

An evaluation of KWO's "Conserving and Extending the High Plains Aquifer"

By
Scott Yeargain

This document (the Conserving and Extending document) has logical and factual problems, in my thinking, which both the KWO and the KWA ought think about prior to KWA approval at its May 18th meeting.

Reasoning problems:

There seems to be an argument structure in the top paragraph, p. 5. Here it is:

1. The HPA supports an extensive agricultural complex including irrigated crops, a large cattle and dairy industry, meat packing plants, and biofuel plants in Kansas.
2. Research has shown that the value of water, as measured in revenue generated, continues to increase for irrigated crops with more efficient crop water management, higher yielding crops, and higher prices.
3. A separate economic study completed in 2013 by the Kansas Department of Agriculture showed that statewide revenue for irrigated and dryland corn was 513 million and 43 million dollars, respectively.
Therefore:
4. Clearly, water resources are an important linchpin of the local and statewide economy.
Therefore:
5. Thus, we should all strive to ensure that groundwater and surface water will be available for future generations of Kansans.

There seem to be two conclusions, one an intermediate conclusion, then the general encompassing conclusion. Here are the problems with this argument structure: the conclusions seem to reference all Kansans and all waters in the state. But the premises relate to only waters used in agricultural applications. Here is a paraphrase of the argument: All Kansans should support water conservation because Kansas agriculture, especially irrigated agriculture, needs water and Kansas agriculture generates state revenue. This reading of the argument is supported by the leading sentences of the very next paragraph: "As the population continues to grow, there is a need for more crops, cattle, and energy. Each of these requires water for production." The logical structure is weak because the water needs of irrigation-agriculture and CFOs in the HPA area of Kansas are not sufficiently established to warrant the water conservation and preservation efforts of all Kansans.

This argument's inference is weak and the premises of the argument are easily doubted. If one remembers the truth about development of irrigated corn and cattle feedlots in the HPA area of Kansas, then he would not write an argument like that above, would not embrace a policy which links water conservation to human population increase through more irrigated corn, more cattle, and more energy which requires water for its production.

Why this argument fails

1. We need not conserve water in the HPA area for “more energy.” Green energy production, wind and solar, electrical production require no water. Nuclear energy production requires large quantities of water for cooling and for steam production; many coal-fired plants use large quantities of water to cool the steam and to control pollution from the plant. For the HPA area to continue to generate vast quantities of electrical energy, no conservation of water is required.
2. Irrigated corn became common in the HPA area with commencement of a regime of pumping water from the HPA and water rights; prior to development of these regimes, Kansas HPA agriculture was dryland crops (wheat and grain sorghum) in rotation with fallow periods.
3. Large cattle feedlots in the HPA area grew out of the decline railroad terminal delivery and the availability of large quantities of irrigated corn in proximity to the proposed feedlots and cheap Hispanic labor.
4. So, the HPA made it possible to develop large corn crops and large cattle crops in the HPA area. And both of these industries have greatly depleted the HPA. The proposed policy (as written in this document, Kansas Water Plan, Conserving & Extending the High Plains Aquifer) supports continuing both industries by subsidies from Kansans because (a) as our population of humans grows we need “more crops, cattle, and energy,” because (b) irrigated corn yielded \$513 million in statewide revenues.
5. We do not “need” more irrigated corn and more cattle to support a growing human population. In large measure irrigated corn produced in Kansas is used in three ways: exported to other countries, ethanol production, cattle feed. Ethanol production is water intensive, hence antithetical to the goal of water conservation and is a continuation of a deleterious cycle of synthetic fertilizer-soil degradation-impaired waters-aquifer depletion; when corn is exported, essentially the HPA is exported in the corn, which is antithetical to conservation of the HPA; cattle are not in any practical sense required for a healthy Kansas diet and when exported to other states are essentially an export of the HPA. Hence, the meaningful premise remaining for support of cattle and irrigated corn in the HPA area devolves to \$513 million in statewide revenues.
6. The failure here, in KWO’s plan, is a failure to provide an economic analysis of:
 - a. How much of the cited \$513 million in state-wide revenue from irrigated corn has its source from the HPA;
 - b. Whether this revenue is net or gross;
 - c. This cited revenue stream apparently does not include an accounting of ancillary costs which are direct consequences of irrigated crop production: fertilizer runoff to surface waters as documented in Kansas’ 2020 303(d) List of All Impaired and Potentially Impaired Waters; the entirety of state and local costs associated with 303(d) impairments; local and state costs associated with TMDL exceedances caused by CAFOs and fertilizer runoff; WTAP and CREP state funding costs linked to irrigated crops in HPA areas; costs associated with EQIP and cost share funds with the state’s Irrigation Technology Initiative.

7. In sum, the KWO's Conserving and Extending the High Plains Aquifer Plan is a paeon to growing irrigated corn in the HPA area in Kansas, to CAFO cattle operations in this area, to the lobbying efforts of the Kansas Livestock Association, the Kansas Corn Growers Association, and to the Kansas Farm Bureau. And it is this without providing any balanced financial analyses of alternative policy postures which the state might take, for instance:
 - a. Diminishing financial and policy support for cattle and irrigated crops in the HPA area and increasing support for green energy. Evidence indicates that every 1,000 MW of wind energy conversion in Kansas results in \$1.08 billion in economic benefit, 3.2 million tons of CO2 reduction, and 1.8 billion gallons of annual water savings;
 - b. Supporting policy which has as its purpose to grow crops and animals consonant with annual precipitation patterns in HPA areas, that is, support which does not require large state subsidies (WTAB, CREP, EQIP, ITI, TMDL mitigation, 303(d) mitigation); and this can be accomplished in concert with policy in (a) just above;
 - c. Farmers are under constant pressure to increase crop and animal production and both processes create a deleterious cycle of nutrient loss from soil which in turn accelerates a pattern of increasing application of synthetic fertilizers to soil to replace such losses. In 1950 the US applied 15 times the amount of potassium, 4 times the amount of phosphorus, 36 times the amount of potassium to cultivated fields relative to what was applied in 1900. We used 3 times more fertilizers in in 2005 than we used in 1975. In 1960 the nitrogen application rate in the US averaged 17 lbs/acre/year; in 2007 nitrogen was applied at a rate of 82.5 lbs/acre/year. (My source is the EPA.). The total application of fertilizers on cultivated crops in the US was 46 lbs/acre/year. By 2004 the total application rate was 146 lbs/acre/year. (https://cfpub.epa.gov/roe/indicator_pdf.cfm?i=55). Increased production from soil does not mean increased fertility of soil because without humus, which contains negatively charged particles, the cations are leached from topsoil and therefore out of reach of plant roots. These cations are pulled by negatively charged nitrates deeper into the soil, then into groundwater and surface water where, in surface water, they facilitate the growth of algae, a crop actually produced by farmers as a consequence of their current practices. The Pillango Project is a 2,697 acre project in Wallace county, Kansas which is on course to break this deleterious cycle of cultivated crops, synthetic fertilizer, 303(d) impaired water, by keeping living roots in soil year-round, maximizing plant diversity, integrating livestock not for the purpose of harvesting but for tromping plant matter into soil. I think this project is soon to become a 13,000 acre project. (Search Pillango at: regen.network). (Also see: The Provenance Company, Lawrence, KS). One of the goals of the Pillango project is to build back soil animals and humus. Consequences of doing so are: precipitation goes into soil rather than running off soil, carbon is sequestered, surface water and ground impairments are diminished by applying absolutely no synthetic fertilizers.

In conclusion, I am just disheartened to read this (KWO's "Conserving & Extending..." document. There are some good things here, and I know damned well after all these years of working both on the Kansas Vision document and the Marais des Cygnes RAC that there are very many intelligent, well-meaning people at the KWO and the KWA. Still, this document pays too much homage to the deleterious regime of crop and animal production which brought our home (Kansas) to (1) 96% rate of impairment for assessed lakes; (2) 84% impairment for assessed stream miles; (3) 99% impairment of assessed wetlands for recreational use and aquatic life; (4) a chronically diminishing high plains aquifer. The science here is clear. What's missing is the moral courage and strength of character to both say what's true and do something about it. Things damned well need be changed.

Scott Yeargain
Member, Marais des Cygnes RAC