

HELPING EACH OTHER
CREATE BETTER COMMUNITIES



THE
LANGDON
GROUP



GATEWAY
MAPPING
INC.

J-U-B FAMILY OF COMPANIES

The Balance of Conservation and Storage

Jessica Nathan-Waller, P.E.

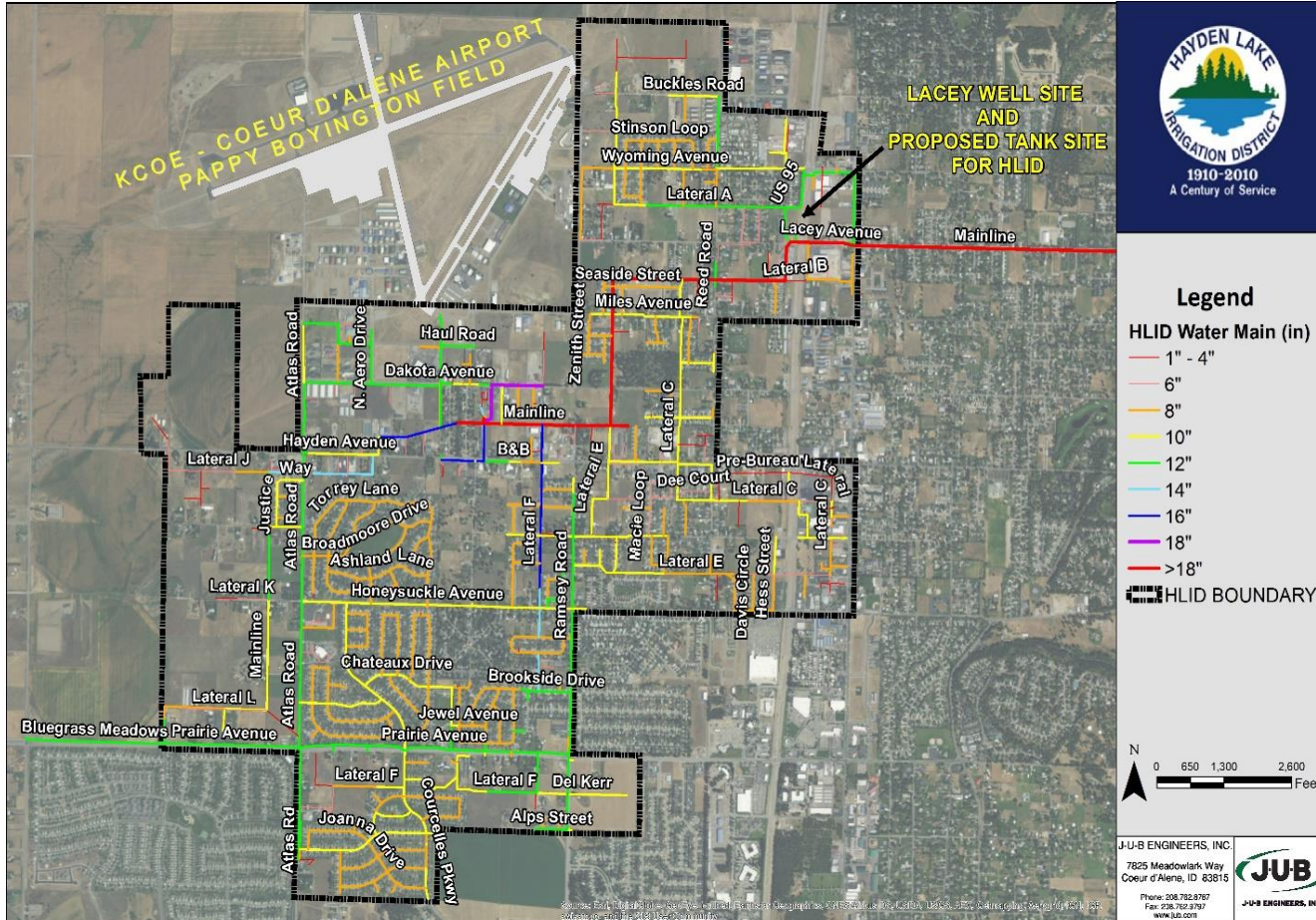
Branden Rose, Hayden Lake Irrigation District System Administrator

2024 AWWA Conference

Outline

- Background
- Management strategies used to date
- Planning Effort
- Impacts of Planning Efforts
- Lessons Learned & Project Highlights

Background



- Hayden Lake Irrigation District provides service within the incorporated cities of Hayden and Coeur d'Alene, as well as parts of Kootenai County.

Background

- Water System
 - 3,750 physical connections
 - 6 supply wells
 - 75,000 gallons of storage (prior to July 2023)
 - Additional 1.6 MG of storage was recommended in 2001

Background

- 1.6 MG of additional storage recommended in 2001
- Efforts to construct fell short
- Focus shifted to saving for future storage and adding supply
- Efforts to construct new storage was finally approved in 2019

Background

- Various, creative, efforts to handle peak demands have allowed the District to operate for 20 years.
- Despite those efforts, the need for storage became urgent, but while they were working through the siting, design and construction, they had to keep serving water....

Strategies Used for Conservation

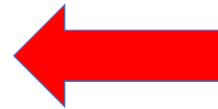
- Developed Laundry List of methods to promote conservation in order to seek by:
 - Using all the tools possible...
 - Rates,
 - Education,
 - Intricate SCADA programming,
 - Sleeping in the shop during lightning storms!

Strategies Used for Conservation

- Financial Methods:
 - Restructure of Rates –
 - Historically, rates were assessed annually
 - ~\$117.3 per irrigation season for 326,000 gallons of water for the first acre under one would receive a portion of the allotment depending on size
 - Currently, the base rate is \$17.50/ month, and you pay for all you use tier billing \$1.16 1-10K \$1.75 11-20k \$3.18 21k gallons
 - Equitable – users are in control of what they use.
 - Impact of the Restructure
 - 1st year \$2.8M in revenue, and 7.2MGD
 - 2nd year \$2.3M in revenue, and 5.6 MGD
 - The Peak Day reduced by 1.6 MGD

Strategies Used for Conservation

- Promote Conservation
 - Education on benefits
 - Landscape recommendations
 - Plants and Maintenance



Educating
Customers
on Broken
Sprinklers

HAYDEN LAKE IRRIGATION DISTRICT ph: 208.772.2612

Pre-1960's | 1960's | 2021

A *Quality* You Can Taste

Home | Announcements | About Us | New Projects | Your Water | Backflow Program | Development | FAQ | Contact Us

Conservation

Conservation of the water resource makes sense. The District uses the Rathdrum Prairie Aquifer as its sole water source. The aquifer we rely on is productive and stable; however, all resources have their limit. For that reason we all need to use water wisely. The District's production of water for our customers increases dramatically during the summer. This increase is due to watering lawns, gardens, landscape and irrigation of crops. It has become necessary for the District to start an Odd/Even Outdoor Watering Schedule. The Odd/Even Watering Schedule will be as follows:

- Street addresses ending with an odd number may water on odd dates of the month.
- Street addresses ending with an even number may water on even dates of the month.

How Can We Help?

Please use the contact form below to send us a question. If you would like to call us we can be reached at 208.772.2612.

First Name:

Last Name:

Email:

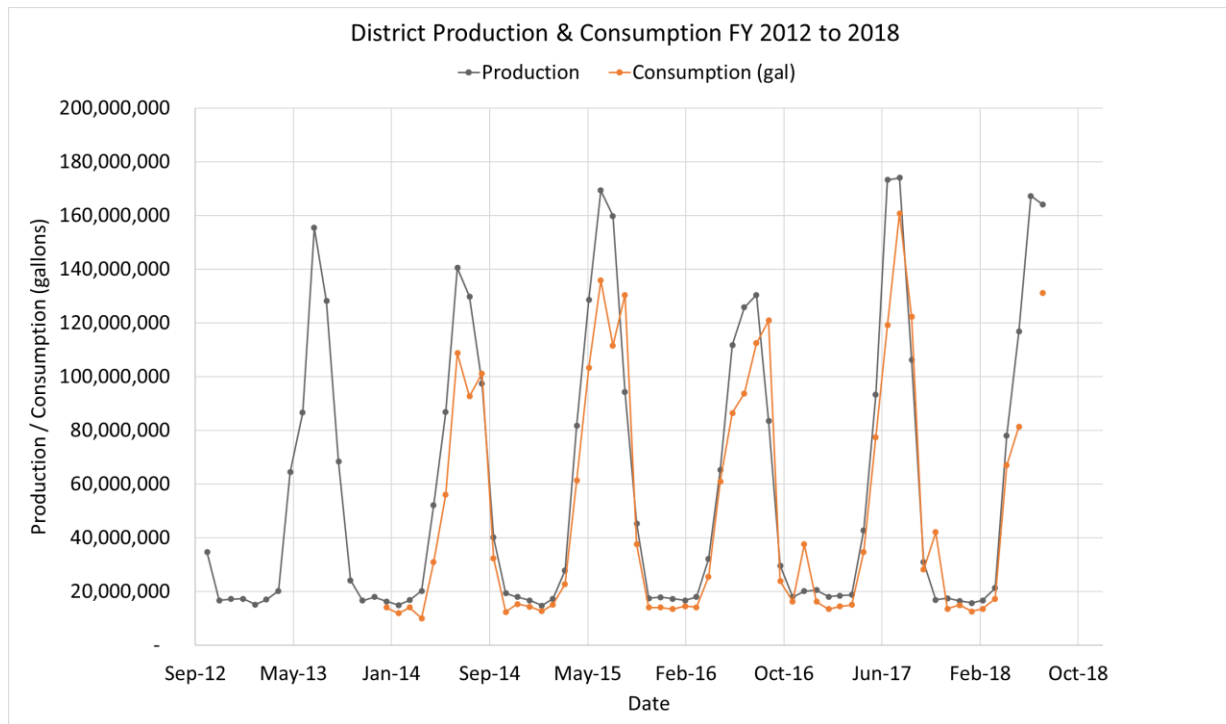
Phone:

Message:

HELPING EACH OTHER
CREATE BETTER COMMUNITIES

Strategies Used for Conservation

- Odd-Even Watering
 - Allow for new installations
 - Consumption increases, while production peak remains the same



Strategies Used to Date

- Emergency back-up power generators for 5 of the 6 wells



Strategies Used for Conservation

- Variable frequency drives



Burnt leads Motor



New 350hp VFD



Fast repairs or ??



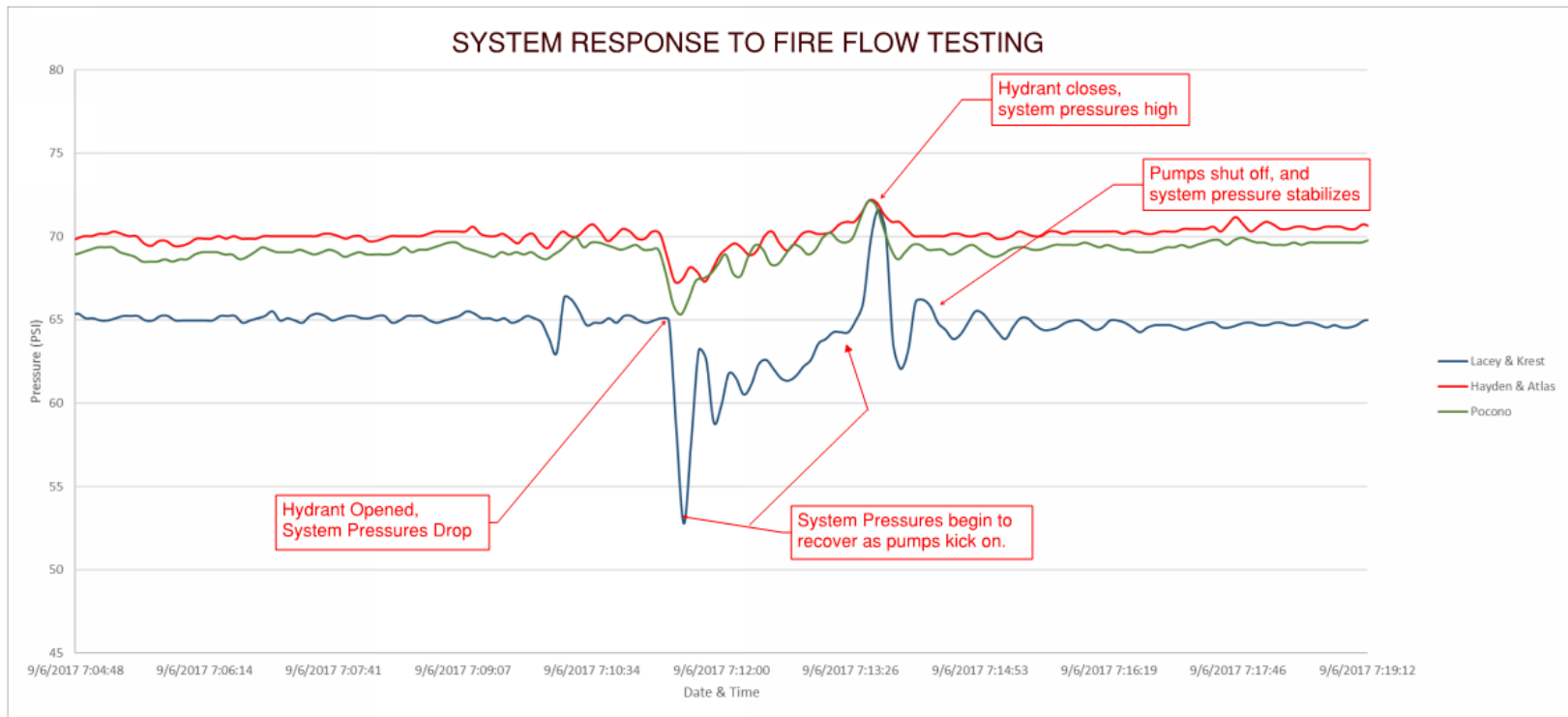
Strategies Used for Conservation

- SCADA programming
 - Complex, used to predict rate of fall in the tank
- Predictive Well Operation
- Special Lead Pump Operation

HLID Summer Operation Scheme	Lacey		Dakota 1		Dakota 2		Dakota 3		Larix		Start Time	
	Start (ft)	Stop (ft)	Start (ft)	Stop (ft)	Start (ft)	Stop (ft)	Start (ft)	Stop (ft)	Start (ft)	Stop (ft)	Hour	Min.
Recipe 1	10	19	1	2	9	18	12	19.5	9	17	3	0
Recipe 2	9	19	10	20	8	17	44	18	6.5	17	9	0
Recipe 3	9	18.5	13	19	14	20	10	18	6.5	17	2	30
Recipe 4	9	18.5	10	19	12	20	11	18	6.5	17	18	0
Recipe 5	12.5	20	5	6	14.5	20.5	0	0	13.5	19.3	2	30

Strategies Used to Date

- SCADA programming
 - Remote access
- Rapid Response Alarms



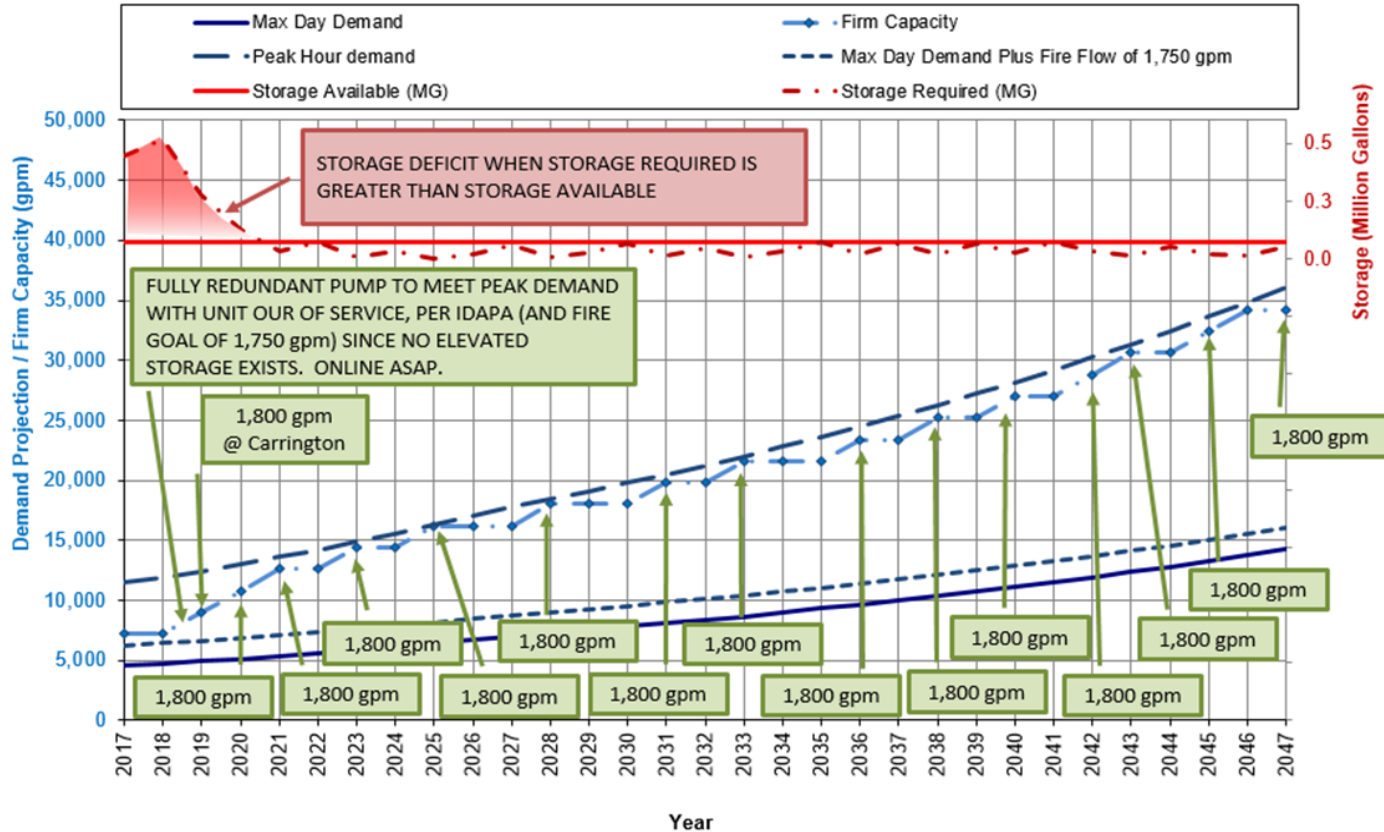
Strategies Used to Date

- System management employed to date often resulted in long hours for operators, especially during lightning storms, peak weeks and system tie-ins!



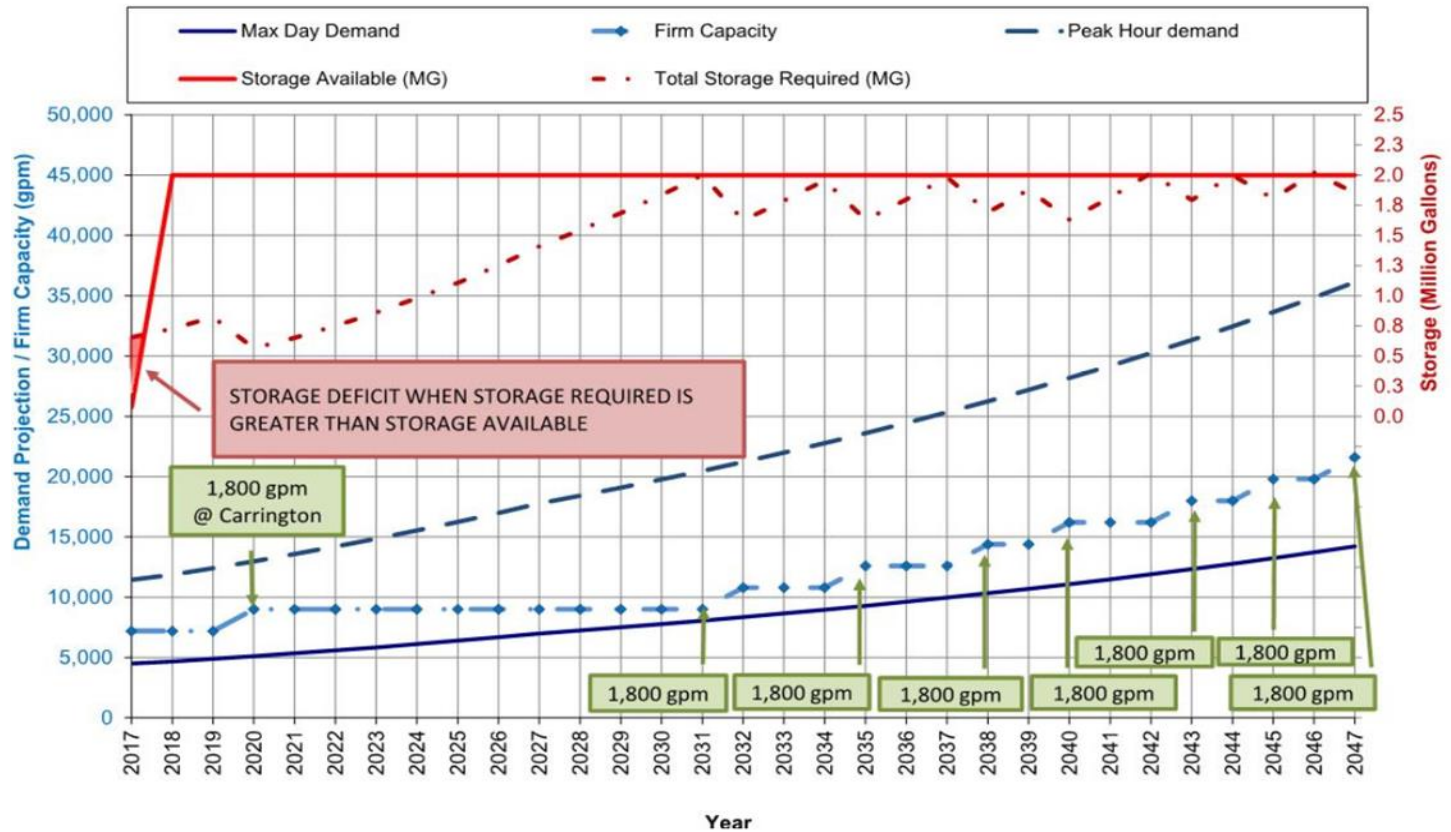
Future Without Storage

Alternative No. 2
 Additional Supply, Rehabilitate Existing Tank, Distribution Improvements
 System Demand and Capacity Comparison
 (Assuming a 3.8% year over year peak day demand growth)



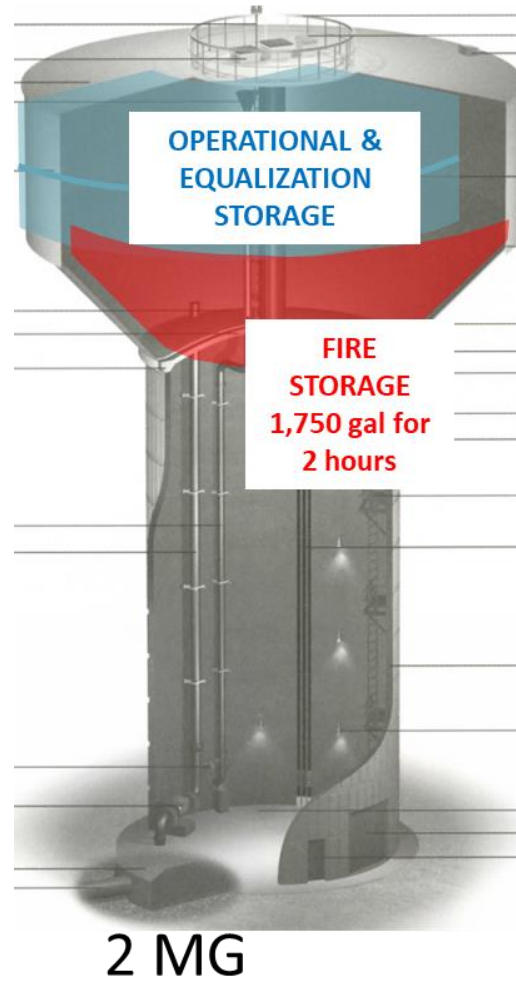
Future With Storage

Alternative No. 3
New Elevated Storage (2MG), Rehabilitate existing Tank, Additional Supply, Distribution Improvements
System Demand and Capacity Comparison
Assuming a 3.8% year over year peak day demand growth)

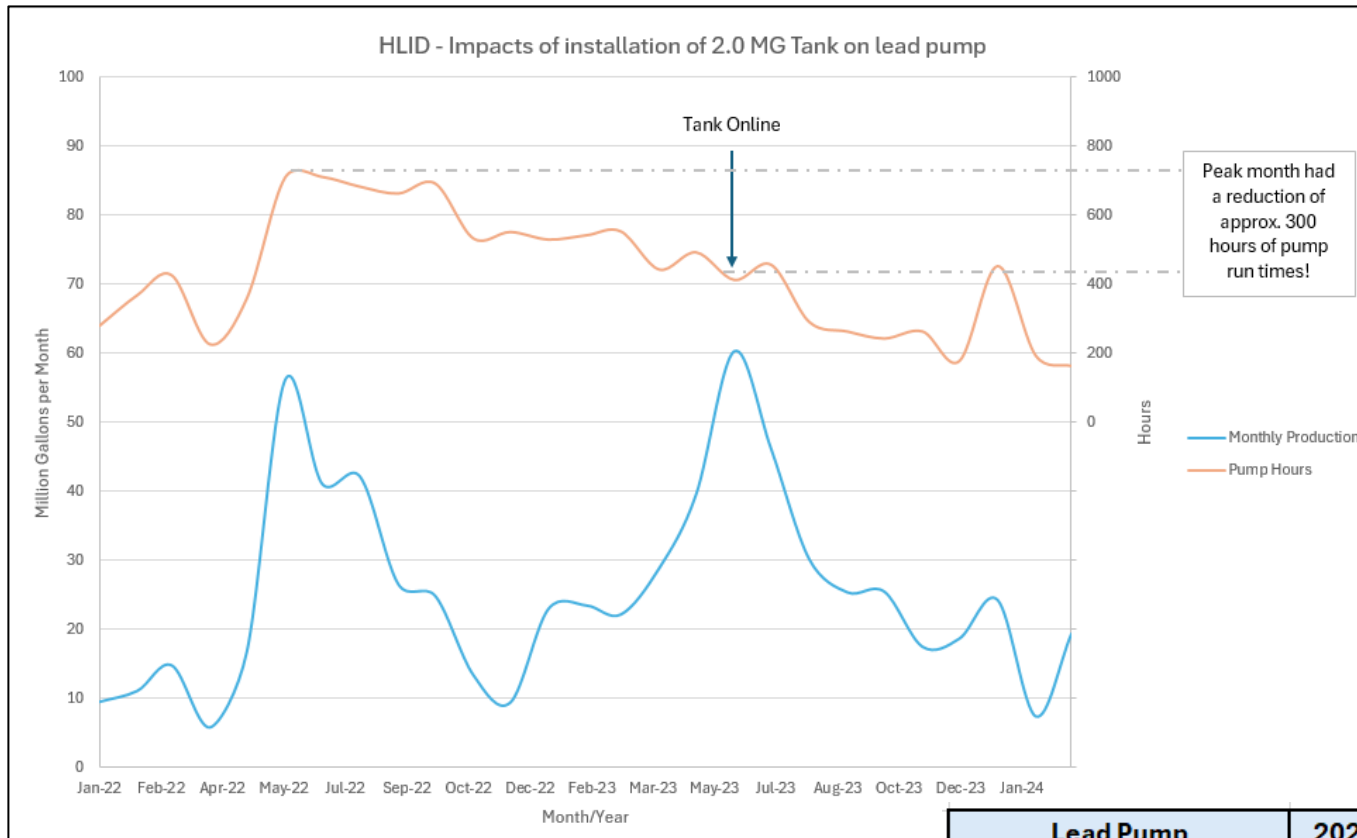


Project Highlights

- Able to provide continuous water service.
- Improve the long-term storage needs for the system.



Project Highlights



Lead Pump	2022	2023	2024	Percent Change
Monthly Production (MG)	56.2	60.4		7.4% increase
System Connections	3230	3476		7.6% increase
Pump Hours (peak month)	709	413		41.7% decrease
KWH (winter month)		75.73	39.6	47.7% decrease

HELPING EACH OTHER
CREATE BETTER COMMUNITIES

Questions and Open Discussion

Branden Rose

Branden@haydenirrigation.com

(208) 772-2612

Jessica Nathan Waller, P.E.

jwaller@jub.com

(208) 762-8787