



Ergs, Joules & Such

Notes on Energy Savings for the Rural Water Community and Maybe Others

As we are currently reviewing National Rural Water Association “White Papers”, I thought this month we would look at Climate Change. This topic seems to rear its ugly head periodically and currently is receiving some press. It was a really hot topic a few years ago and NRWA commissioned a thorough look at the subject through its white paper series.

Dr. Fred Pontius (with the American Water Works Association) did this work and his evaluation is in four pieces: 1) an extended Executive Summary detailing the main points of the evaluation; 2) a side-by-side comparison in tabular form of the positions taken by the International Panel on Climate Change (IPCC) and their supporters versus scientists with opposing viewpoints; 3) a full paper discussing in detail all the issues involved; and, 4) eleven appendices providing backup documentation of the items discussed in the full paper and the Executive summary. Let’s look at most of the summary points Pontius makes in his Executive Summary (paraphrased for brevity):

- ❖ Small water systems should assess their infrastructure and strategically plan to provide potable water to their

customers under reasonably expected long-term weather changes and extremes. In most respects, planning for climate change is no different than conventional water resources and emergency planning;

- ❖ Small water systems must consider that because of natural variability, the weather experienced in a particular area (especially rural areas) may or may not follow general global, country-wide, or regional trends;
- ❖ Existing IPCC computer models are limited and do not produce sufficiently reliable results to be used for strategic planning or assessing climate change impacts at any geographical scale (e.g., local utility, regional, national, global);
- ❖ Temperature changes are greater in urban areas due to the Urban Heat Island Effect (UHIE). The UHIE does not appear to effect atmospheric temperatures in rural areas;
- ❖ Climate change science is by no means settled, including the role of CO₂. Indeed, carbon footprints will likely have no relevance to future weather variability experienced by small and rural water systems;
- ❖ Any federal legislation and/or regulations to control GHG emissions using a cap- and-trade system, carbon tax, or other means that raise the cost of energy will adversely affect small and rural water systems by forcing increases in water rates with little or no measurable benefit.

It’s clear from Fred’s work and looking at the literature that there is much uncertainty and scientific controversy about this subject. In fact, in my fifty-plus years of technical experience, I don’t believe I’ve ever encountered an issue with as much associated ambiguity. My personal recommendation is that any system contemplating action based on climate change predictions exercise due caution and review this white paper evaluation carefully.

One final bullet point from the aforementioned Executive Summary says it pretty well. It is:

- ❖ Avoid drawing conclusions based on extending science beyond what is known or can be reliably tested.

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What's all this talk about TMDL's?

Inasmuch as I have previously discussed the makeup of a typical small wastewater system, let's follow it up with the current hot topic in wastewater – the TMDL process. A recent author, Bill Kramer, has completely a timely white paper for us on this subject entitled "Assessing The Impact Of Current And Future TMDL Designations On Small Wastewater Systems". The report is available on the National Rural Water Association Web site at <http://www.nrwa.org/benefits/whitepapers/TOC.htm>

First of all, what is this TMDL business? It (Total Maximum Daily Load) is an integral part of the Clean Water Act provision that requires each state to report biennially on the quality of their waterways by assessing whether each water is meeting its intended use and listing those that don't (non-attainment) on an impaired waters listing. Corrective actions for these impaired waters can include imposition of a TMDL on affected waterways resulting in strict limits on discharges of pertinent contaminants into that waterway. A common outcome of such restrictions is the requirement for a community to install a new or improved treatment plant. Other serious impacts can include restricted growth in an area with attendant economic stress.

The EPA maintains consolidated information on impaired waters in a national database named ATTAINS. By evaluating the data in this resource, Bill Kramer found:

- ❖ Monthly sewer rates could increase as much as 624 percent as a result of TMDL required actions;
- ❖ As of September 2009, there were 38,222 TMDLs on the books with more than 200,000 more projected when all non-attainment waters are assessed;
- ❖ The number of potential small system upgrades resulting from TMDL designations is estimated to exceed 12,000;
- ❖ The cost of these upgrades would be in the order of \$80 billion;
- ❖ Five pollutant groups – pathogens, mercury, metals other than mercury, nutrients and sediment account for about 80 percent of the

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TMDL impairments with organics, pH, temperature, salinity and ammonia accounting for the remainder;

- ❖ Non-point sources of the above pollutants are by far the biggest culprits in this scenario with municipal sources being the least offensive;
- ❖ From the small wastewater system standpoint, it is important to note that of the various possible sources of pollutants, municipal treatment plants that include small wastewater systems are the least in magnitude; Unfortunately, these sources are frequently perceived as the biggest problem;
- ❖ Of the assessed waters in the US, nearly all water types are reported to have over 50 percent impairment.

It is worth noting in closing that the recent flurry of publicity and concern about nutrient criteria in Florida and elsewhere emphasizes the importance of the TMDL issue to the water community. Water managers, especially those responsible for wastewater systems, would be well advised to become familiar with and involved in this process in their local area.

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