

Yakima River Basin Integrated Water Resource Management Plan – YRBWEP Workgroup Update

June 8, 2016



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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

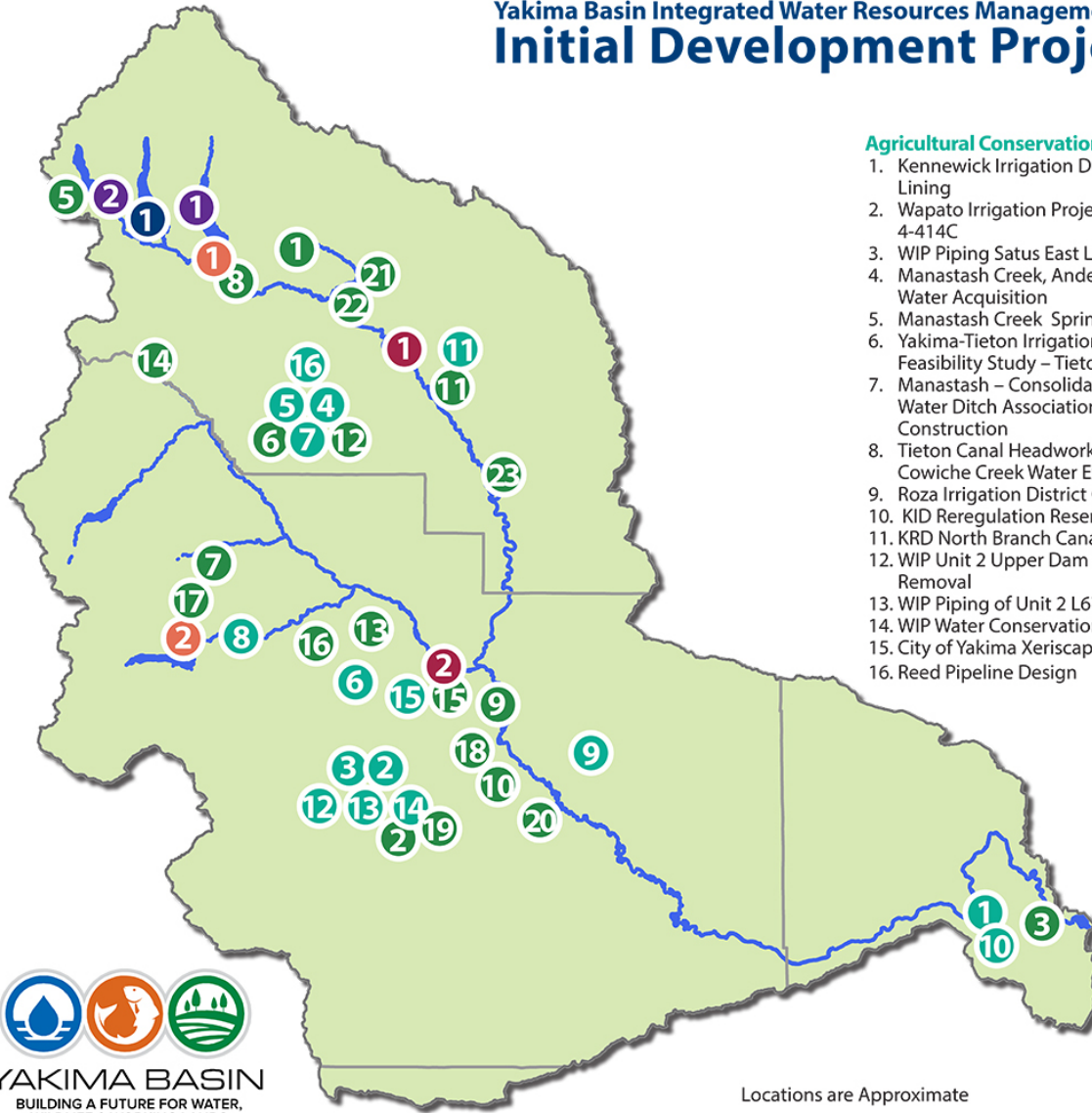
1. Construct pilot projects to evaluate recharging shallow aquifers via groundwater infiltration. Full scale implementation may follow.
2. Build an aquifer storage and recovery facility allowing Yakima City to withdraw water from the Naches River during high flow periods and store it underground for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



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Yakima Basin Integrated Water Resources Management Plan

Initial Development Projects



Agricultural Conservation (2013-2017)

1. Kennewick Irrigation District (KID) Division IV Lining
2. Wapato Irrigation Project (WIP) Piping Lateral 4-414C
3. WIP Piping Satus East Lateral E73
4. Manastash Creek, Anderson Diversion Irrigation Water Acquisition
5. Manastash Creek Sprinkler Conversions
6. Yakima-Tieton Irrigation District (YTID) Feasibility Study – Tieton to Ahtanum Exchange
7. Manastash – Consolidated Pipeline & Manastash Water Ditch Association (MWDA) Pipeline Construction
8. Tieton Canal Headworks Improvement and Cowiche Creek Water Exchange.
9. Roza Irrigation District Canal Lining
10. KID Reregulation Reservoir Design
11. KRD North Branch Canal Lining
12. WIP Unit 2 Upper Dam Rebuild and Lower Dam Removal
13. WIP Piping of Unit 2 L672
14. WIP Water Conservation Plan
15. City of Yakima Xeriscape Demonstration Project
16. Reed Pipeline Design

Fish Passage

1. Cle Elum Dam
2. Tieton (Rimrock) Dam

Groundwater Storage

1. Upper Kittitas Aquifer Storage and Recovery
- Yakima City Aquifer Storage and Recovery

Structural and Operational Changes

3. Cle Elum Pool Raise
4. Keechelus to Kachess Conveyance

Surface Water Storage

1. Kachess Drought Relief Pumping Plant

Water Bank/Exchange Programs

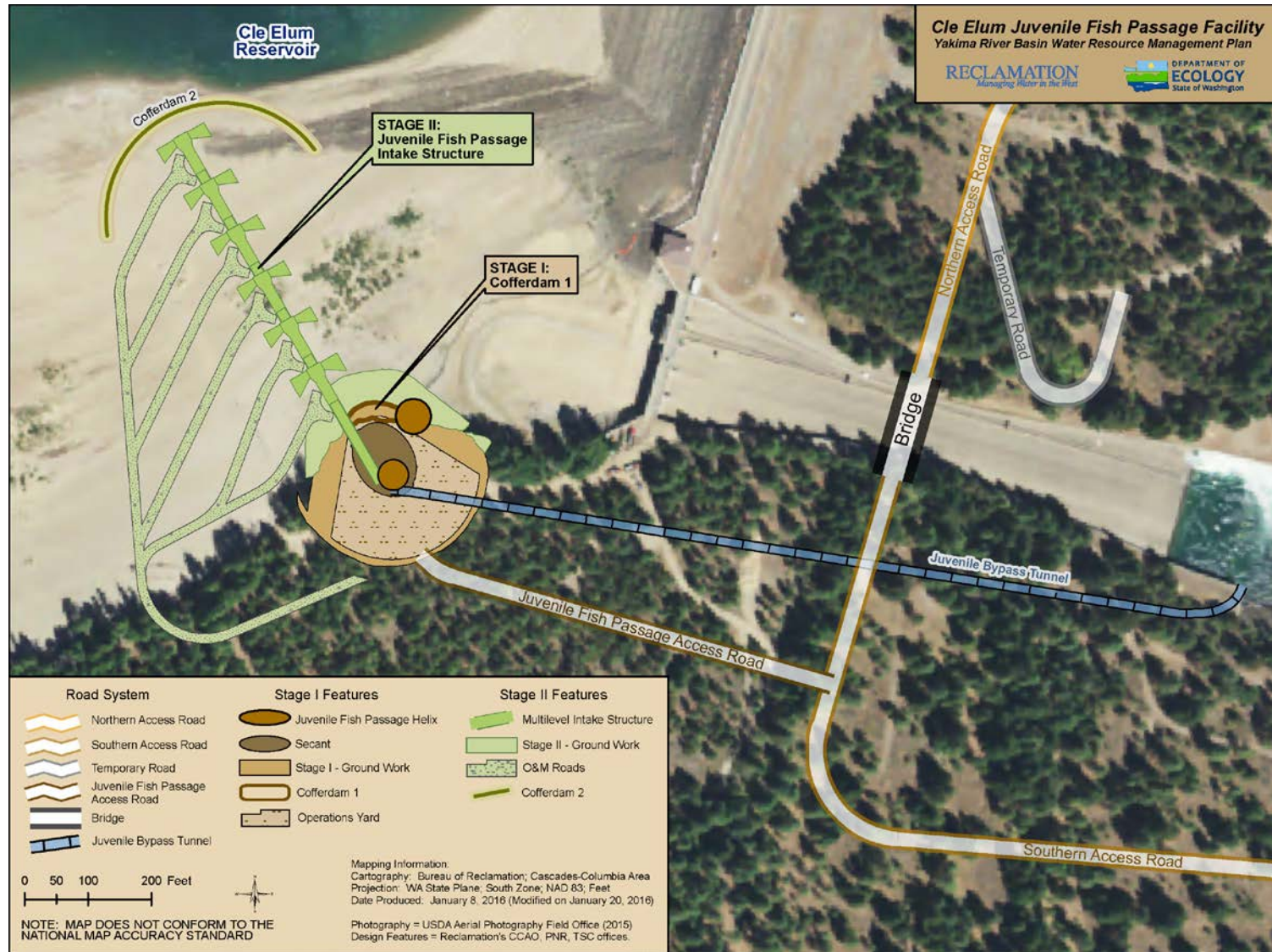
Basin Wide

Habitat Enhancement (2013-2017)

1. Teanaway Acquisition
2. Toppenish Fan Habitat Restoration
3. Bateman Island Causeway Modification Conceptual Design/Outreach/Permitting
4. Bull Trout Habitat Improvements
5. Gold Creek Habitat Assessment and Conceptual Design
6. Reed Diversion design Barrier Removal
7. Little Rattlesnake Road Decommissioning
8. Cle Elum River Side Channel Restoration Project, Phase 2
9. Gap-to-Gap Property Acquisitions
10. Upper Wapato Riparian Restoration
11. Ellensburg Water Company / Coleman Creek Restoration
12. Reed Diversion Barrier Removal
13. Trout Meadows Acquisition / Enhancement
14. Manastash/ Little Naches Land Acquisition
15. Gap-to-Gap Outfall Relocation, Land Acquisition and Levee Removal design and Restoration
16. Cowiche Easement/Design
17. South Fork Tieton Bull Trout Passage Feasibility and Design
18. Rivermile 89.5 Levee Breach
19. Island Road Floodplain Reconnection - Toppenish Creek
20. Wapato Reach - 3-way Levee Setback
21. Teanaway/Indian Creek Restoration
22. Teanaway Habitat Restoration
23. Upper Yakima Floodplain Acquisition and Design Ringer Loop Road

Locations are Approximate

Cle Elum Dam Fish Passage Construction



Cle Elum Dam Fish Passage Construction - Schedule

- **Phase 1 construction contract awarded July 2015.**
- **Phase 1 construction of roads and bridges in progress.**
- **Phase 1 scheduled to be completed in Fall 2016**
- **Award Phase 2 – September 2016.**



Cle Elum Dam Fish Passage Construction

Trees being stacked



Timbering pushing over tree



Cle Elum Dam Fish Passage Construction



Northern Access Road Entrance



Cle Elum Dam Fish Passage Construction



Northern Access Road



Northern Access Road



Cle Elum Dam Fish Passage Construction



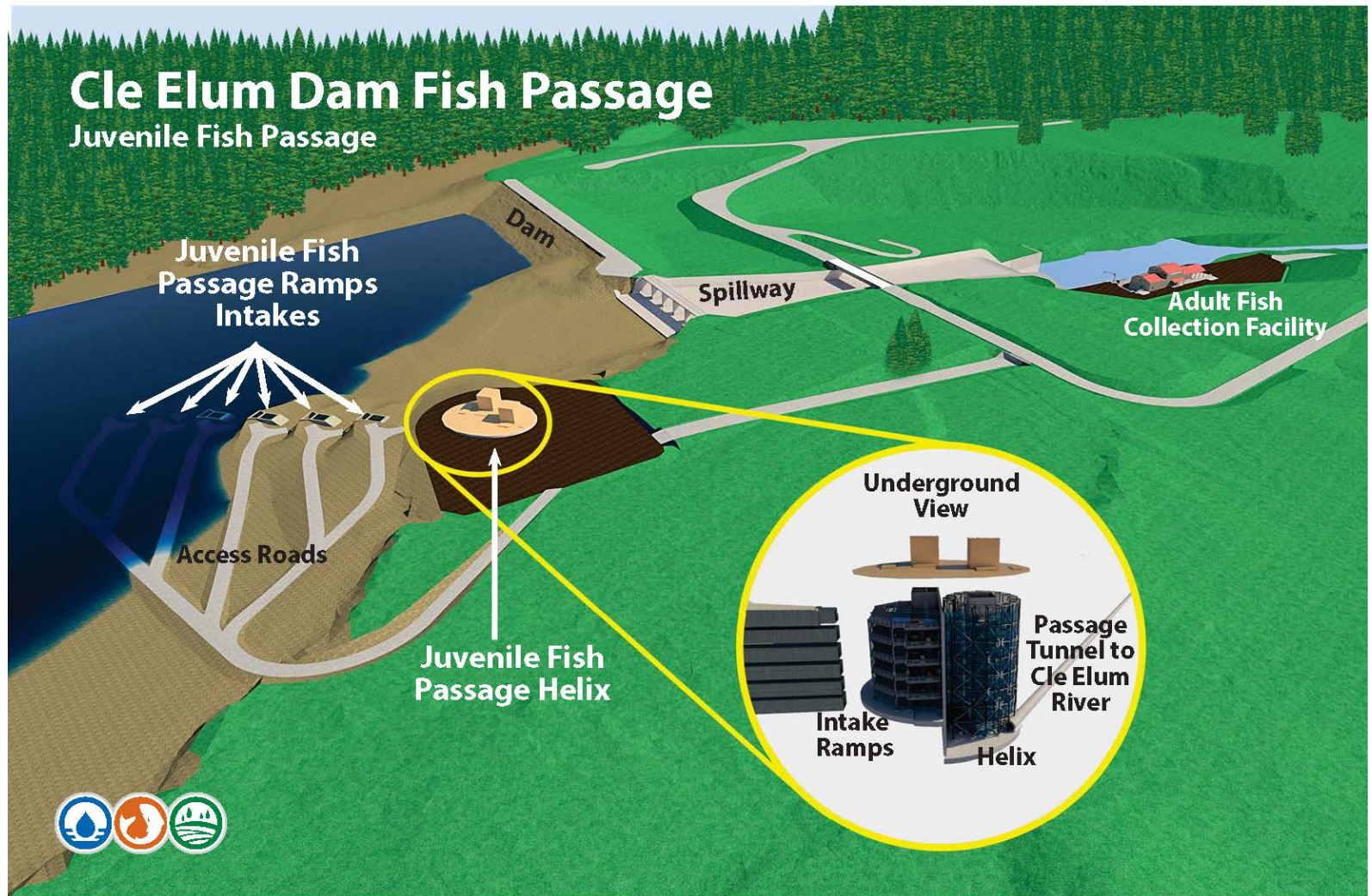
Temporary Bridge In Place



Southern Access Road to Collection Facility



Cle Elum Fish Passage - Adult Facilities



Cle Elum Fish Passage - Adult Facilities

Whooshh Fish Transport System

- **Moves fish through a flexible conduit, using pressure differentials to either push or pull the fish through the tube**
- **The Yakama Nation in cooperation with Reclamation, is working with Whooshh Innovations to test the technology for the Cle Elum Fish Passage Project at Roza Dam, June 2016**
- **Initial indications are that this technology is economical and fish friendly**
- **<http://www.whooshh.com/fish-passage.html>**



Cle Elum Fish Passage- Adult Facilities

Whooshh Fish Transport System at Roza



Cle Elum Pool Raise - Schedule

- **Final EIS; Record of Decision signed June 2015**
- **Radial Gate Modification**
 - Awarded contract in September 2015
 - Construction ongoing
- **Shoreline Protection**
 - Preparing bid packages
 - Continued coordination with USFS and landowners
 - Award contract 2016

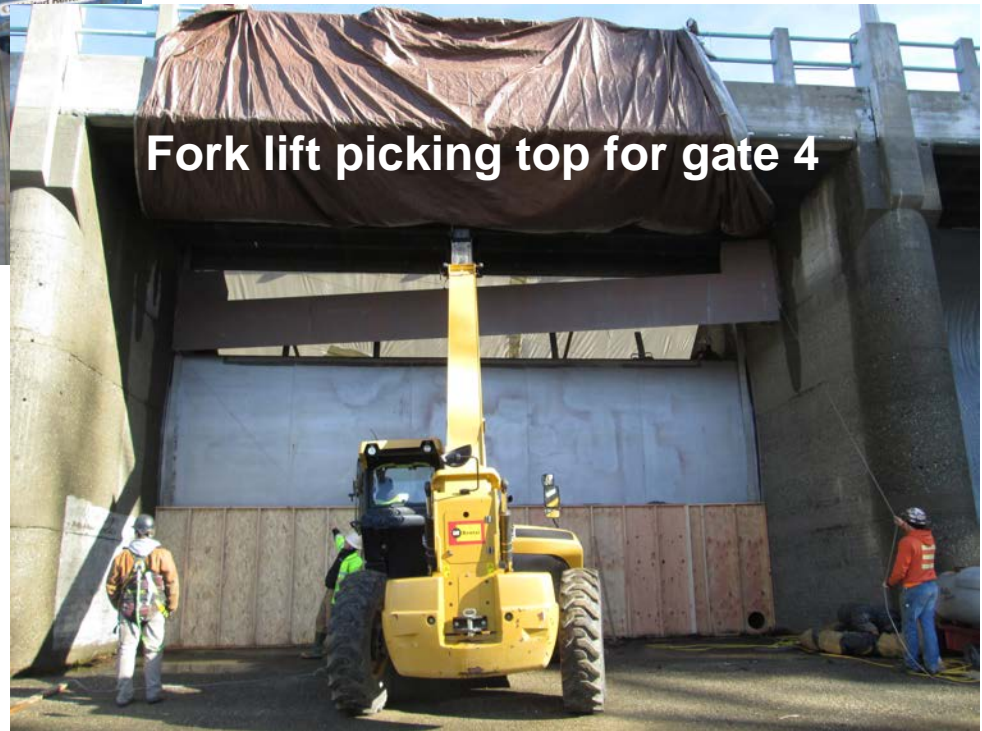


Cle Elum Pool Raise Construction

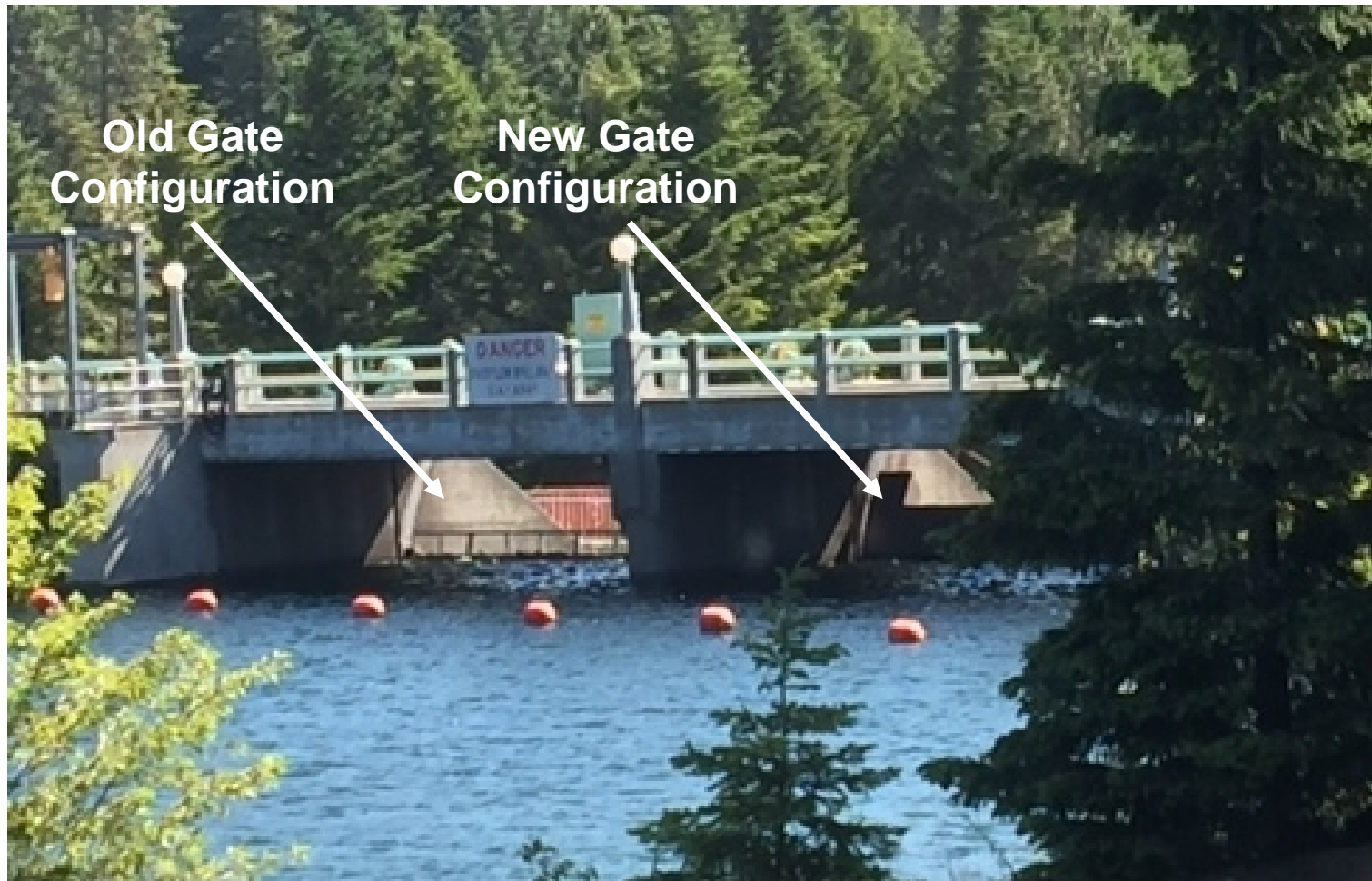
Working on north side arm, bay 4



Fork lift picking top for gate 4



Cle Elum Pool Raise Construction



Kachess Drought Relief Pumping Plant and Keechelus Reservoir to Kachess Reservoir Project Locations



Kachess Drought Relief Pumping Plant Floating Pumping Plant Alternative



K projects EIS update

- **In response to comments on the DEIS, Reclamation and Ecology are re-evaluating to affirm, revise, or update the EIS.**
 - Domestic wells
 - Property values
 - River flows and reservoir operations
 - Kachess Reservoir Bull Trout Passage Appraisal Report
 - Wildfire and fire safety



KDRPP Water Balance Analysis for Water Years 2015-2016:

Objective: Demonstrate use of KDRPP in 2015 drought year and refill in 2016.

Assumptions:

- 200,000 AF available to provide up to 70% supply
- Actual prorationing: 2015 (47%), 2016 (85%)
- All proratable irrigation districts would benefit
- Results in a modeled or routed analysis could produce some different results



KDRPP Water Balance Analysis for Water Years 2015-2016:

- Water Year 2015 - drawdown
 - Prorationing improved to 66% from 47%
 - Used all 200,000 AF available
 - Minimum pool -165,000 AF (65 Ft down)
- Water Year 2016 - refill
 - No change in prorationing of 86%
 - Used 238,000 AF (unchained from actual ops)
 - Maximum pool 90,000 AF (filled/spilled actual ops)
 - Minimum pool -148,000 AF (58 Ft down)
- Maximum pool elevations are from mid-May to early June and minimum pool elevations are from mid to late October.

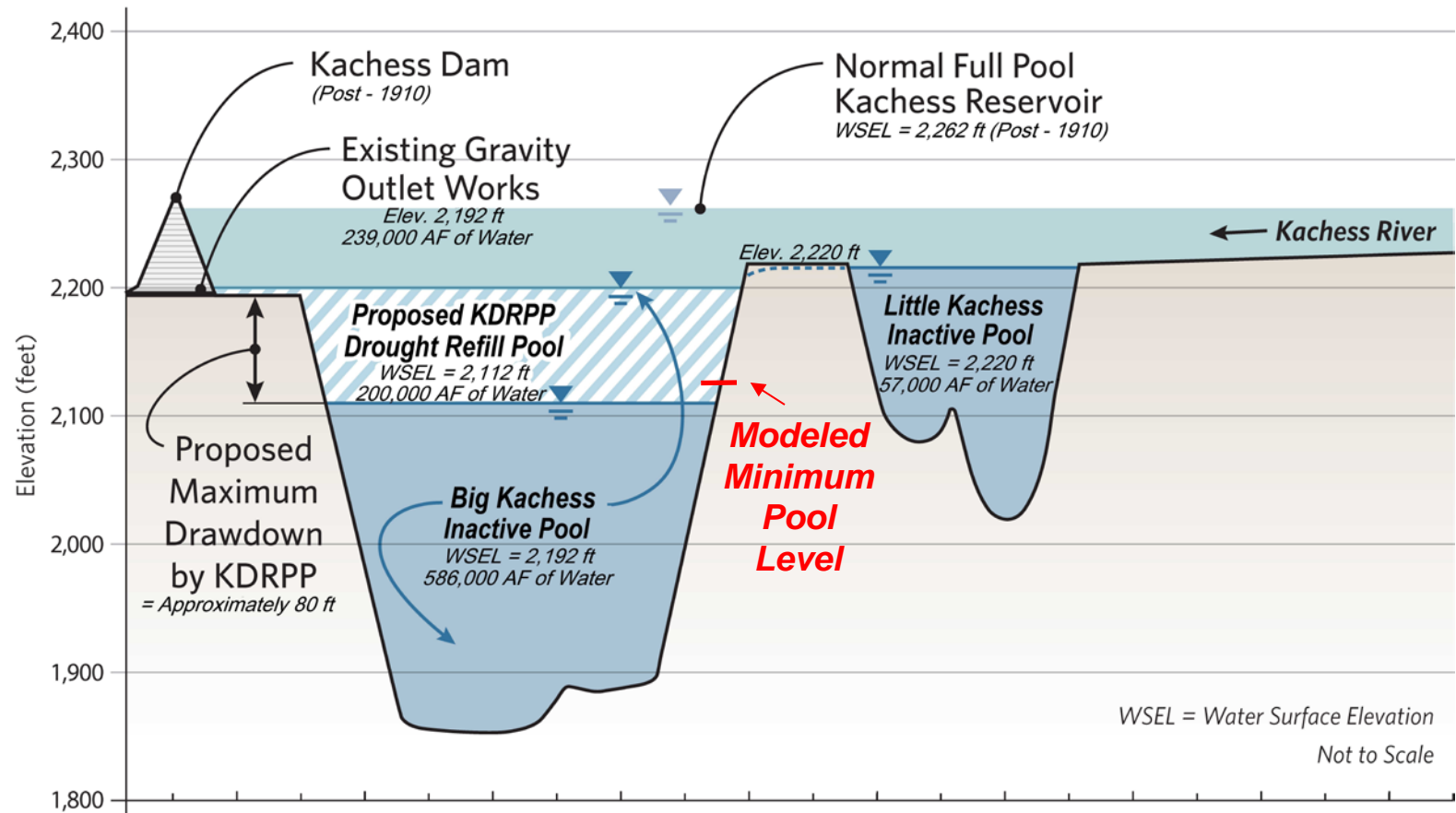
Source: Reclamation - Yakima Field Office Civil Engineering Staff



KDRPP Water Balance Analysis

Water Year 2015 - Drawdown

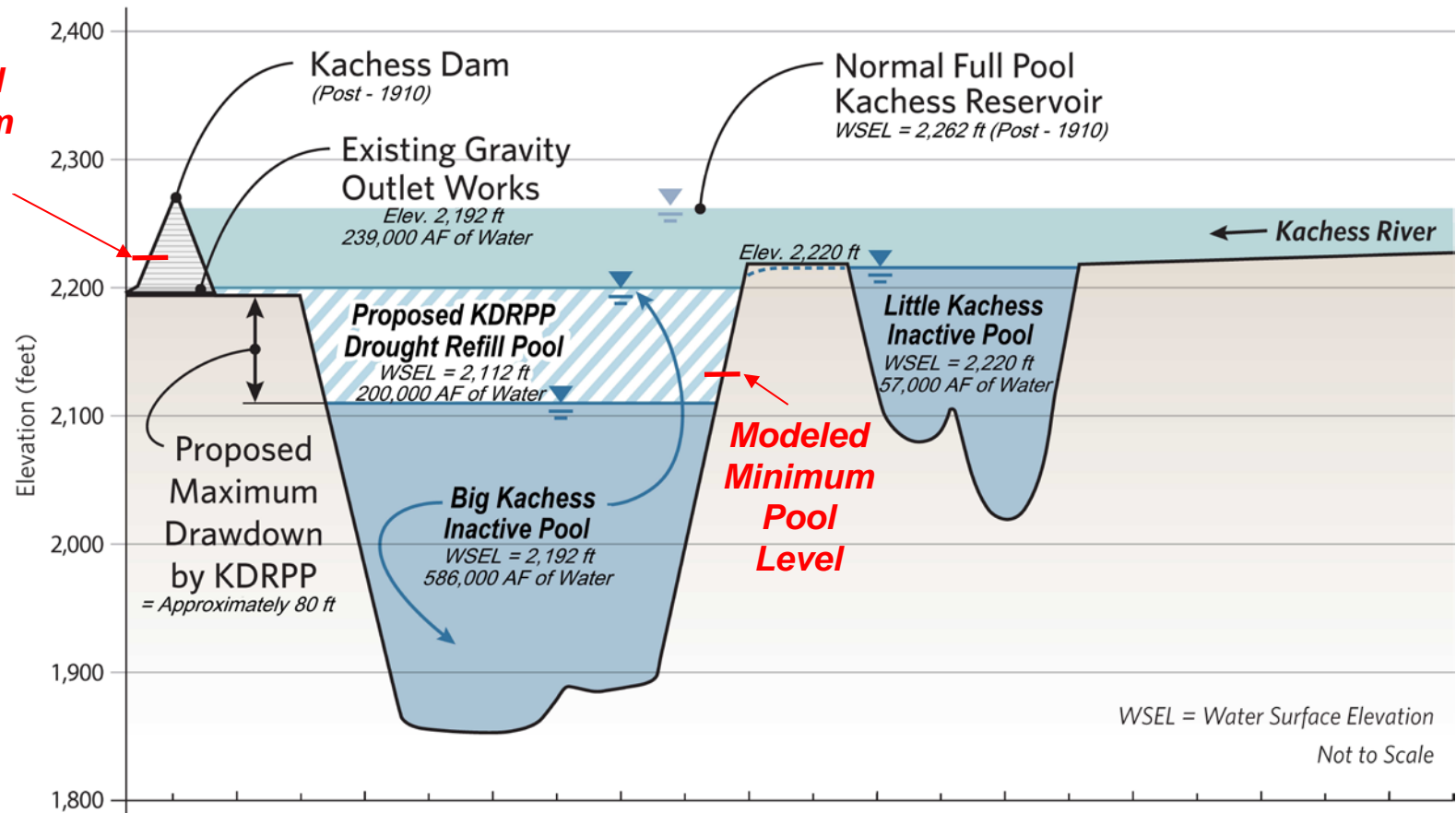
*Schematic Hydraulic Profile Showing the Inactive Pool
Existing Kachess Dam & Reservoir, and Proposed KDRPP Drawdown*



KDRPP Water Balance Analysis

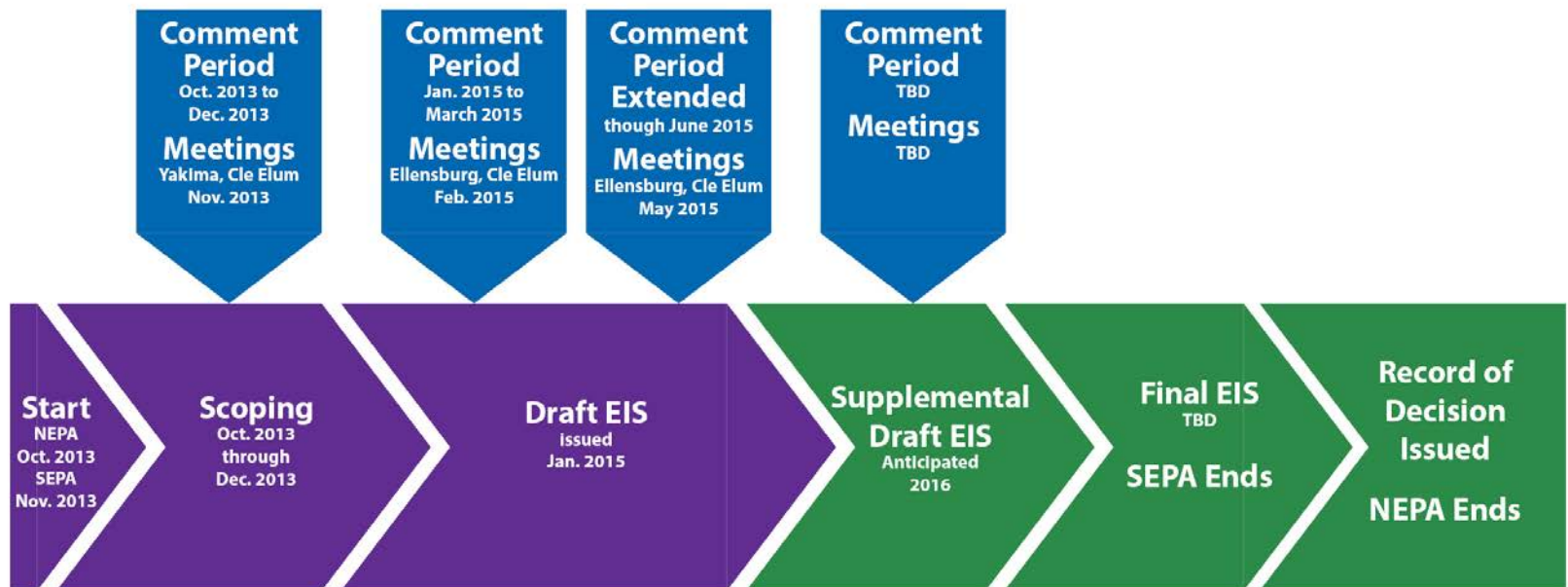
Water Year 2016 - Refill

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



Milestones

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



Time not to scale

Questions?

For further information on the web:

<http://www.usbr.gov/pn/programs/yrbwep/2011integratedplan/>

<http://www.ecy.wa.gov/programs/wr/cwp/YBIP.html>

