DROUGHT PREPAREDNESS CASE STUDY

Pinnacle Pond, Hooksett: 2016

Pinnacle Pond, Hooksett: 2016

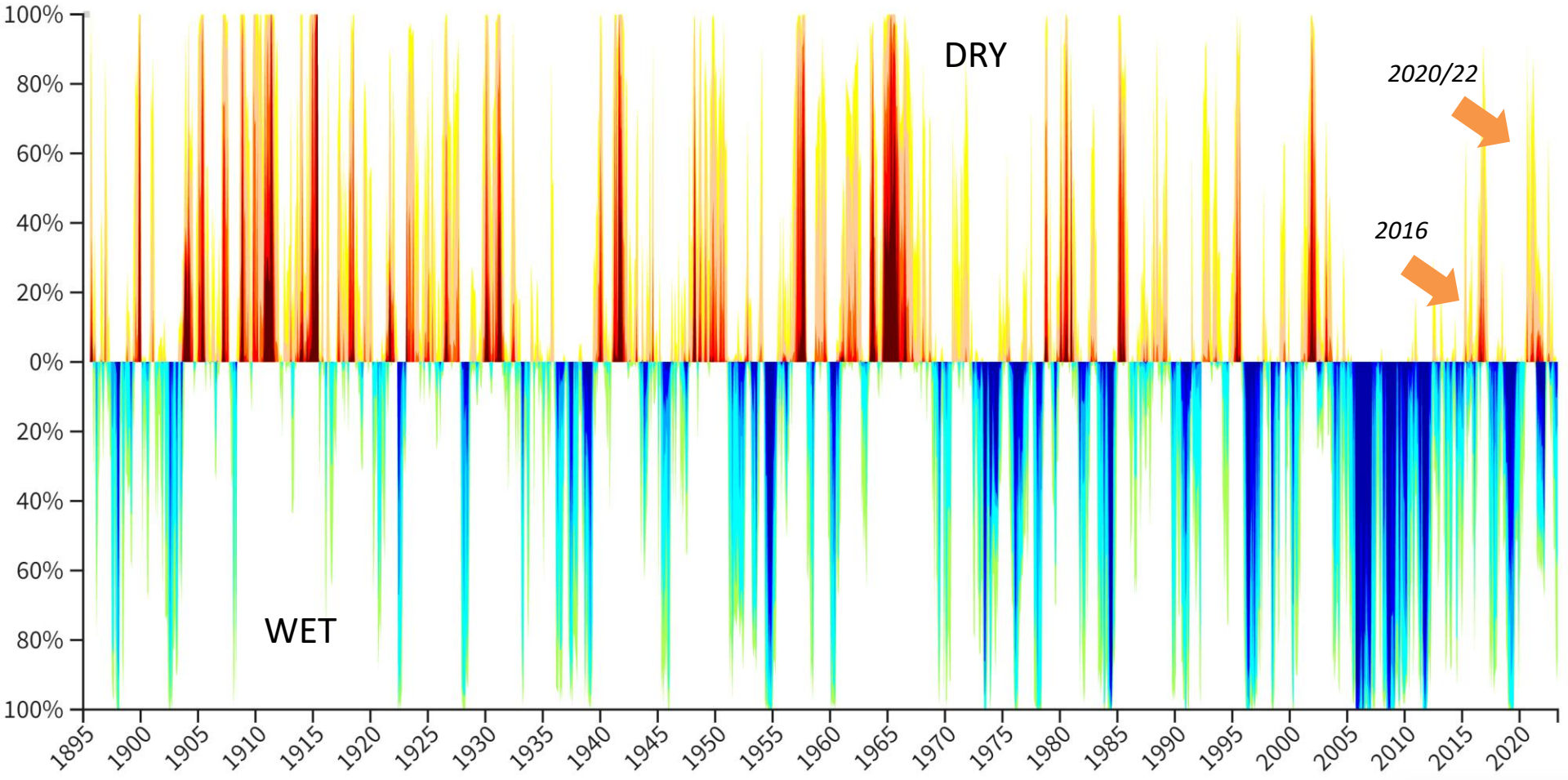
Menu of Local Preparedness Actions

Major Themes:

1. Local Drought Management Plan (DMP) as part of Emergency Response Plan (including supply side actions) And Water Use Management Improvements
2. Land Use Planning to Minimize Water Use & Increase Recharge & Leverage Water Supply/Distribution Opportunities
3. Water Conservation Program (WCP)
4. Water Rates / CIP – Budget Integration & Implementation
5. Nonessential Outdoor Water Use Restrictions
6. Asset Management Program (AMP)
7. Awareness of Alternative Approaches

Source: MA EOEEA, July 13, 2017.

Drought/Precipitation in NH: 1895 to Present



Source: NIDIS Standardized Precipitation Index - NH, Monthly precipitation data.

Drought Preparedness Tip #1 : Source Management

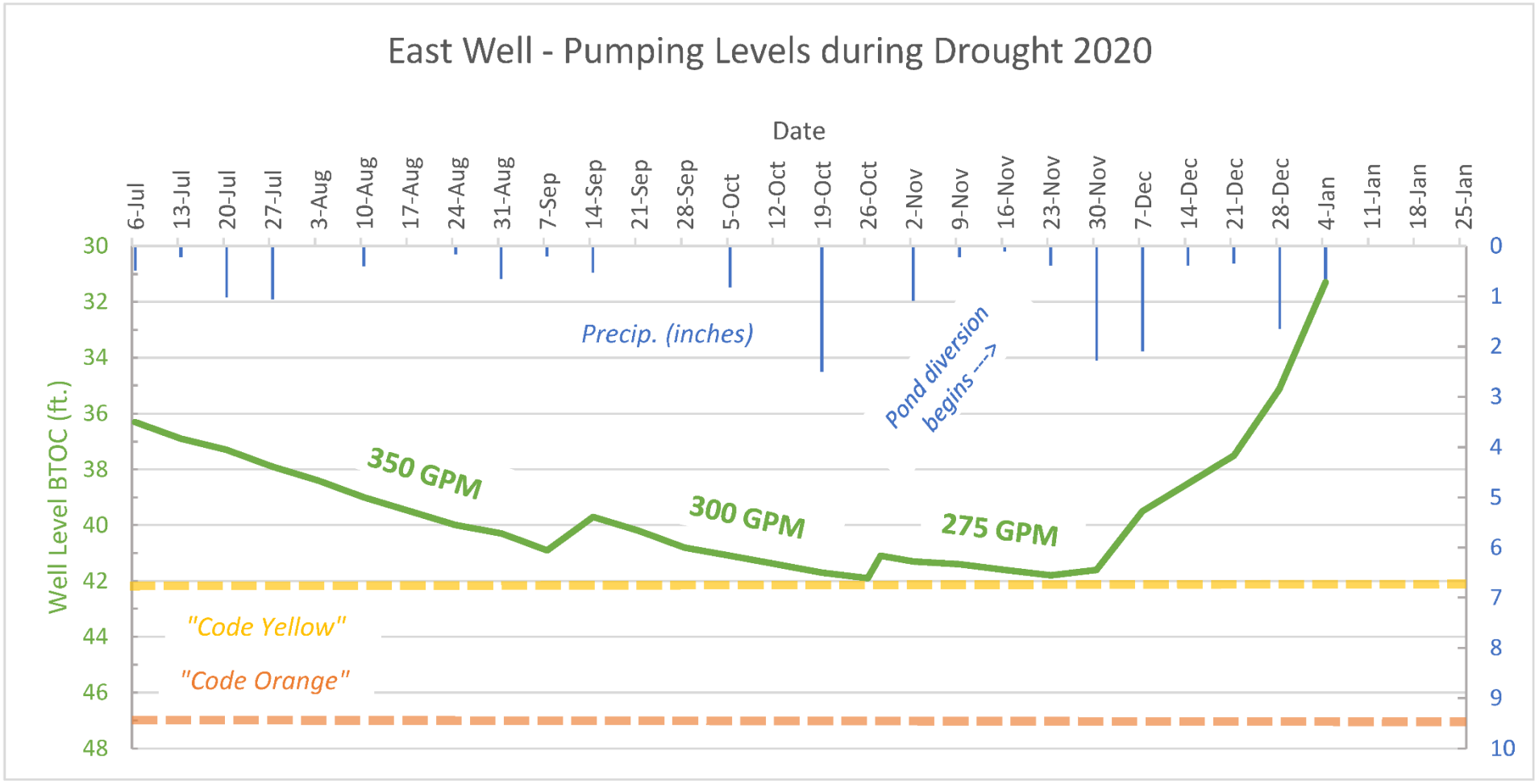
CRITICAL DEPTH ANALYSIS AT SOURCES

Pinnacle Pond, Hooksett Village Water Precinct, Hooksett, NH

Depth Category (ft):	Source: NORTH (1987±) (12")	SOUTH (1986±) (12" x 8")	SOUTH BU (2003±) (12")	EAST (2004±) (12")
Well Depth	76	57	65	80
Top-of-Screen	61	45	50	65
Pump Intake	59	41	49	60
Cavitation Level	56	38	46	57
"Code Red"	51	34	43.5	52
"Code Orange"	46	30	41	47
"Code Yellow"	41	26	38.5	42

- Code Yellow – Increase water level evaluation to weekly; Direct water from Brickyard Brook to Pinnacle Pond, if possible, in accordance with the terms of the NHDES Diversion Permit.
- Code Orange – Increase water level evaluation to daily; Adjust gpm to minimize drawdown in wells; Consider implementing voluntary water use restrictions, Alternate wells, if possible.
- Code Red – Increase water level evaluation to hourly while wells are running; Implement outdoor water ban if more than one well is Code Red; Adjust gpm to further minimize drawdown in well. Interconnection use possible.

Drought Preparedness Tip #1: Source Management



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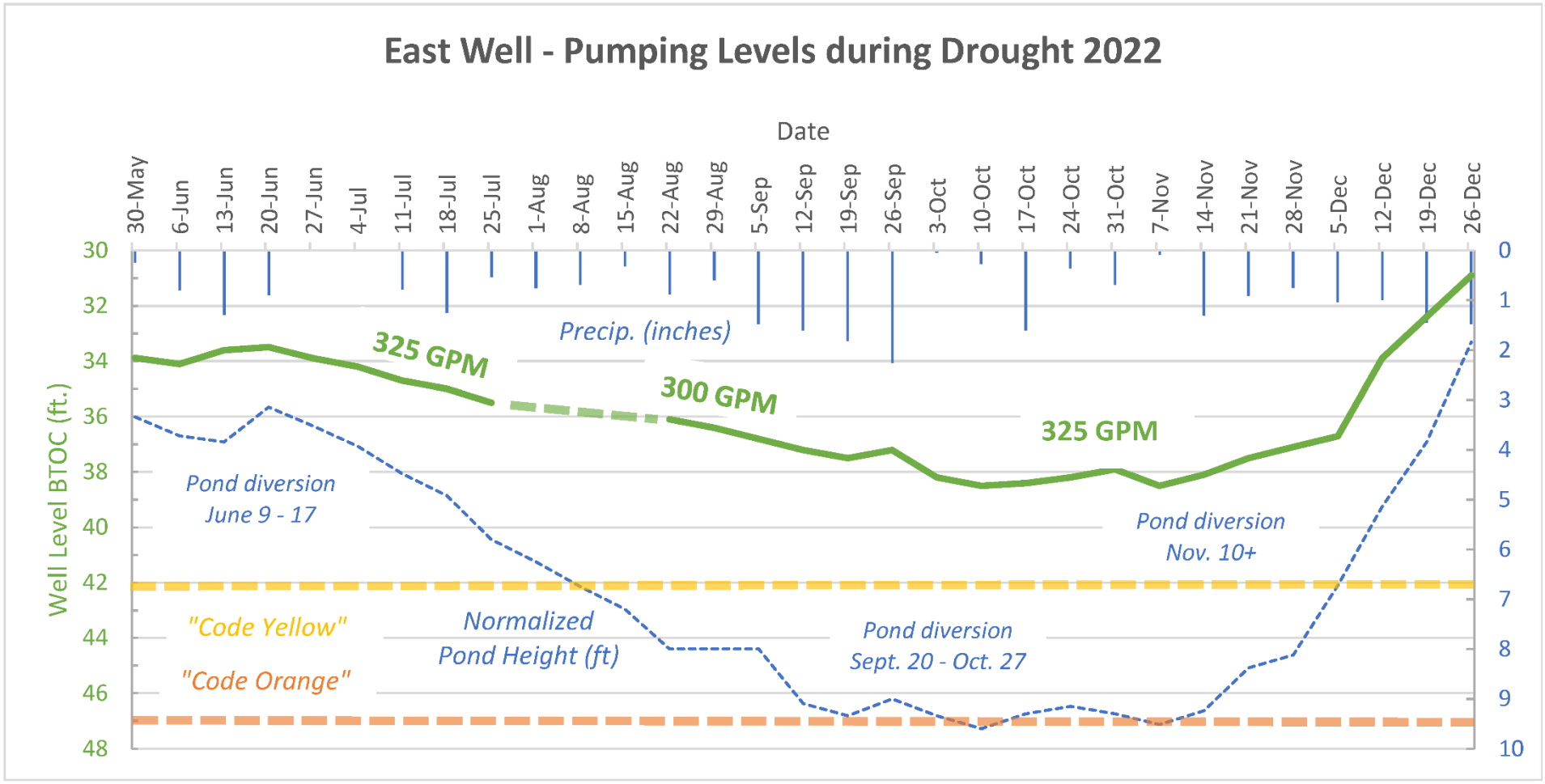


Drought Preparedness Tip #1: Source Management

Drought Preparedness Tip #1: Source Management

June 1st thru 23rd

19 ft static 30 ft running

July 1st - 31st

Well stays the same no matter cord.

all wells High

August 1st - 31st

all Frr + Water Truck

Doesn't

EAST WELL

YEAR?
(Joe's writing)

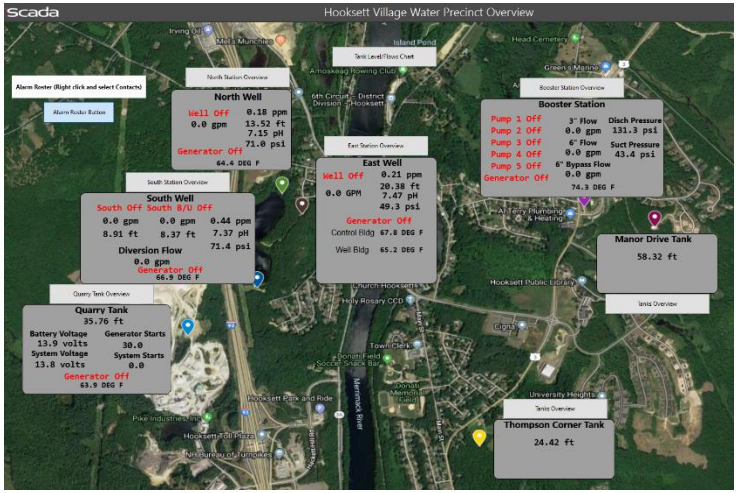
Drought Preparedness Tip #1: Source Management

PUMP STATION DAILY LOG - HOOKSETT VILLAGE WATE

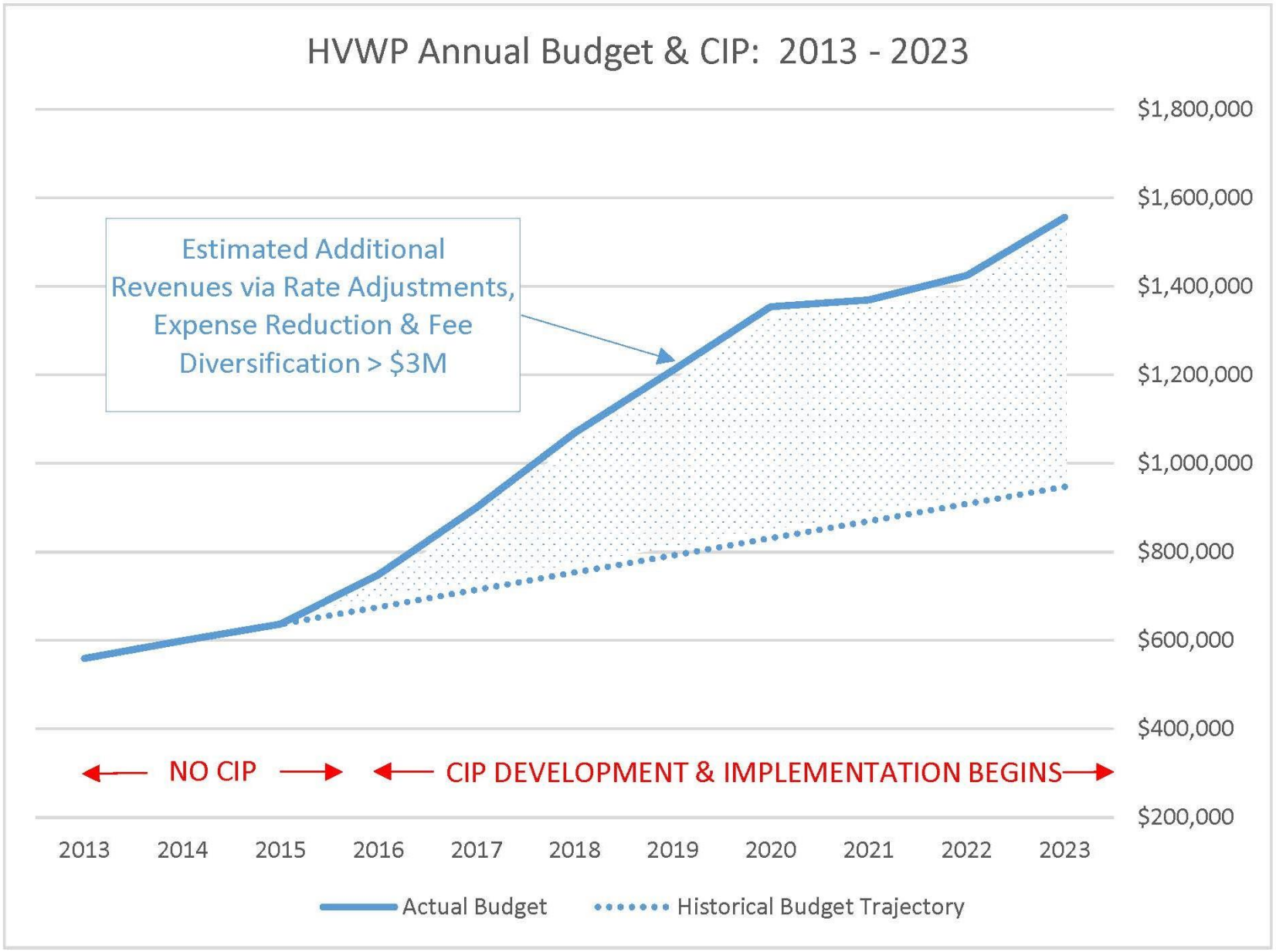
MONTH: July **YEAR:** 2021

DATE:	11	12	13	14	15	16
FLOW METER	60,290,372	60,451,730	60,510,516	60,693,735	60,770,332	60,924,5
GALLONS (x1000)	94,467	161,458	58,786	182,719	77,097	154,21
FLOW RATE (gpm)	-	-	348.5	-	-	-
WATER LEVEL (ft)	14.00	13.95	33.32	13.06	12.41	12.09
HOUR METER	12919.6	12927.3	12930.1	12938.8	12942.5	12949.
RUN TIME (hrs)	4.5	7.7	2.8	8.7	3.7	7.4
SYS. PRESS. (psi)	71.7	69.8	97.6	71.8	70.2	71.5
S. TANK LEVEL (ft)	24.90	25.89	26.14	26.26	24.99	26.3
W. TANK LEVEL (ft)	37.64	39.89	35.91	39.90	37.89	39.99
CL_2 LEVEL (gal)	22.25	13.5	25	15	20.5	17
CL_2 ADDED (gal)	0	15	0	10	5	20
CL_2 USED (gal)	5.5	8.75	3.5	10	4.5	5.5
PO_4 LEVEL (gal)	7	6.5	6.25	39	37.5	37
PO_4 ADDED (gal)	0	0	32.5	0	0	0
PO_4 USED (gal)	.5	.5	.25	.75	.5	.5
SODA LEVEL (gal)	220	210	235	165	235	175
SODA ADDED (gal)	50	50	0	100	0	100
SODA TOTAL (gal)	270	260	235	265	235	275
SODA USED (gal)	35	60	25	70	30	60
CL_2 (wall)	.18	.18	.42	.16	.15	.0
CL_2 (SL1000)	-	-	-	-	-	-
PO_4	-	-	-	-	-	-
pH (wall)	7.72	7.70	7.61	7.81	7.89	7.9
pH (SL1000)	7.50	7.62	7.60	7.79	7.76	7.8
SC (µs/cm)	244	239	235	240	236	23
TEMP (°C)	16.7	16.7	14.6	16.0	16.9	16.8
Fe	-	-	-	-	-	-
Mn	-	-	-	-	-	-
Running (R/NR)	NR	NR	R	NR	NR	NR
Staff Initals	MN	DB/GH	MN	MN	DB	DB
Notes						

Drought Preparedness Tip #1: Source Management



Drought Preparedness Tip #2 : Financial Management



Drought Preparedness Tip #2 : Financial Management

Hooksett Village Water Precinct (HVWP)

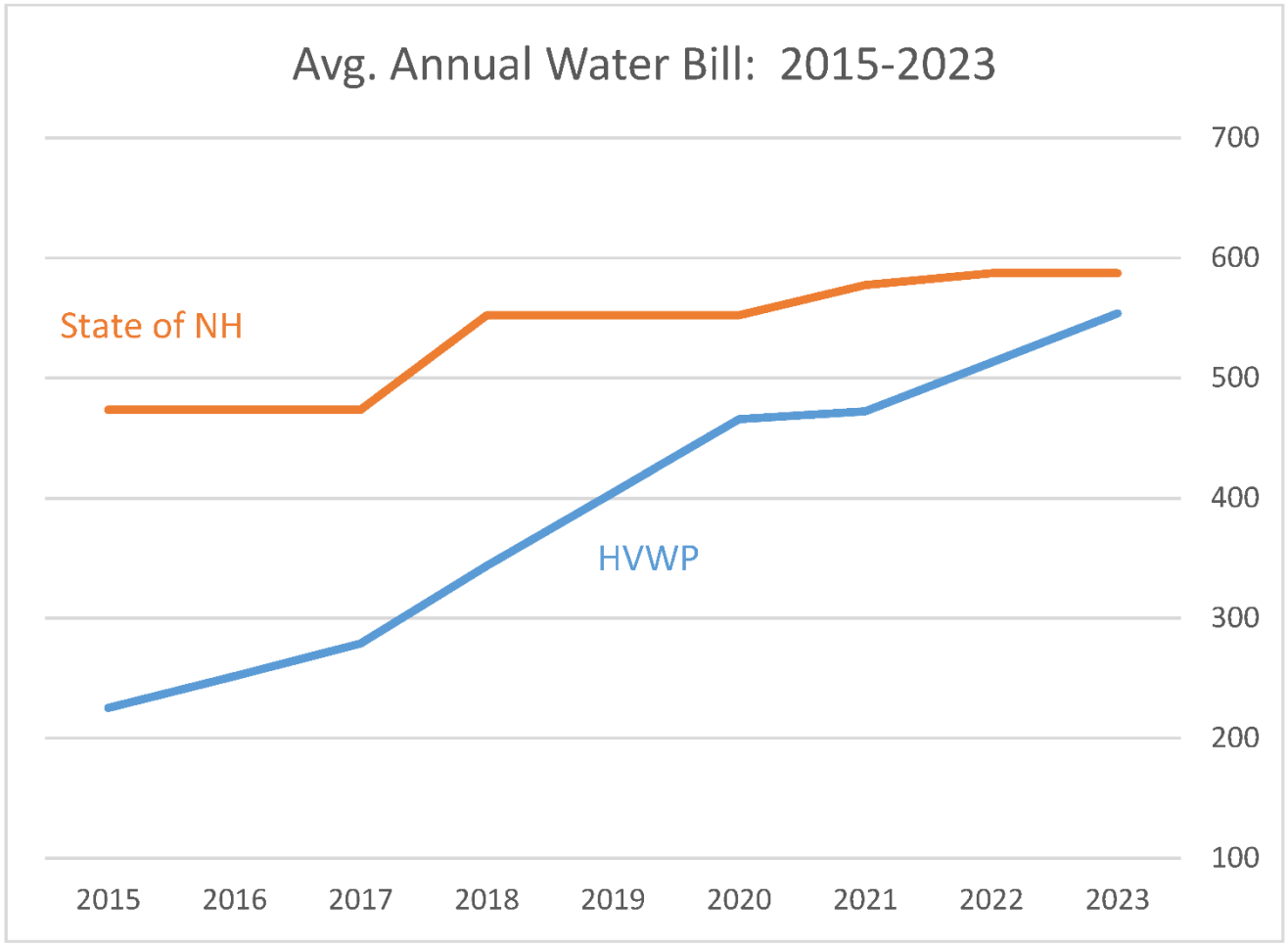
10-Year Capital Improvement Plan for FY2023-32

1/13/2023

Long-Term Project Description	Year± of Last Purchase	Year± of Next Purchase	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029	FY2030	FY2031	FY2032	10-Year Project Cost	25-Year Project Cost
Tanks: (a) Installation of new correctly sized tank for Low Pressure Zone (LPZ) (via $1.8M SRF loan in 2016 - 2019)	2019	--	$110,119	$110,119	$110,119	$110,119	$110,119	$110,119	$110,119	$110,119	$110,119	$110,119	$1,101,195	$1,982,150
(b) Repair/replacement of old LPZ tank and completion of transmission main for new LPZ tank (estim. $1.2M TF loan - 2024)	1950	2022-4	$95,000	$68,599	$68,599	$68,599	$68,599	$68,599	$68,599	$68,599	$68,599	$68,599	$712,388	$1,569,044
(c) Repair/recoat High PZ (HPZ) tank	2020	2033	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$192,500
New Source Installation: For drought/contamination protection and growth (estimated $1M loan in 2026)	2007	2023-5	$25,000	$60,000	$60,000	$62,850	$62,850	$62,850	$62,850	$62,850	$62,850	$62,850	$584,950	$1,432,617
Main Replacement/improvement: 25 miles pipe @ 1,000'/yr x $350/ft = $350K/yr goal (assumes 132-yr life cycle)	0 - 70 yrs±	Annual	$170,000	$244,000	$184,000	$252,000	$252,000	$175,000	$220,000	$220,000	$180,000	$220,000	$2,117,000	$5,908,536
Emergency Interconnection: Backup for west LPZ (estim. $750K loan in 2028)	1985±	2024-7	$20,000	$20,000	$20,000	$20,000	$20,000	$52,250	$52,250	$52,250	$52,250	$52,250	$361,250	$1,092,750
Meters/Transmitters: Routine upgrades/replacements (10-20 year cycle)	0 - 68 yrs±	2023	$40,000	$15,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$95,000	$683,768
Facilities: Improvements for efficiency/safety/damage prev./SCADA	1-35 yrs±	2023	$15,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$15,000	$23,514
Vehicles: Routine replacement before major repairs (12-year cycle)	2022	2025	$0	$0	$70,000	$0	$0	$45,000	$0	$0	$40,000	$0	$155,000	$507,521
Projected CIP totals:		*$474,145 (FY2022)*	***$475,119***	***$517,718***	***$517,718***	***$518,568***	***$518,568***	***$518,818***	***$518,818***	***$518,818***	***$518,818***	***$518,818***	***$5,141,783***	***$13,392,400***
Breakdown of CIP Sources: *Trust funds:*		*$28,466*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$28,466*
Prior year surplus:		*$35,000*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$35,000*
Taxes:		*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
Rates & fees:		*$410,679*	*$475,119*	*$517,718*	*$517,718*	*$518,568*	*$518,568*	*$518,818*	*$518,818*	*$518,818*	*$518,818*	*$518,818*	*$5,141,783*	*$13,328,935*
Projected Budget ▲ due to CIP:		*$0*	*$64,440*	*$42,599*	*$0*	*$850*	*$0*	*$250*	*$0*	*$0*	*$0*	*$0*		
														$13,392,400
Breakdown of Budget Needs: *CIP ▲:*		*$0*	*$64,440*	*$42,599*	*$0*	*$850*	*$0*	*$250*	*$0*	*$0*	*$0*	*$0*		
+ Routine O&M / inflation ▲:		*$15,000*	*$15,000*	*$15,000*	*$15,000*	*$15,000*	*$15,000*	*$15,000*	*$15,000*	*$15,000*	*$15,000*	*$15,000*		
+ Planned trust fund deposit:		*$0*	*$0*	*$5,000*	*$44,500*	*$37,000*	*$30,500*	*$25,000*	*$25,000*	*$25,000*	*$25,000*	*$25,000*		
= Approx. add'l. annual revenue needs ▲:		*$15,000*	*$79,440*	*$62,599*	*$59,500*	*$52,850*	*$45,500*	*$40,250*	*$40,000*	*$40,000*	*$40,000*	*$40,000*		
Maximum budget impact:		*1%*	*6%*	*4%*	*4%*	*4%*	*3%*	*3%*	*3%*	*3%*	*3%*	*3%*		

* NOTE: Used to guide rate evaluation. Does not include CY23 staff expansion.

Drought Preparedness Tip #2 : Financial Management



"…the governing bodies of some of Maine's water utilities appear to have concluded that keeping rates as low as possible is their highest priority. In some instances, Trustees have chosen to forego critical system improvements because they are convinced that doing so is necessary to avoid an increase in rates. Such decisions necessarily compromise that water utility's financial and operational capabilities and may significantly undermine that utility's ability to manage and protect its source of supply, thereby undercutting its ability to deal with a water supply emergency." *MPUC, 2018*

Drought Preparedness Tip #2 : Financial Management

HOOKSETT VILLAGE WATER PRECINCT

VILLAGE WELLSPRING

January 2021

HVWP is pleased to release this issue of the *Village Wellspring*, a periodic newsletter designed to keep you better informed about HVWP activities and events. We would like to take this opportunity to thank those customers that let us know about unusual water usage, leaks, water quality changes and hydrant damage – this makes it easier for us to monitor water system health and safeguards our shared water resources. Please call or stop by anytime to talk about water – it's our favorite topic.

WATER SYSTEM OF THE YEAR AWARD

In October 2020, HVWP was pleasantly surprised with the receipt of the System of the Year Award from the Granite State Rural Water Association. According to GSRWA Executive Director Jennifer Palmiotto, this is a prestigious award reserved only for the best managed utilities in NH. The Precinct was selected based on its proactive planning and public outreach accomplishments. Ms. Palmiotto indicated that our "outstanding team…should be recognized for the improvements that [we] have made to [the] system…including modernizing a well station to improve safety, efficiency and communications, completing an inventory of system assets using a high tech Geographic Information System and hosting a water system overview and a groundwater protection Best Management Practices outreach meeting." It's not often you get a pat on the back – thank you, GSRWA!

PUMP STATION MODERNIZATION

Over the course of the last five years, HVWP has steadily reinvested over $250K into updating and optimizing the efficient and safe operations of all four of its pump stations / treatment plants. By designing and overseeing the completion of these modernization efforts in-house, we estimate that we have saved our customers at least another $250K in outside fees. Chemical and electrical usage is now minimized and monitored effectively. Compliance with modern health and safety criteria is now a standard feature, and new meters, valves and piping ensure that flows are unimpeded and accurately controlled and accounted for. The completion of the North Station in 2020 marks the end of this major long-term project. We'd be happy to show off one of the stations – call for an appointment today and ask us for a tour!

HVWP staff, from left, are Office Manager Betsy Palmiotto, Operator Jessica Bell, Operator Gary Hebert, Assistant Superintendent Matt Norris, and Superintendent Mike Hedden.

…LS, ALARMS & COMMUNICATIONS

…lso invested over $250K in the last five years on a total revamping of our internal controls …We've removed our outdated, trouble-prone, labor-intensive systems of the past and …omprehensive, unified, dedicated radio communications (or "SCADA") system that allows …s to remotely monitor and troubleshoot operations and emergencies at the pumping …itment plants and storage tanks in real-time. This project was completed in 2020, …g Precinct operations. In addition to quicker response times and a significant …in understanding system hydraulics, we are saving about $20K/year on utility bills.

OTHER ITEMS OF INTEREST

• **Water Supply Capacity Study:** HVWP and Lewis Engineering completed a comprehensive review of 60 years of water supply and demand data in May 2020 (available online). The study identified our current and future capacity to provide water for community growth under a variety of simulated conditions. Detailed recommendations to assist with capital improvement planning were provided, including locating new sources and upsizing mains.

• **Managing Critical Assets:** The infrastructure mapping project and Phase I Asset Management Plan were completed in June 2020. As an outgrowth of this work, we voluntarily initiated a hydraulic modeling project to better understand fire flow and water main improvement needs. The AMP and modeling work have led NHDES to award us two additional grants for a $7K energy audit and a $20K Phase II AMP. The audit is underway and has already been …nted, in terms of procedural operations changes as well as heating equipment …reap savings after relatively short payback periods. The Phase II AMP will …nd focus on evaluating the condition, criticality and long-term financial …" assets like pump stations and tanks.

…P and the Hooksett TIF Committee …ds to connect the new tank directly to …ibution system on RT3A, but more …nother critical component of this …tore or replace the old (1950) and …eel tank off of RT3. Stay tuned!

…weather can do a number on water …water piping, meter and backflow …n freezing. Please also help clear …ar your home or business.

…ht is over! Between June and December, Hooksett suffered from …ght conditions. Despite record-high customer irrigation usage …was able to meet demand without restrictions by adjusting pumping …le Pond to recharge the aquifer. The 2020 drought allowed us to …test a response plan we developed during the 2016 drought.

…Check it out! www.hooksettvillagewater.org

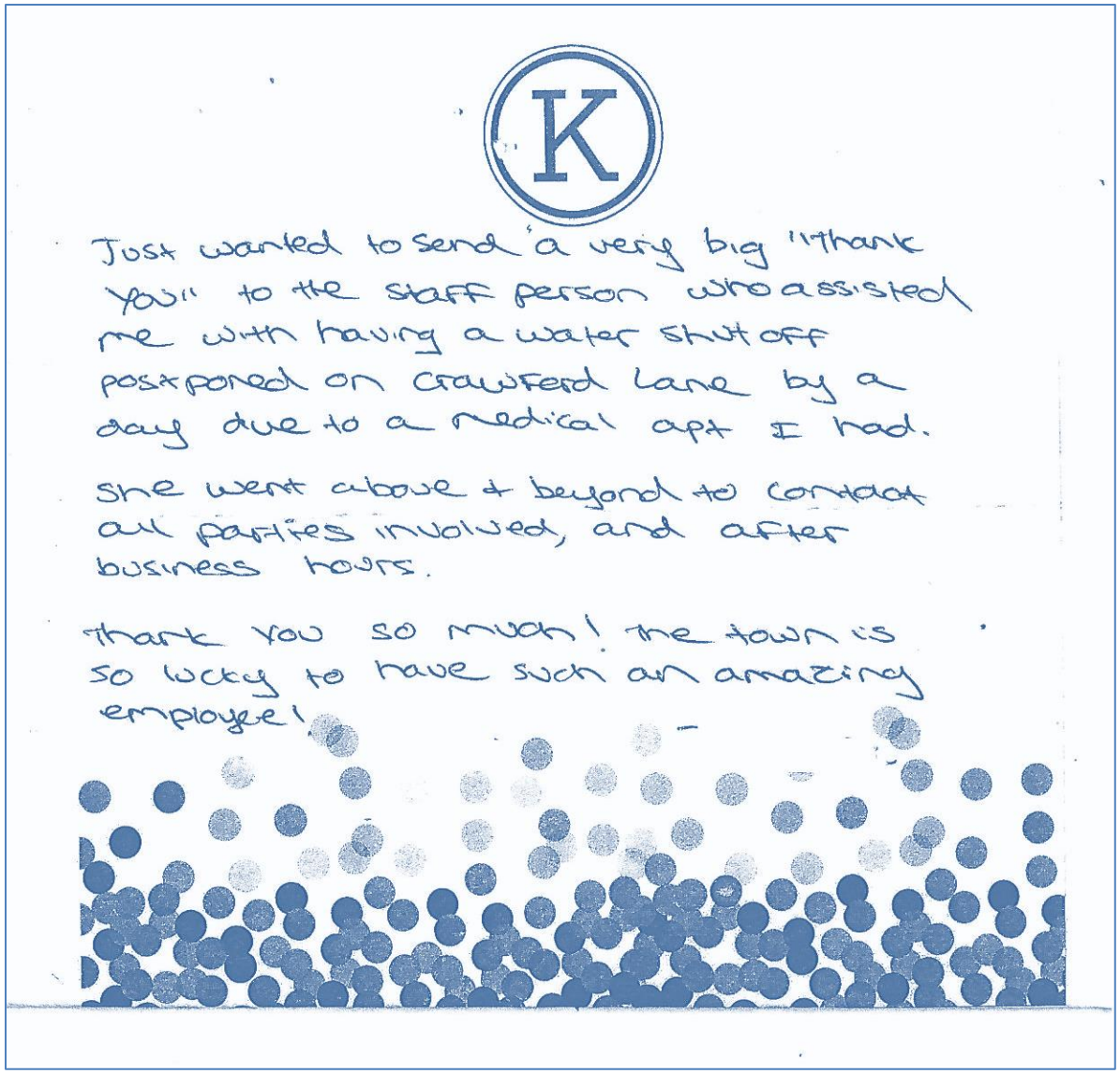
"This is incredibly helpful, thank you so much! I had a post-it note in my budget file about increasing the utility line in our budget to account for the increase in water rates but nothing solid to base it on, so this will be very helpful for future planning."

"You are doing a truly fantastic job down there, the transparency and information you are sharing are quite notable and helpful. It's great to have … true professional[s] running things. As a resident and department head, I really appreciate that you are working so diligently to update the infrastructure..."

"…I appreciate that Hooksett Village Water Precinct is making efforts to explore funding sources for infrastructure support that would prevent drastic rate hikes for current rate payers. So, thank you!"

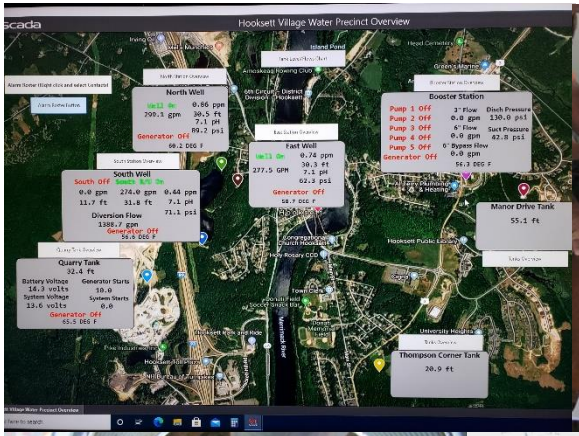
Drought Preparedness Tip #2 : Financial Management

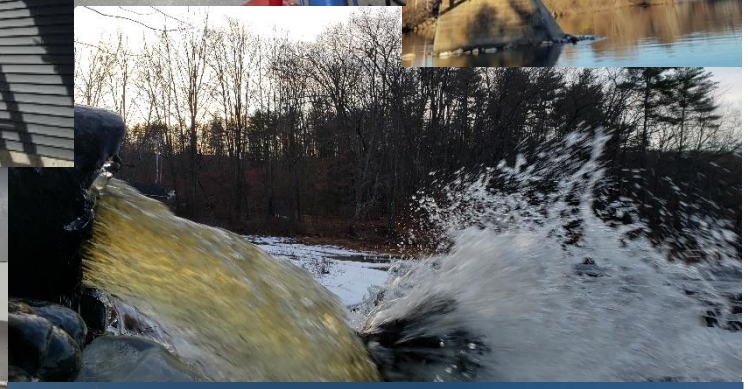
CUSTOMER

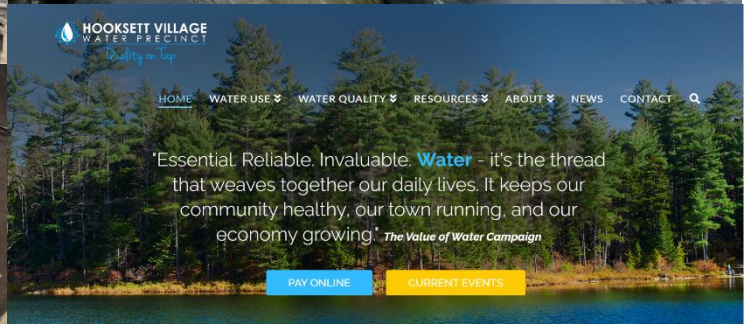


SERVICE

Drought Preparedness Tip #3 : Asset Management







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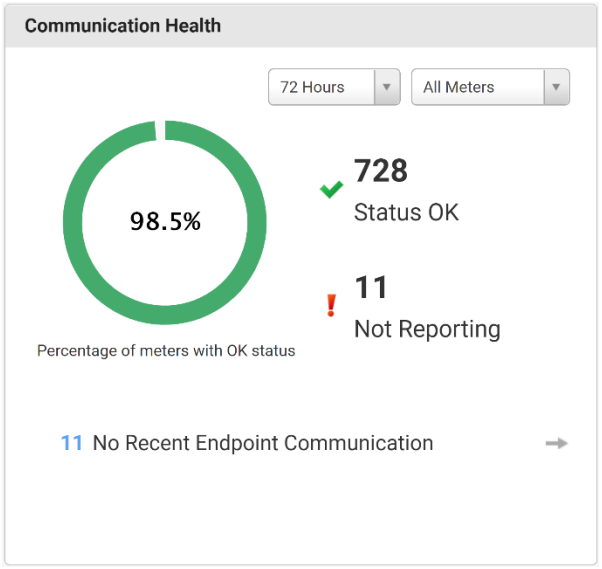
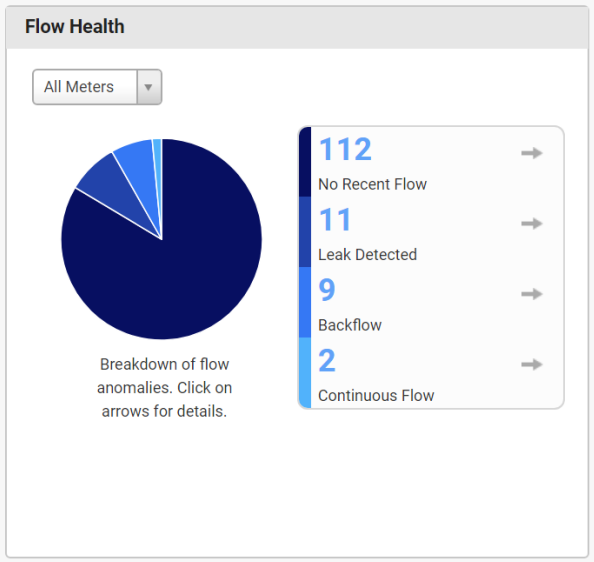
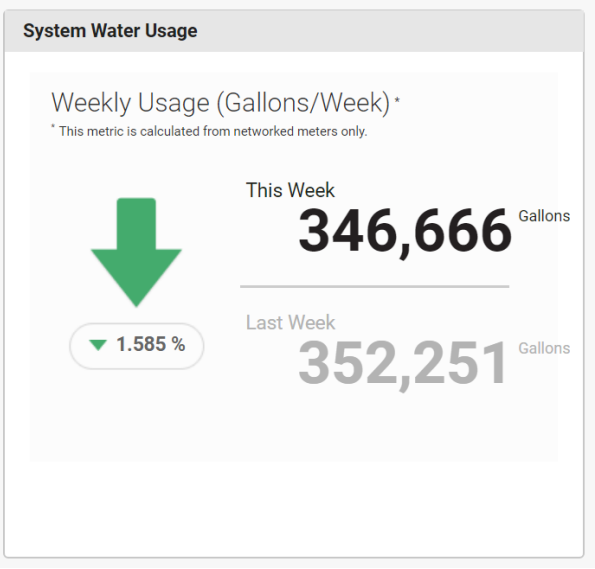
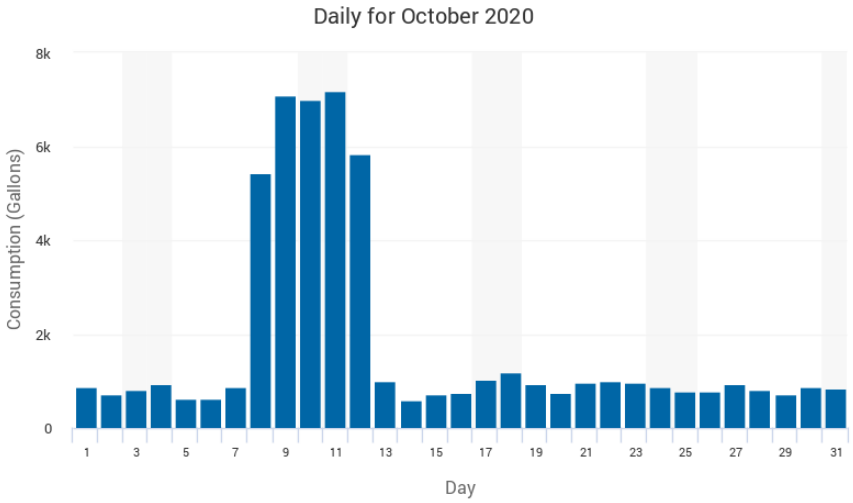
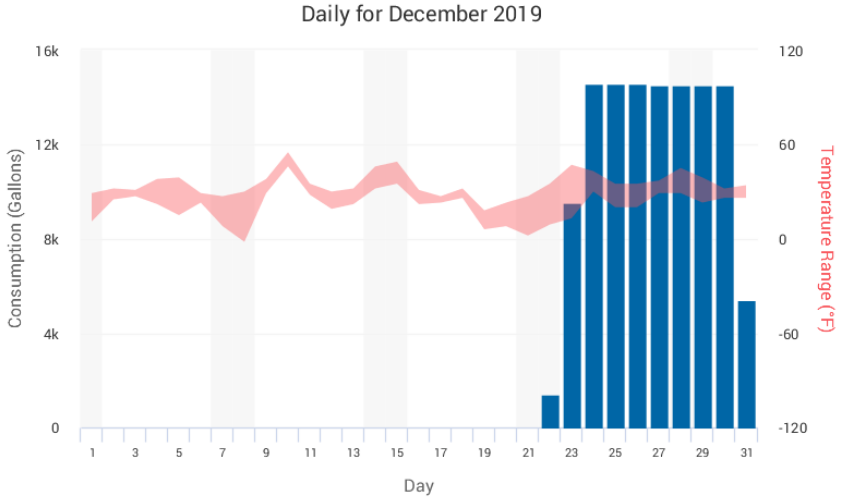






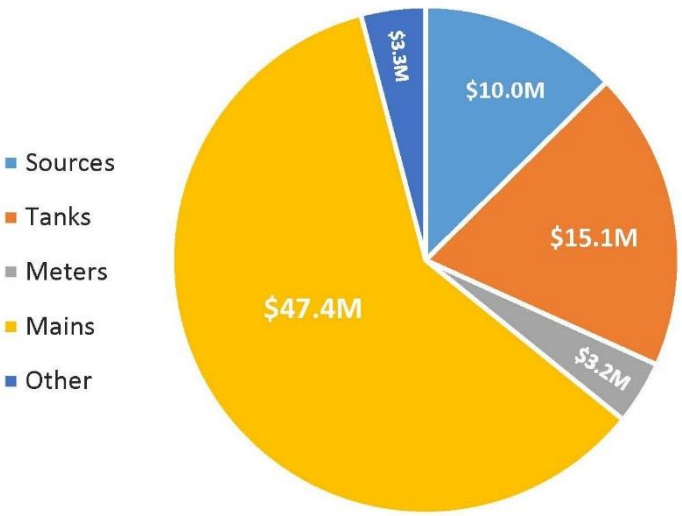




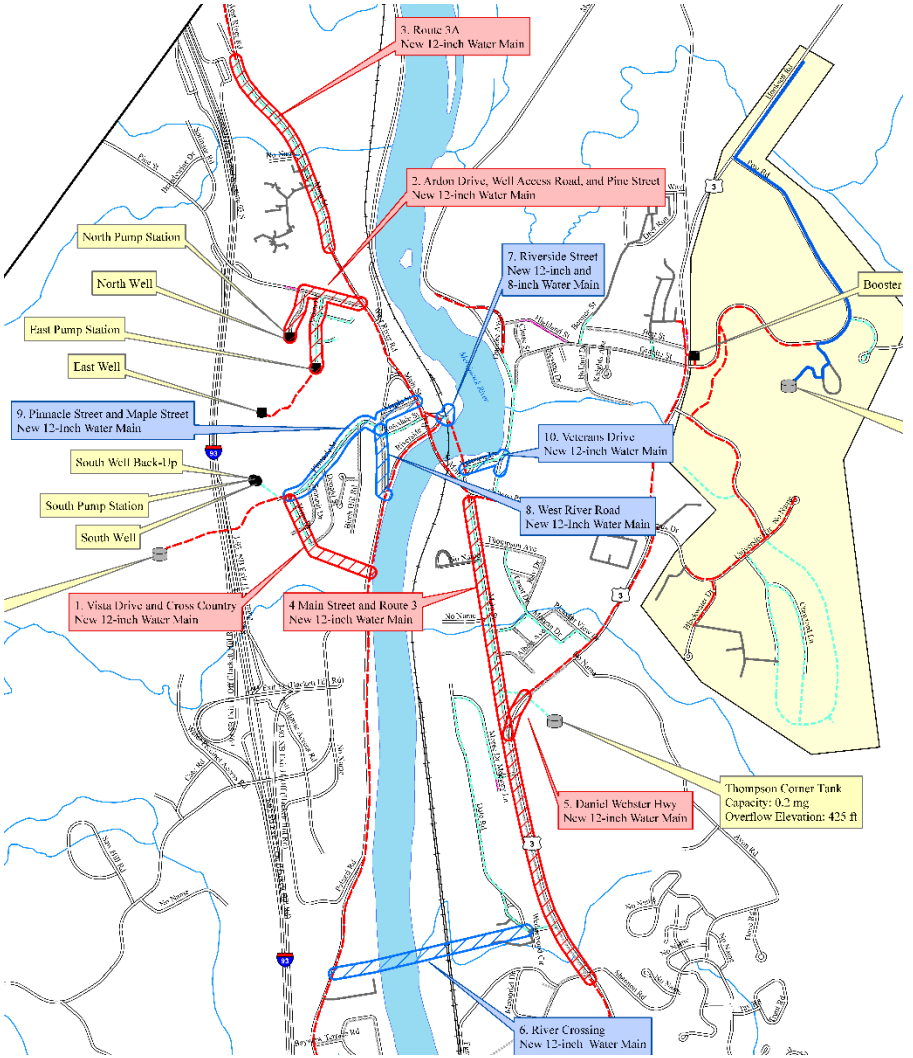
Drought Preparedness Tip #3 : Asset Management

Drought Preparedness Tip #3 : Asset Management

Life Cycle Costs:

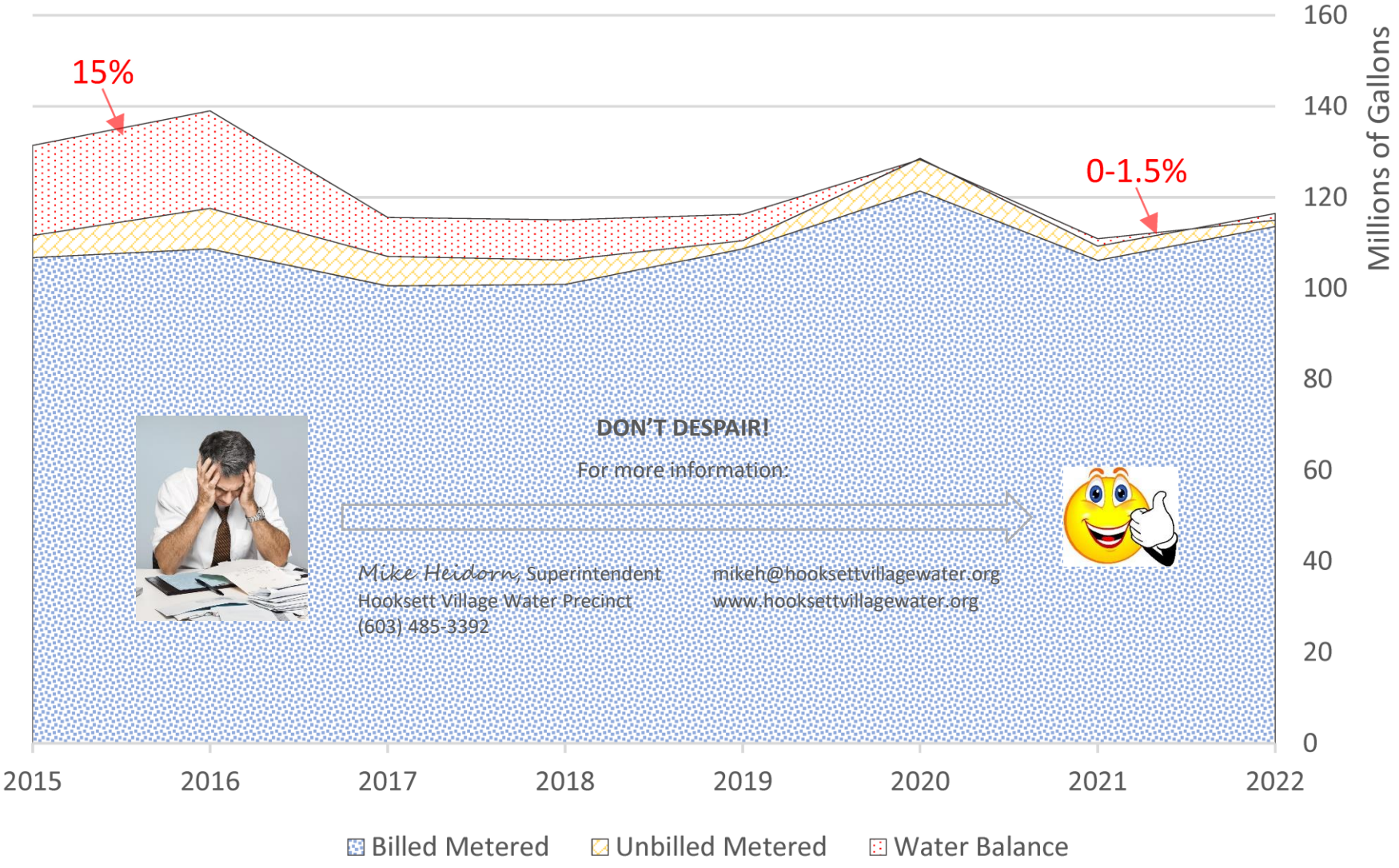


Water Transmission Main Priority Projects:



Drought Preparedness Tip #3 : Asset Management

HVWP Water Balance: 2015 - 2022



DON'T DESPAIR!

For more information:

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(603) 485-3392

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