

Sunday, August 02, 2009 (file cac231)

To: Dan Breedon

Fr: Ed Miller

Subj: Water limitations, climate change and scenic north end of Butte County

Ref A: D. Carle, Introduction to water in California, U.C. Press 2004

Ref B: O. Scaheff, Climate change, Research Channel, 7/29/09, 8-9 PM

Highlights and commentary:

1. Ref A provides well documented data on water requirements, sources and infrastructure that can provide Butte County government and stakeholders tools for worthy decision making up to 2030. The presentation can range from small to large or vice versa. The small to large approach might start with a 150 lb healthy adult whose body contains 12 gallons of water that must be sustained at a rate 2 ½ quarts a day (typically 1/3 free water and remainder in food). Water alone will sustain life for weeks until muscle mass is substantially reduced. In a disaster, local government/emergency services must provide support for a period of weeks with high confidence at any time and location. At the other end of the spectra, government and water agencies need to provide an infrastructure to distribute a significant fraction of the 200 million AF of California's average yearly rainfall. From a system point of view 4500 gal/day/capita of water is required for balanced food production. Typically 1 AF of water/year will provide for the needs of two families of 8 individuals at present levels of consumption. The 71 million AF of California's runoff (surface water) that is readily available for constructive use is dominated by 22.4 million AF of Sacramento watershed runoff that appears in the General plan setting and trends report draft section 12. Ref A map 26 from a DWR 1998 report forecast water shortages of 85 E3 AF for an average year and 989 E3 AF for drought year in the Sacramento watershed based on a 47.5 million California population. The State Water Project annual entitlement and 2002 allocation for the upper Feather River and the Butte County board of supervisors 3500 AF and 1575 AF respectively. This is in contrast to the entire state of 4,125,031 AF and 1,855,768 AF. The average state allocation over the years has been 2,300,000 AF. The water source for Chico was shown as groundwater and for Oroville were groundwater, Feather River/California aqueduct/DWP and local reservoirs/streams. CALFED is considering 1.9 million AF off-stream storage facility near the town of Sites. Today's ER describes consideration being given to a tunnel to bypass the delta. A diversion dam has been removed from Butte Creek and replaced with a tunnel. The bureau of reclamation is considering raising Shasta dam by 6.5 feet to store an additional .28 million AF. Several million AF groundwater banks have been created using percolation beds and recharge wells to capture runoff from the Sierras. DWR customers in Los Angeles are given free 1.6 gal/flush toilets. Water meters and tiered pricing are tools for pushing conservation together with jaw boning about water usage. Desalination using reverse osmosis usage has increased with reduced membrane first cost and increased life primarily in

richer or industrial areas of Southern California. The electric energy cost of pumping water over the Tehachapi Mountains and desalination are putting pressure on the energy system of California and associated GHG.

2. Ref B provides a current view of global warming. Much of this data is being generated in the ramp up to the December IPCC meeting in Copenhagen. China is a poster child for anticipating problems. Vertical temperature gradients are of special interest. Of passing interest is the reduced field strength of Sacramento and other remote TV stations that suffer severe refraction in the presence of substantial temperature inversion. The current prediction of the effect of global warming in our area is for hotter-wetter summers with early snow pack melting. The message of Ref B is that China is likely to follow the U.S. in mitigating global warming but we need to take more aggressive action.
3. I recently traveled the Humboldt Road that crosses Butte Creek in a number of places. I was particularly intrigued by small picnic sites on the creek near the NF campground at Cherry Hill. This is Butte County at its finest. If you every need some images showing the preservation of areas of this type I can fix you up.