



TUALATIN VALLEY
WATER DISTRICT

BONNY SLOPE PARK RESERVOIRS: FROM INSPECTION TO REHABILITATION IN 1 MONTH

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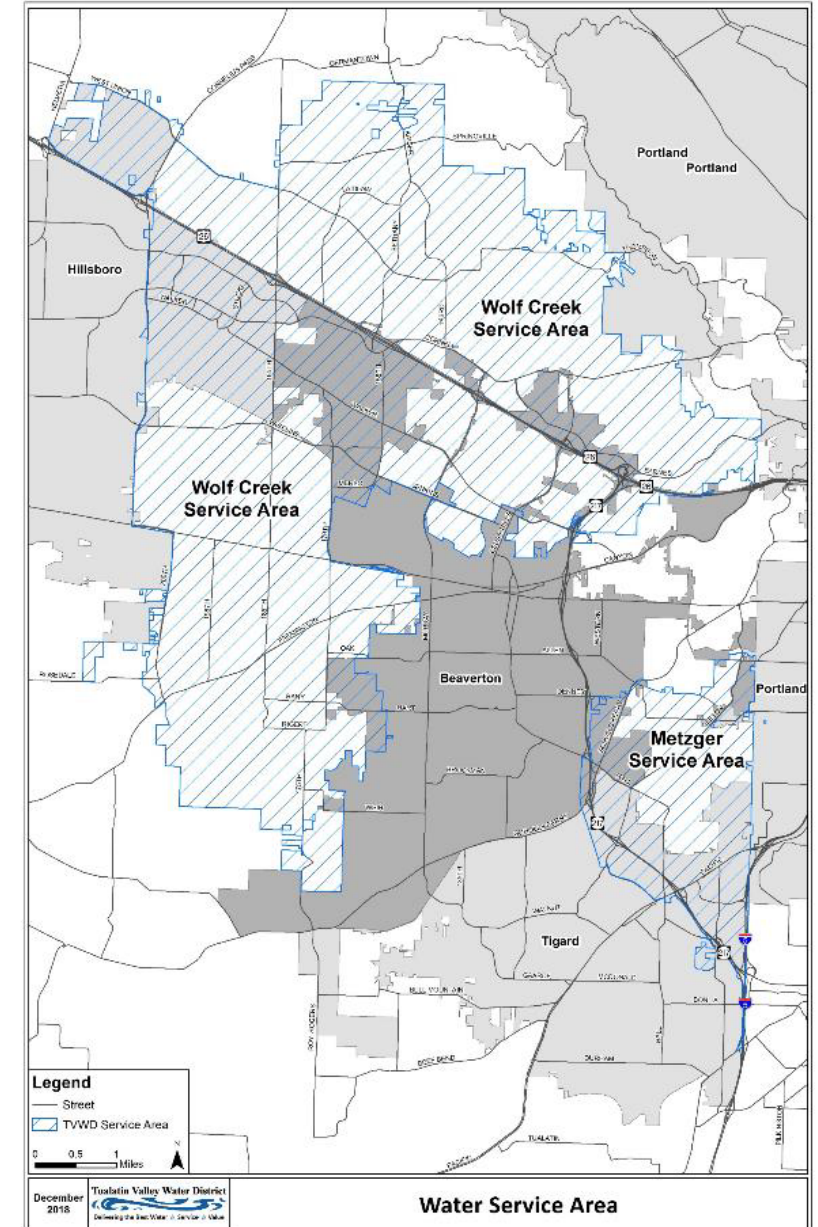
Agenda

- TVWD Overview
- Maintenance Philosophy
- Overview of Bonny Slope Park Reservoirs
- Reservoir Inspections
- Options Analysis
- Reservoir Maintenance

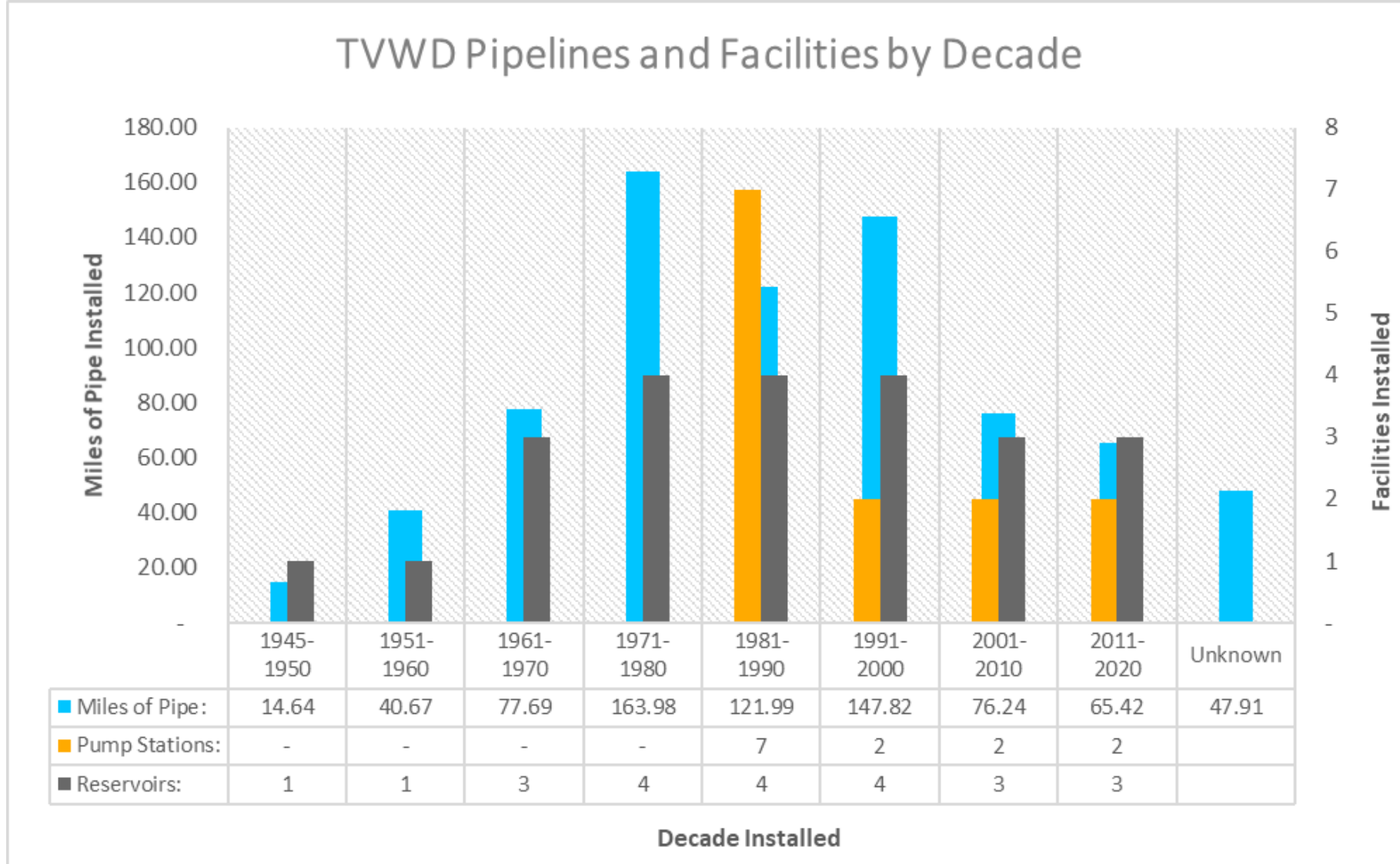


TVWD Overview

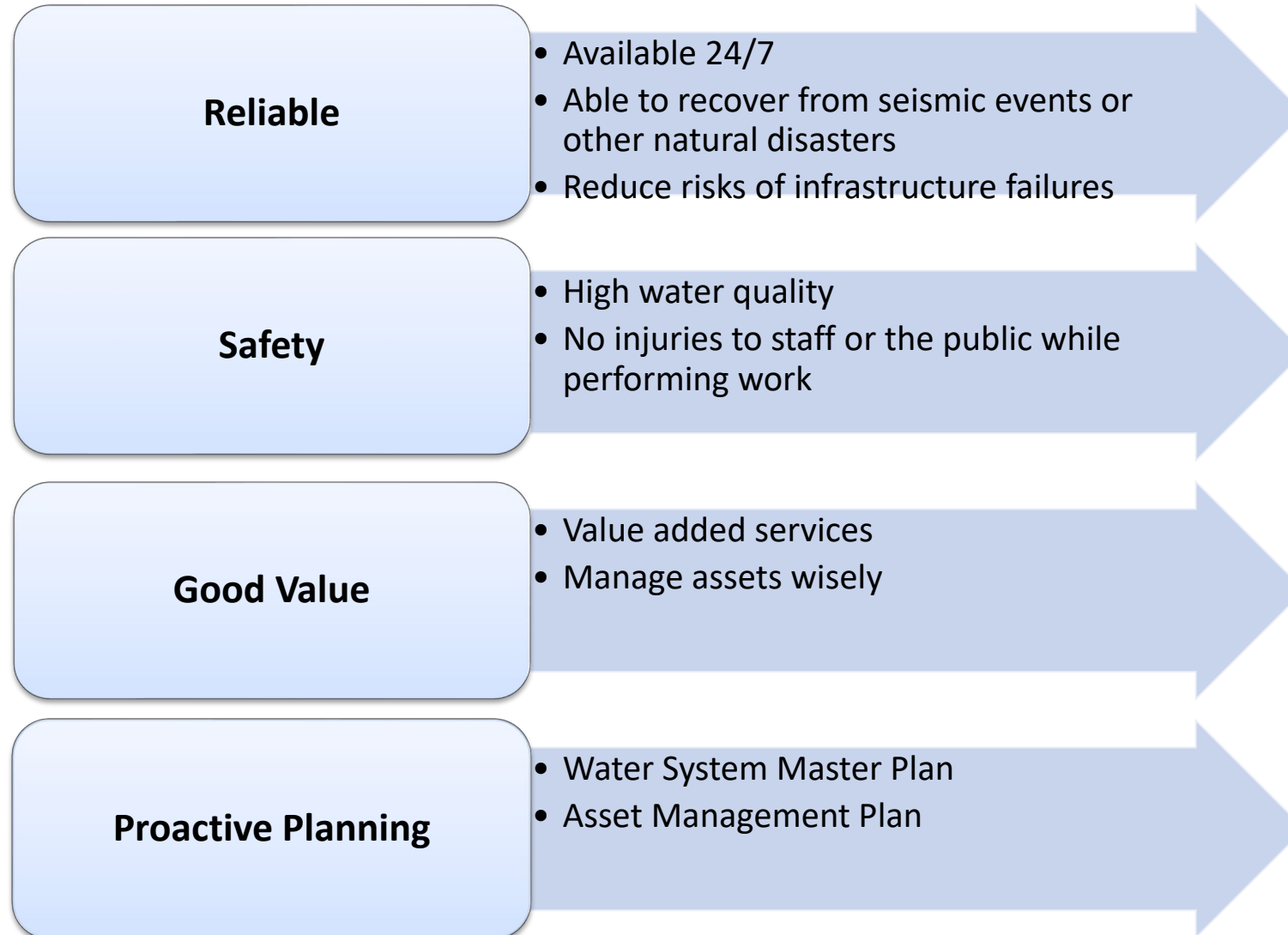
- 2nd largest water provider in Oregon
- In-District population served: ~220,000
- Average daily demand ~22.6 MGD
- 758 miles of pipe
- 67 MG total storage
- 41 Pressure Zones



TVWD Overview - Age of Infrastructure



Maintenance Philosophy



BONNY SLOPE PARK RESERVOIRS

Statistics



West Hills area, surrounded by residential homes

Constructed in 1995 beneath Tualatin Hills Park and Recreation soccer fields and walking path

1.5 Million Gallon capacity each, 115-foot diameter

D-110 style, prestressed concrete reservoirs

Serve the 575 pressure zone

BONNY SLOPE PARK RESERVOIRS

Inspection and Maintenance Evaluation

Reservoirs have trouble cycling

Desire to drain and clean

Structural inspections recommended every 10 years due to soccer fields

Condition assessment desired to assist with budget process, as necessary

District hires out chlorination due to hazards of chlorination



BONNY SLOPE PARK RESERVOIRS

Inspection Process

Roof

- Inspect with reservoirs full
- Floating precautions
- Safety procedures

Floor, Columns, Walls

- Inspect with reservoirs drained
- Clean
- Inspect

Exterior

- Not much visible for these reservoirs
- Access point inspections only



BONNY SLOPE PARK RESERVOIRS

Floating Inspection



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Floating Inspection



BONNY SLOPE PARK RESERVOIRS

Floating Inspection



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Floating Inspection Results

Exposed aggregate appears stable

Cracking in roof slab appears tight

Exposed and rusting rebar should be cleaned and patched

Roof vent area should be cleaned, locking gate is recommended to access hatch area



BONNY SLOPE PARK RESERVOIRS

Drained Inspection



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Drained Inspection



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Drained Inspection



BONNY SLOPE PARK RESERVOIRS

Drained Inspection Results

Reservoirs in mostly good condition

Columns – No repairs recommended

Walls – Clean and patch areas of poor consolidation, focus on exposed and loose aggregate areas

Piping – Blast clean the steel and recoat. Repair pipe straps and concrete supports. Coat overflow pipe.

Ladders – Aluminum ladders are reacting with the chlorine. Will need to replace ladders.

External repairs – Hatches, Fence / Gates



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Emergency Contracting and Repairs - Options

Clean & Place Back Into Service

- Operators are happy
- Additional \$\$ to drain and re-clean next year
- A full year until repairs could be made
- Could contract ahead

Make Immediate Corrections

- Reduces additional reservoir downtime
- Saves costs on cleaning & chlorinating
- Preserves assets

Hybrid Approach

- Evaluated items most important to longevity
- Piping and concrete are the most expensive & difficult to repair if allowed to deteriorate

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Emergency Contracting & Repairs – Hybrid option

Fix leaking valve – TVWD operators

Limited storage in the 575 zone. Worked with operators to find backup solutions on a temporary basis

Low demand season

Save costs on draining, cleaning, and chlorinating by moving quickly to correct issues

Ward-Henshaw is an experienced construction firm, already under contract to perform chlorinating



BONNY SLOPE PARK RESERVOIRS

Reservoir Repairs



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QUESTIONS??

