



**TUALATIN VALLEY**  
WATER DISTRICT

# **FUTURE OF WATER IN WASHINGTON COUNTY**

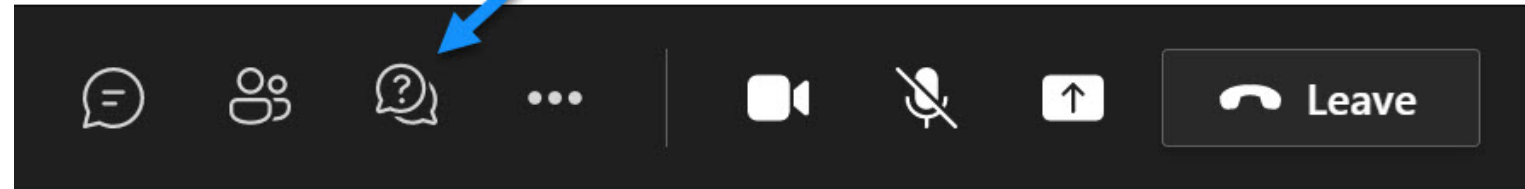


**Talkin' Water**

10-26-2021

# VIRTUAL EVENT GUIDELINES

- Sessions are recorded.
- A Question and Answer opportunity will be provided after the presentation.
- You can submit your questions by typing your questions in the thought bubble with a question mark inside.



- TVWD operates in an inclusive and discrimination-free manner to serve all customers.
- Staff will publish questions and comments and may exclude participants who disrupt events.

# PRESENTERS



Tom Hickmann, PE  
Chief Executive Officer



Dave Kraska, PE  
Willamette Water Supply Program Director



Joel Cary  
Water Resources Division Manager



# HOST

Tom Hickmann, PE, Chief Executive Officer

## Municipal Water

- Tualatin Valley Water District since August 1, 2019
- City of Bend – 14 years

## Engineering Consultant

- David Evans and Associates
- MBK Engineers



# MULTIPLE WATER SOURCES SYSTEM RELIABILITY AND RESILIENCE



River water



Reservoirs



Aquifer Storage  
and Recovery



Regional  
Partnerships



Water  
conservation

Risks  
threaten our  
water supply:

**Earthquakes**  
**Drought**  
**Climate change**  
**Power outages**  
**Fires**





# HOW IS THE WATER SYSTEM OF THE FUTURE FINANCED

- The water system is paid for through customer fees and charges.
- The system has three owner partners, each is paying their share of the system components purchased.
- Water rates recover the costs of delivering water, maintenance, and constructing the system components.
- New water users pay System Development Charges to connect to the system and pay their share of the construction costs.
- TVWD has acquired low interest loans through EPA
  - ✓ WIFIA loan is repaid over 35 years after the project is completed, assuring that all customers pay for the benefit of Washington County's regional water supply.
  - ✓ TVWD has increased water rates over the past decade to have the revenue necessary to construct the project and repay the financing.



# WHAT HAVE WE DONE TO MANAGE COSTS?

Reduced, Deferred, Partnered

**Reduced Personnel Services Budget by 2.8%**



**Deferred \$50 million of Infrastructure Projects**



**Partnered with other cities to lower and share costs**



# HOW YOUR MONEY IS USED

## Major Rate Drivers



**Construction of the additional water supply**



**Repairs and replacements of aging infrastructure**



**Purchased Water**



# PARTNERSHIPS RESULT IN BETTER INVESTMENTS

## TVWD, Hillsboro, & Beaverton are Partners on the WWSP



**Kinsman Road Project**  
Partnership with Wilsonville & Oregon  
Department of Transportation



**124th Avenue Partnership Project**  
Partnership with Washington County



**South Hillsboro Area Pipeline Project**  
Coordinated with Newland



# PARTNERSHIPS RESULT IN BETTER OUTCOMES



**Joint Water Commission**



**Emergency Interties  
Emergency Pumping**



**Mutual Aid**



# **DAVE KRASKA, PE**

Willamette Water Supply Program Director

## **Manages the Willamette Water Supply Program**

- Infrastructure Planning and Design
- Permit Acquisition
- Public Outreach and Communications
- Real Estate Acquisition
- Construction Management
- Schedule and Financial Controls

## **Priorities of the Willamette Water Supply Program**

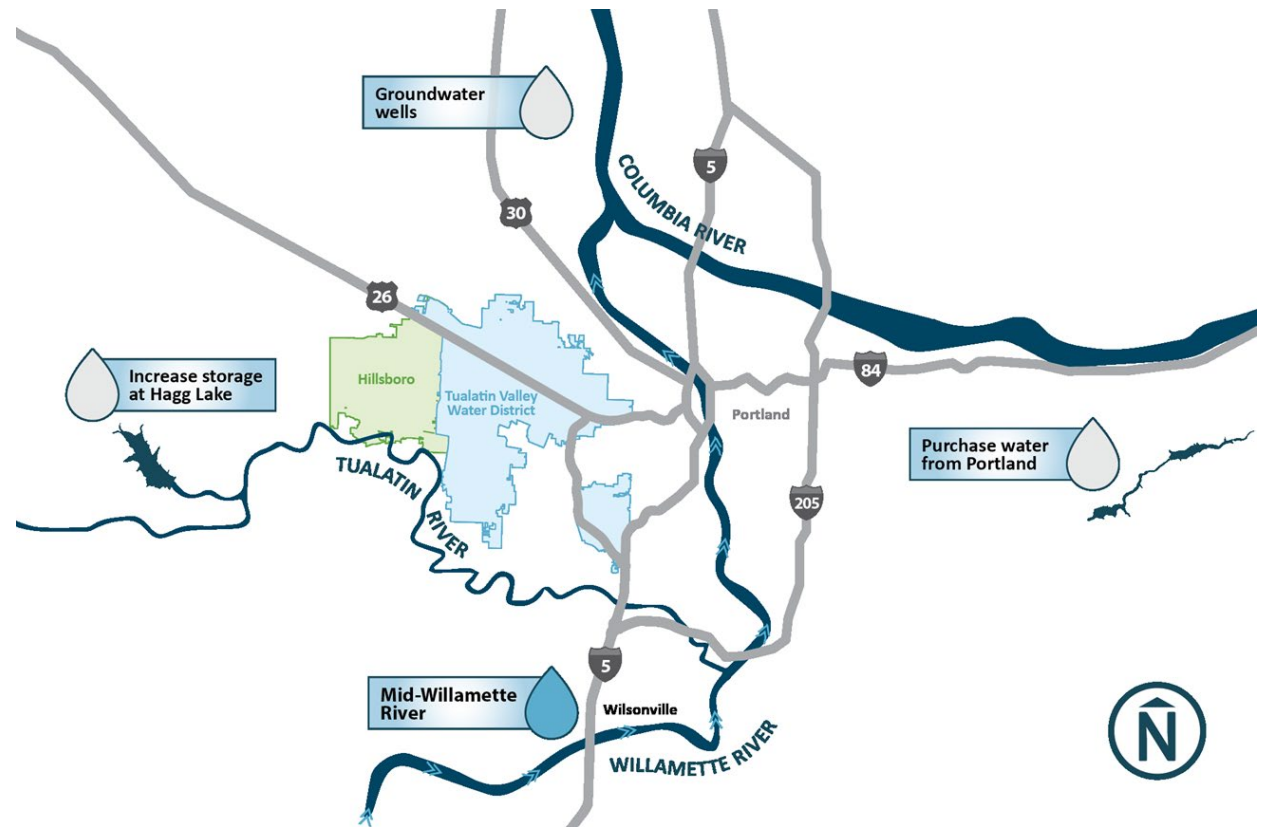
- Cost Management
- Safety/Risk Management
- Schedule: Complete on time

# LONG-TERM WATER SUPPLY SELECTION

In 2013, TVWD selected the Willamette River after a multi-year technical study and public input

- ✓ Lower cost – less impact on rates
- ✓ Excellent water quality
- ✓ Ownership
- ✓ Reliable supply
- ✓ Fewer environmental impacts

**Willamette Water Supply**  
*Our Reliable Water*



The Willamette River flows north from Eugene to the Columbia River.



# Willamette Water Supply Program Mission

**Provide a cost-effective, reliable, and resilient water supply system by July 2026, that benefits current and future generations of the communities we serve and supports a vibrant local economy.**





# WILLAMETTE WATER SUPPLY SYSTEM OVERVIEW

1. Willamette River intake, located in Wilsonville
2. New state-of-the-art water treatment plant
3. 30+ miles of large diameter transmission pipeline
4. Water storage



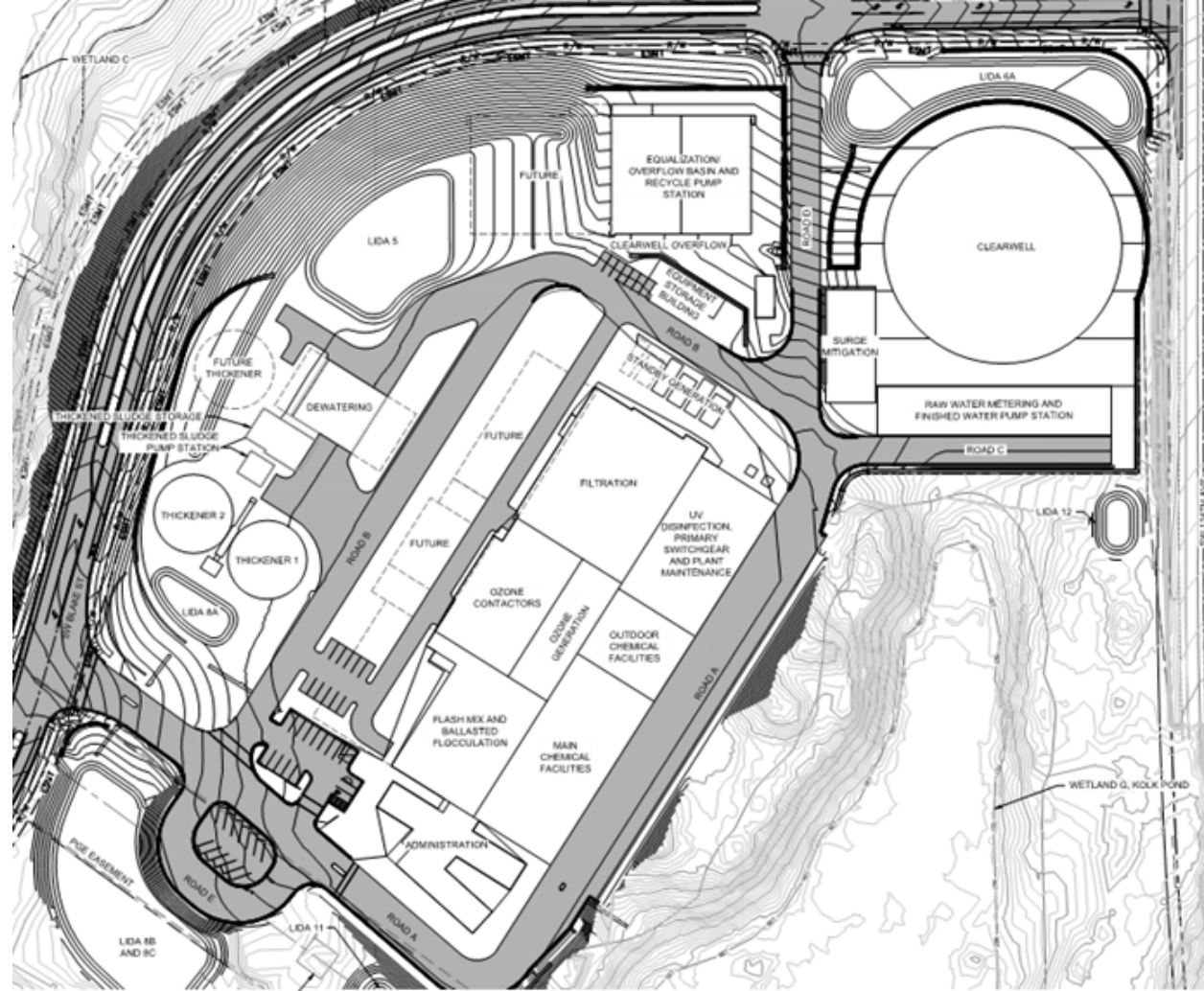
# MODIFIED AND EXPANDED INTAKE CO-LOCATED WITH THE WILLAMETTE RIVER WATER TREATMENT PLANT







Willamette River Water Treatment Plant



Future Willamette Water Supply System Water Treatment Plant

# A multi-barrier water treatment plant will clean the water

# WILLAMETTE WATER SUPPLY SYSTEM WTP WILL PROVIDE MULTIPLE BARRIERS OF PROTECTION

| Constituent               | Barriers Provided by WWSS WTP |                        |                |                 |                       |
|---------------------------|-------------------------------|------------------------|----------------|-----------------|-----------------------|
|                           | Ballasted Flocculation        | Intermediate Ozonation | GAC Filtration | UV Disinfection | Chlorine Disinfection |
| Turbidity / Particles     | ★                             |                        | ★              |                 |                       |
| Pathogenic Microorganisms |                               | ★                      | ★              | ★               | ★                     |
| Tastes and Odors          |                               | ★                      | ★              |                 |                       |
| Trace Organics            |                               | ★                      | ★              |                 |                       |
| Emerging Contaminants     |                               | ★                      | ★              | ★               |                       |



More than 30 miles  
of pipeline will  
connect communities  
to the Willamette  
River supply







Water storage tank will hold water to be delivered to homes and businesses by gravity and provide emergency storage



# SEISMIC RESILIENCE IS INTEGRAL TO THE WILLAMETTE WATER SUPPLY SYSTEM DESIGN AND CONSTRUCTION

Examples:

- Raw Water Facilities Ground Improvements
- Structural Design Features
- Pipelines Design Features





# GROUND IMPROVEMENTS AT THE RAW WATER FACILITIES



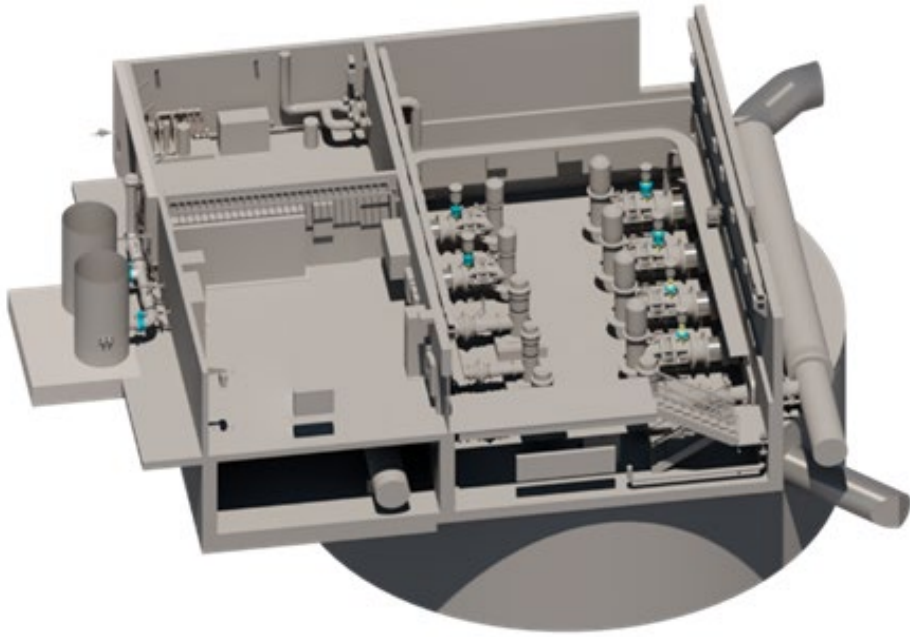
Jet Grouting



Deep Soil Mixing



# SEISMIC IMPROVEMENTS OF THE RAW WATER PUMP STATION

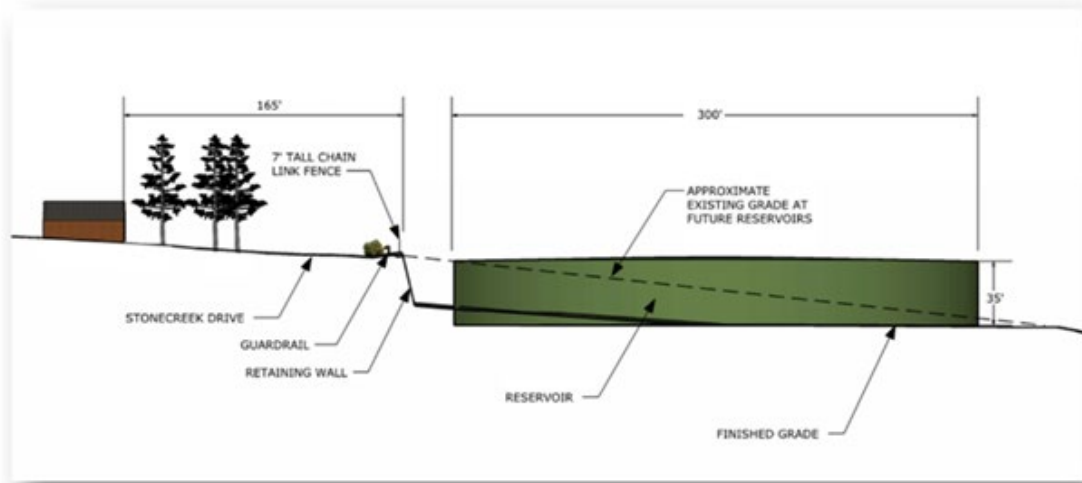


Detailed analysis and structural modeling of pump station building seismic response





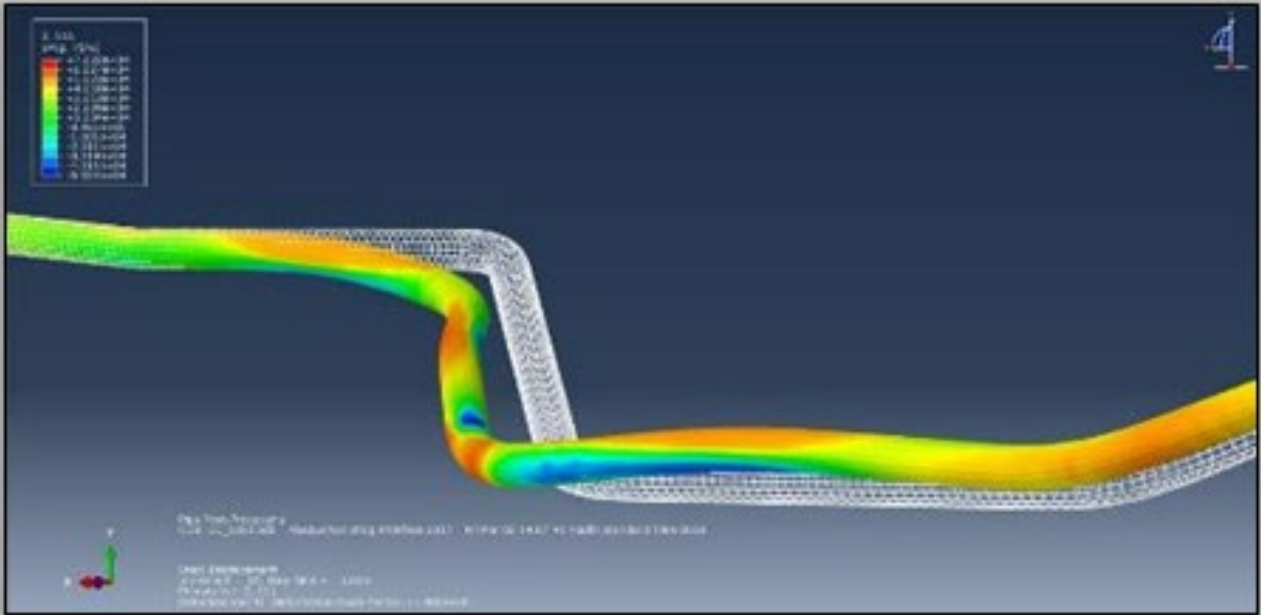
# SEISMICALLY-RESILIENT RESERVOIR DESIGN



Seismic cables will tie the tank walls to the foundation to resist movement during earthquakes



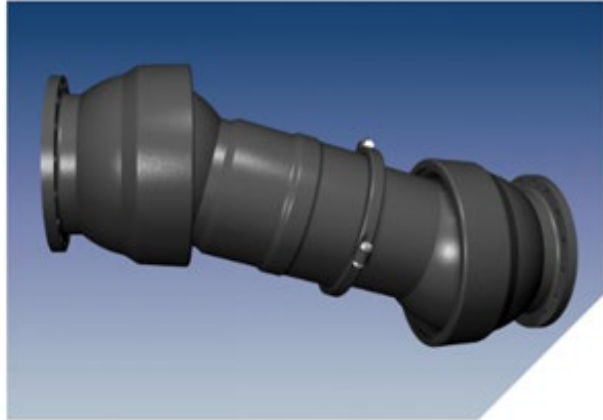
# WWSS PIPELINE DESIGN ACCOUNTS FOR LOCAL GEOLOGIC CONDITIONS



# FLEXIBLE JOINTS AT STRUCTURES PREVENT FAILURE AT TRANSITION POINTS



24" Flex-Tend at RWF Pump Station Connection

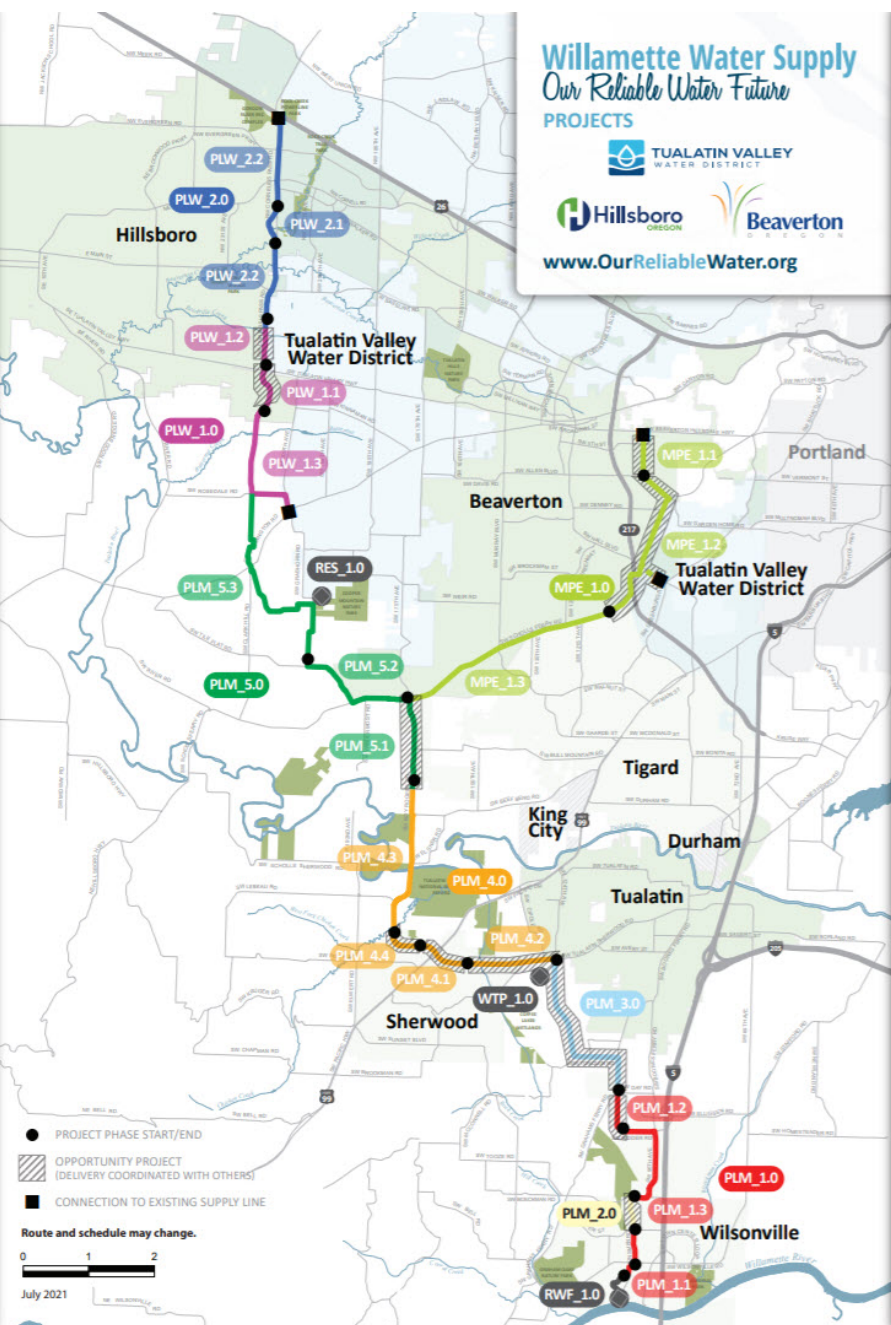


FLEX-TEND, 18 inch Double Ball with Flanged Ends.



Image depicts direct burial application (Polyethylene wrap not depicted). Refer to "Connections" FT-2 for more details.





# Progress

- Completed 7 pipeline projects
- Secured WIFIA loans
- Received Federal permit and approval for thermal trading plan
- Continued successful partnerships
- On track for completion in 2026

# Looking Ahead

- More than \$500 million of construction projects will be sent for bids in next six months

Map at: [www.ourreliablewater.org](http://www.ourreliablewater.org)

# Supporting our economy

To date, 92% of money spent has gone to local employees, goods and services.





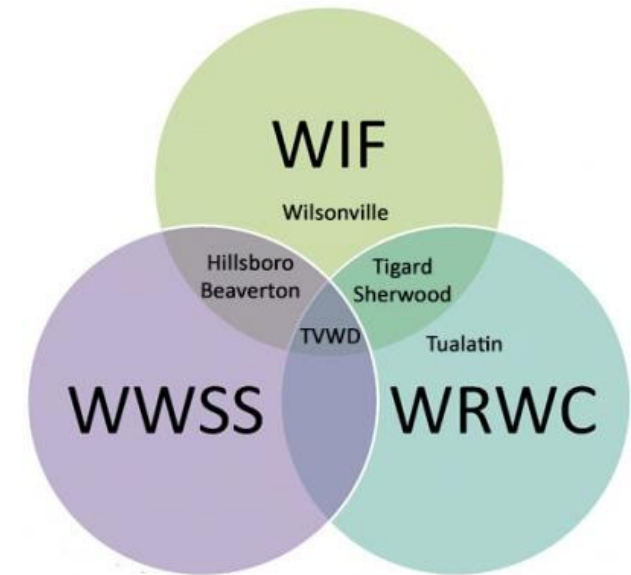


# JOEL CARY

Water Resources Division Manager

**Supports and manages various District and partnership efforts:**

- Water quality monitoring and regulatory compliance
- Integration of the new WWSS source
- Developing partner projects for watershed protection planning
- Water rights stewardship
- Legislative engagement related to these activities



# **WATER QUALITY IN OUR REGION**

## **Current efforts and looking ahead**

### **Actively monitoring and updating our strategic monitoring plans**

- Cyanobacterial harmful algal blooms (cyanoHABs)
- WWSS supply integration planning
- Lead and copper

### **Periodic monitoring and tracking the latest research**

- Per- and Polyfluoroalkyl Substances (PFAS)
- Microplastics



# WATER QUALITY MONITORING

Established efforts to protect public health



## CyanoHABs

- Active monitoring at current sources: Joint Water Commission and Willamette River intake
- Engaged in national research project to further develop predictive modeling for cyanoHABs
- Key state-level legislative engagement



## WWSS Integration

- Supply planning underway to integrate new source into existing systems
- Since 2018, WWSS owners have been evaluating chemistry, water system operations, and potential risks
- Developing final integration plan (2022)



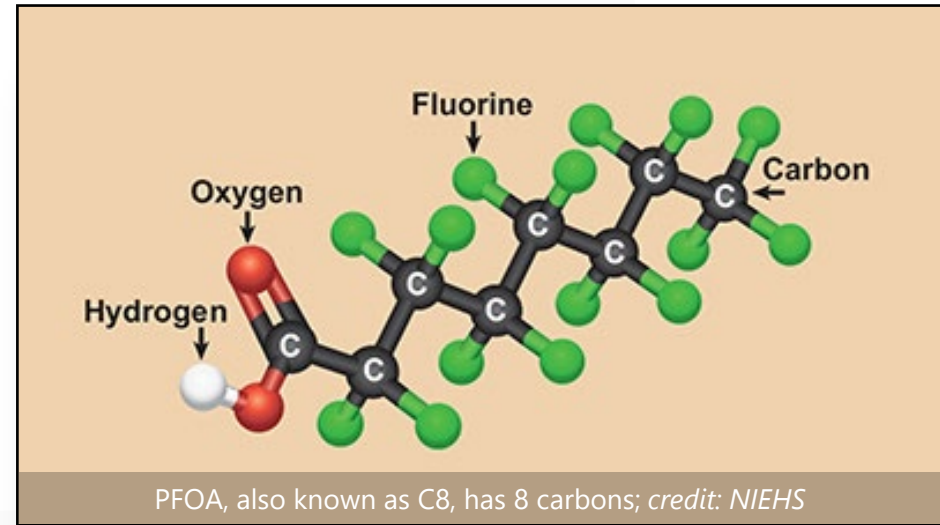
## Lead and Copper

- Actively tracking and planning for new EPA monitoring rules
- Designed treatment processes in multi-barrier WWSS plant
- Working with our supply partners now to address these risks

# PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)

Manufactured chemicals in widespread use since the 1940s

- Carbon (C) chains w/ fluorine (F) attached
- **The C-F bond is the shortest and strongest bond in nature – very slow to breakdown in the environment**
- Most common:
  - Perfluorooctanoic Acid (PFOA)
  - Perfluorooctane Sulfonate (PFOS)
- Historical sources – firefighting foams, non-stick cookware, food packaging, clothing, etc.





# PFAS IN OREGON DRINKING WATER, INCLUDING TVWD AND PARTNER SOURCES: **JWC AND FUTURE WILLAMETTE**



During the 2013-2015 sampling period, over 2500 water samples were collected by drinking water providers across Oregon



PFAS were not detected in any drinking water samples, including JWC and Willamette sources



PFAS sampling again in 2023-2025, with lower detection limits

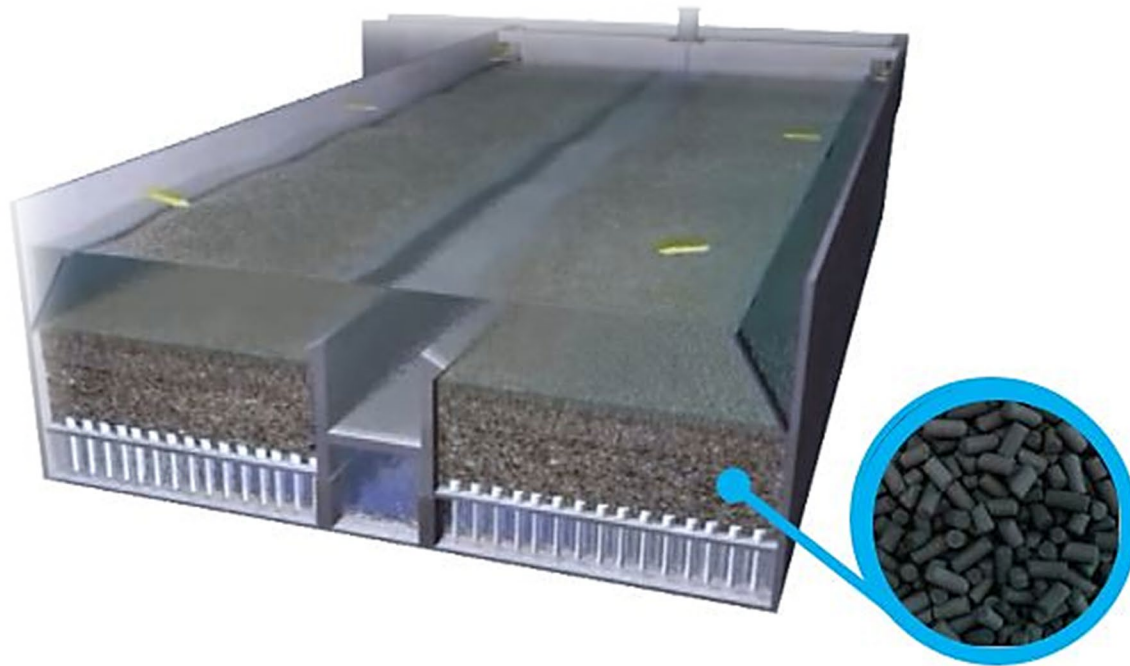


# TREATMENT METHODS FOR PFAS

WWSS has tools to address these compounds

## Granular Activated Carbon (GAC) filtration

- Adsorption by activated carbon depending on media specifications
- Limitations exist – may need to be regenerated/replaced more frequently



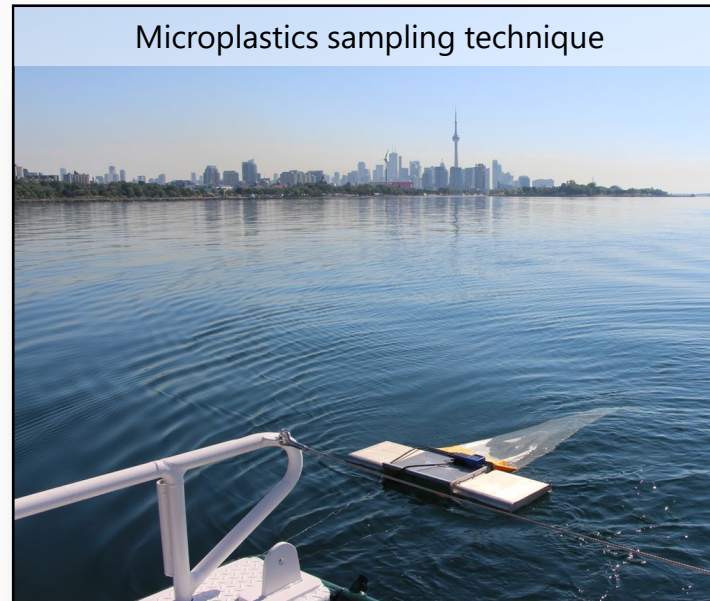
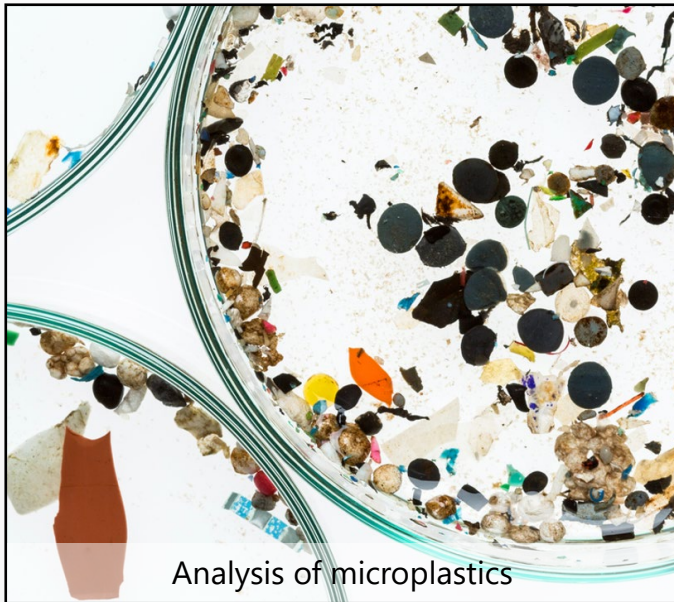
Granular activated carbon





# MICROPLASTICS

## Current state of understanding and future regulations



### Research specific to drinking water still limited

- Occurrence varies with sampling techniques (e.g., surface tension vs. water column sampling)
- Long-term health impacts unclear
- Treatment options based largely on current understanding (particulate size matters)
- July 2021 – California adopted requirements for four years of testing and reporting. Why mention this? Often California leads the way in developing regulations.



# WATERSHED PLANNING ACTIVITIES

We've started these efforts now to build the foundation for a lasting vision around protecting our water sources

## Mission, Vision, Values, and Goals (MVVG)

- The Willamette Intake Facilities (WIF) Commission's adopted strategic plan (2021)
- Roadmap for how the WIF agencies define our regional role
- TVWD, Wilsonville, Hillsboro, Sherwood, Beaverton, and Tigard

## Watershed Protection, Monitoring, and Outreach Plan

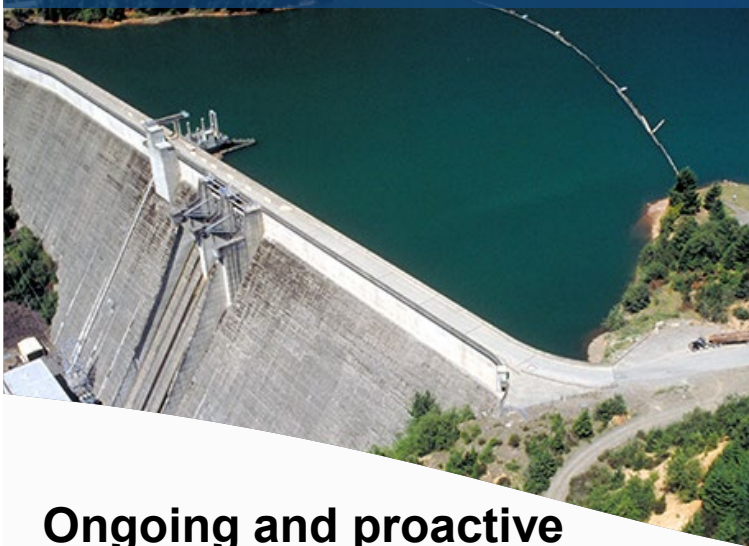
- Multi-year project based on MVVG (2021-2025)
- Includes several elements:
  - Prioritizing watershed risks for mid-Willamette and beyond
  - Developing strategic partnerships
  - Addressing climate change risks



# WATER SUPPLY STEWARDSHIP

Our MVVG strategy helps defines our approach

Green Peter Reservoir-US Army Corp of Engineers (USACE)



## Ongoing and proactive regional engagement

- USACE project involvement
- Collaboration with key stakeholder groups

Willamette Intake Facilities fish screen replacements (Sept 2021)



## Dedicated to responsible resource management

- Maintaining water rights permits
- OWRD engagement
- Effective operational planning

Chinook Salmon-ESA Listed Fish Species in Willamette Basin



## Committed to stewardship on multiple fronts

- Data-driven, science-based decision making



# LEGISLATIVE ENGAGEMENT

Providing input to help our communities

**Through these partnerships and industry affiliations, we're engaging with our state's elected representatives to help inform decision making**

- Harmful Algal Blooms Workgroup (2019-2021)
- House and Senate testimony on 2020 wildfire impacts to water sector
- Advocated for infrastructure needs
- Water rights and water resources priorities for the Willamette Basin

**These efforts will continue as we elevate the work we're doing on behalf of our region**



# YOUR TURN! ANY QUESTIONS?



**Tom Hickmann, PE**  
Chief Executive Officer



**Dave Kraska, PE**  
Willamette Water Supply Program Director



**Joel Cary**  
Water Resources Division Manager

# YOUR TURN! ANY QUESTIONS?



**Niki Iverson, PE**  
City of Hillsboro

**Rob Murchison**  
City of Tigard



**Delora Kerber**  
City of Wilsonville

**Craig Sheldon**  
City of Sherwood



**Nic Westendorf**  
City of Tualatin

**Chad Lynn**  
City of Beaverton