

# Kachess Drought Relief Pumping Plant Public-Private-Partnership

Water Infrastructure and  
Alternative Financing Forum  
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Presented by:

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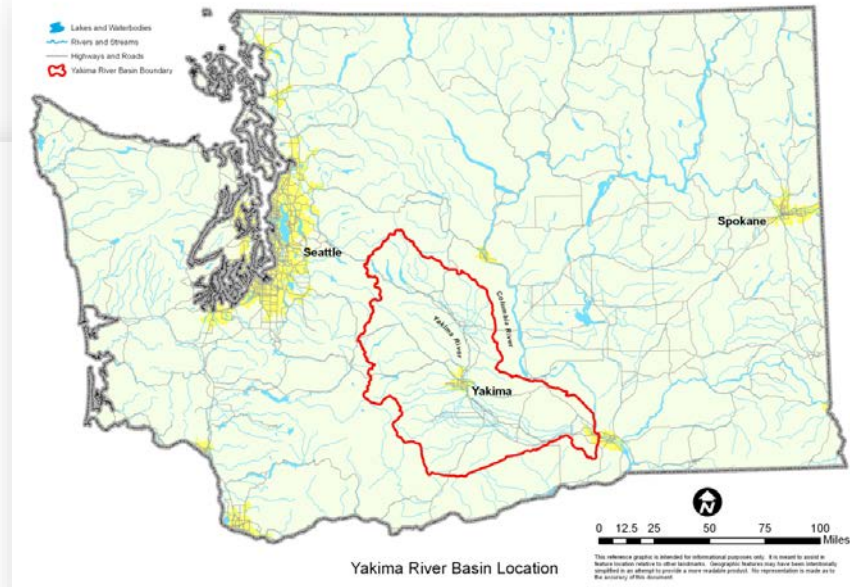
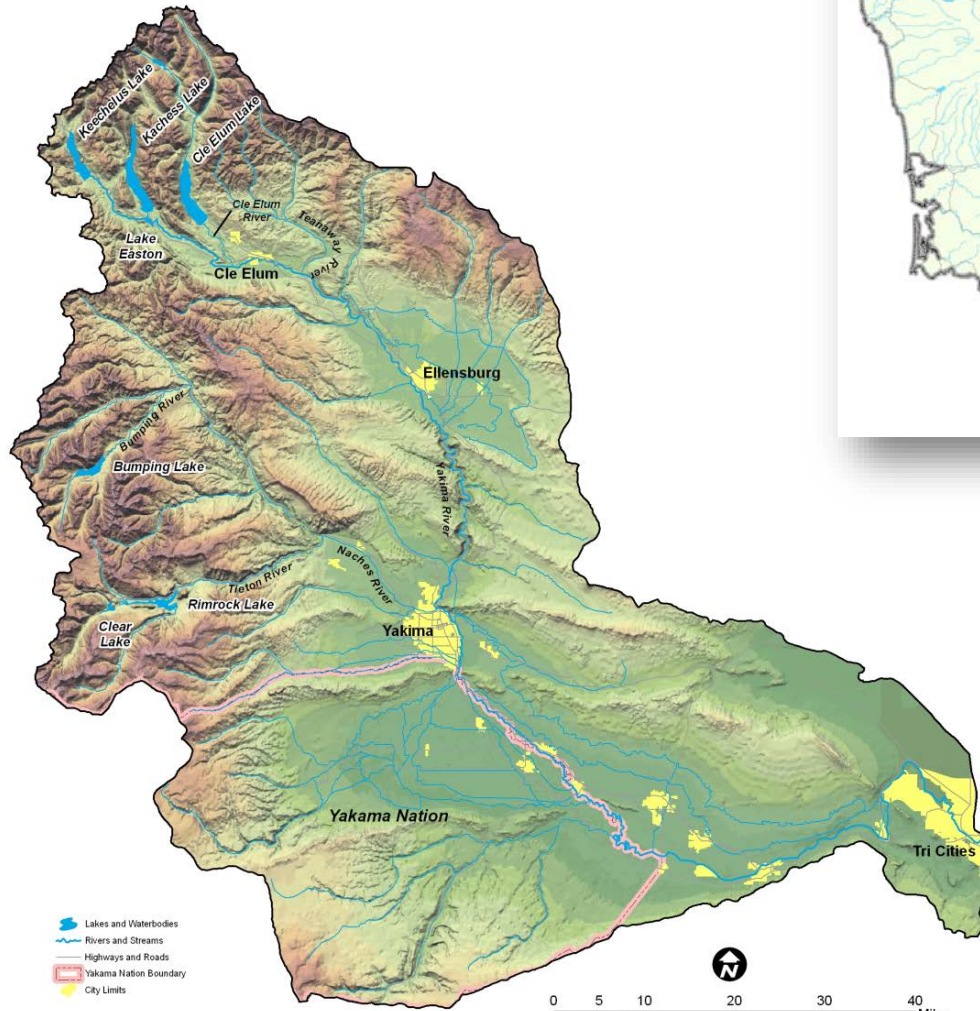
**Dave Minnick**, Roza Board of Directors, Roza Irrigation District

**Scott Revell**, District Manager, Roza Irrigation District

**Wayne Sonnichsen**, Engineering Manager, Roza Irrigation District



# Yakima River Basin Overview

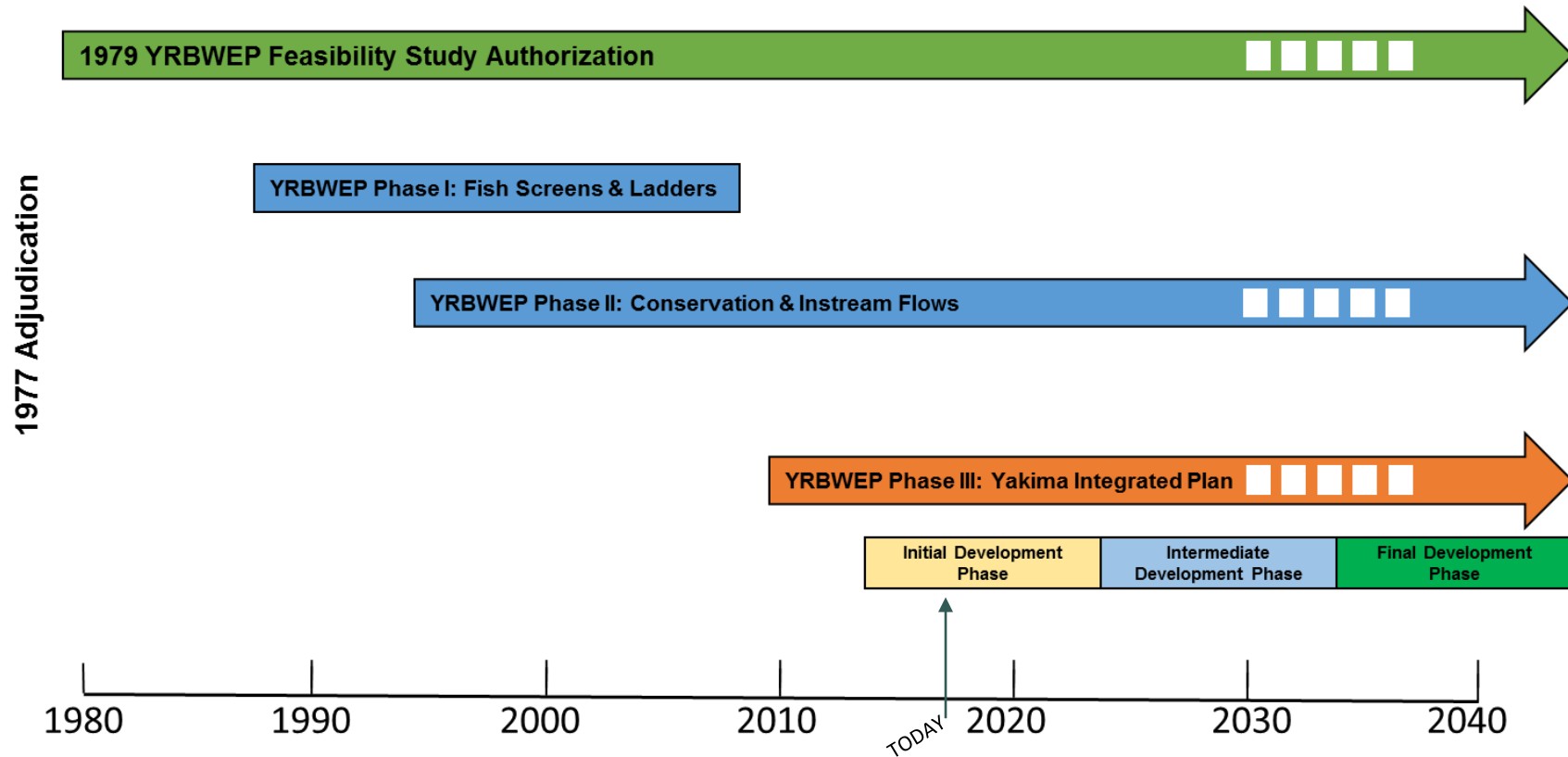


- 6,155 sq. miles w/464,000 irrigated acres
- 5 reservoirs w/ 1M AF capacity, irrigation deliveries 2.3M AF
- Droughts in 1992-1994, 2001, 2005, and 2015
- Reduced Fisheries
- \$4 Billion agriculture economy

This reference graphic is intended for informational purposes only. It is meant to assist in feature location relative to other landmarks. Geographic features may have been intentionally simplified in an attempt to provide a more readable product. No representation is made as to the accuracy of this document.



# Yakima River Basin Water Enhancement Project Timeline





# Yakima Integrated Plan Overview

## YAKIMA RIVER BASIN INTEGRATED WATER RESOURCE MANAGEMENT PLAN

### Structural & Operational Changes

1. Raise the Cle Elum Pool by three feet to add 14,600 ac-ft in storage capacity.
2. Modify Kittitas Reclamation District canals to provide efficiency savings.
3. Construct a pipeline from Lake Keechelus to Lake Kachess to reduce flows and improve habitat conditions during high flow releases below Keechelus and to provide more water storage in Lake Kachess for downstream needs.
4. Decrease power generation at Roza Dam and Chandler power plant to support outmigration of juvenile fish.
5. Make efficiency improvements to the Wapatox Canal.

### Reservoir Fish Passage

#### Provide fish passage at:

1. Clear Lake
2. Cle Elum
3. Bumping
4. Tieton (Rimrock)
5. Keechelus
6. Kachess

### Enhanced Water Conservation

1. Implement an agricultural water conservation program designed to conserve up to 170,000 acre-feet of water in good water years.
2. Create a fund to promote water use efficiency basin-wide using voluntary, incentive-based programs. Focus on outdoor uses as top priority.

### Habitat/Watershed Protection & Enhancement

1. Protect ~70,000 acres of land by acquiring high elevation portions of the watershed and forest and shrub steppe habitat.
2. Evaluate potential Wilderness, Wild and Scenic River, and National Recreation Area designations to protect streams and habitat.
3. Create a habitat enhancement program to address reach-level floodplain restoration priorities and restore access to key tributaries.

### Market Reallocation

Employ a water market and/or a water bank to improve water supply in the Yakima River basin. Market reallocation would be conducted in two phases:

The near-term phase would continue existing water marketing and banking programs in the basin, but take additional steps to reduce barriers to water transfers.

The long-term program would focus on facilitating water transfers between irrigation districts. This would allow an irrigation district to fallow land within the district and lease water rights for that land outside the district.

### Surface Water Storage

1. Build a 162,500 ac-ft off-channel surface storage facility at Wymer on Lmuma Creek.
2. Access an additional 200,000 ac-ft of water by tapping into inactive storage at Lake Kachess.
3. Construct a new dam at Bumping Reservoir to increase capacity to 190,000 ac-ft.
4. Begin appraisal of potential projects to transfer water from the Columbia River to the Yakima Basin.

### Groundwater Storage

1. Construct pilot projects to evaluate recharging shallow aquifers via groundwater infiltration. Full scale implementation may follow.
2. Build an aquifer storage and recovery facility allowing Yakima City to withdraw water from the Naches River during high flow periods and store it underground for use during low flow periods.



# NEPA/SEPA Milestones

## Kachess Drought Relief Pumping Plant and Keechelus Reservoir-to-Kachess Reservoir Conveyance Projects NEPA-SEPA Process



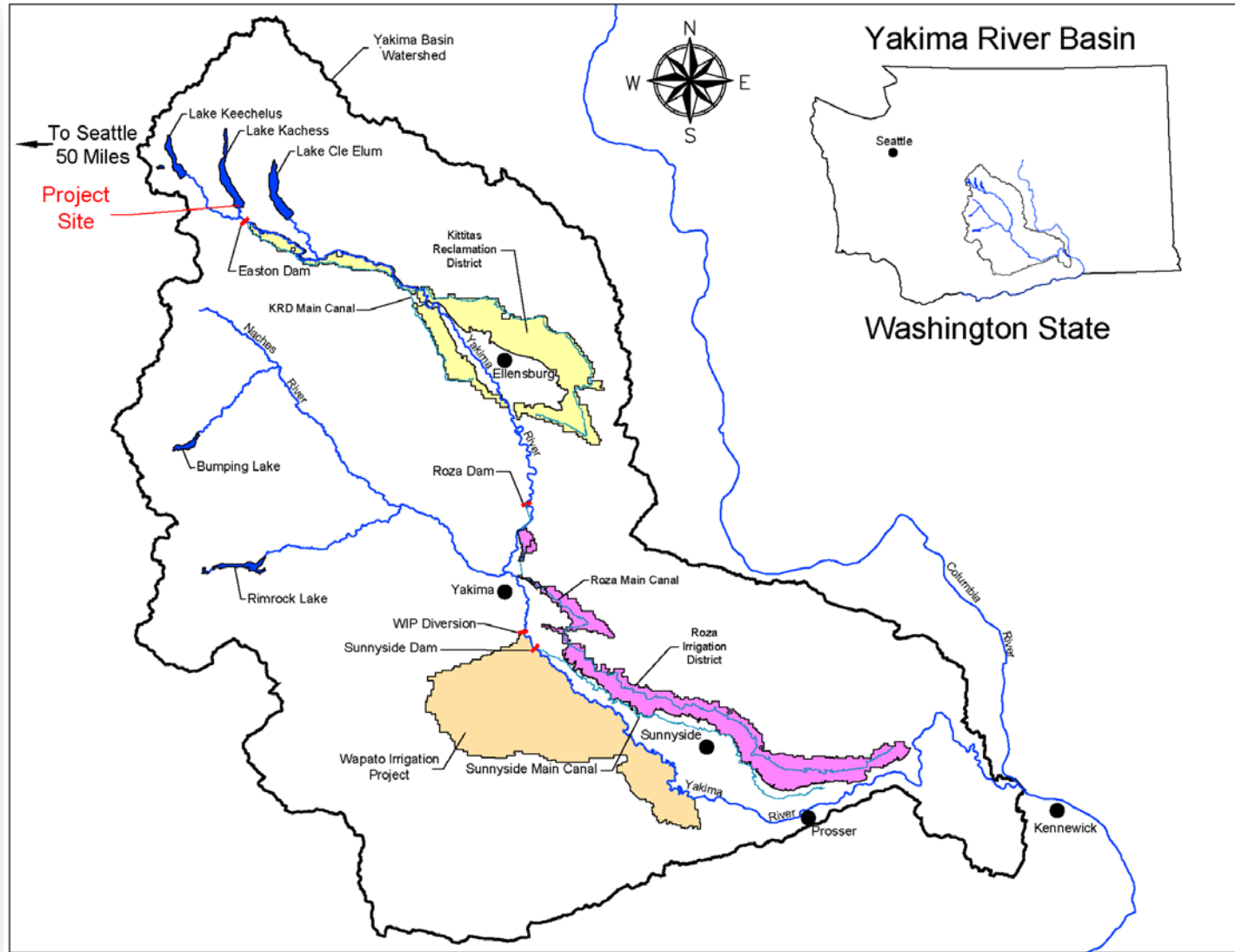
Time not to scale



**RECLAMATION**  
*Managing Water in the West*



# Roza Irrigation District Location



# Roza Irrigation District Overview

- 72,000 irrigated acres over 95 miles w/ 450 miles of canals.
- 80% high value perennial crops (tree fruit, hops, wine and juice grapes) with very high efficiency on-farm irrigation.
- 20% annual crops (silage corn, pasture, row crops) which support a large dairy industry.
- Total crop value of \$1 billion +/- on mostly 2<sup>nd</sup> and 3<sup>rd</sup> generation family farms.
- **47%** water supply in 2015.
- Supply ranged from **35%** to **68%** in five prior drought years since 1992...2016 could be far worse.
- \$13M annual budget of which about 25% goes to capital improvements which conserve water.





# Yakima River Basin Water Rights



Roza is 100% Proratable Water





# Roza Irrigation District Drought 2015



Unwatered Apple Trees Removed



# Roza Irrigation District Drought 2015



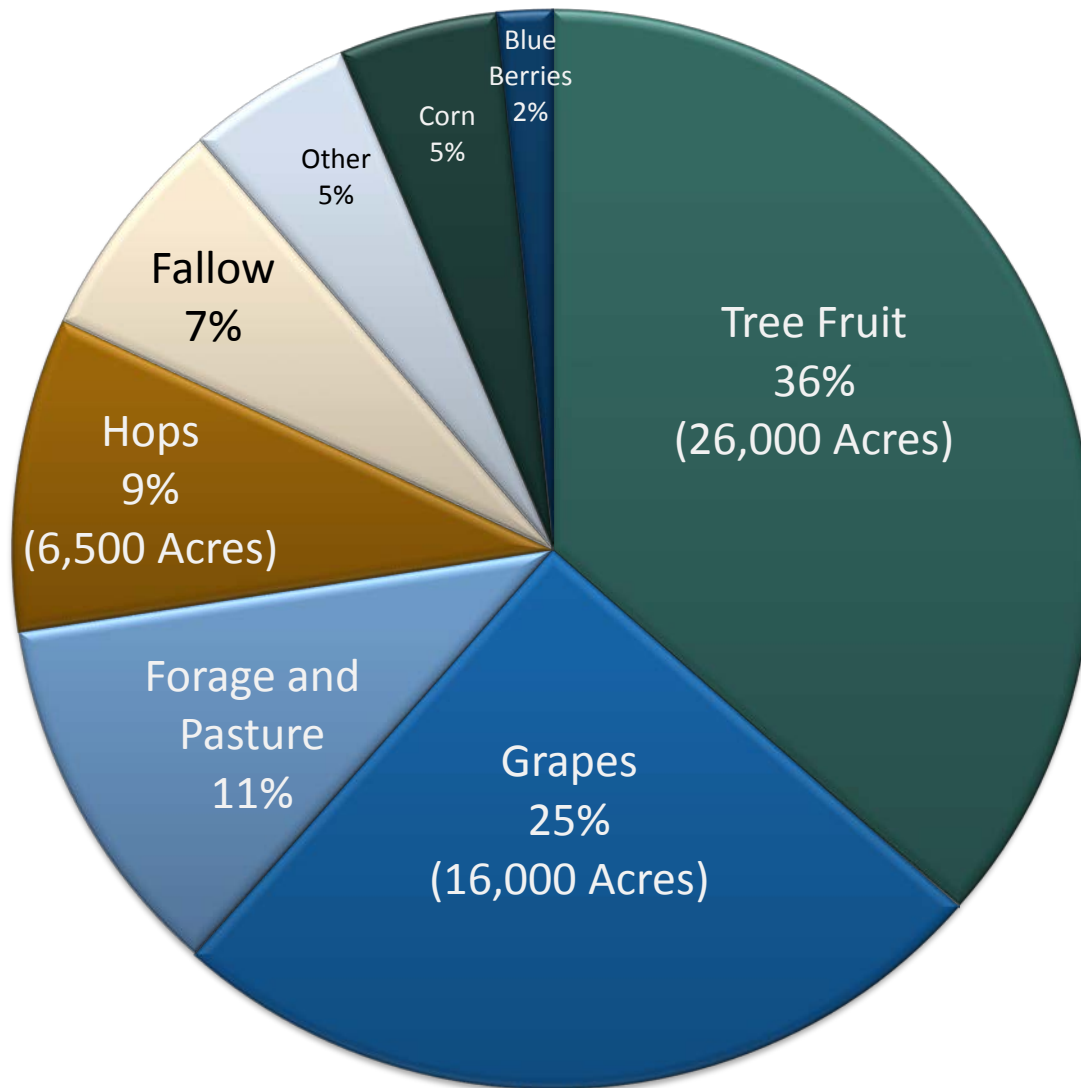
Peach Trees  
Removed



Corn Fields Fallowed



# Roza Irrigation District Drought 2015



Crop Census 2015



# Roza Water Conservation Projects

- \$82 Million in total improvement costs since 1983.
  - \$44 Million Roza dollars.
  - \$38 Million Federal/State grants.
- 46,000 acre feet in reduced diversions annually, including 300+ miles of canal piped.
- \$33 million in Roza funded improvements over the next 13 years to complete the lateral canal enclosure program to conserve 8,500 additional acre feet.
- \$100M+ of grower funded on-farm efficiency and conservation measures (ponds, drip lines, sprinkler conversions, etc.)

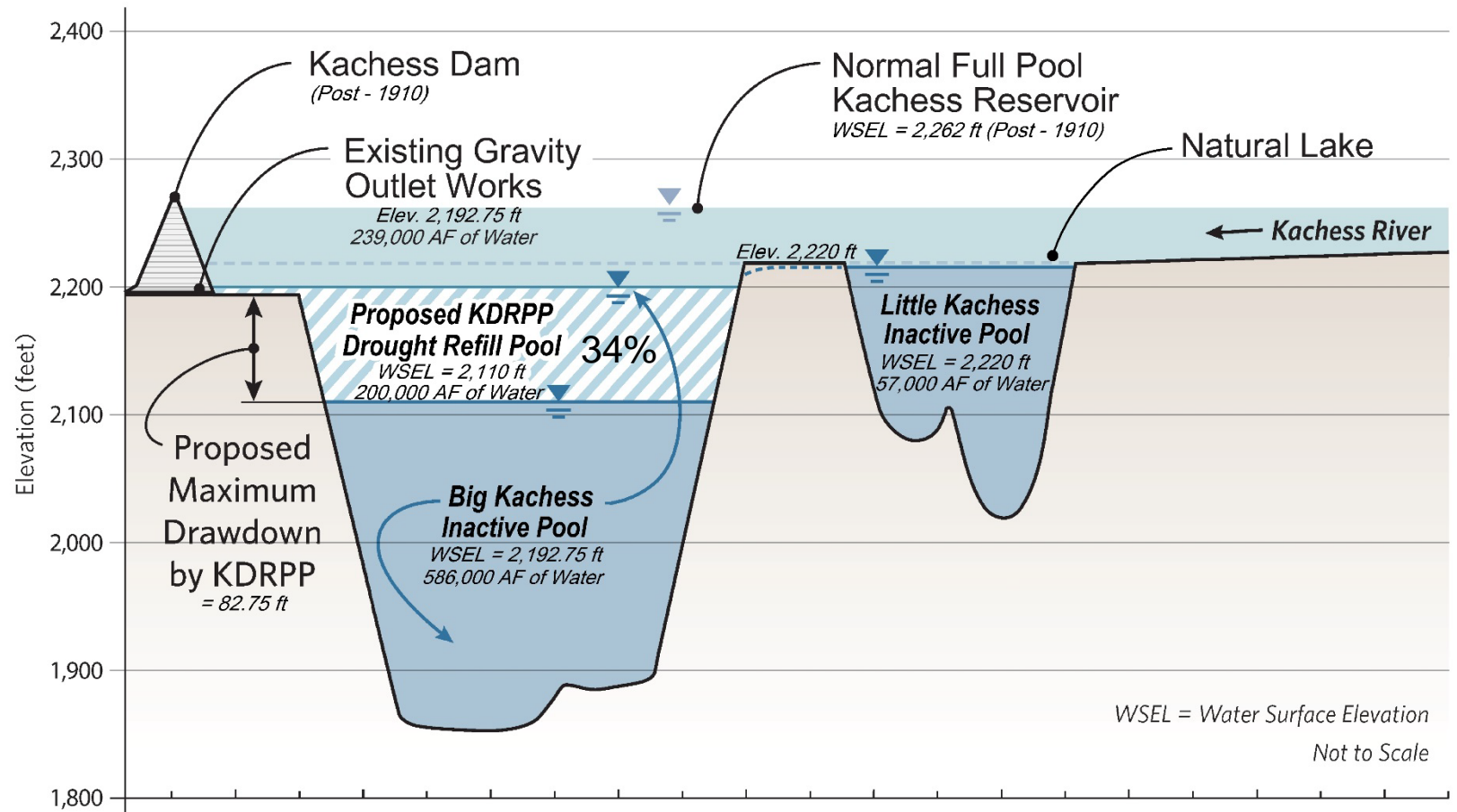
Post 1983





# Kachess Drought Relief Pumping Plant

*Schematic Hydraulic Profile Showing Inactive Pool, Natural Lakes, Existing Kachess Dam & Reservoir, and Proposed KDRPP Drawdown*



# Kachess Drought Relief Pumping Plant

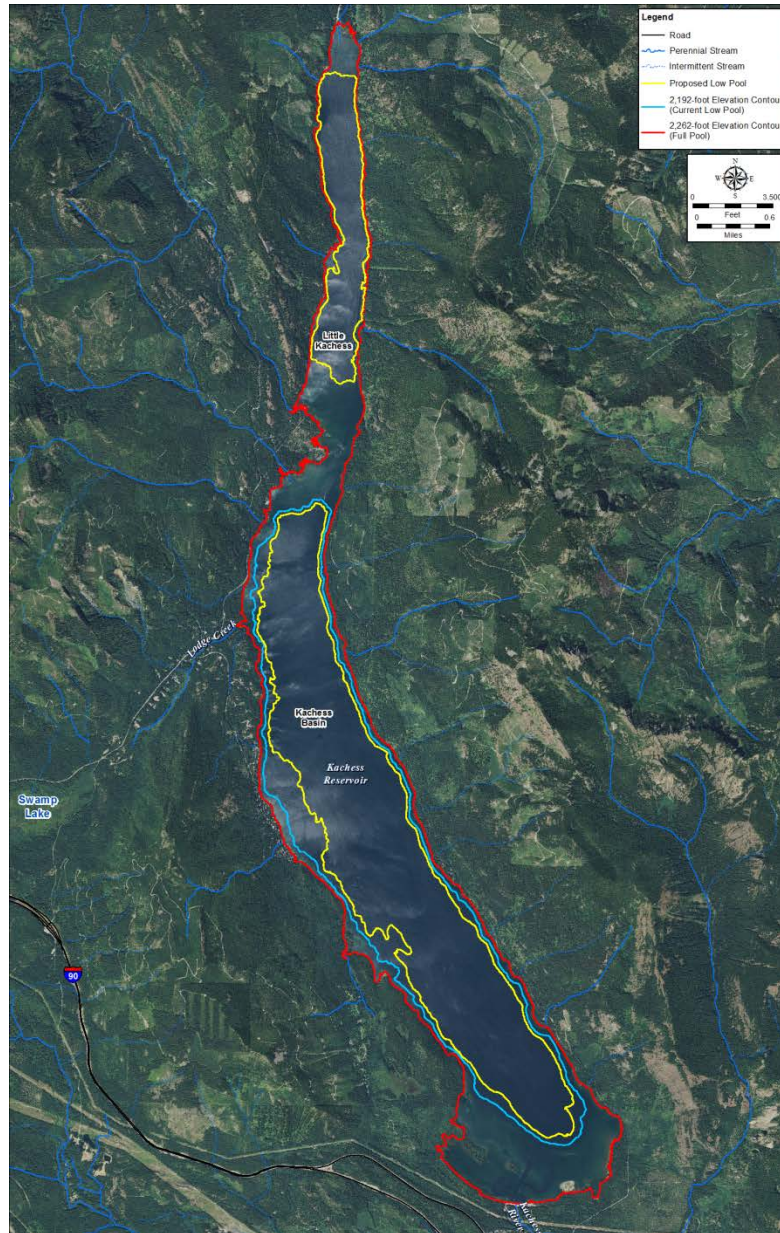


Oct 2015 Aerial Kachess Reservoir





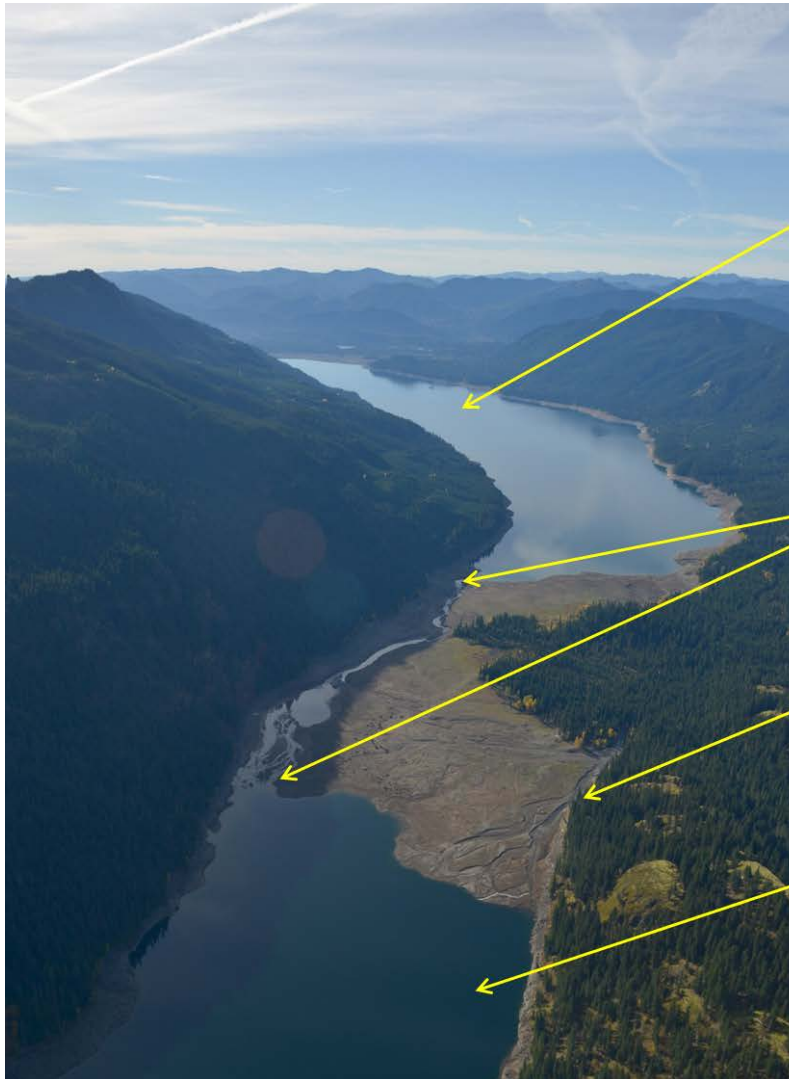
# Kachess Drought Relief Pumping Plant



- Provides up to 200K acre-ft of water in <70% proration years
- Up to 14% less surface area than existing minimum pool



# Kachess Reservoir Bull Trout Passage



## Lower Kachess Lake

Historic Min EL 1999.60' (10/18/94; Hydromet)

## The Narrows

(Inflection Pt (drop off); 2199.5')

## Box Canyon Creek

## Upper Kachess Lake

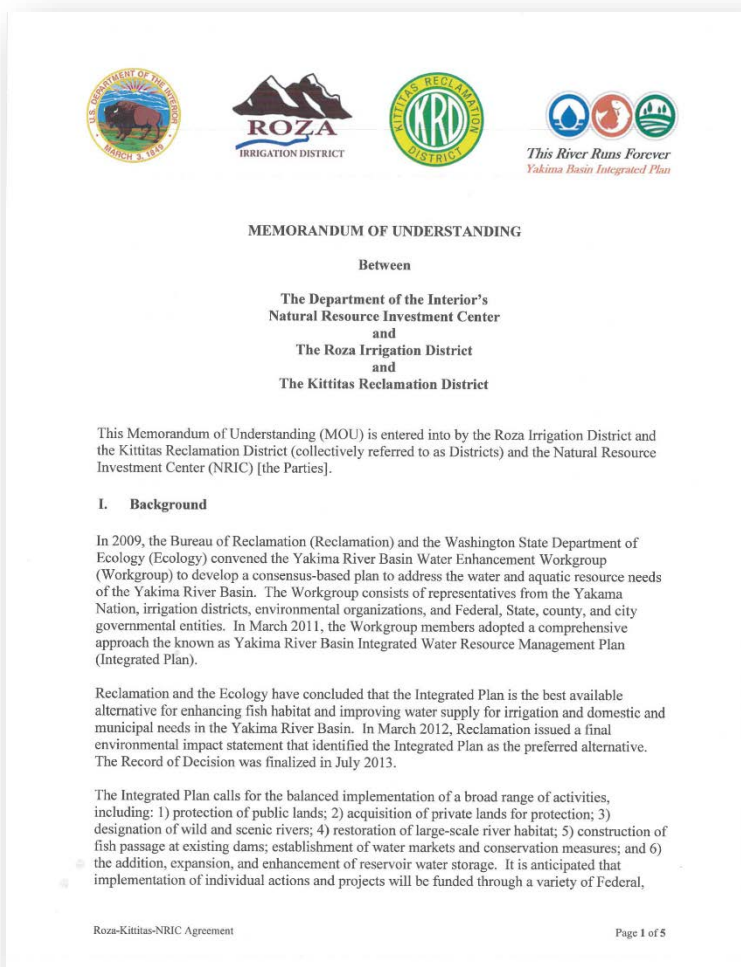
Min EL 2223.93' (Ed Young, fall 2015)

Reference: Kachess Reservoir Bull Trout  
Passage Appraisal Report 2016





# Roza Irrigation District, Kittitas Reclamation District, and Natural Resources Investment Center



# Roza Irrigation District Farmland



Cherries and Nectarines





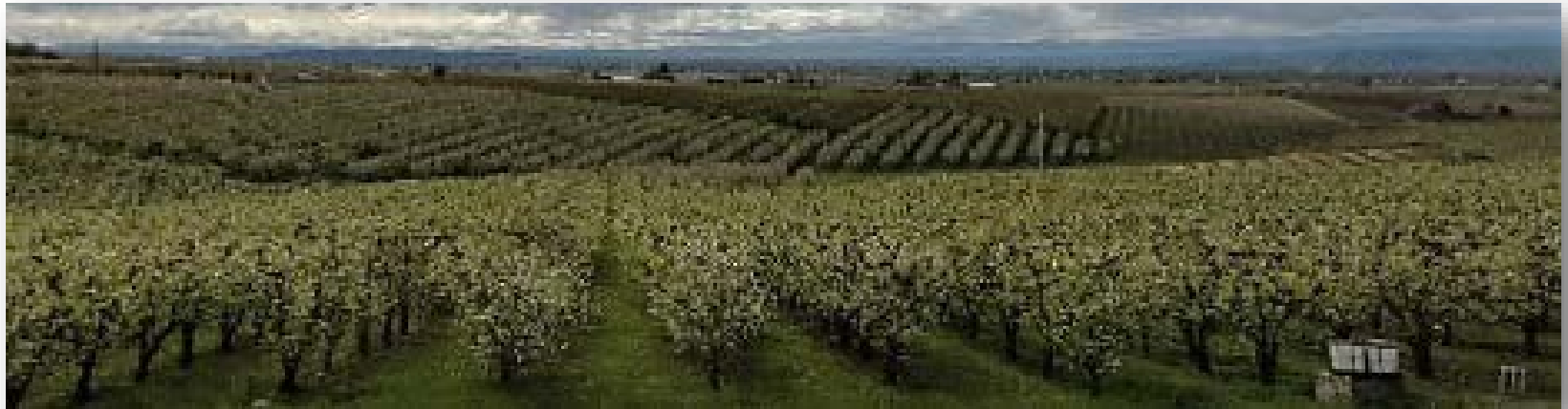
# Roza Irrigation District Farmland



Roza Canal and Hops



# Roza Irrigation District Farmland



Apples and Pears





# Roza Irrigation District Farmland



Mt. Adams in the distance





# Roza Irrigation District Farmland





# Roza Irrigation District Farmland



Mt. Rainier in the distance



# Key Transaction Objectives

