Building the Foundation:

Leveraging ARPA Funds to Launch a Water Campus and Urbanization Strategy in Brooks, Oregon

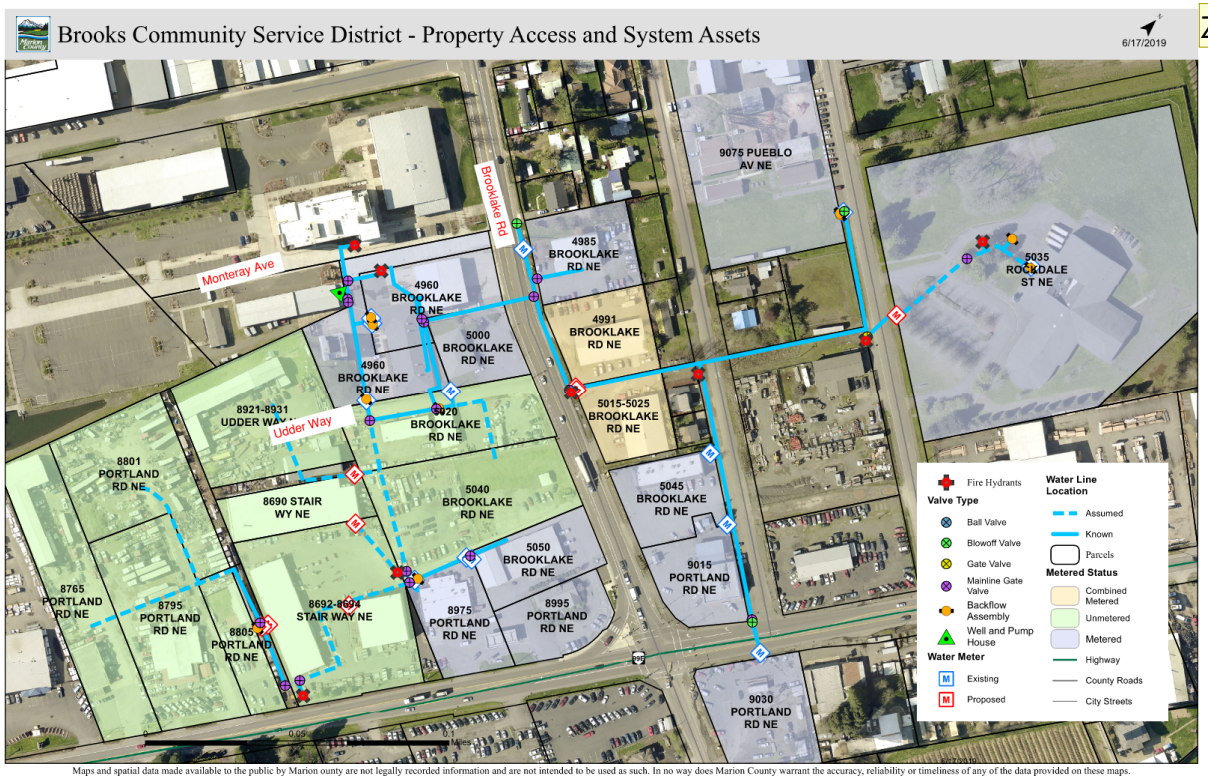
Keller Associates:
Peter Olsen, Zack Wallin

Slayden:
Jeff Wall



Existing Service District Infrastructure

- Small diameter pipe
- Many unknown pipe locations and unmetered connections



Slide 2

ZW1 Zack to find higher resolution version
Zack Wallin, 2026-04-16T17:09:04.002

ZW1 0 I found the exported PDF from the County, and saved in the “additional figures” document here: C:\Users\zwallin\OneDrive - KELLER ASSOCIATES, INC\AWWA Presentation-May 2026 Brooks Water\Photos and figures
Zack Wallin, 2026-04-16T18:57:31.368

Existing Community Infrastructure

Chemeketa Community College Source

- One well (two pumps), 50 gpm pump for normal use, and 400 gpm pump for high demand events
- Pressure tank
- Valve vault with metered connections (separating college use from other residents)



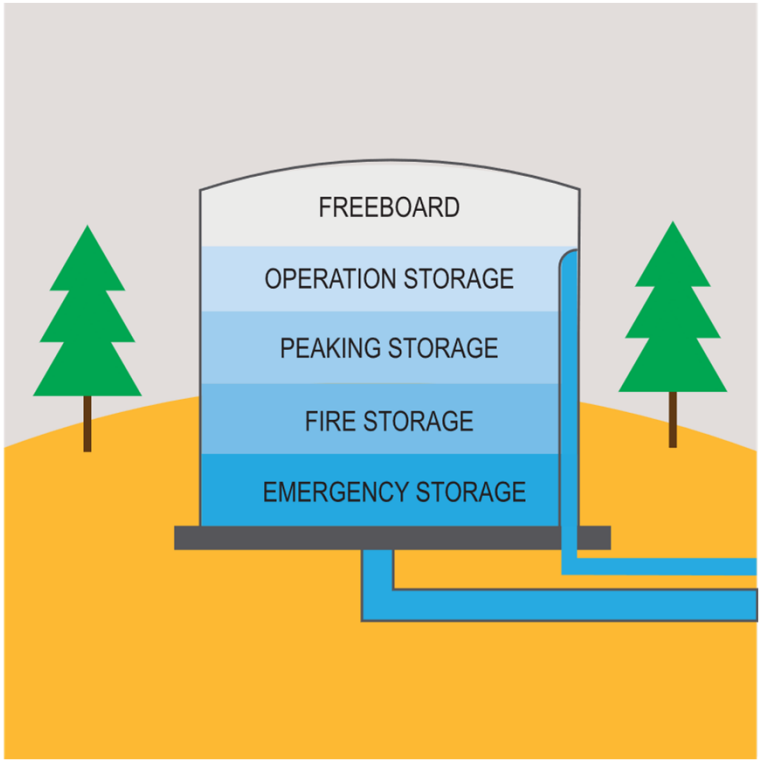
College Well



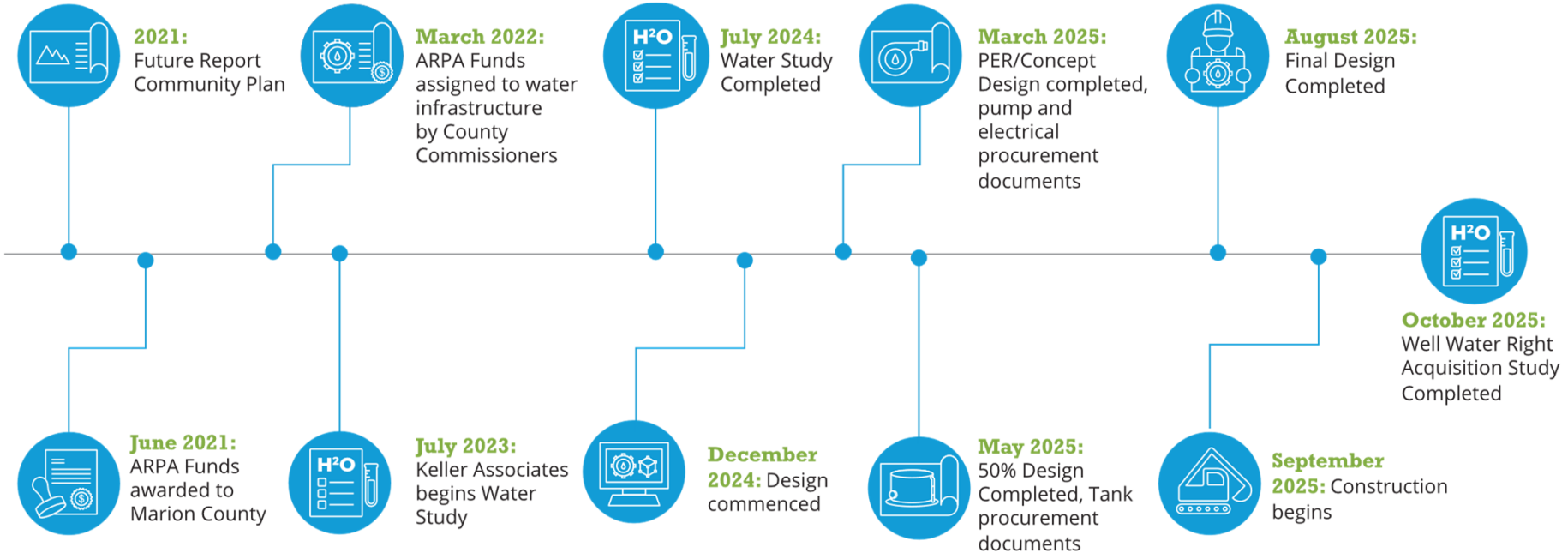
Meter Connection

County Goals

- Provide increased fire flow capacity
- Reliable water source
- Economic development



Project Overview



Future Report Community Plan (2021)

- The Brooks-Hopmere Community Plan visions are enhancement to the I-5 interchange, improved water and wastewater services and community organization and advocacy



ARPA Funding

- March 2021, the American Rescue Plan Act (ARPA) was signed into law in response to COVID-19 Pandemic and established the Coronavirus State Fiscal Recovery Fund and Coronavirus Local Fiscal Recovery Funds
- Marion County was directly allocated $67.5 million for the SLFRF program
- Marion County invited entities to apply for funding from its allocation
- Marion County Public works (PW) applied for funding on behalf of Brooks Community Service District (BCSD)
- 41 projects were awarded funding including BCSD
  - 40% of total funds was awarded to water/wastewater projects
- BCSD was awarded $14.5M

Planning Criteria

Identified Areas of Growth

Year	2024	Industry1	2029	2034	2039	2044
Population	795	-	853	914	960	1,005
ADD (MGD)	0.078	0.3	0.383	0.389	0.394	0.398
MDD (MGD)	0.223	0.3	0.539	0.556	0.569	0.582
PHD (MGD)	0.557	0.3	1.348	1.391	1.423	1.455

1.Industrial demands include 0.25 MGD for a future high user and 0.05 MGD for 50 acres of light industrial development

Year	2024	Industry1	2029	2034	2039	2044
Population	795	-	853	914	960	1,005
ADD (gpm)	54	208	266	270	273	276
MDD (gpm)	155	208	374	386	395	404
PHD (gpm)	387	208	936	966	988	1,010

1.Industrial demands include 0.25 MGD for a future high user and 0.05 MGD for 50 acres of light industrial development

Developed Demand Projections

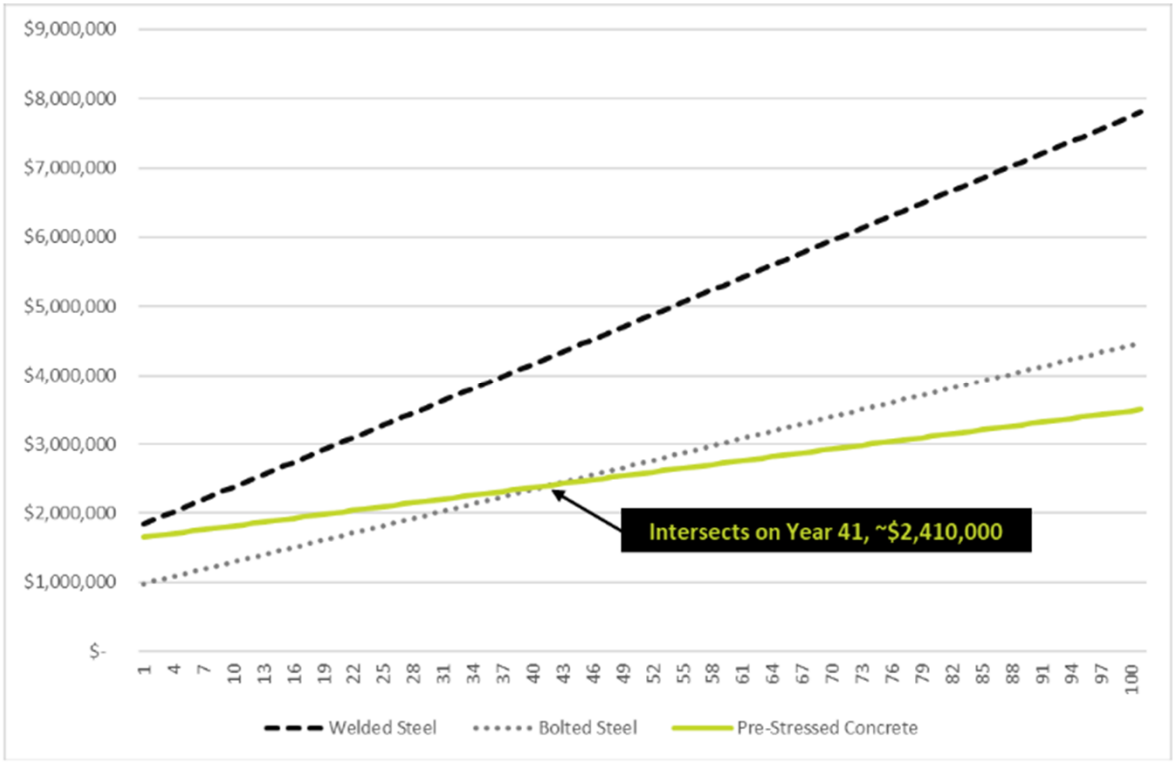
Scenario	Existing	Future
	2023	2044
Peak Storage (MG)[1]	0.03	0.04
Operational Storage (MG)[2]	0.02	0.03
Fire Storage (MG)[3]	0.54	0.54
Emergency Storage (MG)[4]	0.07	0.10
Total Storage Required (MG)	0.67	0.71
Total Storage Available (GAL)[5]	-	-
Storage Surplus/(Deficiency) (MG)[6]	(0.67)	(0.71)

1) Peak Storage: Assumed 15% of MDD.	2) Operational Storage: Assumes 10% of MDD.
3) Fire Storage: Assumes 3,000 gpm for 3 hours	4) Emergency Storage: Equals one day of average day demand
5) Storage currently not available to 763 and 1005 users.	6) The existing infrastructure will not be considered in future planning

No Dead Storage: Full tank & outlet capable for complete drainage

Water Study - Alternatives Evaluation

- Tank material
  - Welded steel
  - Bolted steel
  - Pre-stressed concrete
- Bolted steel-lowest capital cost
- Concrete lowest lifecycle cost

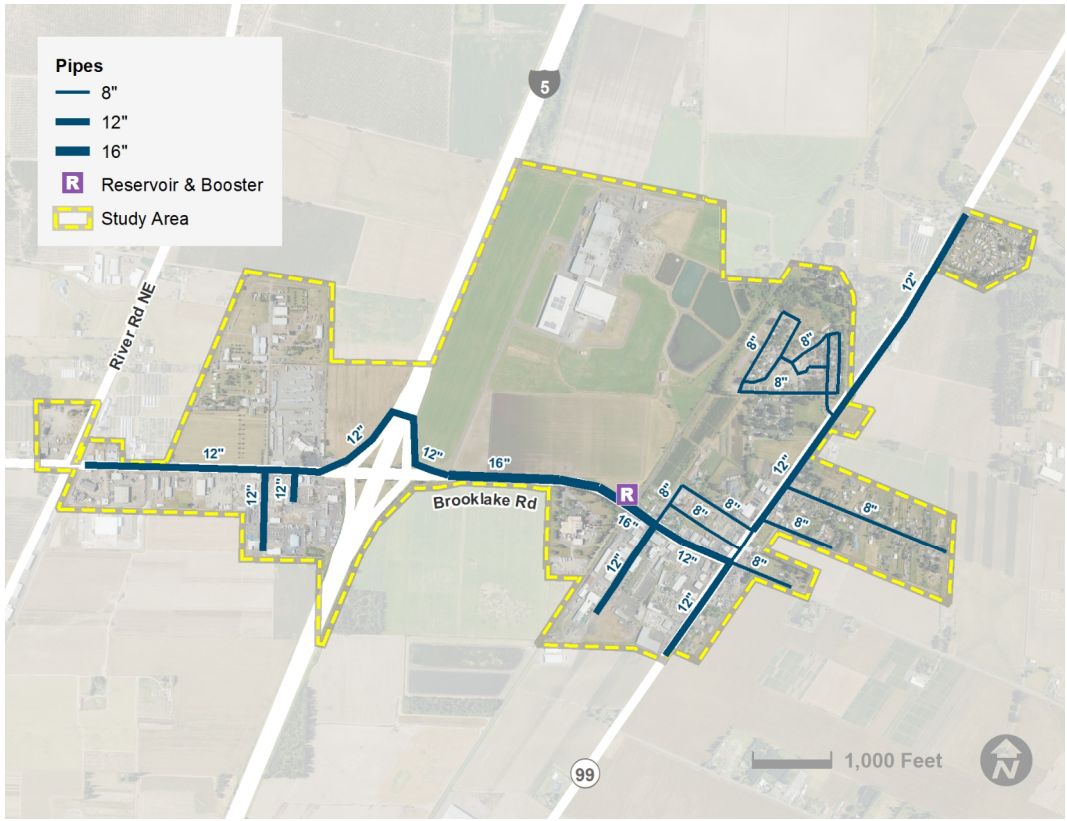


Build-out Scenario

- Storage
- Distribution
- Pump station

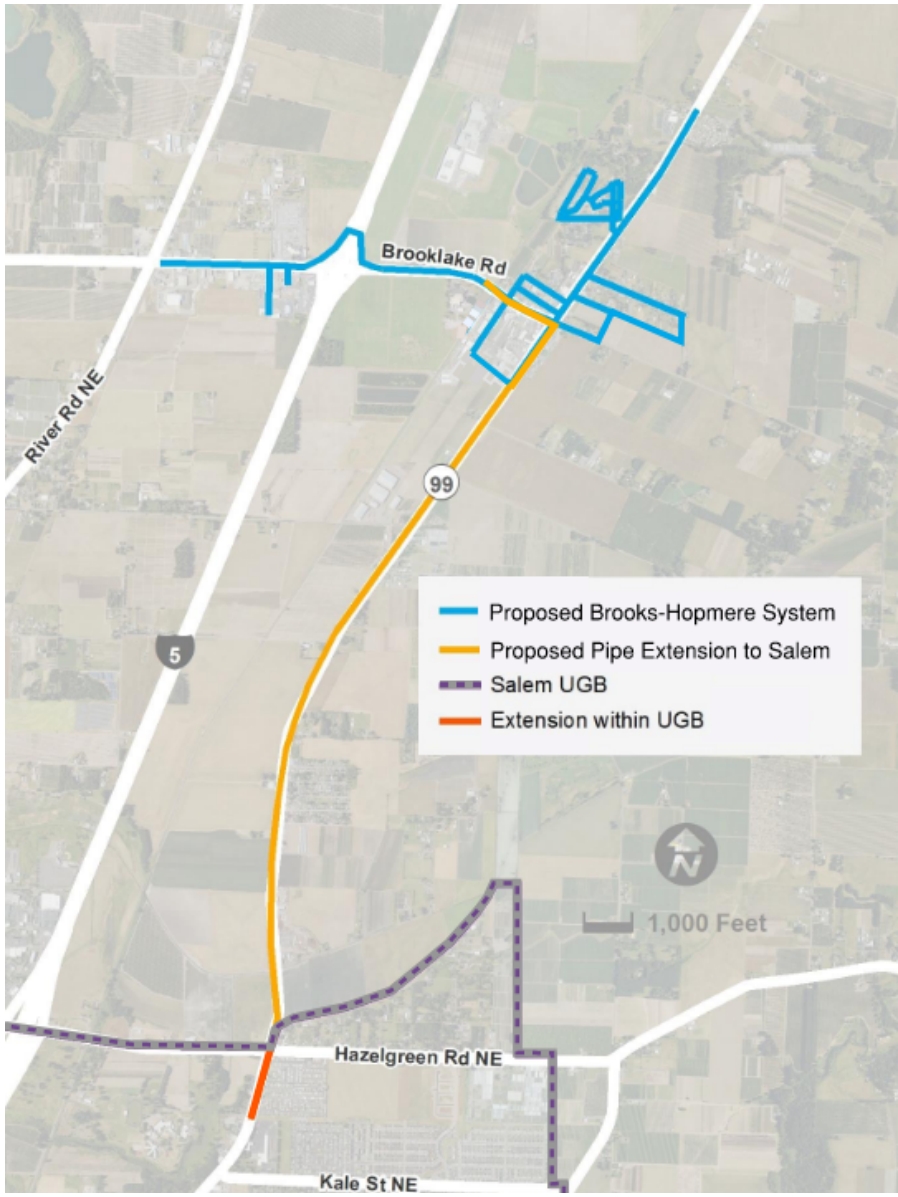
Scenario	Existing	Future
	2023	2044
Peak Storage (MG)1	0.03	0.04
Operational Storage (MG)2	0.02	0.03
Fire Storage (MG)3	0.54	0.54
Emergency Storage (MG)4	0.07	0.10
Total Storage Required (MG)	0.67	0.71
Total Storage Available (GAL)5	-	-
Storage Surplus / (Deficiency) (MG)6	-0.67	-0.71

1) Peak Storage: Assumed 15% of MDD.
2) Operational Storage: Assumes 10% of MDD.
3) Fire Storage: Assumes 3,000 gpm for 3 hours
4) Emergency Storage: Equals one day of average day demand
5) Storage currently not available to 763 and 1005 users.
6) The existing infrastructure will not be considered in future planning
No Dead Storage: Full tank & outlet capable for complete drainage



Water Source Evaluation

- CCC Well
- Well purchase
- New well development (new water right)
- Salem intertie
- Keizer intertie

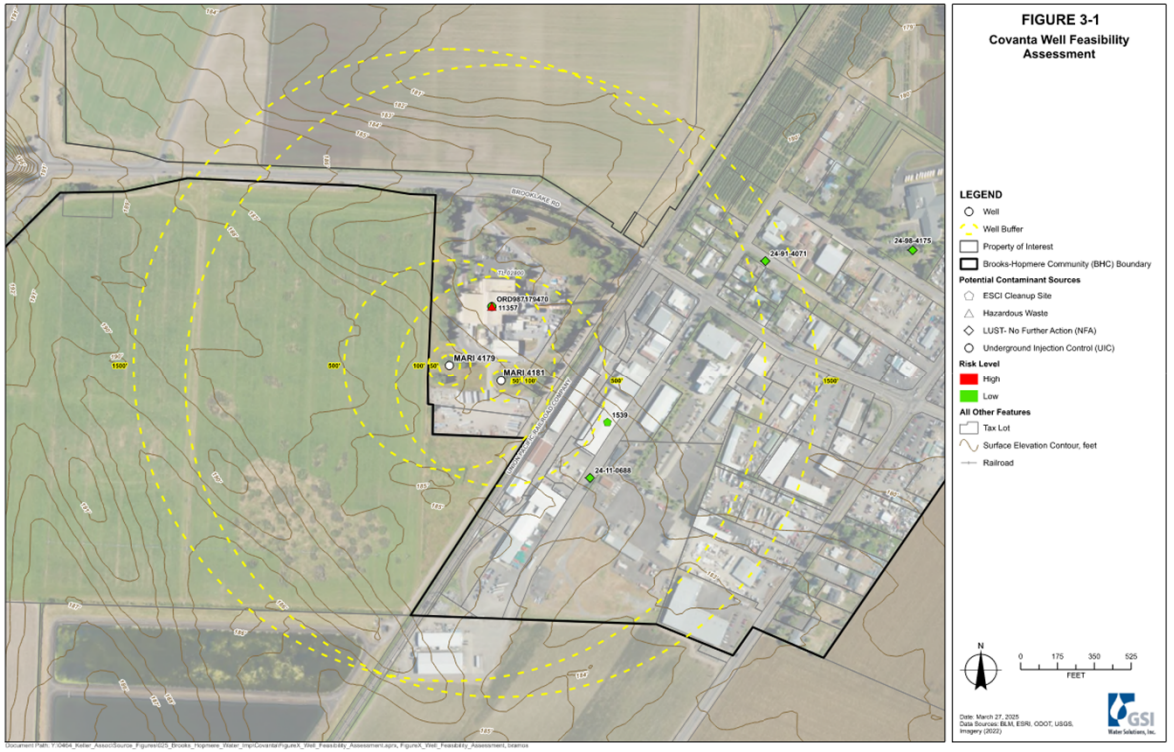


Well Water Rights/Well Siting Study

- A neighboring property has two existing wells that were investigated
- The wells have a water right of 498 gpm (year round)
- Wells may need to be rehabilitated
  - Bacteriological profile shows potential for scale, biomass accumulation, corrosion and fouling
  - Wells are ~40 years old
- Well siting concerns (setbacks)

Well Water Rights/Well Siting Study

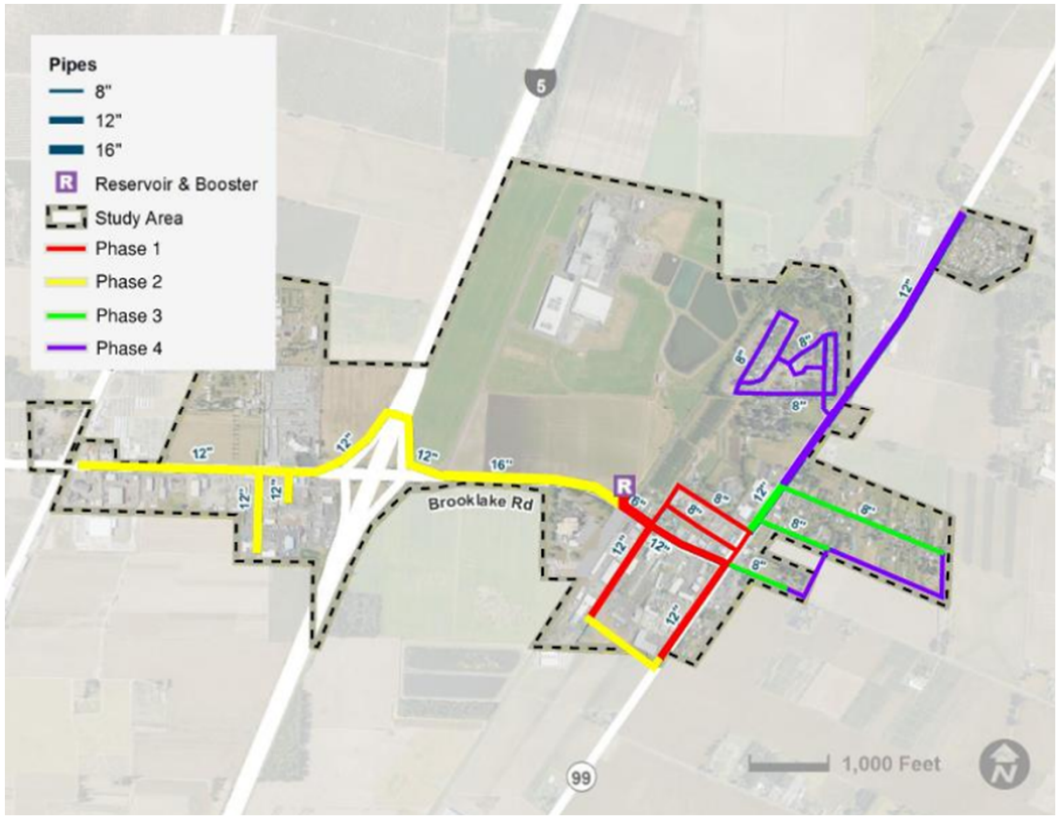
- Project submitted water right application for three wells in 2024
- First review was completed in 2025 and final review is underway for two wells
- One of the water right applications is for a new well located inside the new water campus



Distribution System Planning

Identified Four Phases

- **Phase 1:**
  - Reservoir
  - Booster
  - Distribution
  - Water right acquisition
  - Utilize CCC well
- **Phase 2:**
  - Update water study
  - Well development
  - Distribution improvements
- **Phase 3:**
  - Update water study
  - Distribution improvements
- **Phase 4:**
  - Distribution improvements



Facility Plan Costs by Phase

Project ID#	Project Name	Project Trigger	Total Estimated Cost (2024 Dollars)
PRIORITY 1 IMPROVEMENTS			
1.1	Connect Neighboring System	Water Availability Deficiency	$8,714,000
1.2	Reservoir	Infrastructure Deficiency	$3,616,000
1.3	Booster Station	Infrastructure Deficiency	$3,731,000
1.4	Distribution Network, Phase 1	Infrastructure Deficiency	$7,293,000
1.5	Water Rights Procurement	Redundancy / Resiliency	$35,000
Total Priority 1 Improvements (rounded)			**$23,400,000**
PRIORITY 2 IMPROVEMENTS			
2.1	Water Master Plan Update #1	Recommended every 5-10 years	$150,000
2.2	Well	Capacity Deficiency	$3,063,000
2.3	Distribution Network, Phase 2	Infrastructure Deficiency	$11,146,000
Total Priority 2 Improvements (rounded)			**$14,400,000**
PRIORITY 3 IMPROVEMENTS			
3.1	Water Master Plan Update #2	Recommended every 5-10 years	$150,000
3.2	Distribution Network, Phase 3	Infrastructure Deficiency	$4,197,000
Total Priority 3 Improvements (rounded)			**$4,347,000**
PRIORITY 4 IMPROVEMENTS			
4.1	Distribution Network, Phase 4	Development	$8,209,000
Total Priority 4 Improvements (Rounded)			**$8,209,000**
TOTAL WATER SYSTEM IMPROVEMENTS COSTS (rounded)			**$50,400,000**

CM/GC Onboarding

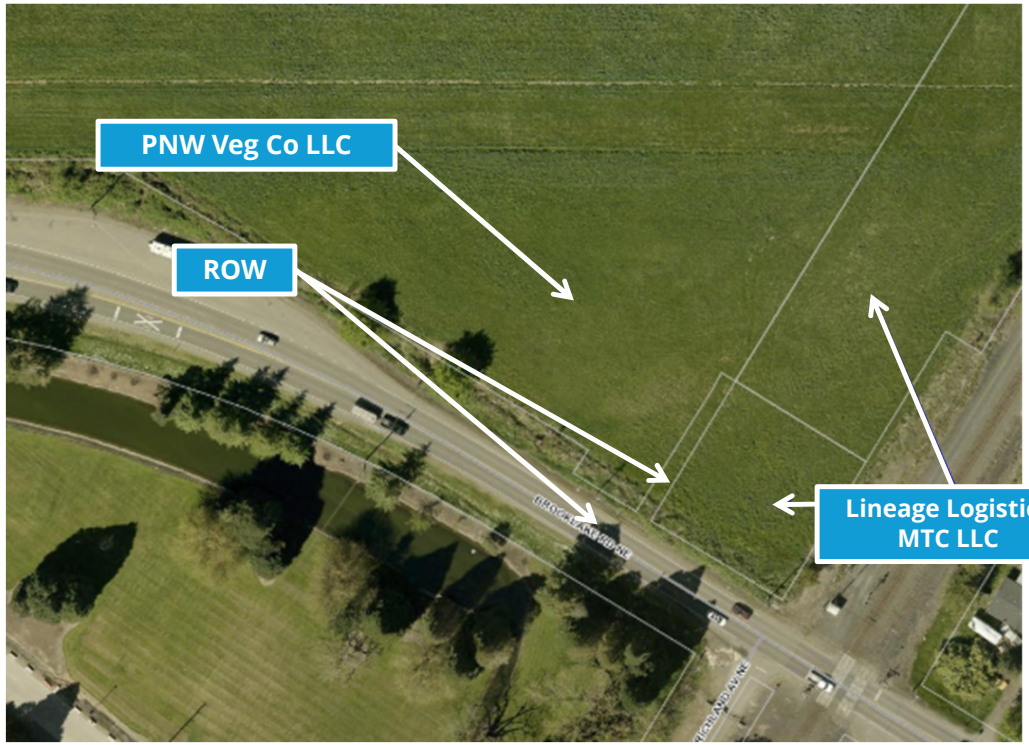
- Marion County public contracting rules allow the use of CMGC contract with approval of the Board of Commissioners
- Alternative delivery method preferred due to
  - Rigid funding deadline
  - Technical complexity
  - Need for value engineering
  - Procurement of long lead items (i.e., pumps & steel tank)
- The CMGC was selected based on a combination of price and qualifications involving the submittal of detailed proposal

Phase 1 Implementation Comparison

Scenario	Objectives / Goals	Components	Phasing	Feasibility Factors	Other Considerations
Scenario 1	Disconnect from CCC well while supplying existing customers and willing Phase 1 connections as cheaply as possible	• Connect to Salem; Build Phase 1 distribution	• Partially compatible	• Water pressure • Chlorine residual; • Requires higher peak flow • May require larger pipe from Salem • Agreement with City of Salem	• More information required • Long-term benefits
Scenario 2	Disconnect from CCC well while supplying existing customers and willing Phase 1 connections	• Connect to Salem • Build Phase 1 distribution • Booster station	• Partially compatible	• Requires higher peak flow • May require larger pipe from Salem • Agreement with City of Salem • Additional capital required	• More information required • Long-term benefits • Reliability/resiliency
Scenario 3	Disconnect from CCC well while supplying existing customers and willing Phase 1 connections; and support additional development by providing fire flow capacity	• Connect to Salem • Build Phase 1 distribution • Booster station • Storage reservoir	• Fully compatible	• Agreement with City of Salem • Additional capital required	• Current master plan • Long-term benefits • Reliability/resiliency
Scenario 4	Secure ongoing use of CCC well while supplying existing customers only	• Existing CCC well (upgrades) • Build Phase 1 distribution	• Not compatible	• Well capacity unknown • Agreement with CCC • Supply prioritization	• More information required • No new connections • Not a long-term supply solution
Scenario 5	Secure ongoing use of CCC well while supplying existing customers and willing Phase 1 connections; and support additional development by providing fire flow capacity	• Existing CCC well (upgrades) • Build Phase 1 distribution • Booster station • Storage reservoir	• Short-term compatibility	• Well capacity unknown • Agreement with CCC • May require additional capital	• More information required • Not a long-term supply solution

Land Acquisition and Easements

- Water study identified potential locations for water campus ZW1
- Selected site for water campus is three parcels with several owners
- Critical schedule for easement acquisition required by ARPA legislation
- Resolution of needs for permanent easement was adopted by Board of Commissioners
  - Permanent easement allowed construction to commence
- Ongoing-completing consolidation and deed



Slide 18

ZW1 Confirm-is the water master plan called “water master plan” or it is a feasibility study? Typ. All slides
Zack Wallin, 2026-03-30T22:42:38.046

ZW1 0 The scope of work calls it a water study
Zack Wallin, 2026-04-01T21:30:51.847

Preliminary Engineering

Key Project Elements

- Source connection
- Storage reservoir
- Booster station
- Water campus site development
- Transmission main



Preliminary Engineering-Source

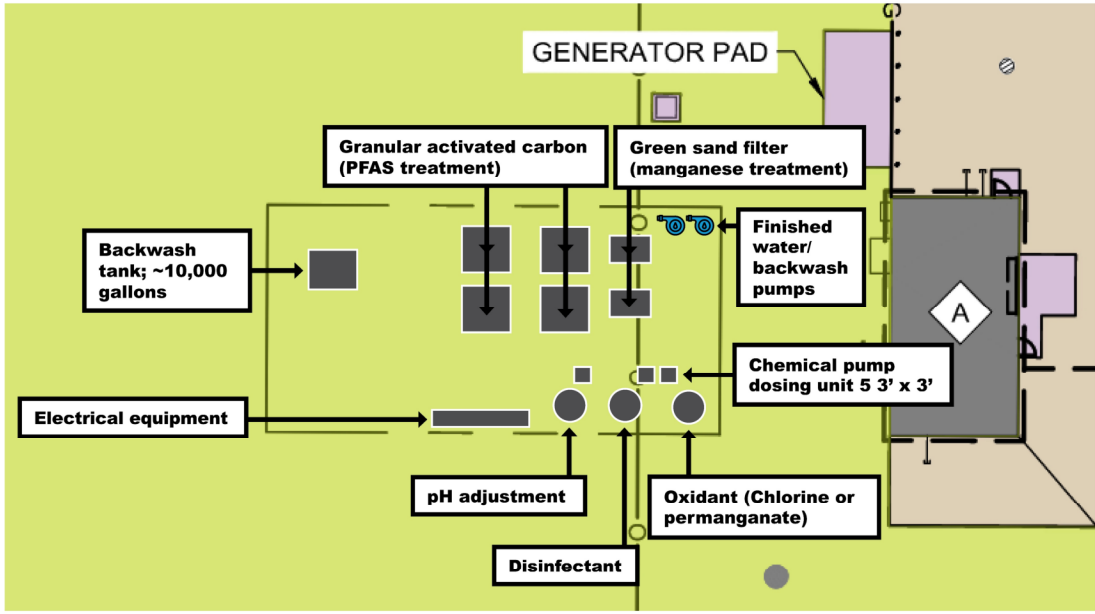
Water Source Quality

- CCC well has elevated manganese, PFAS, corrosive potential

Parameter	Units	Result	MCL	Comment
Alkalinity	mg/L CaCO3	118 to pH 4.5	N/A	Moderate Alkalinity (resistance to pH change)
pH	pH units	7.75	N/A	
Color (apparent)	Color Units	15	15	Anticipated that color is caused by Manganese
Langelier Index	N/A	-0.369	N/A	Negative Langelier index generally indicates corrosive potential. Positive Langelier index generally indicates scaling potential
Manganese	mg/L	0.248	0.05	Secondary MCL, not currently a primary MCL, but may become a primary MCL within the next 5-20 years.
PFHxS	ng/L	4.62	10	PFAS constituents are a primary MCL, with an implementation window expiring in 2029
PFOA	ng/L	7.66	4	
PFOS	ng/L	2	4	

Preliminary Engineering-Source

- Future WTP for the well source could have significant operational requirements and capital expense ($10+million)
  - PFAS treatment (Granular Activated Carbon pressure vessels)
  - Manganese treatment (Green Sand filters)
  - Chemical addition (pH adjustment, disinfectant, oxidant)



Preliminary Engineering-Source

- Timing on acquiring additional water right may be significant, and water quality is unknown
- County elected to proceed with using the CCC well with design provisions to help future proof:
  - Oversize generator, and provide load bank to hedge if a future WTP is needed
    - Additional cost for larger generator ~$10k
  - Slightly condense water campus to allow for space for a future WTP



Preliminary Engineering-Tank

- Facility plan identified prestressed concrete tank as the preferred alternative
- Value engineering: bolted steel tank
  - A bolted steel tank is far better than no tank!
- Glass fused steel vs epoxy coating
  - Not decided on at this point
  - Plan to write the spec to allow either, and allow selection based on best value (not necessarily low bid)



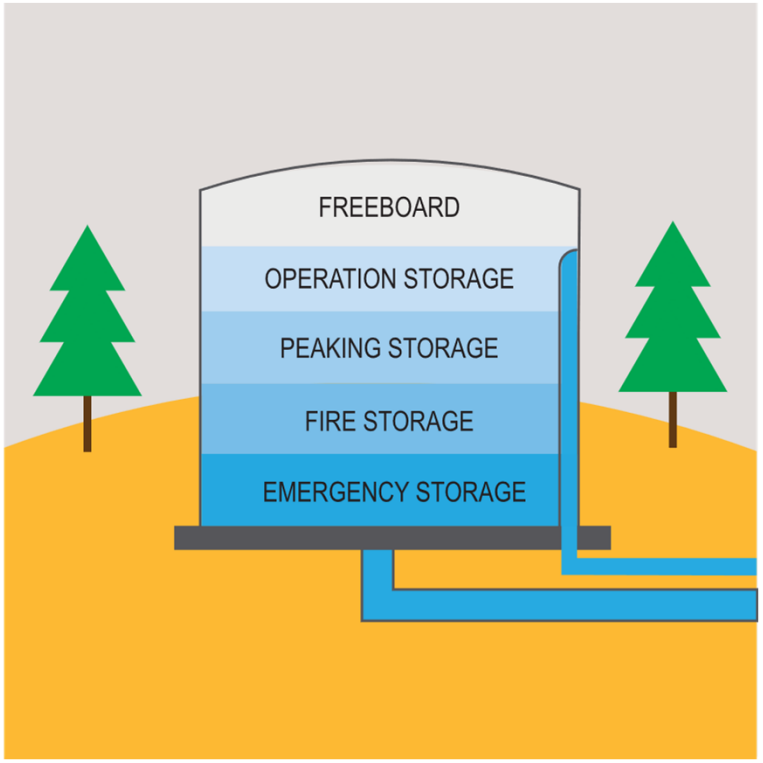
Preliminary Engineering-Tank

Deferred Design

- Site was designed to give tank suppliers ability to be flexible in tank diameter, up to 100-ft
- Rammed aggregate piers

Other Considerations

- Dynamic joints for pipe connections
- Overflow pond sizing (60 minute response time)
- Ultra sonic level sensors with backup floats



Preliminary Engineering-Pump Station

- **Four pumps** for normal operations (vertical multistage)
  - 2x 100gpm
  - 2x 300gpm
- **Two high-capacity pumps** for emergency situations (vertical split case)
  - 2x 3,000 gpm
- **Sky lights** for high-capacity pump removal, gantry for duty pump removal

Preliminary Engineering: Pump Station

Alternative	Advantages	Disadvantages
1- Skid Booster Station	• Pre-assembled unit for delivery/installation-less onsite mechanical piping placement during construction	• Schedule is on the supplier of the pump skid, but they do not have schedule related risk-if the actual lead time is longer than advertised
	• Pump cost reportedly lower if purchased within a skid unit (could be a sales tactic to sell skid unit)	• Less layout flexibility
	• Typically smaller footprint	• Sole source potential-Additional paperwork may be required to ensure competitive bid
2-Traditional Booster Station(s)	• Flexible layout design	• Typically larger footprint
	• Contractor can procure individual components as needed	• More complex installation/construction process (not a huge concern, as this is typical)
	• More options available for a competitive bid	• Pump cost reportedly lower if purchased within a skid unit (could be a sales tactic to sell skid unit)
	• Better access for maintenance activities	

Preliminary Engineering: Pump Station

- Designated chlorine (sodium hypochlorite) room for boosting residual (if future water source requires chlorine) after long HRT in the tank
- 1-½" Pressure sustaining valve for normal duty pumps, for recirculation during low demands
- 6" pressure relief valve for high capacity pump emergencies (locked on)
- CMU building



Preliminary Engineering: Distribution

- 6” raw water line, from the well to the water campus
- 16” and 12” distribution pipe
  - Butterfly valves on 16”
  - Gate valves on 12”
- New water lines, where services are adjacent to proposed piping
- Railroad boring adjacent to water campus



Preliminary Engineering: Geotechnical Investigations

- Central Geotech provided a geotechnical investigation for the water campus
  - Soils are primarily silt and clay
  - High groundwater (5-12 ft below existing grade)
- Rammed aggregate piers are needed for the tank
- Site specific response analysis was not completed
  - Tight timeline
  - Cost of report was about the same as actual cost savings from a slightly smaller tank



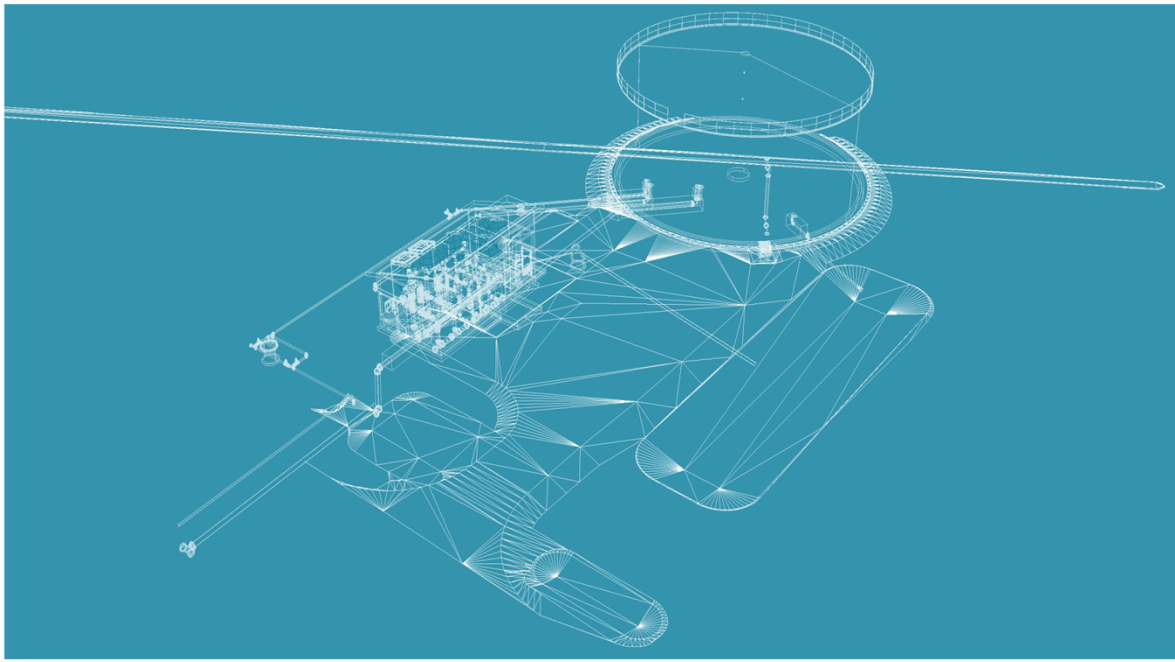
Value Engineering

- Ductile Iron Pipe vs C900 (fully restrained)
- Concrete Tank vs Glass Fused Steel vs Epoxy Coated Steel
- Asphalt vs Gravel
- Reduce site finishes to needed for facility, not whole property
- Solenoid control valve vs direct communication with well
  - Community college preferred minimal work at their existing well site
- Reduction in distribution piping



Final Design

- Epoxy coated steel tank
- Solenoid control valve for tank feed
- Railroad boring
- Distribution extents-add alternate bid section in case bid prices are high



GMP Development

Goal – To accelerate Construction to Meet ARPA Spent Timeline

- **Early Work Amendments:**
  - 1 – Long Lead Equipment (Generator & Pumps) - June 2025 – After Preliminary Engineering Report
  - 2 & 3 – Site Investigations – July 2025 – After 50% Design
  - 4 – Design Build Tank & Foundation Improvements – August 2025 - After 50% Design
    - Start engineering for design build scopes with long lead times
  - 5 – Early Civil Work – September 2025 – 90% Design
    - Prepare site before winter
- **Guaranteed Maximum Price November 2025:**
  - Balance of design
  - Based on 100% Design

Construction

- Tank size adjustment during submittal process
- Unknown stormwater pipe identified and located during Rammed Aggregate Pier installation
  - Flowable fill used to fill in damaged and abandoned pipe
  - Stormwater re-routed around water campus



Current Status

Project Under Construction

- Completed items
  - Yard piping on water campus
  - Booster building structural
  - Tank Foundations
  - Generator and Load Bank
  - Railroad borings
- Construction underway:
  - Distribution piping - completion May 2026
  - Tank construction - completion June 2026
  - Booster station mechanical/electrical - completion July 2026
- Commissioning - September 2026





Startup / Commissioning

- Reservoir startup and commissioning-CCC concerned about well runtime



Next Steps

- Complete Construction
- Operational
  - Revised agreement with Chemeketa Community College
  - Develop utility specifications/standard
  - Develop connection/permitting process
  - Develop system development charge program
  - Staffing needs



Next Steps

- Future projects (Phase 2-4)
- Future funding acquisition
- Water right/well acquisition and development
- Continued community engagement
- Economic development potential
- Expand district boundary
- Evaluate alternative district organizations



