Yakima River Basin Water Enhancement Project (YRBWEP) Workgroup Agreement to Support Final Integrated Water Resource Management Plan and Related Future Activities

1.0 Action

The Workgroup supports an Integrated Water Resource Management Plan for the Yakima basin. The Integrated Plan includes the seven elements: reservoir fish passage, structural/operational changes, surface storage, groundwater storage, fish habitat enhancements, enhanced water conservation, and market based reallocation of water resources and the actions contained within these elements, as described below.

By approving this decision document the Workgroup also supports Integrated Plan implementation. Non-federal organizations represented on the Workgroup will collaboratively work together to support the Integrated Plan as it moves forward through legislative processes. The entire Workgroup will support National Environmental Policy Act (NEPA) and State Environmental Policy Act (SEPA) reviews, permitting and mitigation for actions in the Integrated Plan.

To support, the Workgroup will organize an Implementing Subcommittee comprised of tribal, state, and local entity representatives to oversee efforts to seek authorization and funding. The Implementing Subcommittee will report progress back to the Workgroup. The Workgroup will meet periodically to review plan implementation progress.

2.0 Background

The Yakima River Basin Water Enhancement Project (YRBWEP) Workgroup has been working for nearly 18 months on a Yakima Basin Integrated Water Resource Management Plan (Integrated Plan) to restore fisheries and improve water supply in the Yakima basin.

The Workgroup, convened in June 2009 by the Bureau of Reclamation (Reclamation) and Washington State Department of Ecology (Ecology), developed a preliminary Integrated Plan (December 2009) comprised of seven elements and agreed to move these forward for further evaluation in 2010. These seven elements were identified in the 2009 Ecology Final Environmental Impact Statement for the Yakima River Basin Integrated Water Resource Management Plan.

Actions within these seven elements have been evaluated and characterized in greater detail in 2010 through the Yakima River Basin Study. Summary results from the basin study are provided in this document, including the elements and actions the Workgroup is approving for inclusion in the Final Integrated Plan. More detailed information will be provided in the Integrated Plan. Workgroup members will have the opportunity to review and comment on the draft Integrated Plan in early 2011.

The Workgroup identified the following key concepts for promoting the Integrated Plan:

- Include benefits for all involved interests.

- Be composed of a package of complementary projects drawn from all seven elements, that in combination, provide water supply, flow and habitat benefits.

- Be adaptable and flexible to accommodate anticipated trends, such as increasing drought, climate change and population growth, as well as unanticipated events.

- Maximize benefits from in-basin supply opportunities first, and seek out-of-basin supply if triggered by rolling needs review.

3.0 Integrated Plan Elements and Actions

The YRBWEP Workgroup finds that the elements and actions listed below should be included in the Final Integrated Water Resource Management Plan.

3.1 Fish Passage

Restore anadromous salmonid access to habitat above the five existing large storage reservoirs and provide upstream and downstream passage for bull trout and other resident fish. For Clear Lake dam and Box Canyon Creek, provide upstream passage for bull trout. For Cle Elum and Bumping, install upstream and downstream fish passage. Install upstream and downstream fish passage at Tieton, Keechelus, and Kachess dams based upon evaluation studies. Passage would be constrained by the following:

- There would be no changes to current operations (i.e., quantity and timing of flow releases), but the flow pathway(s) would change to accommodate operation of the new downstream fish passage facilities.

- Fish-passage facilities would be designed and operated within the existing operational considerations and constraints.

- There would be no impacts on "total water supply available" (TWSA).

- Operations would continue to serve existing Reclamation contracts.

Providing for unimpeded fish migration past the existing storage dams in the Yakima basin would increase species distribution, allow for the reintroduction of extirpated sockeye runs, and allow expanded migrations and genetic interchange for listed bull trout and other native fish.

3.2 Structural and Operational Changes

3.2.1 Cle Elum Dam (Pool Raise)

The proposed Cle Elum Pool Raise project (Pool Raise) consists of raising the maximum water level of Cle Elum Lake three feet from a current maximum elevation of 2,240 feet to 2,243 feet. The Pool Raise would increase the volume of available storage in Cle Elum Lake by approximately 14,600 acre-feet. Modifications would include shoreline protection, radial gate improvements, and mitigation of upstream inundation and recreation.

3.2.2 Kittitas Reclamation District (KRD) Canal Modifications

The proposed KRD Main Canal and South Branch Canal Modifications project (KRD Modifications) would improve KRD laterals along those canals designed to reduce seepage losses, with the water saved used to enhance instream flows in tributaries to the Yakima River, including Taneum Creek, Manastash Creek, Big Creek, and Little Creek. Specific actions would include:

- Piping of irrigation laterals along the KRD Main Canal and South Branch Canal.
- Construction of a re-regulation reservoir to capture KRD operational spills at Manastash Creek.
- Construction of a pump station on the Yakima River to deliver flows to Manastash Creek water users.

3.2.3 Keechelus to Kachess (K to K) pipeline

Convey water from Lake Keechelus to Lake Kachess to reduce flows and habitat conditions during peak flow events below Keechelus, and provide more water storage in Lake Kachess for downstream needs.

This project would include modifying the existing Lake Keechelus outlet tunnel, installing nearly five miles of large-diameter pipe, and installing a new control structure and outfall into Lake Kachess. Also included, is an evaluation of a new power generation facility at the outfall.

3.2.4 Power Subordination

Further subordinate water diversions for power generation at Roza Dam and Chandler power plant to support outmigration of spring Chinook, sockeye and coho juveniles, recognizing power is already greatly subordinated above what originally occurred when the dams were built. Further subordination would have to be offset by additional generation elsewhere in the system. Failure to do so would make these plants no longer economically viable for BPA to support financially, and have major economic impacts to Roza and Kennewick Irrigation Districts.

3.2.5 Wapatox Improvements

This project includes piping and/or replacing the lining along portions of the existing Wapatox Canal. It would include installation of new canal lining from the fish screen to the Wenas Grade

Pump Station and replacement of the existing canal with a pipeline downstream of the pump station, or replacement of the entire existing canal downstream of the fish screen with a pipeline. This project would consolidate diversions into the Wapatox Canal diversion and provide sufficient conveyance and pumping capacity for deliveries to Wapatox Ditch Company users, Naches Selah Irrigation District, the City of Yakima Water Treatment Plant, and the Gleed Ditch. It would reduce or eliminate the carriage water diverted to the Wapatox Canal and then spilled back to the Naches River at the downstream end of the canal, and also reduce or eliminate other canal losses.

3.3 Surface Water Storage

Pursue additional water supply development through the following in-basin storage projects. Storage enhancements should provide supply for instream flow needs and out-of-stream needs, including municipal and domestic uses. Congress should authorize Reclamation to provide water for municipal and domestic uses, in addition to current authorities. With each of these projects, evaluate and implement feasible additional power generation opportunities.

3.3.1 Wymer Dam

Wymer Dam would be located as an off-channel storage facility on Lmuma Creek, approximately 8 miles upstream of Roza Diversion Dam. The storage capacity of the reservoir would be approximately 162,500 acre-feet. Water would be pumped into the reservoir from the Yakima River during winter, spring and potentially summer, during high flow periods from upstream reservoir releases.

Two pump station options are being considered. Option 1 includes a new pump station at Thorp, including a new water transmission main from the pump station to an upgraded Kittitas Reclamation District (KRD) North Branch Canal system, and a new tunnel to deliver water to Wymer. Option 2 would be a 400 cfs pump station on the Yakima River just upstream of Lmuma Creek with water conveyance through a new water transmission main that would deliver water to Wymer.

Wymer Reservoir releases would pass through tunnels, a siphon, and a hydroelectric powerhouse to the Roza Canal at the existing Roza Canal intake structure. The downstream conveyance alignment provides for connection with future potential storage sites within the Burbank and Selah drainages.

3.3.2 Kachess Reservoir (Inactive Storage up to 200KAF)

The Lake Kachess Inactive Storage project is located just east of Interstate 90 (I-90) near Easton, Washington. The project involves a lake tap in Lake Kachess that would allow the lake to be drawn down approximately 80 feet lower than the current outlet. This lake tap would provide the ability to withdraw another 200,000 acre-feet (AF) of water from the lake when needed for downstream uses during drought conditions.

Water would be conveyed either through a pump station and outlet just downstream of the Lake Kachess Dam or a tunnel outlet to the Yakima River approximately 4.8 miles southeast of the Lake Kachess Dam.

3.3.3 Enlarged Bumping Reservoir (190 KAF)

The proposed dam site is about 40 miles northwest of Yakima, Washington, on the Bumping River about 4,500 feet downstream of the existing Bumping Lake Dam.

The dam would impound approximately 198,300 acre-feet at elevation 3,490 (top of active conservation capacity) with a surface area of 4,120 acres. The existing dam would be breached following construction to allow full use of the existing pool. The dam and reservoir would provide carryover storage against possible shortages of irrigation water for federally-served irrigable lands, and would also provide instream flow and incidental flood control benefits.

3.3.4 Columbia River Pump Exchange with Yakima Storage

Conduct a feasibility study for direct pumping from the Columbia River with Yakima Basin storage options. This would include evaluating water availability and physical configurations for pumping, routing and storing Columbia River water in the Yakima Basin. Potential storage locations discussed include Wymer, and Selah and Burbank Creek drainages. Columbia River water availability analysis should consider constraints for the Federal Columbia River Power System Biological Opinion target flows, effects on salmonids (migration, spawning and rearing), and cumulative impacts of other water withdrawal proposals (e.g. Odessa). In the feasibility study, Roza diversion alternate supply (Columbia River) and associated dam removal should be evaluated.

The Columbia River and Roza Alternate Supply projects are shown as contingent on triggers relating to need and feasibility, for implementation. Need for Columbia River water will depend on which of the earlier projects are completed, how effective they are, how the Basin economy develops over time, and whether and how fast climate change occurs.

It is suggested these triggers be assessed every five years, in conjunction with updated water needs assessments. If the need for the Columbia River project is demonstrated and the project is feasible, then request project funding and schedule implementation. Since the Columbia River project would provide the source for Roza alternate supply, the Roza project is given the same set of triggers relating to need and feasibility.

3.4 Groundwater Storage

3.4.1 Shallow Aquifer Recharge

The objective of groundwater infiltration is to divert water prior to storage control into designed infiltration systems (ponds, canals, or spreading areas), and allow withdrawal of the infiltrated water during storage control in lieu of reservoir releases.
There are two phases to the groundwater infiltration program: pilot scale infiltration testing in two study areas, followed by full scale implementation. Initially, a limited pilot study would be

conducted to verify the feasibility and general design features of groundwater infiltration systems. Pilot testing would take place in two study areas: the Kittitas Reclamation District (KRD) and the Wapato Irrigation Project (WIP). In each study area, two pilot scale infiltration systems would be constructed. Each system would be between one and two acres in size. The pilot tests would result in recommendations for implementation.
At full scale implementation, it is anticipated that between 160 and 500 acres of infiltration area would be necessary to achieve a total infiltration capacity of at least 100,000 acre feet. Total infiltration volumes may vary from year to year depending on snowpack conditions and reservoir re-fill requirements. Full scale infiltration on the KRD system would be dependent on construction of the Thorp Pump Station (See Wymer Dam – Section 3.3.1).

3.4.2 Aquifer Storage and Recovery

Aquifer Storage and Recovery (ASR) involves diverting surface waters during high-flow periods and storing the water in underground aquifers for use during low-flow periods. The City of Yakima would divert water from the Naches River and treat it at the City's existing water treatment plant. It would then be injected through wells and later pumped out for use by the City's residents and businesses. ASR may also be viable for other cities in the Yakima basin.

3.5 Fish Habitat Enhancement

Implement an approximate $470 million habitat enhancement program addressing reach-level floodplain restoration priorities and restoring access to key tributaries through flow restoration, removing fish barriers, and screening diversions. These actions would significantly improve prospects for recovering fish populations to levels that are resilient to catastrophic events and the potential impacts of climate change by accelerating ongoing efforts to protect existing high-value habitats, improve fish passage, enhance flows, improve habitat complexity, and reconnect side channels and off-channel habitat to stream channels.

Fish habitat enhancement actions would help create improved spawning/incubation, rearing, and migration conditions for all salmonid species in the Yakima basin, implement key strategies described in the Yakima Subbasin Plan, and complete most of the actions described in the Yakima Steelhead Recovery Plan.

3.6 Enhanced Water Conservation

3.6.1 Agricultural Conservation

Implement an approximate $423 million agricultural water conservation program designed to conserve up to 170,000 acre-feet of water in good water years. The agricultural water conservation program includes measures beyond those likely to be implemented in the existing YRBWEP Phase II conservation program.

Agricultural water conservation measures that could be implemented under this program include:

- Lining or piping existing canals or laterals.

- Constructing reregulation reservoirs on irrigation canals.
- Installing gates and automation on irrigation canals.
- Improving water measurement and accounting systems.
- Installing higher efficiency sprinkler systems.
- Implementing irrigation water management practices and other measures to reduce seepage, evaporation and operational spills.

Although a list of specific projects was reviewed in developing this element, this recommendation does not identify specific projects for implementation. Projects to be implemented would be selected through detailed feasibility studies and evaluation by the existing Conservation Advisory Group (CAG).

3.6.2 Municipal and Domestic[1] Conservation program

Create a $30 million fund to promote water use efficiency basin-wide using voluntary, incentive-based programs. Focus on outdoor uses as top priority.

Convene a locally-based advisory committee on municipal and domestic water conservation to organize outreach to local elected officials and provide liaison with Reclamation, WDOE and WDOH. The advisory committee would focus particular attention on:

- Education, incentives and other measures to encourage residential and commercial users to improve efficiency of landscape irrigation, where the source of supply is agricultural irrigation canals or ditches.
- Improving the efficiency of consumptive uses.
- Establish standards for access to the new supply developed through the Integrated Plan and dedicated to municipal use and municipal/domestic mitigation.
- Determining appropriate conditions for accessing the new supply that would apply to homeowners or developers seeking mitigation water for homes supplied by individual household wells.

[1] **Municipal and domestic water usage includes** water delivered by public water systems regulated by the State Department of Health, water used by individual homeowners served by "exempt" wells; water used by commercial or industrial facilities, and water delivered by irrigation entities for purposes of outdoor landscape irrigation in developed areas of the Yakima Basin. It includes residential, commercial, industrial and urban recreational uses of water such as parks, ballfields, and golf courses

3.7 Market Reallocation

The Market Reallocation Element proposes to reallocate water resources through a water market and/or water bank to improve water supply in the Yakima River basin. This element consists of recommendations for legislative changes and funding requests to improve the efficiency and flexibility of water transfers. The proposal includes two phases—a short-term option that builds on the existing water market programs, and a long-term option that requires more substantial changes to existing laws and policies.

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

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