Yakima Basin Integrated Plan Overview

October 4, 2019

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Yakima River Basin Overview

- 6,155 sq. miles w/ 464,000 irrigated acres
- 5 reservoirs w/ 1M AF capacity, irrigation deliveries 2.3M AF
- Reduced Fisheries
- $4.5 Billion agriculture economy
Yakima River Basin Water Management

- Managed by Bureau of Reclamation
- 5 reservoirs with 1M acre-feet of capacity (average annual runoff 3.3M acre-feet)
- Snowpack is the “sixth reservoir”
- Irrigation deliveries: 2.3 M acre-feet
Yakima River Basin Surface Water Right Adjudication

Background

• Started in 1977
• State’s longest running court case
• Already knew surface water was over allocated
• Settled some long standing water wars dating back over 100+ years
• Case provided certainty about surface water rights in 31 tributaries, 30 major claimants, and the Yakama Nation
Declining Water Supply

- Surface water is over-appropriated
- Proratable irrigation districts reduced to as little as 37% of allotments
- Snowpack declining (12-71% runoff)
Reduced Fisheries

- Historic salmon and steelhead run
  - 800,000 fish
- Average run size last 10-15 years
  - 15,000-20,000 fish
- Native coho, sockeye and summer Chinook extirpated
  - Coho reestablished, sockeye being reestablished
- Spring and fall Chinook
  - Seriously reduced
- Steelhead and bull trout
  - ESA Threatened species
Yakima Basin Integrated Plan

• **Goals:**
  
  • Restore and enhance environment, fish and wildlife, including fish passage at federal dams
  
  • Improve water supply during drought years (70% proratable supply)
  
  • Provide for efficient and adaptable water supply management
  
  • Contribute to sustainable economy and environment
YRBWEP Workgroup Members

- **Federal Agencies**
  - Bureau of Reclamation
  - National Marine Fisheries Service
  - U.S. Fish and Wildlife Service
  - U.S. Forest Service
  - U.S. Army Corps of Engineers

- **Yakama Nation**
  - Yakama Nation Natural Resources
  - Yakima/Klickitat Fisheries Project

- **Washington State Agencies**
  - Department of Ecology
  - Department of Agriculture
  - Department of Fish and Wildlife
  - Department of Natural Resources

- **Local Governments**
  - Benton County
  - Kittitas County
  - Yakima County
  - City of Yakima

- **Irrigated Agriculture**
  - Kennewick Irrigation District
  - Kittitas Reclamation District
  - Roza Irrigation District
  - Sunnyside Valley Irrigation District
  - Yakima-Tieton Irrigation District

- **Other Stakeholders**
  - American Rivers
  - Yakima Basin Fish & Wildlife Recovery Board
  - Yakima Basin Storage Alliance
  - Trout Unlimited
Partnerships
Yakima River Basin Water Enhancement Project Timeline

1979 YRBWEP Feasibility Study Authorization

YRBWEP Phase I: Fish Screens & Ladders

YRBWEP Phase II: Conservation & Instream Flows

YRBWEP Phase III: Yakima Integrated Plan

Initial Development Phase
Intermediate Development Phase
Final Development Phase

Yakima Basin Integrated Plan - State Legislation 2013
Yakima Basin Integrated Plan - Federal Legislation 2019

Yakima Basin Surface Water Right Adjudication – 1977 to 2019 (Signed)

Purpose

• Partnership among Washington State, federal government and water users to meet the Yakima Basin’s future needs

• Address non-federal issues

Ecology authorized to implement Integrated Plan

• To protect and enhance fish and wildlife

• To improve availability and reliability of water supplies as well as efficiency of use

• To establish flexible operational enhancements to prepare for the uncertainties of climate change
Yakima River Basin Water Enhancement Project

YRBWEP Federal Legislative History

**P.L. 96-162 Feasibility Study, December 28, 1979**

**P.L. 98-381 Section 109 of Hoover Power Plant Act of 1984, August 17, 1984**
- Authorized fish passage at federal facilities

- Comprehensive Plan for the Yakima Basin
  - To protect, mitigate, and enhance fish and wildlife
  - To improve the reliability of water supply for irrigation
  - To authorize a water conservation program
  - To provide for implementation by the Yakama Nation of an irrigation demonstration project, Wapato Irrigation Project improvements and a Toppenish Creek Corridor enhancement project

**P.L. 116-9 Title VIII Subtitle C Yakima River Basin Water Enhancement Project, March 12, 2019**
- YBIP – Authorized in 10 Year Increments
P.L. 116-9, Title VIII, Subtitle C, YRBWEP

- Expands purposes
  - “…recovery and maintenance of self-sustaining harvestable populations of fish and other aquatic life … throughout their historic distribution range in the Yakima Basin.”
  - Includes municipal, industrial and domestic supply
  - Resilience to drought and climate change

- YBIP authorized in 10 year increments
  - Initial Phase – implementation authorized
  - Intermediate and Final – planning/study authorized

- Initial Phase Authorizations (Implementation)
  - KDRPP (accessing up to 200,000 af inactive storage at Kachess)
  - Additional (non-YRBWEP II) conservation of 85,000 af/yr in Initial Phase
  - Groundwater recharge and aquifer storage and recovery projects using federal infrastructure
  - Supporting water marketing and transfers
  - $75 million for Indian irrigation projects (WIP)
John D. Dingell, Jr. Conservation, Management, and Recreation Act

P.L. 116-9 – Signed March 12, 2019 includes Yakima River Basin Water Enhancement Project Phase III Act

Sponsors: Senator Cantwell (D) and Congressman Newhouse (R)
Yakima Integrated Plan Overview

7 Key Elements

- **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.

- **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.

- **Reservoir Fish Passage**
  Provide fish passage at:
  1. Clear Lake
  2. Cle Elum
  3. Bumping
  4. Tieton (Rimrock)
  5. Keechelus
  6. Kachess

- **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.
Yakima Basin Integrated Plan
Subcommittee Structure
Yakima Basin Integrated Plan Initial Development Phase
Map I - Conservation, Storage, Operations, and Water Market Projects

Structural and Operational Changes
1. Cle Elum Pool Raise
2. Keechelus to Kagess Conveyance
3. KRD Upper Yakima system storage

Surface Water Storage
1. Kagess Drought Relief Pumping Plant

Groundwater Storage
1. Upper Kittitas Shallow Aquifer Recharge (SAR)
2. Yakima City Aquifer Storage and Recovery (ASR)
3. Toppenish Fan Aquifer Recharge
4. Selah Moxee Irrigation District SAR Feasibility Study
5. Yakima Basin Aquifer Geochemistry Evaluation (Basin Wide)
6. KRD Yakima Basin ASR Feasibility Study (Basin Wide)

1. KRD 13.6, 13.8 Lateral Piping Project
2. Wapato Irrigation Project (WIP) Piping Lateral 4-414C
3. WIP Piping Satish East Lateral E73
4. Kennewick Irrigation District (KID) Division IV Lining
5. Manastash Creek Sprinkler Conversions
6. Yakima-Tieton ID Diversion Relocation Feasibility Study
7. Manastash-Consolidated Pipeline & Manastash Water Ditch Association (MWDA) Pipeline Construction
8. WIP Piping of Unit 2 L672 and Headworks Rebuild
9. KRD North Branch Canal Lining
10. Roza Canal Lining Phases I, II, III, IV
11. WIP Lining of Unit 2 (167+20 to 173+80)
12. KID Reregulation Reservoir Design
13. WIP Unit 2 Upper Dam Rebuild and Lower Dam Removal
14. WIP Water Conservation Plan
15. City of Yakima Xeriscape Demonstration Project
16. Reed Pipeline Design Manastash Creek
17. Anderson Diversion Irrigation Water Acquisition
18. KRD South Branch Canal Lining, Phases I and II
19. WIP Unit 2 West Piping
20. WIP Unit 2 West Lining
21. KCCD Irrigation Efficiency Improvements
22. KRD Upper Tributary Supplementation
23. WIP Track D Lateral Pipeline
24. Heritage Gardens Municipal Conservation Program (Basin Wide)

Water Bank/Exchange Programs
1. KRD/TU Yakima basin Water Market Structure and Strategic Development (Basin Wide)
Initial Development Phase

- Addresses implementation in first 10 years of 30-year plan
- Advances all seven plan elements
- Represents just under 1/3 of estimated plan costs (about $900M)
  - Kachess Drought Relief Pumping Plant ($200M)
  - Aquifer Storage and Recovery ($6M)
  - Agricultural Conservation ($85M)
  - Water Marketing ($0.5M)
  - Cle Elum 3-foot pool raise ($22M)
  - Cle Elum Dam and Reservoir Fish Passage ($200M)
  - Evaluate, Design, and Construct Second Fish Passage Facility at Tieton Dam ($100M)
  - Habitat and Land Acquisitions ($100M)
- Costs are preliminary based on studies to date
Surface Water Storage

Need to make up 1.5 million acre-foot difference in snowpack and storage

Accessing inactive storage at Kachess Reservoir

Potential storage site at Wymer/expanding Bumping Reservoir in later phases
Kachess Drought Relief Pumping Plant

**Water Supply:** Up to 200,000 acre-feet in a drought year

**Drawdown:** Up to 80 feet

**Surface Area:**
Up to 20% less surface area than existing minimum pool

Authorized in P.L. 116-9
March 2019
Surface Water Supply KDRPP
New Authorization in P.L. 116-9, Sec 8201

- Authorizes proratable irrigation entities to finance, construct, operate and maintain the Drought Relief Pumping Plant to access up to 200,000 af inactive storage

- KDRPP drought-only water supply considered Yakima Project water, available to provide up to 70% water supply for participating proratable irrigation entities

- BPA shall provide pumping power, costs borne by the participating irrigation entities
Structural and Operational Changes

- Raising Cle Elum reservoir pool 3 feet
- 14,600 acre feet of water

Kachess-to-Keechelus Conveyance

KRD Tributary Supplementation
Cle Elum Pool Raise

14,600 acre-feet managed for instream flows

- Modify radial gates - complete
- Shoreline protection – under construction
- Land acquisition – in process
Fish Passage at Reservoirs

- Benefits: Opens up high quality, cool water habitat. Allows Sockeye restoration

- Without the lake and upper river habitat, full restoration of Yakama Nation Treaty fishery is impossible

- Sockeye restoration began in 2009
First SOCKEYE to be born and raised in the Yakima River Basin in over 100 years to return, was released into Cle Elum Reservoir in 2013.
Cle Elum Fish Passage
Looking upstream at dam spillway and tunnel portal on 3/2019
Tunnel Contract - Retaining Wall and Helix Base
More Cle Elum Fish Passage Construction

H-Piles & Excavation

Intake Construction
The Teanaway Community Forest is a 50,272-acre forest situated at the headwaters of the Yakima Basin watershed. The forest will be managed through a partnership between the Washington state departments of Natural Resources (DNR) and Fish & Wildlife, with input from the local community and interested stakeholders.

DNR designed the community forest model, which was approved by state lawmakers in 2011. The model is a tool to involve local citizens in protecting working forests that support healthy communities through grazing, forestry, recreation, and conservation.

The Teanaway property was identified as part of the Yakima Basin Integrated Plan as an area of importance to safeguard the Yakima Basin water supply and associated habitats, and to support the economy by preserving working lands and enhancing recreation opportunities. The Basin Plan was developed by a coalition of public and private organizations committed to increasing the quantity and quality of water in the Yakima River Basin.

LEARN MORE
Teanaway Community Forest

- Recreation, Working Lands & Floodplain Restoration
- Teanaway Community Forest – 50,241 acres
- WA’s first community forest
Enhanced Water Conservation

Sealing canals, installing pipes, eliminating leaks, building re-regulation reservoirs

Portion of conserved water returns to creeks for instream uses

85k acre feet conserved annually by 2023, in addition to irrigators conserving ~10k to date
Municipal Conservation – Irrigation Conservation
Groundwater Storage

- Proposed Areas for managed recharge modeling
- Pilot studies ongoing at Kittitas Reclamation District and Wapato Irrigation Project
- Drilling additional monitoring wells Summer 2018
Groundwater – Aquifer Storage Potential

Groundwater Storage Potential in the Yakima River Basin: A Spatial Assessment of Shallow Aquifer Recharge and Aquifer Storage and Recovery, (Gibson and Campana, 2018)
Market Reallocation

• **Near-term effort**
  – Build on existing water market programs
  – Take steps to reduce barriers

• **Longer-term effort**
  – Focus on water transfers between districts
  – Allow fallowing within district, leases to outside district
  – Requires substantial changes to existing laws/policies

• **WaterSMART Grant awarded to Kittitas Reclamation District in 2017**
Questions ??

For further information on the web:
http://www.ecy.wa.gov/programs/wr/cwp/YBIP.html