

FLUSHING CHANNEL ANALYSIS SUMMARY INFORMATION

- ◆ The 1977 Vancouver Lake Rehabilitation Study recommended the flushing channel with three(3) 96-inch diameter culverts connecting the Columbia River with Vancouver Lake. The theoretical design capacity of the culverts was 1,100 cubic feet per second (cfs).
- ◆ The purpose of the flushing channel was to add fresh, cooler water into Vancouver Lake to improve water quality.
- ◆ Prior to construction and based on successes with Moses Lake, it was decided to install two(2) 84-inch diameter culverts connecting the flushing channel to Vancouver Lake.
- ◆ Water flow is restricted from the Columbia River to Vancouver Lake due to the installation of large diameter flap check valves.

Therefore, water flow from the Columbia River is relative to the water level elevation difference between the Columbia River and Vancouver Lake.

- Theoretically, water only flows into the lake when the river elevation is greater.
- Average positive water elevation difference is 1.5 feet. This means that the Columbia River water surface elevation is higher than that of Vancouver Lake.
- From limited data, in mid-June through November, the water elevation of the Lake is higher than the river. Therefore, theoretically there is no water flow from the Columbia River into Vancouver Lake.
- At a positive 1.5-foot water surface elevation difference, the estimated flow through the two(2) 84-inch diameter culverts is 300 cfs.

The following table shows the capacities of the flushing channel at different nodes along the channel relative to the water surface differences or gradient.

Water Surface Elevation (ft)	Culvert Pipe (cfs)	Channel near Culverts (cfs)	Mid Channel (cfs)	Channel @ River (cfs)	Gradient (ft)
High (15 ft)	430	1600	2,000 - 2,980	785	2.94
Low (4 ft)	250	325	460 - 740	45	1.0

Hydrographic surveys from 2001, 2003, and 2004 suggested no significant change in the cross-sectional area at the restriction at the mouth of the flushing channel. This suggests the restriction at the mouth may have reached equilibrium with capacity of the two(2) 84 inch diameter culverts.

*Summary Prepared by Todd Coleman, PE
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