



Date: July 30, 2020

Re: Yakima River Basin Enhancement

Commissioner Anderson,

The Yakima County Farm Bureau continues to stress the great importance of building additional water storage and transferring Columbia River water to the Yakima Basin.

The YCFB thank you for forwarding the information from Ecology. We find Ecology's title revealing: Counting Every Drop and we would suggest a better strategy towards water management in adopting the concept of "Saving Every Drop". There is an important distinction which we offer to illustrate.

Ecology points out that agriculture utilizes the greatest amount of water amongst water users but ignores the fact that it is an unavoidable necessity of nature. Plants have physiological water requirements and you can ignore those needs at the certainty of not having a harvest or in the extreme, plants simply dying.

Farmers raise their crops in the outdoor conditions that on a day like today where the thermometer is breaking 100 degrees. I am sure we can all relate to what a struggle that becomes. Consider tending to your lawn, shrubs and/or garden at your home in these conditions, then shift to a large farm and think about it on that scale. Further, our soils are generally permeable in the substrata, which further complicates keeping plants hydrated since applied water tends to be leached below the root zone.

As to the difference between "Counting Every Drop" vs. "Saving Every Drop", allow for a moment to focus on a single drop of water. In Ecology's thought process a "drop of water counted" that does not enter an irrigation delivery or a water storage facility delivery system but rather continues along its tributary and flows directly into the ocean is considered a "win". We count it as a loss. In contrast, the YCFB believes in "Saving Every Drop".

In "Saving Every Drop" the YCFB believes that the return of fresh water to the ocean should be delayed for as long as possible whether it is used by agriculture, municipal or domestic use, wildlife or stored. Flows for fish and hydroelectric power generation must be accounted for but fresh water is precious and the ocean which covers 7/8th of the world's surface has a most abundant supply. In fact the YCFB is aware that there is concern in certain circles that the world's ocean levels are feared to rise at an alarming degree relatively soon. Thus we believe there are abundant reasons to slow the eventual march of fresh water away from land and Ecology's idea of "Counting Every Drop" which allows fresh water to escape as quickly as it runs off to be most counter-productive.

The YCFB believes that the water that moves below the root zone and canal leakage is not lost but banked as ground water, captured by the next farmer down the line geographically or eventually added back to the stream flow **but in a special way**. (We will come back to that in a bit)

An additional note about ground water recharge via irrigation facilities: In Southern Idaho there is a large scale indirect ground water recharge project underway. The project involves utilizing the existing canal system to convey excess winter water flows from the Snake River to points where the permeability to the substrata is high and then allow the excess water to percolate into the ground water aquifer that has become depleted. It is reported to be most successful.

Conventional sprinklers operating at relatively high pressures lose water through vaporization (particularly during high temperatures and low humidity) but even that loss is not fully egregious because the water that evaporates from one landscape which stays over land can and often does become another's fresh water through additional precipitation. Plants also transpire water and it also evaporates from the soil surface adding to the repatriation of atmospheric moisture.

What we have just described is a phenomenon known as the hydrologic cycle. Environmentalists have discarded if not buried that concept but it is rooted in reality and has been a well-known and important process.

Conservation has its own inherent limitations. The cost of more sophisticated watering systems is often prohibitive and generally only pay with high end value crops. The quality of your water also must be factored into the equation. Soils or water sources with salt contents, not just sodium but calcium or other salts as well are a real stumbling block, at a minimum requiring a conventional water system along with the micro system be retained and functional. Establishing new crops also often also requires a conventional watering system be left in place in order to hydrate the soil surface to germinate seeds and allow them to sufficiently root to the extent that drip irrigation can sustain them.

Many pests are destructive to micro irrigation systems as well. My brother had a small grape planting and was irrigating it with a small drip system. He was quite frustrated when a local coyote discovered water in the dripper lines meant to water the grape plants. The coyote would systematically chew repeatedly and gain drinking water thus damaging a considerable span of plastic tubing each time it wanted to refresh itself.

I recently spent over an hour by phone with an area representative for Netafim (a drip irrigation component manufacturer) discussing my desire to try and test a small pilot Subsurface Drip Irrigation (SDI) on my Alfalfa. Gophers are a bane to drip in field crops because they dearly love to chew through buried drip lines. He told me that fully 20% of the hay growers in California recently walked away from their SDI test fields due to frustration and failure in controlling their gophers. Besides pest issues, SDI requires a huge investment in infrastructure and the cost ranges up to about \$2,500 per acre (a pivot cost less than a \$1,000 per acre). Inputs such as sulphuric acid must be injected with the water such that the pH is maintained at 6.0. In contrast my irrigation water supply is about 8.2 (7.0 is neutral) and it would take a large supply of that powerful acid (and expensive) to sufficiently treat my water. Beyond the acid issue, SDI has a tendency to plug from fine soil particles trying to enter the emitter locations and the life expectancy of the dripper lines is not long enough to pay for the investment.

It is far easier to point out the perceived advantages of these conservation measures as a bureaucrat in located in a climate controlled office in Olympia than it is for a farmer to attempt implementation of them in Eastern Washington, risking crop failure or greatly added skilled labor requirements and then face explaining an unfortunate situation to one's Banker.

An interesting fact was explained to me a few years ago by a Fish Biologist for the Yakama Nation. It involves the existence of water passing beneath lands that has entered former creek and river beds now buried under subsequently formed deposits of alluvial fill. As the water enters these hidden water pathways, a species of fresh water Krill reproduces there. These Krill become abundant and productive in the sheltered environment because the fish that feed upon them can-not reach them. That changes if and when that water is naturally re-introduced into a stream with fish. Something else occurs though that is even more profound in periods of warm or hot temperatures. The water re-introduced is also much cooler than the stream since it has been naturally refrigerated by its underground travel. The fish are drawn to these locations by the then available Krill and the cool water. The term "Cold Water Refuge" (CWR) applies here. The water in these underground passages is provided through leakage from stream beds and deep percolation of "lost" irrigation water from farm systems and canal leakage.

The water "lost" by agriculture also feeds many wet lands, keeps springs alive and recharges ground water aquifers. The fresh water does not simply vanish. It is recycled, over and over again until it finally finds the ocean and has to make its way back to land as fresh water once again through precipitation.

For decades, the Yakima Basin Agriculture community has been asking for serious storage additions and the answer has been more water for fish and municipal interests and "conservation" for farmers. We have been waiting a very long time and we have been conserving all along. The time for added storage and transfers from the Columbia River is long over-due. Empty promises of deferred action are not enough. Renewed calls for further conservation with trendy catch phrases such as "Counting Every Drop" are not productive.

In our previous meeting with you, we asked to meet again but the Covid-19 pandemic has derailed that. We still look forward to more normal conditions and being able to get back to solving problems related to our industry. Our State Farm Bureau does have a program in place for virtual meetings and they charge the County FBs their cost making it a reasonable alternative at this time. Perhaps that could factor in towards making progress sooner?

Thank you again

Mark Herke
President Yakima County Farm Bureau