## Return of Pioneer Water Users Association irrigation water to the lower Wenatchee River and expected Water Quality Improvement.

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The Wenatchee River has US EPA approved Total Maximum Daily Load allocations for temperature, dissolved oxygen, pH, and phosphorus due to noncompliance with state water quality standards (WA DOE 2005, WA DOE 2006). The state water quality standards were established to protect fisheries and wildlife, as well as public health and enjoyment. Compliance with these standards will enhance propagation and protection of fisheries in the basin (WA DOE 2006). The Washington State Department of Ecology with support from the National Oceanic and Atmospheric Administration has determined that compliance is necessary for improving the health of the salmonid fishery in the Wenatchee River (WA DOE 2008).

Water quality Implementation Plans have been approved (WA DOE 2007) or prepared (WA DOE 2009) and contain a variety of options for improving water quality. Increasing stream flow is specifically listed as an implementation action for decreasing water temperature. Any such project is encouraged by the Wenatchee Watershed Planning Unit (WA DOE 2007). Returning 15 cfs will have small but significant effects on water temperature in the lower Wenatchee River and sets a valuable precedent for transfer of water rights and return of irrigation water to the Wenatchee River.

The phosphorus load allocations are driven by noncompliance with dissolved oxygen and pH standards in the lower Wenatchee River. The impacts of the biological and chemical processes that cause the noncompliance can both be mitigated by decreases in temperature. Reductions in temperature will improve solubility of oxygen and may reduce biological metabolism that raise the pH.

Returning irrigation water to the river is consistent with implementation plans for improving salmonid habitat on the Wenatchee River. Potential benefits may be small but this is true for all of the implementation projects which together will be required to improve the river for salmonid production.

References:

WA DOE 2005. *Wenatchee River Watershed Temperature Total Maximum Daily Load Study*. Washington State Department of Ecology. Publication no. 05-03-011

WA DOE 2006. Wenatchee River Watershed Wenatchee River Watershed Dissolved Oxygen and pH Total Maximum Daily Load Study. Washington State Department of Ecology. Publication no. 06-03-018.

WA DOE 2007. Wenatchee River Watershed Temperature Total Maximum Daily Load Allocation: Water Quality Improvement Report. Washington State Department of Ecology. Publication no. 07-10-045

WA DOE 2008. Public meetings in Wenatchee held during review of the TMDL with stakeholders in the Wenatchee River Valley. Members were told that NOAA fisheries biologist reviewed and supported the TMDL recommendations for pH and DO.

WA DOE 2009. Wenatchee River Watershed Dissolved Oxygen and pH Total Maximum Daily Load Study: Water Quality Implementation Plan. July 2009 Draft. Washington State Department of Ecology. Publication no. 0x-010-xxx.