delta and into and
23 around the area surrounding Discovery Bay will also alter water temperatures, likely resulting in
24 warmer water and fewer incidences of very cold water. These conditions encourage population
25 growth of the Asiatic clam, an invasive species present in the Delta.

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28 ¹ http://www.cal-ipc.org/resources/news/pdf/Cal-IPC_News_2011Spring.pdf

² http://www.leginfo.ca.gov/pub/11-12/bill/asm/ab_1501-1550/ab_1540_cfa_20120409_123649_asm_comm.html

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Executed at Sacramento, California, August 31, 2016.

s/Erik Ringelberg