SWEETWATER SPRINGS WATER DISTRICT

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

FROM: Steve Mack, General Manager

Meeting Date : August 4, 2016

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

RECOMMENDED ACTION: Receive a presentation from General Manager Steve Mack regarding the progress on the 2015 Urban Water Management Plan update progress, including a discussion on population and water use projections for the Plan and revisions to the Water Shortage Contingency Plan, and provide direction.

FISCAL IMPACT: none

DISCUSSION:

Sweetwater Springs Water District is tasked with updating its UWMP for the 2015 cycle. This update was due July 1, 2016 but because the late provision of guidelines, the efforts and uncertainty related to drought water use restrictions, California Urban Water Conservation Coalition reporting requirements and the fact of doing this report inhouse, we are aiming at a public hearing date at the October 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 2035. The State encourages an additional 5 years of forecasting but because of the uncertainties of population estimates, the additional 5 years is not included in this update.

Population and Water Use Forecasts:

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 3.1 shows some of the relevant population information. Some observations:

- The raw data for the two Census tracts showed a substantial decrease in population between 2000 and 2010 (967).
- SSWD residential connections increased by a total of 53 since 2010.
- The 2010 UWMP had population increases based on the 2009 General Plan for Unincorporated areas which was 0.69%. Since then there is a new General Plan Update which is called General Plan 2020. That has an annual population increase for the Russian River area (which includes the District's service area, Armstrong Woods Road, Cazadero and Forestville) of 1.26%.
- 1.26% seems like a high increase for our service area - where are these people going to go? But this is the forecast used by Sonoma County for our area and it seems appropriate to use for the period between 2010 and 2020.
- Table 3-1 uses the General Plan 2020 increase for 2010-2020. After 2020, the population increases at 0.69% per year (the General Plan 2009 estimate).

Table 3-1 Retail: Population - Current and Projected

	2010	2015	2020	2025	2030	2035	2040*(opt)*
Population Served (2015 Estimate)	7,493	8,042	8,630	8,932	9,244	9,568	
2010 UWMP Estimates	7,493	7,755	8,026	8,307	8,598	8,899	
Difference in Projections	-	287	604	625	646	669	

NOTES: 2015 Estimate based on 2010 Census and Sonoma County General Plan 2020 population projections for the Russian River area from 2010 to 2010 and General Plan 2009 estimates for 2025-2035.

Having estimates of annual population allows calculation of current gpcd which in turn allows proceeding with developing projections for future water supply use and needs. Using the California Department of Water Resources (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 98.6.

In calculating future gpcd's water system loss targets have been employed. The 2010 system loss was 28%. The 2010 UWMP included the goal of getting to a system loss rate of 15%. Using that as a goal for 2025, interim loss target goals were 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 want to include further progress in water loss prevention - we could strive for getting District water loss prevention down to 10% by 2035. For calculation purposes Table 3-2. GPCD Targets and District Water Production shows actual and projected gpcd using the methods discussed here (actual water use, estimated population projections, and system water loss reduction goals).

Table 3-2 GPCD Targets and District Water Production

	% System Loss/Target	GPCD based on System Loss Reduction	GPCD Sold	GPCD Lost	DWR Target	Total Water Production
Baseline GPCD		113			113	
2010 actual	28	98.6	69.9	28.7	109	828
2015 actual	20.7	73.0	57.5	15.5		658
2015 Target	24	93.6	69.9	23.6	102	813
2020 Target	20	89.6	69.9	19.7	90.2	806
2025 Target	15	84.7	69.9	14.8		788
2030 Target	12.5	82.2	69.9	12.3		792
2035 Target	10	79.8	69.9	9.9		795
2030 Target (15%)	15	84.7	69.9	14.8		816
2035 Target (15%)	15	84.7	69.9	14.8		844

With established gpcd projections, future water supply needs can be projected by multiplying gpcd by population. Table 3-2 includes actual and projected water production based on this gpcd approach. Observations:

- DWR requires the UWMP to include some methodology to demonstrate that a water agency will reduce its water use by 20% compared to the baseline - the 80% of baseline gpcd approach and 3 other more complicated approaches. The District's approach in 2010 UWMP was the 80% of baseline. That is easy to do and show, and we are meeting those targets. I see no reason to change.

- Actual gpcd in 2015 is much better than the 2015 target and the 2020 target. The District's target are based solely on reducing system losses - other reductions (showerhead, low flush toilet, behavior modifications are not taken into account. The August 2010 Agenda report on this topic stated that we would probably get to the 2020 target by 2015 and we've exceeded that by quite a bit.

- The drought restrictions have 'interfered' with or confounded the 2015 actual results. We have no way of knowing what will happen when District customers' water use rebounds. I expect the rebound to take some time, especially if other parts of the State remain in drought conditions.

- Water loss reduction has played an important part of the District's overall reduction in gpcd from 2010. Overall water production reduced 20% and 7% of that can be attributed to water loss reduction. District water users reduced their water use (by sales) by 13% since 2010, water losses reduced 40% in the past five years.

- Regardless of the rebound effect and whether our beyond 2025 targets are based on 12.5-10% or 15%, our water production estimates are well within the District's water license (1137 AF) and meet the State's requirement for a 20% reduction from the baseline water use as determined by the 1999-2008 baseline.

Water Shortage Contingency Plan:

Our current drought situation gives us a good opportunity to review the Water Shortage Contingency Plan included in the 2010 UWMP. One possibility that was not included in the 2010 UWMP was the State declaring a statewide drought and requiring mandatory compliance of some sort by all water agencies. Attachment A is a red-lined version of the 2010 Water Shortage Contingency Plan. It also includes tables required for the 2015 Update. Please review this for possible additions and improvements.

Appendix A. Water Shortage Contingency Plan

A.1. Water Shortage Emergency Response

During declared shortages, or when a shortage declaration appears imminent, the General Manager, or his designated representative(s), shall be responsible for notification of the appropriate personnel and agency representatives. The personnel and agencies to be contacted include: The District Board of Directors, District Staff, the Russian River & Monte Rio Fire Protection Districts, the California Division of Drinking Water, the Sonoma County Office of Emergency Services and such other agencies and/or persons as deemed appropriate. The District may also notify all customers through its automated calling service, as appropriate. The District's general response to any emergency is also described in the District's Emergency Preparedness Response and Recovery Plan.

The District Plan includes responses to regional and statewide drought emergencies. In most of these cases where the requested reduction is 20% or less, the District would specify a list of water use restrictions but not declare Stage I of the Water Shortage Contingency Plan. The possible water use restrictions include:

1. The application of potable water to any driveway or sidewalk is prohibited.
2. Using a hose that dispenses potable water to wash a motor vehicle, unless the hose is fitted with a shut-off nozzle is prohibited.
3. Using potable water in a fountain or decorative water feature, unless the water is recirculated, is prohibited.
4. Irrigating turf or ornamental landscapes during and 48 hours following measurable precipitation is prohibited.
5. Restaurants and other food service establishments can only serve water to customers on request; and
6. Operators of hotels and motels must provide guests with the option of choosing not to have towels and linens laundered daily and prominently display notice of this option.

During situations that require 20% or less water use, District will rely extensively on public information to let people know of the need to reduce water use.

A.1.1. Emergency Response Check List.

The following Table A-1 summarizes the actions the District will evaluate during a water supply emergency.

Table A-1. Possible Disaster Response Activities	
Examples of Potential Actions to Discuss	**Check if Discussed**
Determine what constitutes a proclamation of a water shortage.	
Stretch existing water storage.	
Obtain additional water supplies.	
Develop alternative water supplies.	
Determine where the funding will come from.	
Contact and coordinate with other agencies.	
Create an Emergency Response Team/Coordinator.	
Create a catastrophe preparedness plan.	
Put employees/contractors on-call.	
Develop methods to communicate with the public.	
Develop methods to prepare for water quality interruptions.	

A.2. Emergency Response Stages and Reduction Goals

The District has a three-stage Emergency Response Plan (Table ~~A~~8-~~2~~1) to invoke during declared water shortages. The Emergency Response Plan includes voluntary and mandatory reductions, depending on the causes, severity, and anticipated duration of the water supply shortage.

Table 8-1 Retail Stages of Water Shortage Contingency Plan		
Stage	Complete Both	
	Percent Supply Reduction[1] *Numerical value as a percent*	Water Supply Condition *(Narrative description)*
Add additional rows as needed		
.I	20-30%	Regional or Statewide drought declaration, or local reduction in water supply requiring 20-30% reduction, short term reduction in water use
II	31-50%	Reduction in water supply requiring 31-50% reduction in water use
III	>50%	Greater than 50% reduction in water supply
[1] One stage in the Water Shortage Contingency Plan must address a water shortage of 50%.		
NOTES:		

~~Table A-2~~ ~~Emergency Response Stages and Reduction Goals~~			
~~Shortage Condition~~	~~Stage~~	~~Customer Reduction Goal~~	
~~15 – 25%~~	~~I~~	~~25%~~	
~~26 – 35%~~	~~II~~	~~35%~~	
~~36 – 50%~~	~~III~~	~~50% or >~~	

A.2.1 Priority by Use

Priorities for use of available potable water during shortages are based on the legal requirements set forth in the California Water Code, Sections 350-358. Water allocations are established for all customers according to the following ranking system:

- Minimum health and safety allocations for interior residential needs (includes single family, multi-family, hospitals and convalescent facilities, retirement and mobile home communities, and fire fighting and public safety)
- Commercial, industrial, institutional/governmental operations (where water is used for manufacturing and for minimum health and safety allocations for employees and visitors), to maintain jobs and economic base of the community (not for landscape uses)
- Permanent agriculture (orchards, vineyards, and other commercial agriculture which would require at least five years to return to production).
- Existing landscaping
- New customers, proposed projects without permits when shortage declared.

A.2.2 Health and Safety Requirements

Based on commonly accepted estimates of interior residential water use in the United States, Table A-3 indicates per capita health and safety water requirements. In Stage I shortages, customers may adjust either interior or outdoor water use (or both), in order to meet the voluntary water reduction goal.

Under the Stage II mandatory rationing program, the District has established a health and safety allotment of FORTY-FIVE GALLONS PER CAPITA PER DAY (45 gpcd), which is equivalent to 1.8 units (180 cubic feet) per person per month. This amount of water is sufficient for essential interior water use. Stage III mandatory rationing would require that most customers make changes in their interior water use habits (for instance, not flushing toilets unless “necessary” or taking less frequent showers).

We should consider whether a mandatory rationing program is necessary. Other communities get to 50% conservation without rationing.

Table A-3 Per Capita Health and Safety Water Quantity Calculations						
	Non-Conserving Fixtures		**Habit Changes** 1		**Conserving Fixtures** 2	
Toilets	3 flushes x 5.5 gpf	16.5	3 flushes x 5.5 gpf	16.5	5 flushes x 1.6 gpf	8.0
Shower	4 min x 4.0 gpm	16.0	4 min x 3.0 gpm	12.0	5 min x 2.0	10.0
Washer	12.5 gpcd	12.5	11.5 gpcd	11.5	11.5 gpcd	11.5
Kitchen	3 gpcd	3.0	2 gpcd	2.0	4 gpcd	4.0
other	3 gpcd	3.0	2 gpcd	2.0	4 gpcd	4.0
Total (gpcd)		51.0		44.0		37.5

1 Reduced shower use results from shorter and reduced flow. Reduced washer use results from fuller loads.
2 Fixtures include ULF 1.6 gpf toilets, 2.0 gpm showerheads and efficient clothes washers.

A.2.3 Water Shortage Stages and Triggering Mechanisms

Specific criteria for triggering the District's rationing stages are shown in Table A-4. Examples of possible reduction methods are shown in Table A-5.

Table A-4 Water Shortage Stages and Triggering Mechanisms			
Percent Reduction of Supply	**Stage I ~~15~~ 20 - ~~25~~30% ~~(Voluntary)~~**	**Stage II ~~25~~30 - ~~35~~50% ~~(Mandatory)~~**	**Stage III ~~35 - 50% >~~ >50% ~~(Mandatory)~~**
Water Supply Condition			
Current Supply	Total supply is ~~75~~70 – ~~85~~80% of "normal." or conservation is needed to stretch existing supplies, or participation in a regional or statewide drought emergency OR	Total supply is ~~65~~69 – ~~75~~50% of "normal." or conservation is needed to stretch existing supplies OR	Total supply is less than ~~65~~49% of "normal." or conservation is needed to stretch existing supplies OR
Future Supply	Projected supply insufficient to provide ~~75~~80% of "normal" deliveries for the next two years. OR	Projected supply insufficient to provide ~~65~~70% of "normal" deliveries for the next two years. OR	Projected supply insufficient to provide ~~50~~60% of "normal" deliveries for the next two years. OR
Water Quality	Contamination of ~~20% of~~ water supply (exceeds primary drinking water standards) for 3 days OR	Contamination of ~~30% of~~ water supply (exceeds primary drinking water standards) for up to one week OR	Contamination of ~~40% or more of~~ the water supply (exceeds primary drinking water standards) for over one week OR
Disaster Loss	Disaster loss	Disaster loss	Disaster Loss

Table 8-2 Retail Only: Restrictions and Prohibitions on End Uses

Stage	Restrictions and Prohibitions on End Users ***Drop down list*** *These are the only categories that will be accepted by the WUEdata online submittal tool*	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement? *Drop Down List*
Add additional rows as needed			
0	Landscape - Restrict or prohibit runoff from landscape irrigation	This is required at all times.	Yes
0	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	This is required at all times.	Yes
I	CII - Restaurants may only serve water upon request	-	No
I	CII - Lodging establishment must offer opt out of linen service	-	No
I	Other - Require automatic shut of hoses	-	Yes
I	Other - Prohibit use of potable water for washing hard surfaces	-	Yes
I	Landscape - Limit landscape irrigation to specific days	-	Yes
II	Landscape - Prohibit all landscape irrigation	-	Yes
II	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	-	Yes
-	-	-	-

NOTES:

Table A-5
Consumption Reduction Methods

Examples of Consumption Reduction Methods	Stage When Method Takes Effect
Demand reduction program	All stages
Flow restriction ??	III
Restrict new connections	III
Use prohibitions	I, II, III
Water shortage pricing	II, III
Per capita allotment by customer type	III
~~Voluntary rationing~~	~~I~~
Mandatory rationing	II, III
Education Program	All Stages
Other	

A.3. Water Shortage Ordinance

The District has adopted a Wastage of Water Ordinance (3090.90) listed below.

3090.90 Wastage of Water: No consumer shall cause or permit any water furnished to their property by the District to run to waste in any gutter or otherwise. Notwithstanding section 3080.30-3080.60, the District may, after one warning, terminate the service of any consumer for failure to comply with the foregoing rule. Restoration of service may be conditioned upon installation of a flow restrictor on the consumer's service. Fees will be charged for the flow restrictor and installation or removal in addition to the turn-on charge provided for in section 3020.112.

The District would consider implementing a moratorium on new connections during declared water shortages, and revisions to the wastage of water ordinance or adoption of other water shortage-related ordinances as appropriate to the type of emergency. A draft emergency water shortage ordinance is in Appendix D.

A.3.1. Excessive Use Penalties

Any customer violating the regulations and restrictions on water use shall receive a written warning for the first such violation. Upon a second violation, the customer shall receive a written warning~~ and the district may cause a flow-restrictor to be installed in the service. If a flow-restrictor is placed, the violator shall pay the cost of the installation and removal.~~ . If the written warning is not complied with water service ~~is~~may be disconnected~~,~~; it shall be restored only upon payment of the turn-on charge fixed by the Board of Directors.

Comment: District practice is to shut water off if customers do not comply with warnings. We do not use flow restrictors.

A.4. Mechanism to Determine Reductions in Water Use

Under normal water supply conditions, potable water production figures are recorded daily. All customers are metered and are billed on a bimonthly basis. Production totals are reported monthly to the Field Supervisor and the General Manager, and are incorporated into the District's water production report and the General Manager's Report presented at each monthly Board meeting. Bimonthly sales information is also incorporated into the General Manager's monthly report.

During a Stage II or Stage III water shortage, or during a water emergency, daily production figures will be reported to the Field Manager, as appropriate. The Field Manager will compare the weekly production to the target weekly production to verify that the reduction goal is being met. Weekly reports will

be forwarded to the General Manager, the Board of Directors and the State ~~Department of Public Health~~ Division of Drinking Water or other appropriate regulatory agencies. If reduction goals are not met, the General Manager will notify the Board of Directors so that corrective action can be taken.

A.5. Revenue and Expenditure Impacts and Measures to Overcome Impacts

The District maintains a reserve equal to 15% of its annual operating budget expenses (approximately $1.~~5~~ 7 million Operating Budget expenses) for the purposes of dealing with emergencies and disaster-related expenses. This reserve amount is $~~277~~255,000 for FY ~~12~~17. The District has additional budget reserves for economic uncertainty, debt repayment and capital expenses. The total District Reserve Policy amount is approximately $1 million.

The analysis shown in Table A-6 Cost Impacts Associated with Water Shortages assumes that water revenues are consistent with metered use in the 2005/20~~06~~ fiscal years upon which the District's Rate Model is based. It also assumes that total district operating expenses would increase by approximately 10%, or $150,000 during these major water shortage events. Table A-6 shows the estimated cost impacts of the major shortage events:

Table A-6 Cost Impacts Associated with Water Shortages		
	Stage II	**Stage III**
% Reduction in Annual Sales	~~35~~40%	50%
Reduction in Water Sales Revenue	$~~290~~239,000	$297~~400~~,000
Increased Operating Costs	$150,000	$150,000
Total Net Reduction in Revenue	**$~~450~~389,000**	**$~~550~~447,000**

As shown in Table A-6, the District would have sufficient reserves to sustain a major water shortage emergency for over one year, but the financial impacts of these unlikely events would be substantial. During this period the Board of Directors would have ample time to assess the need for rate increases consistent with the type of water shortage. It may be that a rate restructuring would be needed to encourage reduced water use while developing sufficient revenues for sustained operations. On note, the District is currenty (2016) experiencing the impacts of a Stage I Declaration and it is having impacts on funding the Capital Improvement Program.