



## KLAMATH IRRIGATION DISTRICT

6640 K.I.D. LANE

KLAMATH FALLS, OREGON 97603

Phone: (541) 882-6661 Fax (541) 882-4004

13 February 2023

House Committee on Agriculture, Land Use, Natural Resources, and Water  
Chair Ken Helm  
Vice-Chair Annessa Hartman  
Oregon State Legislature  
900 Court St. NE,  
Salem, OR 97301

RE: Testimony in opposition to House Bill 2647 with amendment 1

Chair Helm, Vice Chair Hartman, and Members of the Committee:

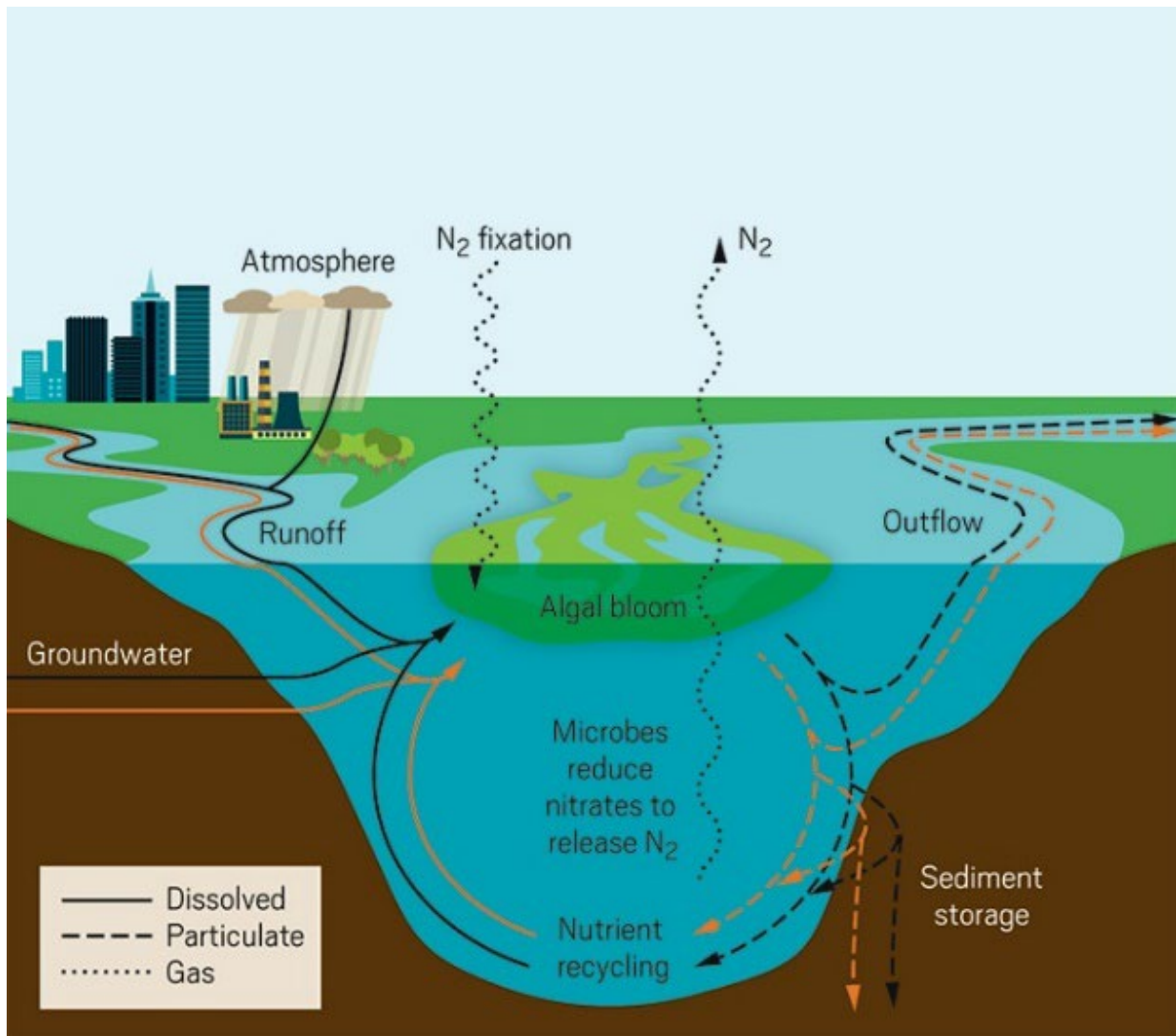
Klamath Irrigation District (District) is in opposition to HB 2647 as amended. Klamath Irrigation District is a special government district operated under Oregon Revised Statute 545. The District is responsible for distributing the naturally nutrient rich waters of the Klamath Basin to agricultural farm land for beneficial use.

**HB 2647 significantly increases government costs to monitor, report, and reduce known natural sources of phosphorus, sulfur, and nitrogen in the volcanic areas which are rich in nutrients which enable and promote algae blooms. Improving water quality above natural conditions is a very expensive endeavor which unnecessarily affects the core element of the ecosystem.** The bill as presented requires the expenditure of taxpayer resources to “develop strategies for reducing pollutants that contribute to the occurrences” without isolating from management known or suspected natural sources of nutrients, **without addressing other alternatives** which can increase water quality, **and without required input from Oregon Water Resources Department, nor the Department of Agriculture, nor Oregon’s Department of Fish and Wildlife.**

Algae is the oldest organism on earth which feed upon the natural nutrients in our watersheds. Blue-green **algae** (*Microcystis aeruginosa*) **is endemic in the Klamath Basin and is integrated in the sediment of all the water bodies** in the Basin. These algae control their buoyancy using a microscopic gas-filled vesicle. The algae can suspend themselves and range in depth from the bottom of the lake to the surface depending on the amount of sunlight available combined with the amount of nitrogen and phosphorus present. When there is a lot of sunlight and nitrogen available, the algae float to the surface of the water column in a lake. When the algae is pushed to the top it is no longer ‘out of sight and out of mind’. Studies indicate blue-green algae are uniquely able to naturally ‘fix’ tremendous quantities of nitrogen and phosphorus through their robust nitrogen-cycle during photosynthesis. This is outlined in the study published at <http://plankt.oxfordjournals.org/content/23/12/1399.full>

During the 2023 Sucker fish Technical Symposium held at the Oregon Institute of Technology on 15 February and hosted by Oregon's Department of Fish and Wildlife, Russ Franklin suggested that **invasive carp species of fish are depleting the natural plant resources which absorb nitrogen and phosphorus which the algae feed upon**. Invasive carp are likely a source of the problem which is ignored in this bill as they are not a "point source" of "pollution."

Naturally occurring algae are often unseen when their growth is limited due to limitations in nutrients (and sunlight), which must be shared by many other plants and organisms that utilize many of the same nutrients. Algae have the ability to migrate vertically within a column of water, they spend much of their time below the surface of the water and out of sight until nutrient levels exceed the other natural plant's ability to absorb it. When the ecosystem is in balance, in locations where the invasive carp species have not eaten all of the plant material which absorb a great deal of the natural nitrogen and phosphorus from the inflow to our lakes and reservoirs, algae is often not seen as a problem.



In the historical record, the waters of the Klamath were never reported as clear. The earliest records of surveyors to the Klamath Basin indicate the waters of the Upper Klamath Lake's water quality were so poor the horses and dogs would not partake, even in the warm conditions. During an expedition to the region in the early 1840's John C. Fremont would not allow horses to drink from Klamath Lake at Rattlesnake Point because of the foul water quality (Fremont, 1845). In the Journal of George Gibbs, while with the Indian Treaty group of Colonel Redick McKee in October 1851, he recorded the Klamath River water quality was so bad in the autumn that one should seek out creeks for fresh water. Gibbs further states the water was "tepid and unfit for use."

On 14 August 1855, Lieutenant Henry L. Abbot, leading an exploration party to survey a line for a proposed railroad running north from the Sacramento River to the Columbia River commented the "dark color" and "disagreeable taste" of the waters of Klamath Lake. Abbott's team camped in the vicinity of Cove Point for a few days. His report goes on to state, "the taste of the water was so disagreeable that several vain attempts were made to discover a spring in the vicinity...a wide field of tule prevented approach to the water...the water taken from the lake had a dark color and a disagreeable taste, occasioned apparently by the decayed tule."

Jim Waddell, of the Karuk Tribe, recalls late members of his family stating, "The Klamath River was not of good quality, especially in the fall. It had times of the people shoving rotting salmon back into the river to get rid of the stink!" Before dams, another name for the Klamath was Stinking River. Stretches of the upper Klamath River would often go underground in the summer, leaving the aquatic life to rot in the sun. The upper Klamath is also naturally poor habitat for salmon and steelhead, as it starts out warm and rich in phosphorus in the marshes and volcanic rock of south-central Oregon. Phosphorus feeds algae and makes for low-oxygen conditions that are bad for salmon.

The "impurities" of Upper Klamath Lake's water became the focus of a 1905 controversy in Klamath Falls regarding possible "disease laden ice." One Klamath Falls citizen commented "there is no pure ice in Klamath county ... the waters of the lake are not fit to drink ..." while another held that "the ice on the Upper [Klamath] Lake runs a chance of being infected with the flotsam and jetsam of that great body of water. A great many fish of the sucker species die and float into the waters of the lake, which give a chance for impurity." (Causes and Effects of Nutrient Conditions in the Upper Klamath River) "Dick" Breitenstein (born 1878) records that as a teen, he "used to work on the Ankeny ditch (established 1878 as an early irrigation ditch cut along Link River, through Linkville, and then along the area now known as "A" Canal in 1884) shoveling muck" from the lake out of the canal. Indicating the source of water from Upper Klamath Lake was not pristine. (Klamath Echoes Volume 1, Pages 28-29 )

Judge U.E. Reeder (sometime between 1895 and 1905) reports, "We always tried to haul lumber to the Lower Lake in the spring when the water was running through the Straits into Lower Klamath Lake. And in the fall, we hauled hay [north] through the

Straits into the [Klamath] river, when the water was draining out of the Lower Lake.” This indicates, late summer/fall water, in very shallow conditions of Lower Klamath Lake and marshes, heated by the hot summer sun, with significant evaporation, was flowing heated water into the Klamath River at the Keno Cut while minimal to no water from Upper Klamath Lake was making its way past Keno. (Klamath Echoes Volume 2, Page 18 )

In 1908, A.T. Sweet and I.G. McBeth of the U.S. Reclamation Service reported, “The water in this lake is quite shallow, but a deep deposit of floating sludge and black muck lies below it. This sludge is often piled in spots by the movements of wind and water, obstructing navigation.”

Reclamation’s management of Upper Klamath Lake elevations since 1992, and specifically since 2001, appear to have created dead-zone elevations that prevent lowering the lake to natural elevations in the fall, which only compound nutrient levels year over year by allowing the nutrients captured by the algae to settle into the sediment instead of flushing them out of the lake, thus reducing the load.

This government body should be utilizing the State resources to enable ideas such as those presented by Frank Rogalla, Director of Innovation and Technology in the 2019 documentary Brave Blue World at 21:30 of the video available at [https://www.documentaryarea.tv/video/Brave%20Blue%20World/?fbclid=IwAR33IWUViwdl04kEZPubDfHxejK4qJlnT-O-FiizLSt\\_uIRMziNP7dqULjQ](https://www.documentaryarea.tv/video/Brave%20Blue%20World/?fbclid=IwAR33IWUViwdl04kEZPubDfHxejK4qJlnT-O-FiizLSt_uIRMziNP7dqULjQ)

Furthermore, HB 2647 fails to account for existing work and authorities related to algae blooms, and proposes a simplified solution to a complex problem that requires diverse expertise and stakeholders as explained in testimony by The Oregon Farm Bureau and others.

HB 2647 requires the expenditure of government funds and resources to record and report on information which is already known. Numerous studies have been performed which identify the natural source of the nutrients in the Klamath basin. At this time, the technology to reduce natural nutrients entering Upper Klamath Lake is unattainable and beyond the economic reach to improve the water quality of the Klamath Basin above natural conditions. Furthermore, historical approaches of dilution to mitigate pollution will likely negatively impact the Klamath Project.

Therefore, Klamath Irrigation District must oppose HB 2647 as amended.



Gene Souza

Executive Director

Klamath Irrigation District