SWEETWATER SPRINGS WATER DISTRICT

TO: Board of Directors **AGENDA NO. V-C**

FROM: Steve Mack, General Manager

Meeting Date : August 4, 2011

SUBJECT: DISTRICT URBAN WATER MANAGEMENT PLAN (UWMP) POPULATION AND WATER USE PROJECTIONS

RECOMMENDED ACTION: Receive a presentation from General Manager Steve Mack regarding the progress on the 2010 Urban Water Management Plan update progress, including a discussion on population and water use projects for the Plan.

FISCAL IMPACT: none

DISCUSSION:

Sweetwater Springs Water District is tasked with updating its UWMP for the 2010 cycle. This update was originally due in December 2010 but because of changing water use targets as part of an overall Statewide water supply planning effort, the State guidelines were delayed and the deadline was moved to July 2011. In the event, State guidelines and training were not available until March 2011 which was a busy time for District staff and we are aiming at a public hearing date at the September 1 meeting with submittal to the State shortly after that.

One of the aims of the UWMP is to demonstrate that a water supplier has adequate water supplies 20 years into the future. As such our planning horizon is 2030. The State encourages an additional 5 years of forecasting making the end date of the plan 2035. This is a complicated subject and what follows is the thinking and process I followed in developing population estimates and projections, and water supply projections based on population projections and gallons per capita per day (gpcd) projections. I apologize in advance if this is hard to follow and more detail than Board Members want. However, it is important to disclose and document how we have arrived at the projections upon which the UWMP is based. At Thursday's meeting I will be doing a PowerPoint presentation to walk through the various figures and tables (and probably some additional ones)

Important in doing water supply planning is accurate information on current water use and population. Because Sweetwater Springs Water District meters all aspects of our water supply system, we have excellent information on water use, both production and sales. Population is another matter. The Sweetwater Springs Water District (SSWD) service area is not a recognized Census area, nor are there any between Census

updates as exists for many cities and all counties (I believe). Compounding this problem is conflicting information from past UWMP's.

The SSWD service area is close in extent to Census tracts 1537.04 (Guerneville and surrounding areas) and 1537.03 (Monte Rio and surrounding areas). Census tract 1537.04 also includes the Armstrong Woods neighborhoods which are served by Cal Water (which has a population of approximately 400-500). Table 1 shows some of the relevant population information. Some relevant observations:

- The 2000 and 2005 UWMP's have population estimates that are considerably higher than the 2000 and 2010 Census estimates.
- The raw data for the two Census tracts shows a substantial decrease in population between 2000 and 2010 (967).
- A perplexing element of the population decrease is that SSWD residential connections increased by a total of 32 during the decade. Either residential connections became part time or density decreased (or both).
- SSWD service area population is adjusted for Armstrong Woods and Freezeout Road (added in 2010) in 2000 and 2010 by 500 and 400 respectively.
- I am adjusting the population estimate by including seasonal residents. I am estimating that 30% of our residential accounts were seasonal residents which were here 25% (3 months) of the time in 2000 and 33% (4 months) in 2010 reflecting a move to a reported more seasonal occupancy due to the economic downturn.

Table 1. Population Data and Projections from Various Sources

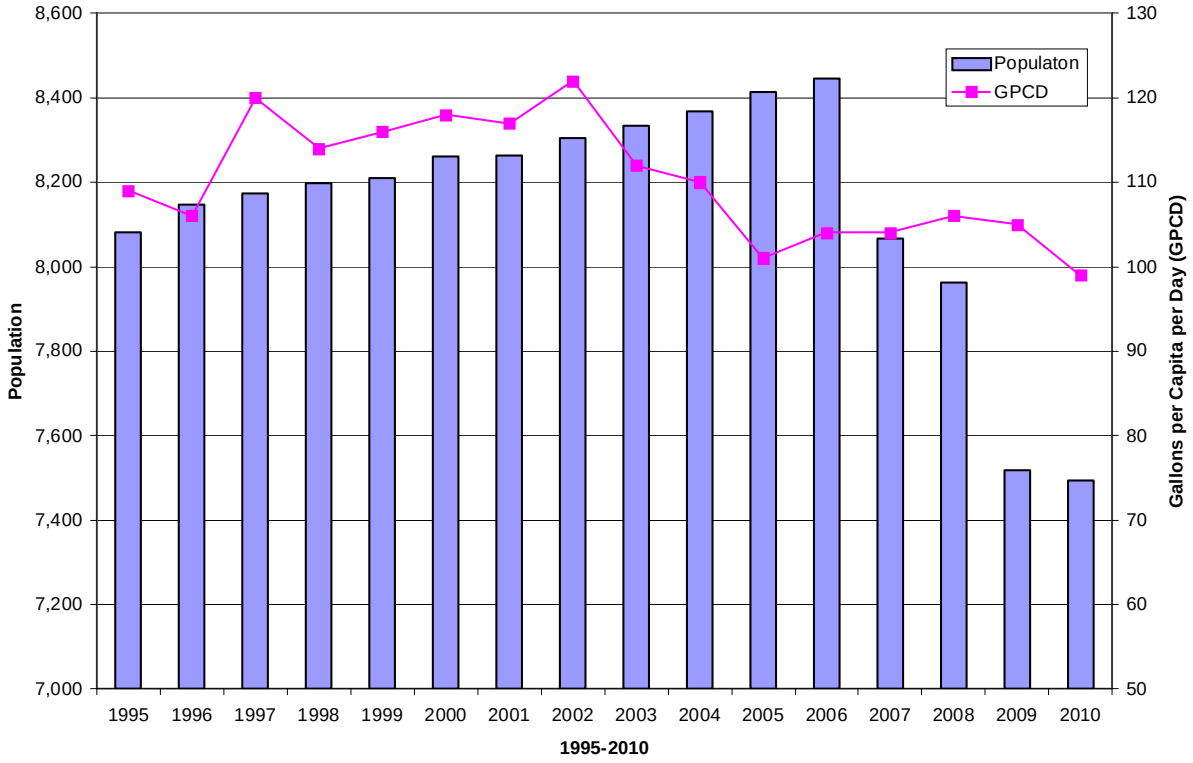
	2000	**2005**	**2010**	**2015**	**2020**	**2025**
2000 UWMP Service Area Population Without Redevelopment	9,206	9,390	9,672	9,962	10,159	
2000 UWMP Service Area Population With Redevelopment	9,206	9,575	10,053	10,750	11,445	
2005 UWMP		9,360	9,672	9,690	9,920	10,020
US Census (Census Tracts 1537.03, 1537.04)	8,185		7,218			
Census, SSWD Service Area	7,685		6,818			

Census, SSWD Service Area Adjusted for Seasonal Residents	8,261		8,521			

Once service area population is established for 2000 and 2010, one has to develop population estimates for the years between the Census years and to make projections into the future.

Population estimates are needed for every year between the censuses because the California Department of Water Resources (DWR) and the Coalition for Urban Water Conservation in California (CUWCC) want a baseline gallons per capita per day (gpcd) developed. The Census data make it clear that there was a population decrease in our area of some magnitude. What it does not tell us is when and why this decrease happened. For the 2001-2009 population estimates used for the 2010 UWMP effort, I assumed that the population decrease is tied to the economic downturn that happened in 2008 (and continues). This approach also assumed population increased at a small rate prior to the downturn based on a relationship between service connections and population prior to the downturn.
Figure 1. SSWD Service Area Population and GPCD shows the effect of these assumptions. Figure 1 also shows the gpcd that results when these population estimates are divided into District annual production amounts. This approach gives a plausible gpcd curve showing higher gpcd in the early part of the decade (higher losses from more leaks) and a reduction in gpcd with the advent of capital projects aimed at reducing system water losses and recent regional water conservation efforts due to low water levels in the Russian River (2009) and the toilet rebate and replacement program.

Figure 1. SSWD Service Area Population and GPCD



Having estimates of annual population allows calculation of gpcd which in turn allows proceeding with developing projections for future water supply use and needs. Using the DWR and CUWCC methodology, the District's baseline gpcd is 113. That figure is calculated by dividing the water produced in each year from 1999 to 2008 by the estimated population and then averaging the 10 years' gpcd's (various specific water losses, such as flushing, are included in the calculation). Using the gpcd approach, the CUWCC/DWR 2020 water use target is 80% of the baseline. That amount is 90.2 gpcd. In comparison, the District's 2010 gpcd was 99.4.

In calculating future gpcd's water system loss targets have been employed. The 2010 system loss was 28%. We have discussed getting to a system loss rate of 15%. Using that as a goal for 2025, interim loss target goals can be developed for 2015 (24%) and 2020 (20%) for the purpose of using the resulting gpcd's (multiplied by population projections) to estimate the water supply needed in those years. We may strive to have a better loss percentage sooner, but for water supply needs purposes, these seem like realistic goals. Table 2 GPCD Targets shows actual and projected gpcd using the methods discussed here (actual water use, estimated population projections, and system water loss reduction goals).

Also important in this discussion are the DWR/CUWCC gpcd targets. The District must meet the 20% in 2020 target (or take a different, more complicated approach for meeting water use reduction goals). As stated earlier that target is 90.2 gpcd. Table 2 shows that meeting the loss reduction goals discussed above will get the District to the DWR 2020 goal by 2015 and that should give us some cushion for meeting the target by 2020.

Table 2. GPCD Targets

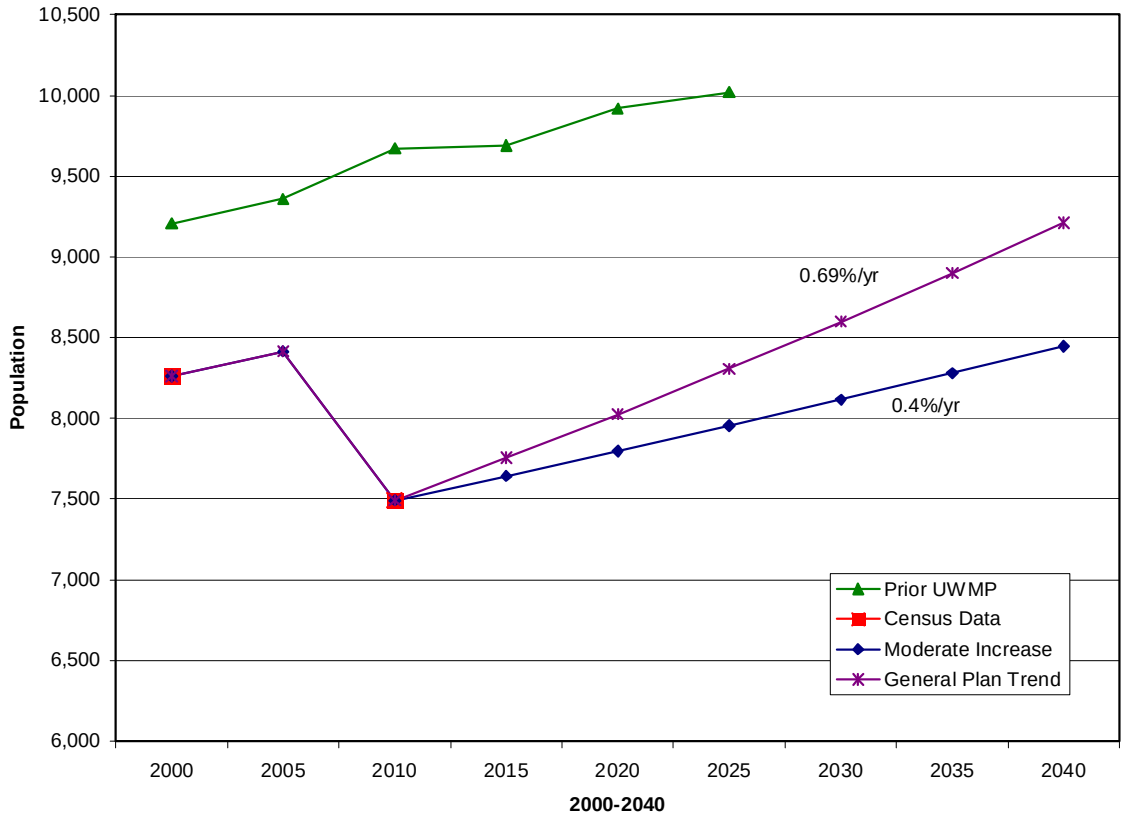
	% System Loss/ Target	GPCD based on System Loss Reduction	DWR/CUWCC Target
Baseline gpcd		113	113
2010 target	28%	99.4	109
2015 target	24%	88.7	102
2020 target	**20%**	**85.9**	**90.2**
2025 target	15%	82.3	

With established gpcd projections, future water supply needs can be projected by multiplying gpcd by population. However, that requires having a population projection. Again, the SSWD service area is too small to have extensive population forecasting done for it. The Sonoma County General Plan has an annual population growth estimate of .69% per year for the unincorporated areas of Sonoma County, however that estimate covers all the dissimilar unincorporated portions of the County with one growth estimate. The County planner who apprised me of the General Plan population increase estimate suggested that a growth rate of half the official estimate might be appropriate for this part of the County. Using historical trends is not useful because of

the loss of population between the last two censuses. Substantial growth within the SSWD service area is not very realistic because of the physical factors involved – floodplains at the lower elevations next to the River and steep slopes once away from the River. Economic activity is not expected to make this area a magnet for new housing, even if there were building sites. However, back in 2000 there were approximately 10% more people here – there's at least room for that population to return.

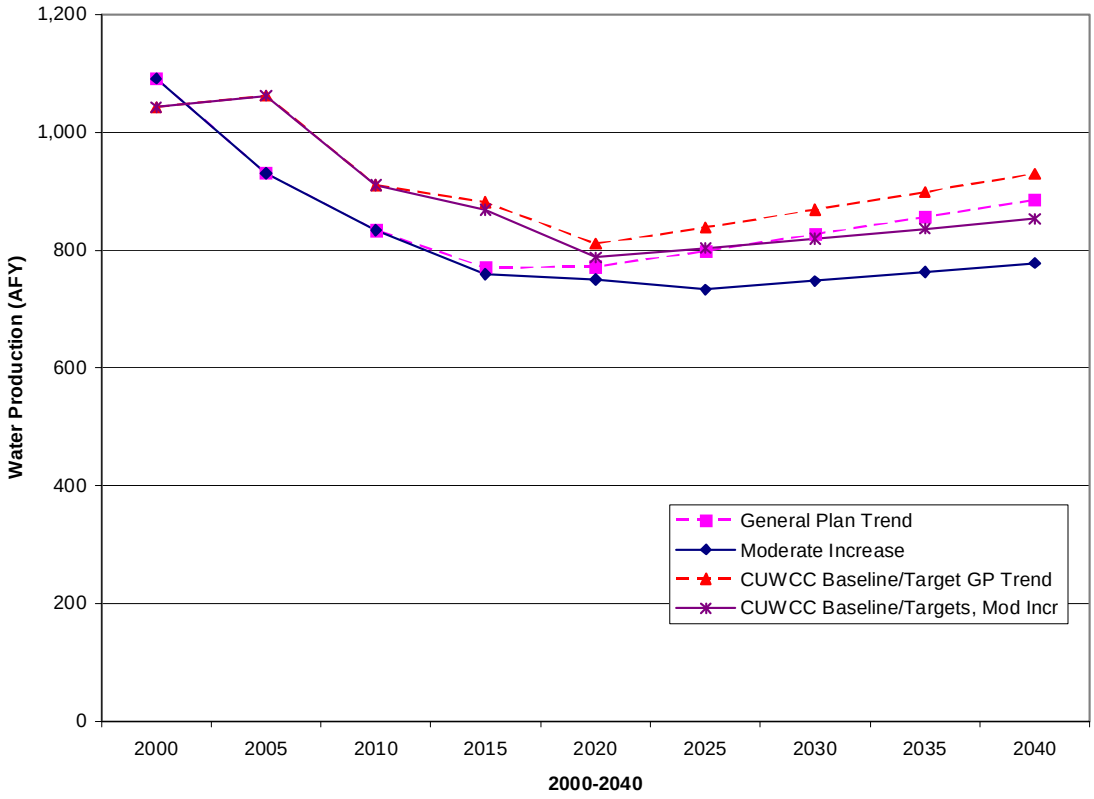
Figure 2. Population Projections, 200-2040 illuminates the problem and shows some solutions. The two real data points are the results of the 2000 and 2010 Censuses which are much lower than the population estimates used for the 2000 and 2005 UWMP's. Figure 2 shows two projections from the starting point of the 2010 Census population: one based on the 0.69% annual increase used by the Sonoma County General Plan and the other is a more modest 0.4% annual increase. The latter approach would result in a population in 2035 similar to what was reported for the SSWD service area for the 2000 Census.

Figure 2. Populaton Projections, 2000-2040
Sweetwater Springs Water District Service Area



Multiplying the projected population by the projected gpcd will produce an estimate of the water supply needs for the District into the future. Figure 3. Water Use Projections 2000-2040 Based on Different Population Projections does that using the General Plan Increase Trend of 0.69% per year and what I have called the Moderate Increase of

0.4% per year. Also included Figure 3 are water use projections using the CUWCC (and DWR) Baseline/Target gpcd's (20% reduction from the baseline by 2020). This approach estimates that the District will need in the range of 760 to 850 acre feet (af) of water annually at the end of this planning period and will remain within the CUWCC/DWR targets which is approximately 900 af per year. This compares well with the District water rights of 1137 af, our current production capability, and is approximately the same as current annual production (827 af in 2010).

For the 2010 UWMP I intend to use the General Plan population forecast (0.69%/year) because it is a published figure and produces results that, when added to the 2010 Census starting point, fill the population "hole" created by the drop in population between 2000 and 2010 and provide for some increase over that. When multiplied by the projected gpcd, this produces a water supply forecast that is within District water rights and is a realistic forecast of District water supply needs.

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