To *The Productivity Commission re: MDBP.* ***27 November, 2023.***

Details: In brief, my second Submission is the result of a much appreciated 50 minute pm telephone conversation with PC **Senior Water Advisor, ; 22 November 2023.**

``Here-in, I present a reduced **Submission Review**; additional to my first ***Submission No 100*** with its 30 Attachments. Nevertheless, the undersigned found it degrading and a loss of self-respect for others and myself, given that the ***PC*** did not include anything in their replies about the critical ***Sth Australian Lower Lakes.***

Of huge significance, these lakes and their use literally effects thousands of growers & nearby residents, together with numerous businesses also found in four towns facing the Lower Lakes. Many recall distinct acid dangers during the Millenium Drought, with a severe lack of covering water (both fresh or ocean), that quickly became the catalyst for allowing oxygen to reach dried acidic soils, to where it mobilised into dangerous sulphuric acid across the Lower Lakes and lower Murray River region. Upstream,"In-take pipes below Murray Bridge, as raw water feeders to Onkaparinga and Adelaide systems, were too close to a tragety for comfort! "There exists more than 80 major drinking water supplies state-wide, where nearly half of these either directly or indirectly draw from the Murray River. (Ref: **SA Water *"River Murray-Water & Environment)***."

Today, we face possibility of further drought and no sign of treatment water ahead? During the Millenium drought, the *Dept. Environment & Water* in SA refused to allow a few inches of ocean water upstream past the barrages. However, it was apparent the Dept. was not conversant with controlling acid mobilisation, with the use of ocean water. The SA *Dept Environment & Water* did claim a minor acid irradication trial, but it was not successful for them when using ocean water; leaving the state in a quadary that came close to equaling Qld's acid laden ***Trinity Bay*** horror; with its successful 23 year irradication of 120,000 tonnes of sulphuric acid, found to be pouring into the Pacific Ocean at 190 times its natural state, from its disturbed 774 hectare mangrove swamp.

For comparison,SA's Lower Lakes acid bed extends over 840Sq km, together with acid bearing soils found in the bottom of creeks and ana-branches, as a result of pyrite leakage from Mount Lofty Ranges where pyrite contamination extends north of Adelaide to Kangaroo Island.

Pyrite was mined NE of Nairne township until 1972. Due to the Millenium Drought, Sth Australia's ***Lower Lakes*** and river beds were badly contaminated with sulphuric acid until welcome rainfall in the catchments, resulting in minor Murray River flows covering some of the Lower Lakes aquatic beds that overall, contained an estimated 500 million tonnes of acidic soils found in underlying acidic muds, *"where frequent acidic drainage is considered common, according to* ***Ref: Brukunga Pyrite Mine in SA.Reviews conducted since closure in1972.***

But, there's more tothis; its valid and its amply covered with extensive photographs on request!

Residents *were* frustrated and concerned when discovering mobilised sulphuric acid flowing through cracked, dried out muds in nearby creeks, the Goolwa channel and along the edges of receeding Lower Lake beds during the Millennium drought. They were concerned about safety and their health with concerns in particular, when strong winds across dry channel beds such as those along the Goolwa Channel for weeks on end, where beds should have been covered with water (ocean water- brought through the Goolwa Barrage), knowing full well there was more than enough free ocean water to do so? During a long period without water, aircraft aerial spreading of crushed lime commensed & continued across visible acid, followed by planting of a type of unknown vegetation. From an onlooker perspective, nothing used todate had any affect with irradication. My colleague Scientist, Ian Rowan BCs Hon and your writer requested an investigation by EPA with automatic air filters to measure dusty sand and acid laden silt being blown onto homes and people. Doctor appointments increased while property acid damages where reported. All the while, upstream food growers either struggled or completely stopped, or finally departed. River banks below

Murray Bridge collapsed with 4 homes abadoned in Sturt Reserve due to a metre-wide crack appearing underneath each home while 5 vehicles further downstream were lost due to river bank collapse and never found afterwards. Weeks later in Goolwa, we're told an earthen regulator was to be built across the Murray River from Clayton to Hindmarsh Island, to harness and regulate any of the minor down river flows behind this earthen dirt bank to be stored and piped over the top, to supply regulated flow downstream towards Goolwa and its dried channel bed in Goolwa.

Meanwhile, freshwater in Lower Lakes have a distinct connection with every up-river food grower/ from the Darling River, Menindee Lakes, the Murrumbidgee & Murray Rivers, and the Goulburn and Loddon rivers. Other includes SA and its interstate water storages. The ***Lower Lakes*** hold **2018GL** of ***Murray River*** Water. Albeit, there's a massive downside with these lakes with evaporation levels reaching 950GL/yr (Ref:Dept Environment & Water FAQ's millenium drought)) during cooler weather with levels reaching above 1000GL's/yr loss during extremely hot temperatures during summer. It's worth mentioning how the Lower Lakes in extreme temperatures can lose almost half of its water capacity. The Dept, also brings to notice the disconnection of wetlands with exposure of up to 20,000 hectares of acid sulfate soils and increased salinity levels with parts of the Coorong becoming five times saltier than the sea. Thats bad enough until one realise how peak levels of river water held in the Lower Lakes are worth more than $14.5 Billion dollars. Furthermore, the Deptments FAQ paper above also tells how 2,029 tonnes of finely crushed limestone, from Robe in the Sth East was hauled in at great cost and appliede by air. A further 1978 tonnes werer applaide as acid barriers while 6,580 ha of land was vegetated either by machine seeding by air, or by land and even hand planting.

And so, the SA Department was against opening the barrages to let the ocean in when it decided that the introduction of seawater had an even more serious impact and would irreversibly damage the RAMSAR site.**Ref**: FAQ, *Dept Environment & Water.*

Truth today! **The above is not so! It's in science, applied when returning Queenslands Trinity Bay to a "healthy estuary with a low cost strategy, called "lime assisted tidal exchange."**

So, for starters, how much expensive river water is used from the Lower Lakes, and by how many licensed food growers in one year. I asked the ***SA Dept of Environment & Water*** for answers for the two questions. For the 2019-20 year, 166 licensed growers used a combined 21.37GL from a combined entitlement of 21.186GL. (**Ref.**single page attached:***DEW:WL Data Requests via.sa.-gov.au.***)

And typically, because the barrages don't have accurate water flow measuring guages and the last guage used is some 275km at Lock One; then we're unable to really report where all of the remaining river water in the Lower Lakes is used, perhaps lost, evaporates or finishes up in the Northern Lagoon of the Coorong and for what its worth, to clear the Murray Mouth.

Then we have questions concerning salt collection and how much of this water is used to transport the salt into the sea. Truth is, the salt through-out the basin rivers are only found in the water column unless all of the water evaporates so that the salt sits on the bottom. Similar to methods used with commercial salt gathering. Salty Ocean water is just the same, and it doesn't precipitate until the salt load is ten times that of the ocean.

Current predictions for South Australia's sea level rise is at least 30 centimetres by 2050, and one metre by 2100. This may lead to a transition of the Lower Lakes to a estuarine system by the end of the century. According to (ref:***Lower Lakes & Coorong Recovery Fact Sheet***). Sea level to rise 30cm by 2050 and one metre by 2,100.

Footnote: It beggars belief that one basin state continues to waste freshwater in the Lower Lakes, when food security suffers and food grower numbers reduce every day.

Ken Jury, Senior Investgative Journalist in Marine & Aqautic Ecology from GOOLWA SA.