

Combining Two Water Systems into One

PNWS-AWWA 2019 Conference

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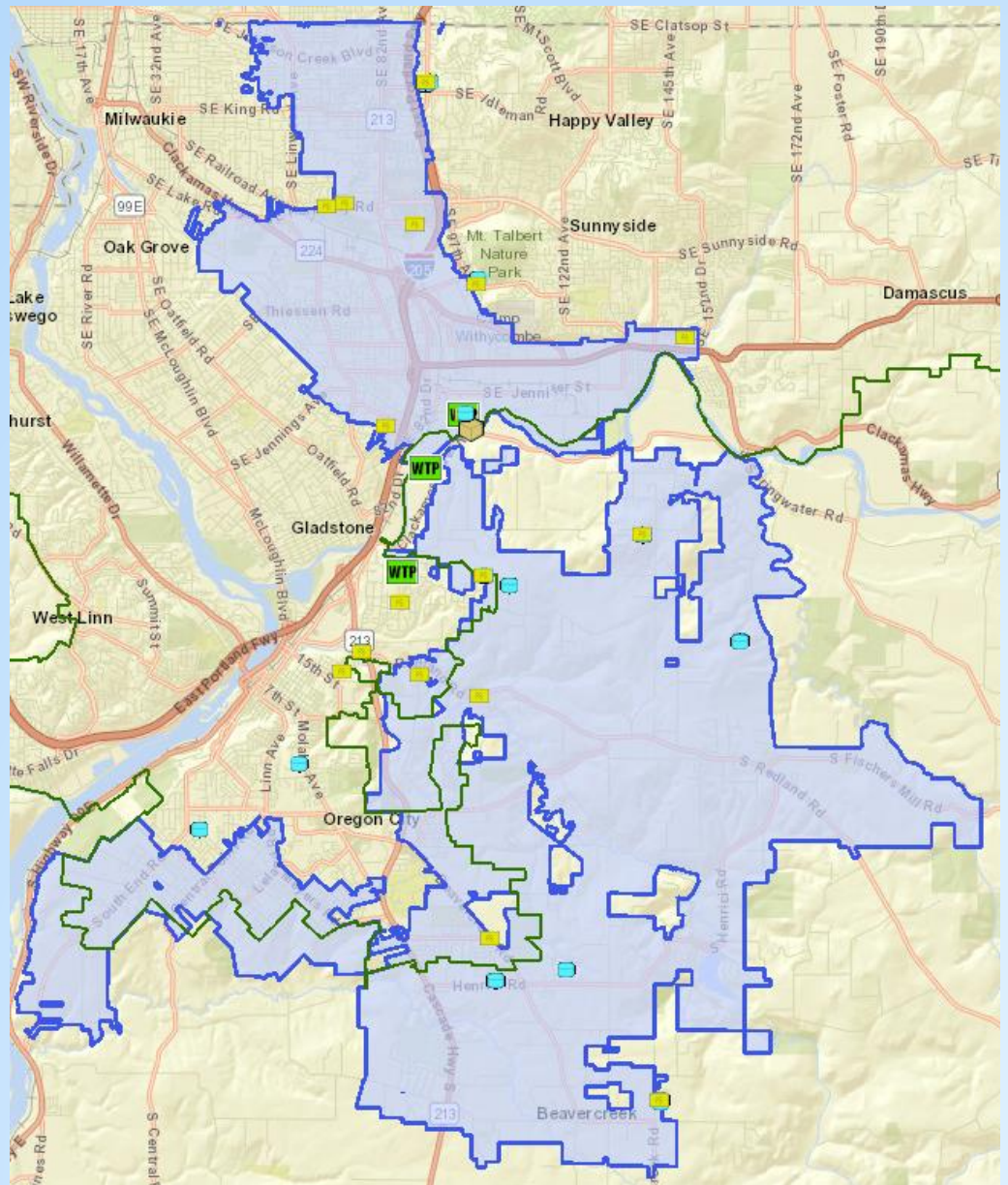


WATER
OUR FOCUS
OUR BUSINESS
OUR PASSION

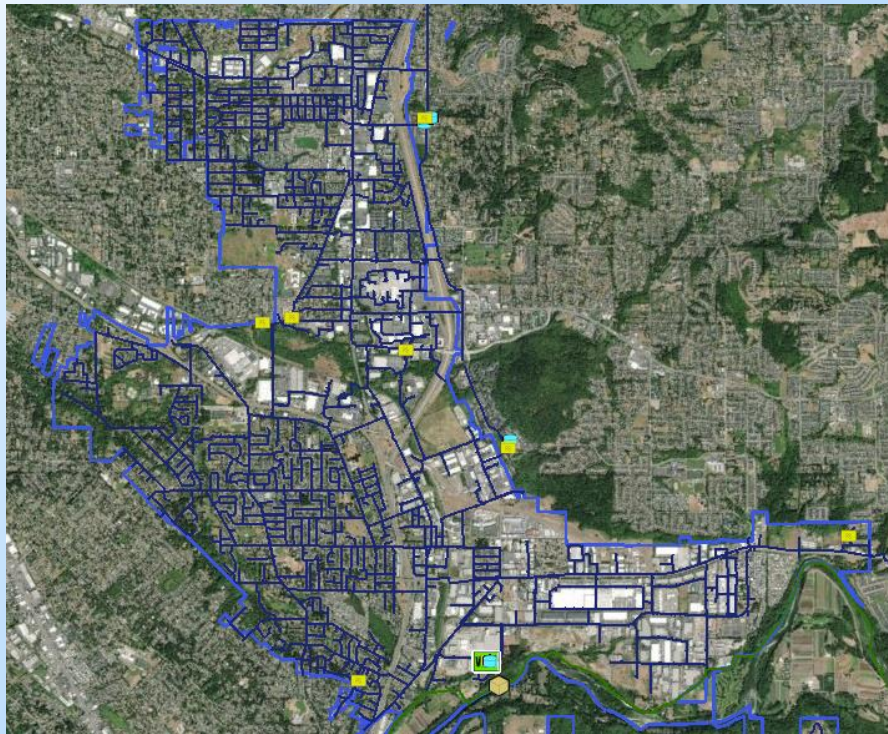


Background of Clackamas River Water

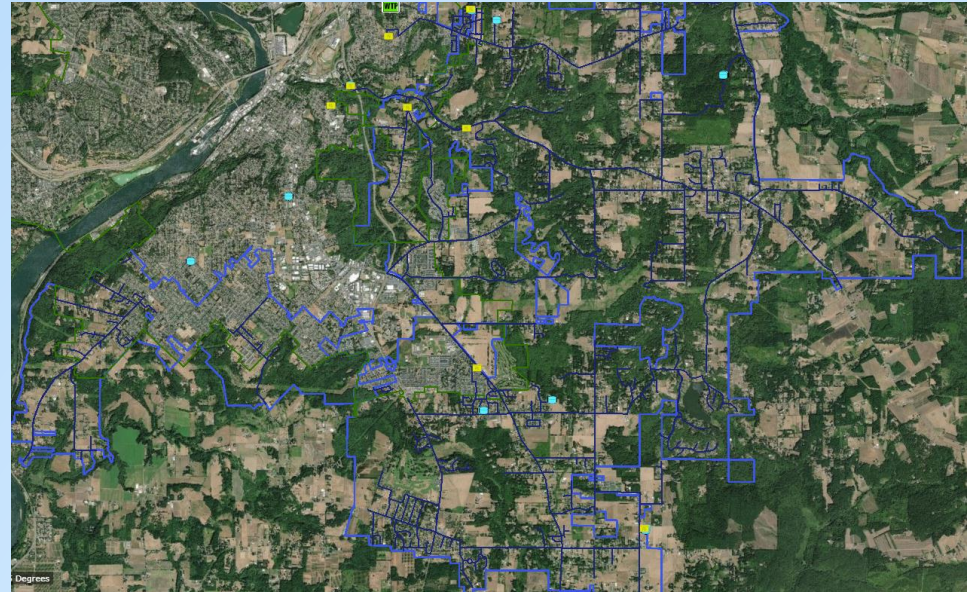
- Special District providing quality drinking water
- Serves unincorporated areas southeast of Portland in Clackamas County
- Clackamas Water District- 1926
- Clackamas River Water- 1995 (CWD merged with Clairmont Water)



CRW Has Two Water Systems / Service Areas



North Service Area
(Urban/Suburban)



South Service Area
(Suburban/Rural)

CRW System Characteristics



North: 12.6 square miles
29,000 people
40% commercial/industrial
7.0 mgd demand
8,000 service connections

South: 29.4 square miles
18,000 people
98% residential/
agricultural/forest
1.6 mgd demand
5,000 service connections

CRW System Characteristics (cont'd)



North: 16 MG storage reservoirs

4 pumping stations

139 miles of pipelines



South: 8.5 MG storage reservoirs

7 pumping stations

125 miles of pipelines

CRW Sources and Facilities



North System served from
CRW's 30 mgd WTP



South System served from
several connection points
with Oregon City and
South Fork Water Board

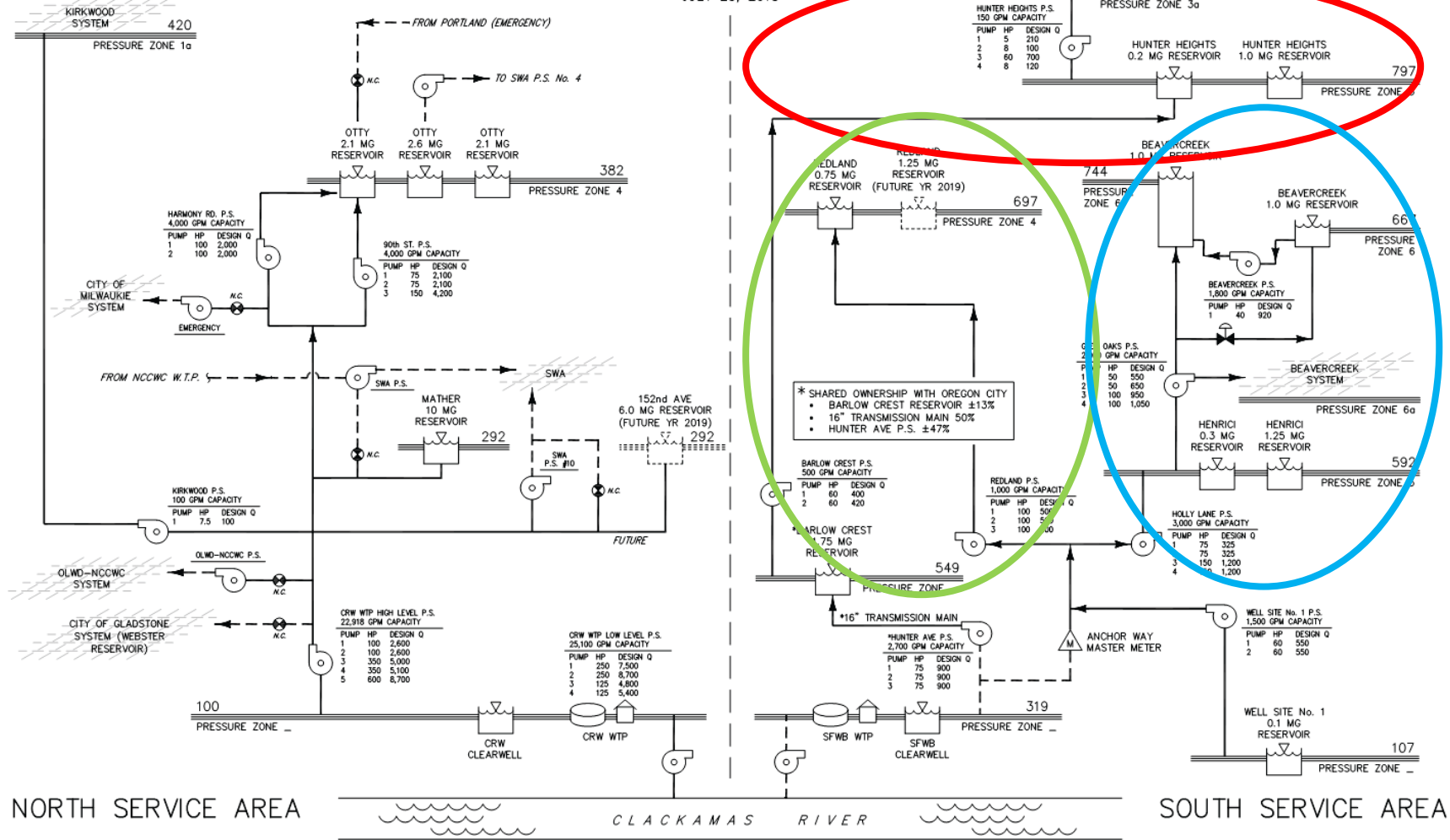
CRW Has Excess Capacity in WTP

- CRW has rights for 30 mgd from the Clackamas River
- WTP capacity of 30 mgd
- Firm Capacity 23.4 mgd
- Existing average demand = 7.0 mgd
- Existing maximum demand = 11.0 mgd

CRW South System is Three Branches

CLACKAMAS RIVER WATER PRESSURE ZONE SCHEMATIC

JULY 23, 2018



NORTH SERVICE AREA

SOUTH SERVICE AREA

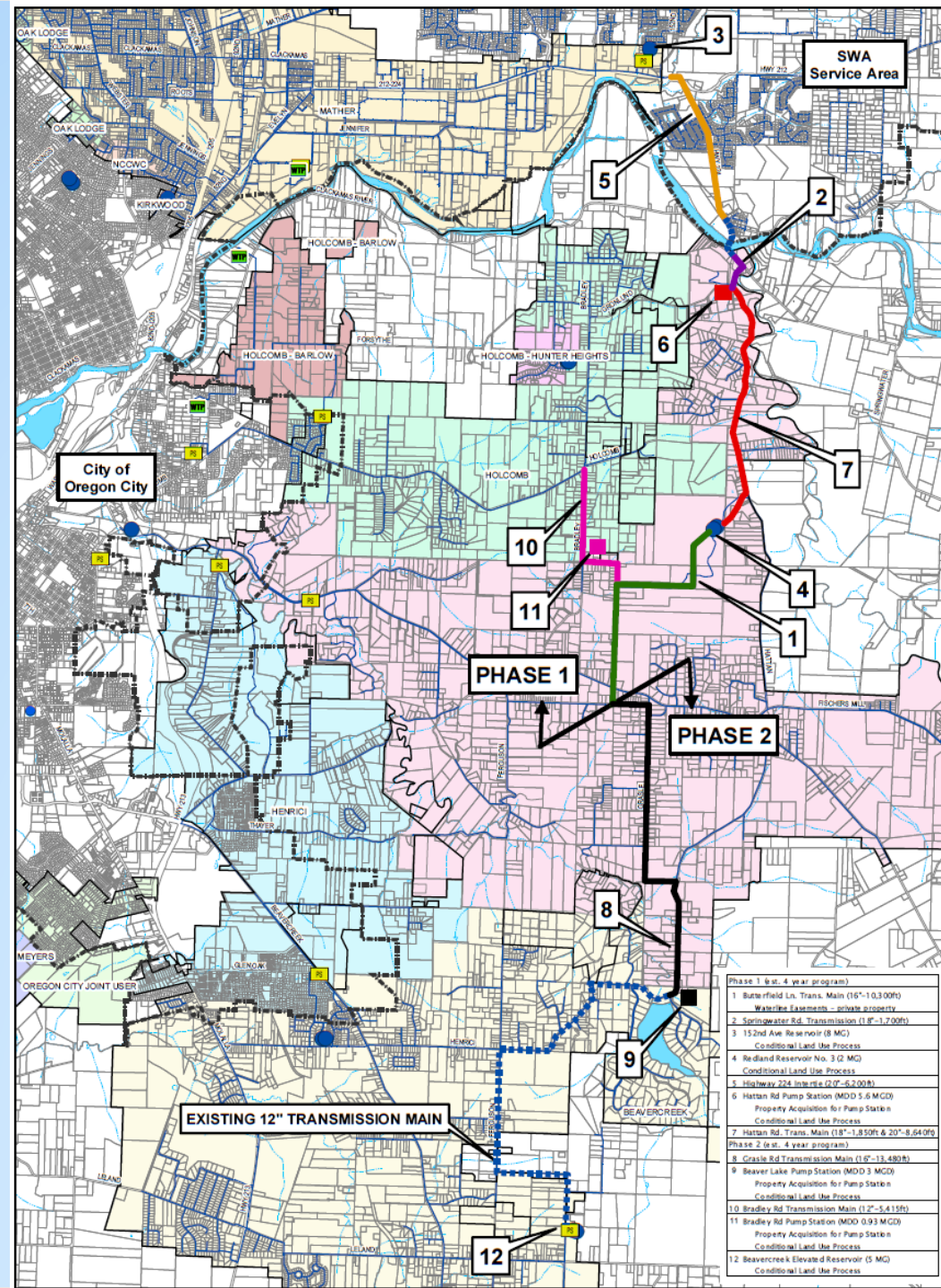
CLACKAMAS RIVER

Why not Connect the North to the South?

- Concept planned for many years
- Key decision elements/benefits considered:
 - Use excess WTP capacity
 - Develop resilient supply
 - Furnish CRW water to CRW customers
 - Improve fire flows; replace aged infrastructure
 - Reduce dependence on other suppliers; create redundancy

CRW's Backbone System

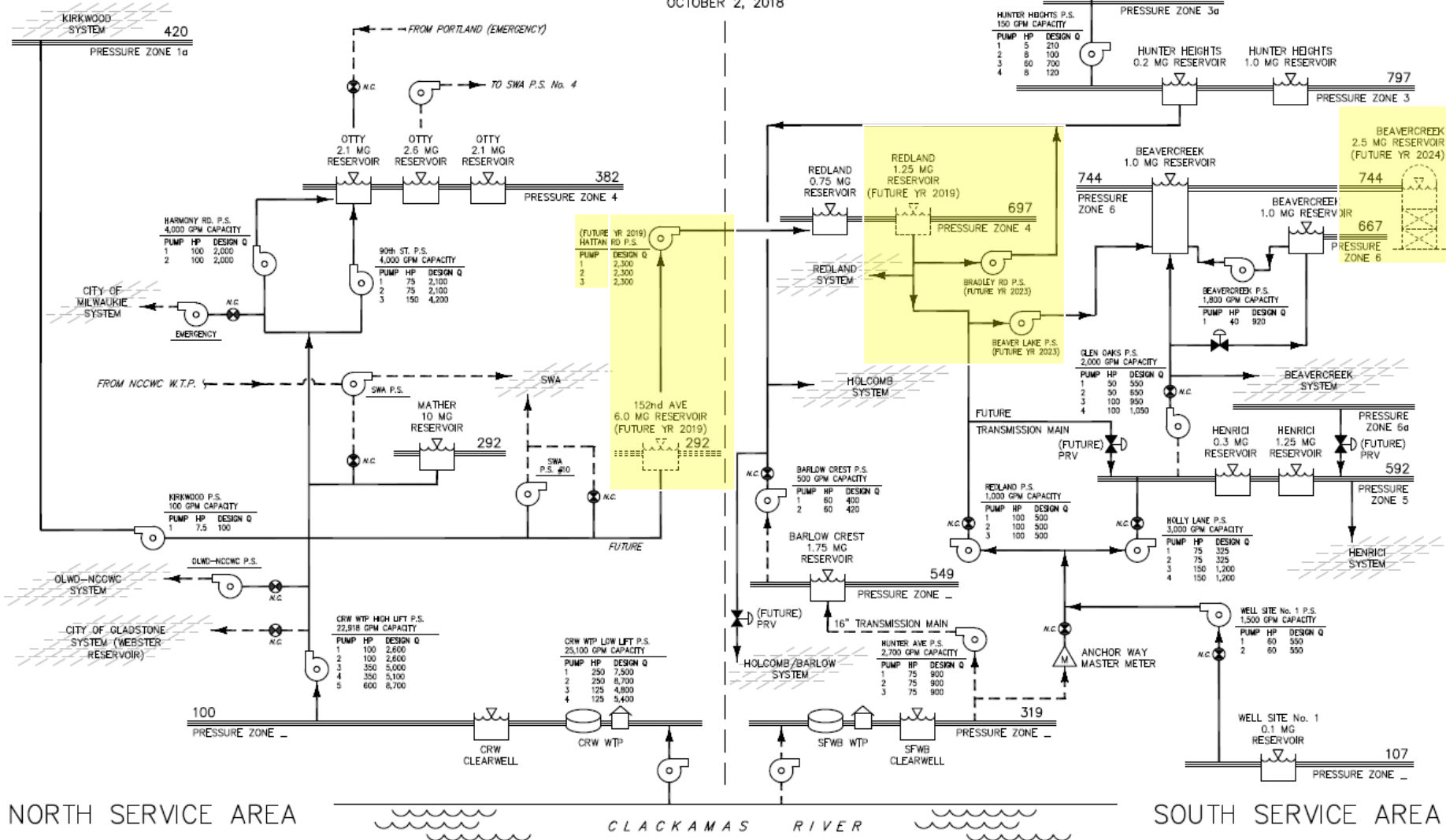
- 2014-15 planning effort following Board direction
- Two-phased approach funded by municipal bonding
- 3 Reservoirs/Tanks
- 3 Pumping Stations
- Transmission Mains



CRW's Backbone System

CLACKAMAS RIVER WATER PRESSURE ZONE SCHEMATIC WITH BACKBONE PROJECTS

OCTOBER 2, 2018



NORTH SERVICE AREA

CLACKAMAS RIVER

SOUTH SERVICE AREA

CRW Split the Project into Two Phases

- Phase 1
 - Two reservoirs – 7.25 MG total
 - One pump station – 6 MGD
 - Transmission pipelines
 - Bonding acquired 2016; substantial completion 2019
- Phase 2
 - One reservoir – 2.5 MG
 - Two pump stations – 4 MGD total
 - Transmission pipelines
 - Planning for bond acquisition in 2020

Phase 1: 152nd Avenue Reservoir Provides Storage and Supply

- 152nd Avenue Reservoir (6 MG) as Supply to the South System



Phase 1: Hattan PS Provides Full Supply to the South

- Hattan PS will supply water to the Redland pressure zone

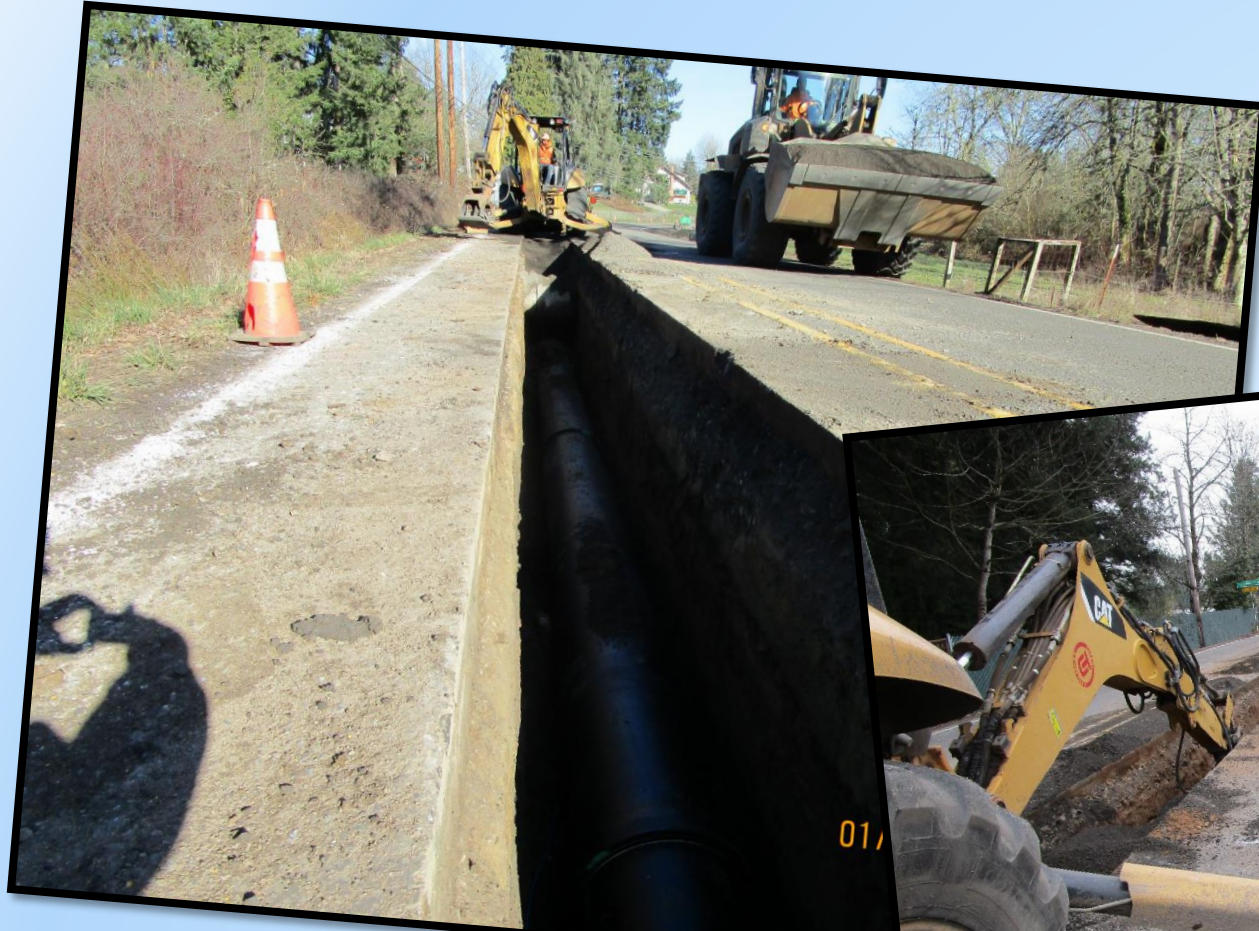


Phase 1: Redland Reservoir Provides Zone-Based Storage

- Redland Reservoir No. 3 Provides Additional Storage to the Redland Area



Phase 1: Transmission Pipelines are Necessary to Convey Flow from North to South



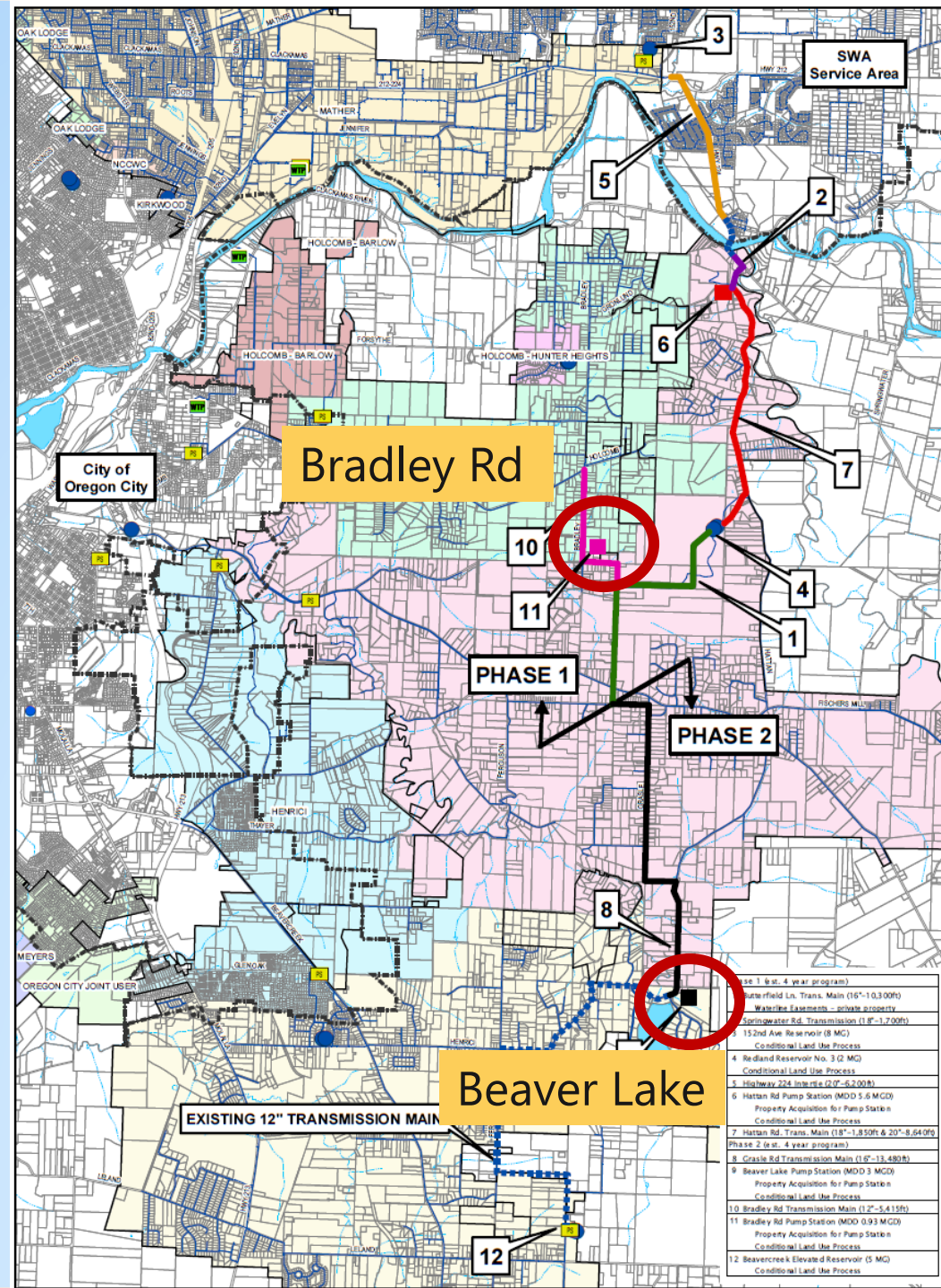
Phase 2: Beaver Creek Elevated Tank Needed to Minimize Pumped Storage

- Beaver Creek Elevated Tank Will Provide Necessary Storage at the Proper Elevation



Phase 2: Pump Stations

- Bradley PS Will Provide Supply to the Hunter Heights System
- Beaver Lake PS Will Provide Supply to the Beavercreek System



Hydraulic Benefits of the Project

- New Infrastructure with Better Capacity
- More Efficient Pumping
- Water quality improvements (reduced dead-ends, CRW source control, etc.)

CRW Backbone Projects- Estimated Cost & Schedule

- Phase 1: ~\$30 million; 2016-2020
- Phase 2: ~\$20-25 million (TBD); 2020-2024

Backbone Projects: Benefit Summary

- Use excess WTP capacity
- Develop resilient supply
- Furnish CRW water to CRW customers
- Improve fire flows; replace aged infrastructure
- Reduce dependence on other suppliers; create redundancy
- Plus some other potential benefits:
 - Change in Water Quality
 - Request from OHA for a Single Operating Certificate



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Thank you!