Message From The Manager: Paul Tischler

Hello customers and members of Sardis Lone Elm Water Supply Corporation! We have been forced to enter into mandatory water use restrictions as of August 14, 2023 due to unprecedented demand at certain times of the day. I realize this can be frustrating; however, we also realize that times of low pressure can be even more frustrating! I want to take this opportunity to explain Sardis's current situation, plans moving forward, and what we can all do to help maintain a constant supply of water.

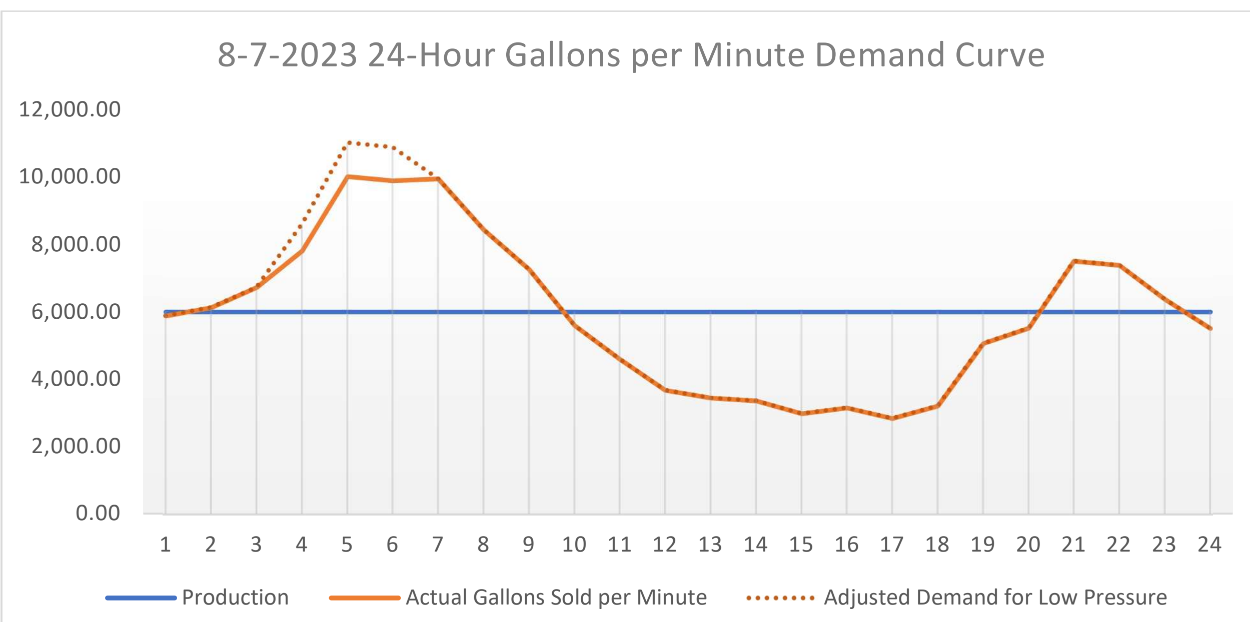
EXPLANATION:
I will go into further detail later in this article concerning capacities but first, I want to explain what is taking place. There are three basic components of a water system: water production & treatment, ground & elevated storage (tanks & towers), and pumping/distribution. In the past, I have analogized the water system to the interstate highways in downtown Dallas. Congestion happens and traffic slows to a halt for two hours every morning and two hours every evening. The other twenty hours per day, traffic moves fairly decent (except in front of the American Airlines Center, there is no explanation for that). The difference between highway systems and the modern-day water system is that rush hour happens twice per day and most everyone's irrigation seems to be happening between 4:00am and 8:00am every day. Another similar situation is the power grid. Everyone's air conditioner is running non-stop from 4:00-8:00 pm this time of year. The grid has very little strain on it at 4:00am in August.

Back to reality and really boring math. The numbers say a lot:

- State required production capacity for 7,100 connections= 6,134,400 gallons per day
- Sardis's current production capacity= 8,638,560 gallons per day

According to these numbers, we currently exceed the State's required production capacity by 41%. So, what's the problem? A peak hour analysis of water sold between 5:00 am and 6:00 am during the weekdays resulted in a peak flow that equates to 15,840,000 gallons per day (11,000 gallons per minute).

This graph depicts actual data from our current peak day for 2023:



A simple way of looking at this is to look at a typical family's budget. If you are on salary or a fixed hourly schedule, your take home pay will be constant each week. The variable part of the equation is that your house payment and electric bill are both due on the 1st and then your car payment is due on the 15th which, for this example, is more than you bring home for those particular weeks. To make ends meet, you must save some of your money on the 7th and the 21st. So the analogy is as follows:

- Fixed Income = Fixed Production
- House & Electric Payment = Our Water Demand at 4:00 am
- Car Payment = Our Demand at 10:00 pm
- Savings Account = Our Storage Tanks

The solution seems simple, find a higher paying job or a second income to increase your available savings. Similarly, this would equate to Sardis obtaining more production and building larger storage tanks. That's where the analogy ends! Our production capacity currently exceeds State requirements by 41% and our storage capacity exceeds requirements by a combined 81.5%. The problem with increasing these elements much more in excess than they already are, is that TREATED water cannot sit. If money stays in the bank, it will theoretically gain interest. If treated water sits in tanks and pipes, it loses quality. There is a balance that all water systems must maintain between having enough extra capacity for the hottest day in August while still maintaining a disinfectant residual on the coldest day in February!

Please do not mistake this concept for the thought of "Sardis just doesn't want to spend the money on infrastructure and supply". This is absolutely not the case!!! Our system is based on a "growth pays for growth" model. What this means is that we charge a fee for each new meter that is set on the system. These fees are set aside into a special account that will pay for the new infrastructure that was required for that growth. Water rates pay for maintenance, operation, renewal, wholesale water cost, electricity, etc. Sardis-Lone Elm WSC is a member-owned, non-profit entity that charges rates on a "cost-of-service" basis. Excess monies are reinvested into making the water system more reliable (2.45 Megawatts of back-up power generation, freeze protection, smart water meters, etc.). One of the reasons that we are so far ahead on storage capacity is that we spent $2.7 million on an elevated tank a couple of years ago (without the use of financing).

IMMEDIATE ACTION REQUIRED:
To help space out demand, we have temporarily initiated Stage III of our Drought Contingency Plan which requires allocating different days of the week for each address to water. This essentially lowers the daily peak-hour demand.

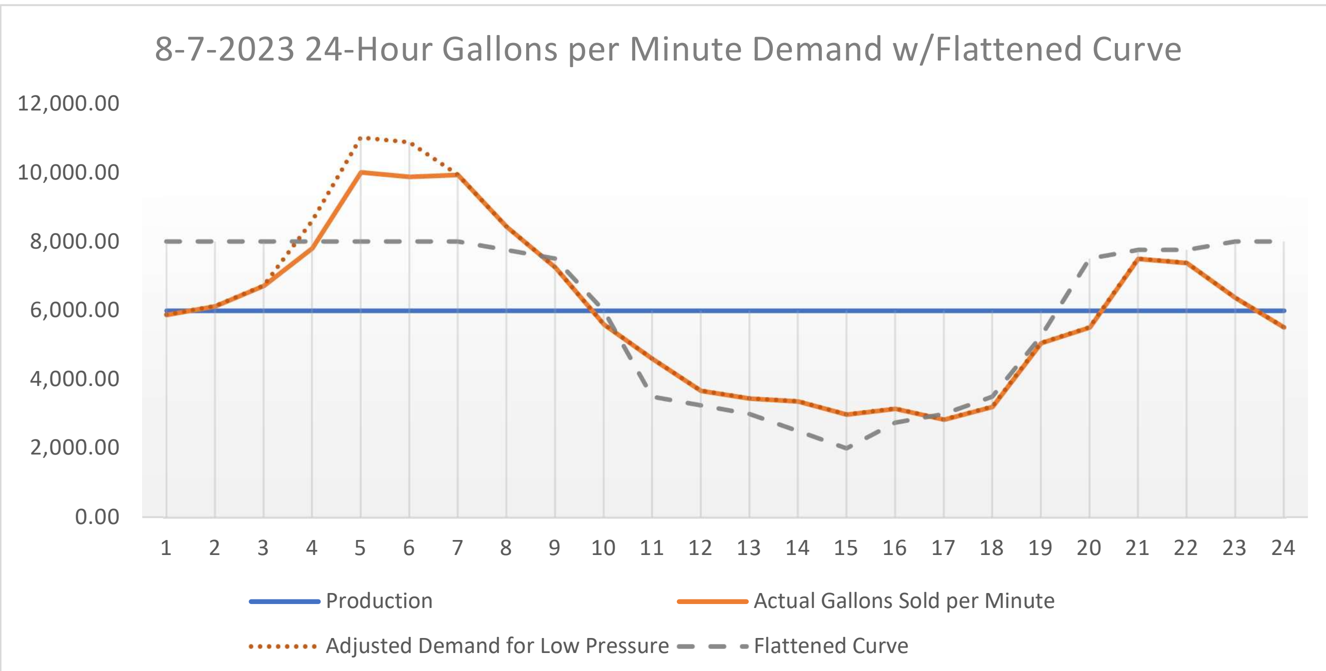
A MORE PERFECT WORLD:
There is a better way though; but it will take education, coordination, and explanation for it to work and the solution is viable for any water system that may choose to implement the plan.

1. Educate consumers in the fact that irrigating during the heat of the day is wasteful due to evaporation and/or wind. Block out from 10:00am-6:00pm every day for zero irrigation that involves spraying water into the atmosphere. By using the windows of midnight-10:00am & 6:00pm-midnight, demand can be spread throughout the cooler parts of the day. This allows pumping facilities (which operate on electricity) to recover and slow down during the heat of the day when electricity is in its highest demand.
2. Coordinate with customers and have scheduled days for odd/even addresses year-round. This could be optional except for during periods of extreme drought and water shortage but make it the popular thing to do similar to how recycling is today. This would spread out demand through

the entire week, flatten the demand curve, and save millions of dollars on un-needed & over-sized infrastructure while keeping energy demand charges and the general "cost of doing business" charges lower which will equate to fewer and/or lower rate increases! Think of it this way, If your family drinks five gallons of milk a month, you will not buy a five gallon bucket of milk to place in an expensive oversized refrigerator designed to hold a five gallon bucket just for the milk to go bad during week three! The milk that went bad, even though you did not consume it, still has an expense associated with it. You will instead buy one gallon per week. Except for in the summer when the kids are home all day, then you will buy two gallons per week.

3. Explain to consumers how a water system works. Many people take water for granted and say things like "its only water". Think about it though, why is Terlingua, Texas not a thriving metropolis? Very little water equates to very little people, jobs, and life in general! Water is everything and it's a precious natural resource! Explain to consumers that by evening out demand, pressure and volume can be increased, the same amount or more water can be used, all the while costs and rates can remain stable.

This graph illustrates the exact same amount of water used with a more uniform demand schedule. The cost difference between supplying adequate pressure between the "Actual Gallons Sold" and the "Flattened Curve" is in the millions of dollars for any water system USA:



MOVING FORWARD:
There are several projects that are currently in design for immediate implementation that will boost supply for the entire system such as:

- Increased daily supply of treated wholesale water
- 2,500 feet of 20" water main
- 7,000 feet of 12" water main
- Pump station renewal

EXISTING CAPACITIES

CURRENT CONNECTION COUNT		**7,100**	
Production Capacity	**(TCEQ requirement 0.6 gpm/connection)**		
	Wells	4,190	gpm
	Plant #5 Wholesale	697	gpm
	Plant #3 Wholesale	557	gpm
	Plant #4 Wholesale	557	gpm
		6,001	gpm
	Total	**8,641,440**	**gallons per day**
	Connections Supported	**10,002**	
	Action Item @	**8,501**	
	Required capacity exceeded by	**41%**	
Elevated Capacity	**(TCEQ requirement 200 gallons/connection)**		
	Plant 1 (HWL 903')	300,000	
	Plant 3 (HWL 903")	300,000	
	Plant 4 (HWL 903')	500,000	
	Plant 6 (HWL 903')	1,000,000	
	Plant 7 (HWL 953')	500,000	
	Total	**2,600,000**	**gallons**
	Connections Supported	**13,000**	
	Action Item @	**11,050**	
	Required capacity exceeded by	**83%**	
Ground Storage Capacity	Plant 1	150,000	
	Plant 2	200,000	
	Plant 3	200,000	
	Plant 4	500,000	
	Plant 5	500,000	
	Plant 6	500,000	
	Plant 7	500,000	
	Total	**2,550,000**	**gallons**
	Connections Supported	**12,750**	
	Action Item @	**10,838**	
	Required capacity exceeded by	**80%**	
High Service Pump	**(TCEQ requirement 0.6 gpm/connection)**		
	Plant 1	1,200	
	Plant 2	1,200	
	Plant 3	3,000	
	Plant 4	1,400	
	Plant 5	3,000	
	Plant 6	1,100	
	Plant 7	1,500	
	Total	**12,400**	**gallons per minute**
	Connections Supported	**20,667**	
	Action Item @	**17,567**	
	Required capacity exceeded by	**191%**	
Emergency Power Generation			
	Plant 4: 2,000,000 gal/day	550	
	Plant 5: 2,000,000 gal/day	750	
	Plant 6: 1,200,000 gal/day	600	
	Plant 7: 936,000 gal/day	550	
Total emergency water supply: 6,136,000 gal/day		**2,450**	**KW**