

HELPING EACH OTHER
CREATE BETTER COMMUNITIES



THE
LANGDON
GROUP



GATEWAY
MAPPING
INC.

J-U-B FAMILY OF COMPANIES

Surviving Without Storage

You Cannot Conserve Your Way out of
Infrastructure Improvements

Michelle L. Johnson, P.E.

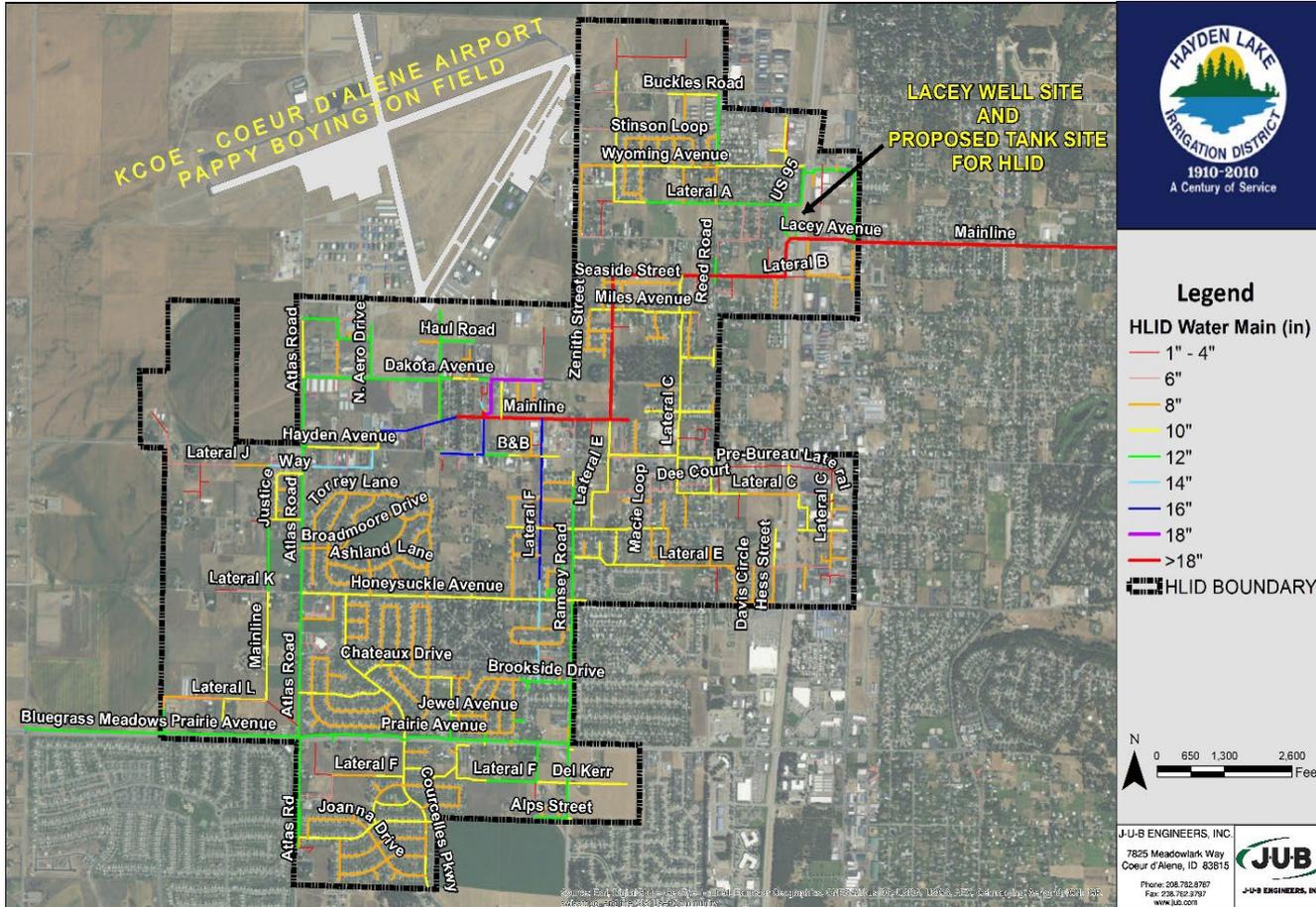
Branden Rose, HLID System Administrator

2022 PNWS AWWA Conference

Outline

- Background
- Management strategies used to date
- Solutions moving forward
- Tank Construction Information

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
 - 3,000 physical connections
 - 6 supply wells
 - 75,000 gallons of storage

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

Strategies Used to Date

- Efforts to manage peak demands include:
 - Conservation
 - Odd-even watering
 - Emergency back-up power generators
 - Variable frequency drives, allowing for longer run times and less starts
 - SCADA programming predicting rate of fall in the tank
 - Bringing wells online proactively to maintain pressure
 - Time-sensitive recipes to change lead pumps
 - Rapid response alarms directly notifying operators
 - Remote access to SCADA

Strategies Used to Date

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



HAYDEN LAKE IRRIGATION DISTRICT ph: 208.772.2612

Pre-1960's | 1960's | 2021

A Quality You Can Taste

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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:

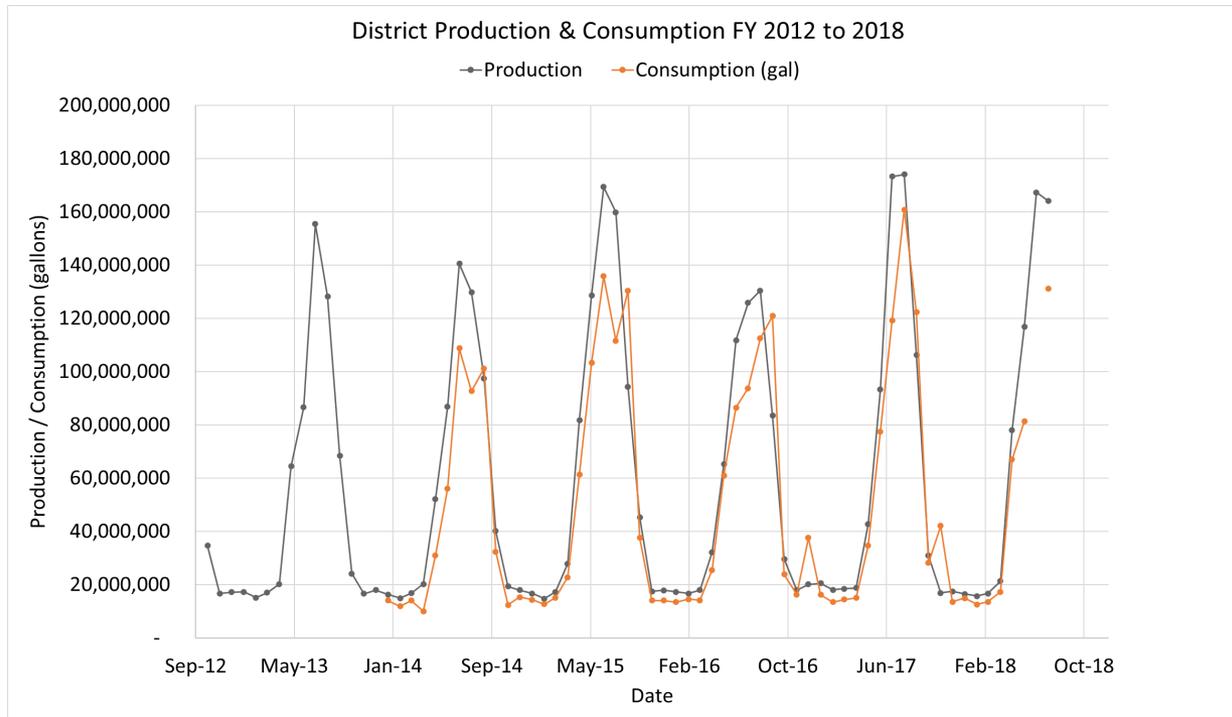
Message:

← Educating Customers on Broken Sprinklers

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Strategies Used to Date

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



Strategies Used to Date

- Emergency back-up power generators



Strategies Used to Date

- Variable frequency drives



Temporary
Motor



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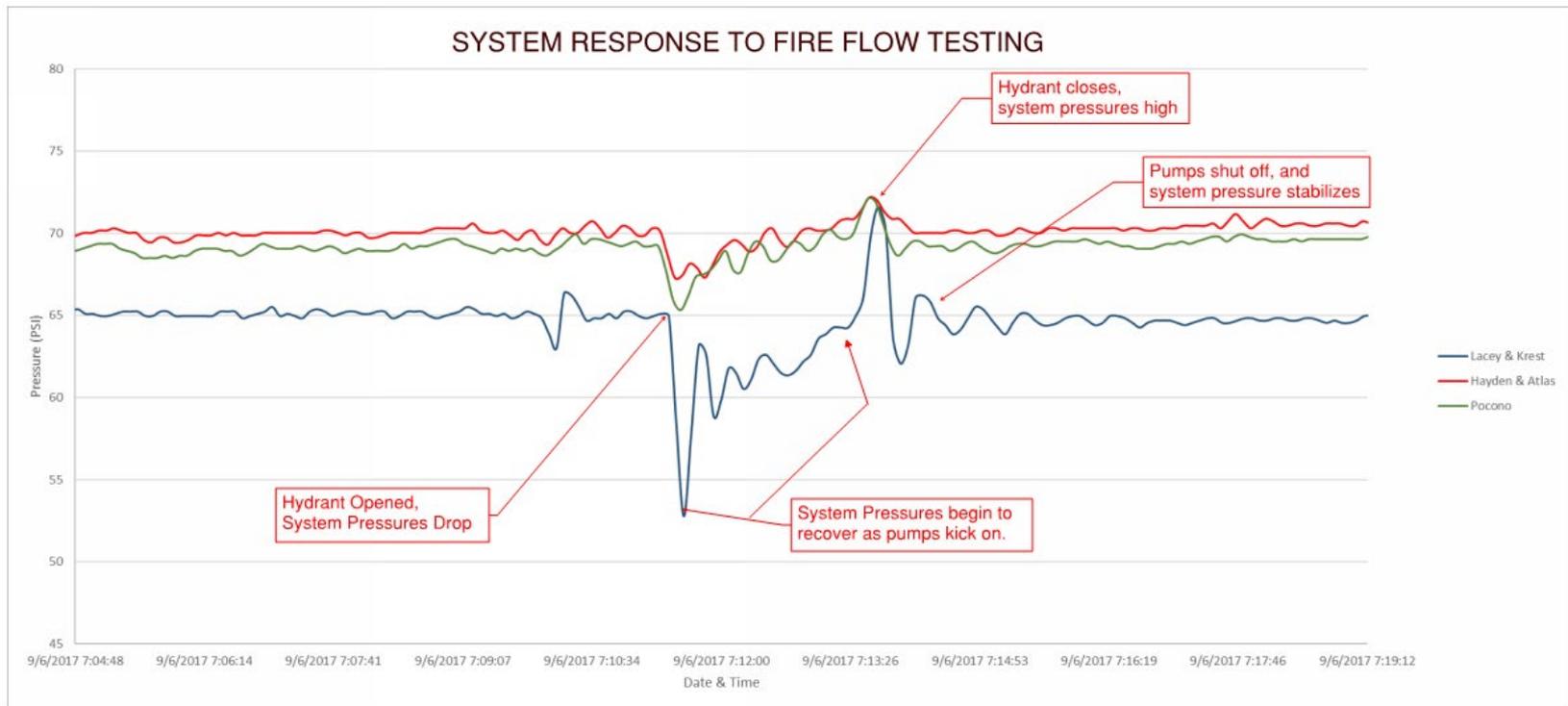
Strategies Used to Date

- 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)	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!

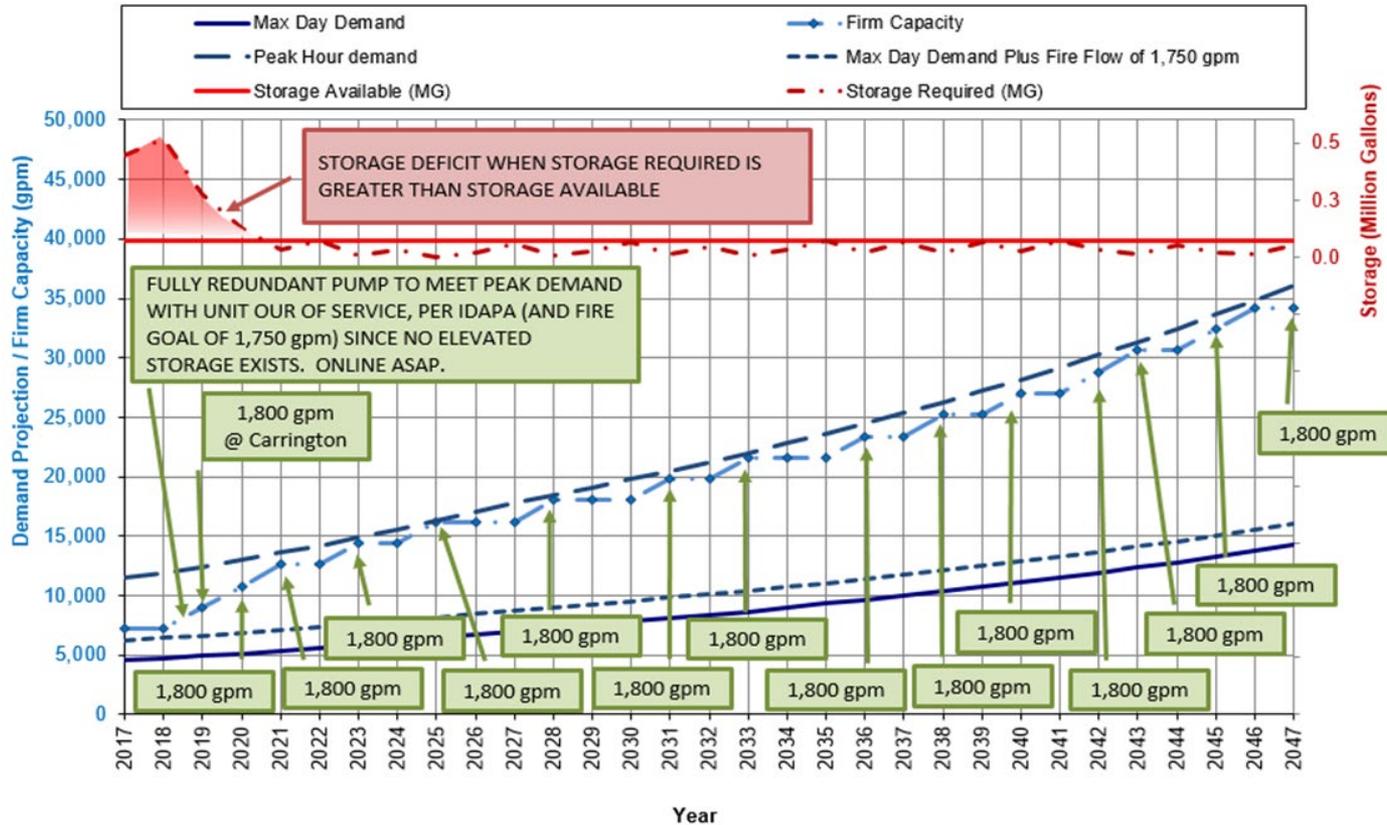


Developing Solutions

- District began a planning effort in 2017
 - Seeing pressure on District Infrastructure
 - Anticipating continued growth in the District

Future Without Storage

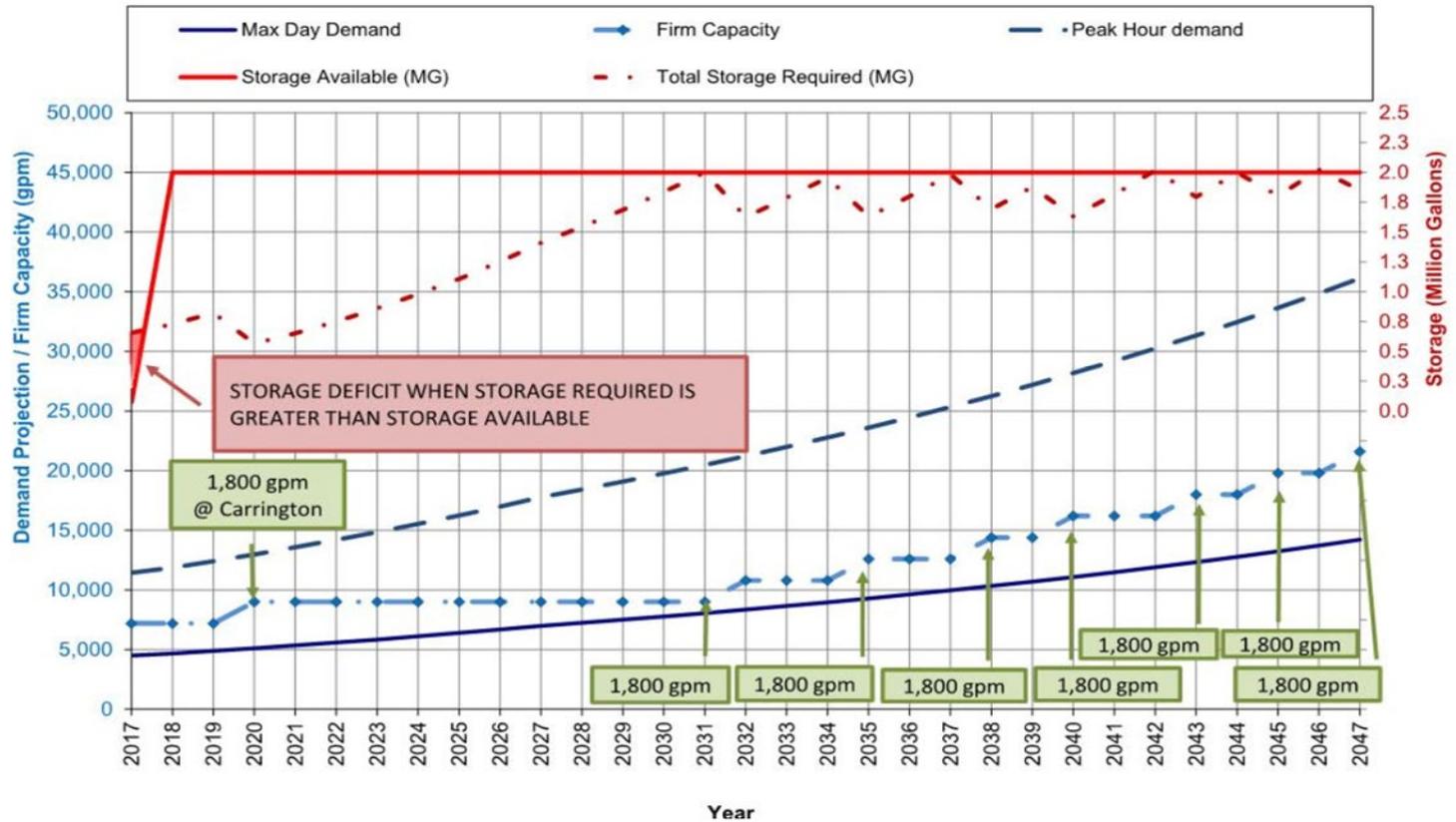
Alternative No. 2
 Additional Supply, Rehabilitate Existing Tank, Distribution Improvements
 System Demand and Capacity Comparison
 (Assuming a 3.8% year over year peak day demand growth)



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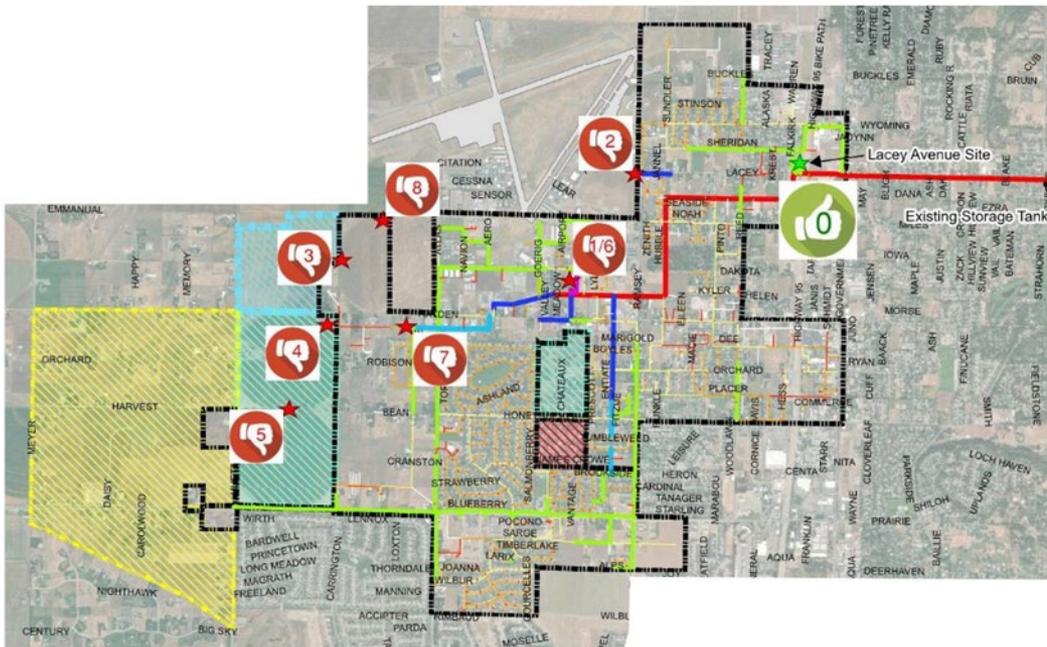
Future With Storage

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)



Tank Site

Evaluated Sites



Preliminary Coordination with FAA

- Driving factor
- Requires multiple aviation & elevation studies
- Public involvement
- Permitting
- 9 sites were evaluated

Now What?

- ✓ Planning Complete
- ✓ Siting Challenges
- ✓ Design
- ✓ Funding
- Construction

Construction

Foundation

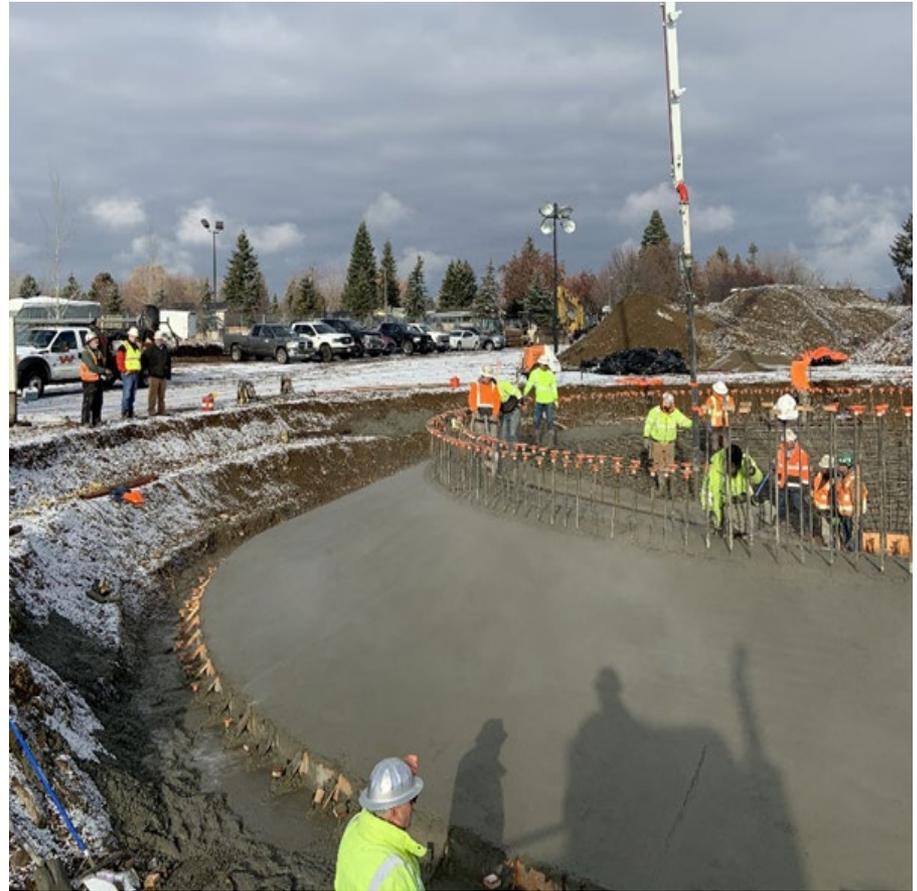
- Spread footing
 - Averages soil bearing loads
- Reinforced concrete
- Iron and steel are subject to AIS requirements



Construction

Foundation Concrete

- 745 cubic yards of concrete placed
- Sloped sides
- Pedestal supported with rebar rings



Construction

Concrete Pedestal Ring

- 12-foot segments
- Segment cured to 1,000 psi
- Then next segment is placed
- Total of 9 segments
- 5,000 psi concrete



Construction

Concrete Pedestal

- Access for
 - Storage
 - Maintenance



Construction

Tank Dome Panels

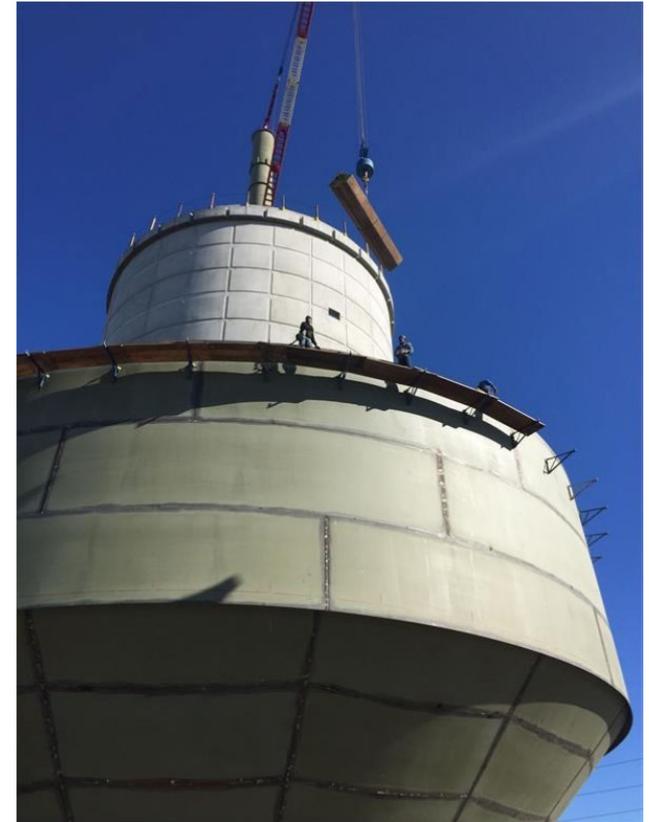
- Concrete compression support
- Steel liner cured in formwork



Construction

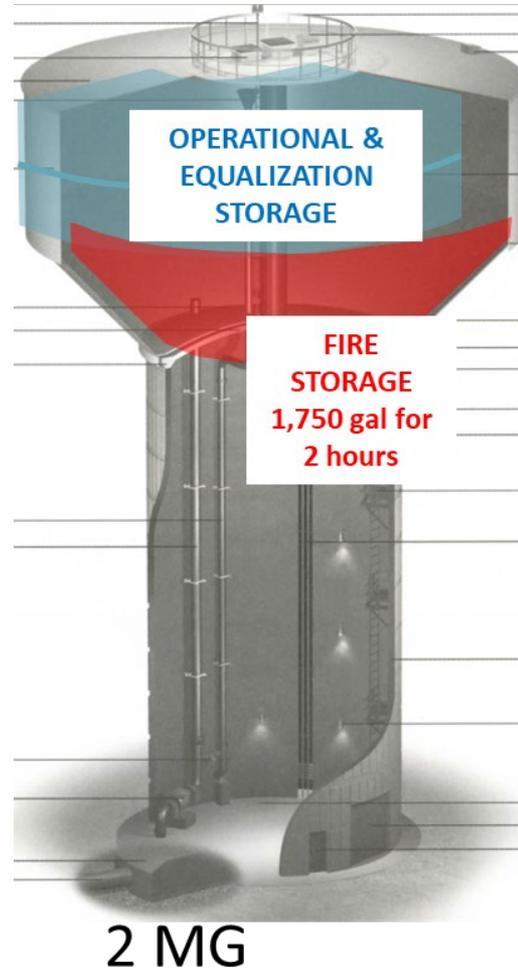
Tank Shell

- Welded at grade
- Hoisted into place when complete



Project Highlights

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



Questions and Open Discussion

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