Appendix A: The flow chart methods for the Okanagan Tennant and Weighted Usable Width (WUW) methods

Okanagan Tennant

#1: Define area and reach(es) of interest

#2: Review literature and assemble information

#3: Adopt Fish Periodicity chart(s)

#4: Calculate long-term mean annual discharge (LT mad)

#5: Choose time steps

#6: Review presumptive flow standards

#7: Set EFNs as % LT mad for each time step

#8: Convert EFNs from % LT mad to m³/s

#9: Confirm applicability of presumptive flow based EFNs

Do EFNs need modifying?
No
Yes → Modify

#10: Create four hydrographs:
1. Naturalized
2. Residual
3. Licensed
4. With proposed diversion

#11: Calculate percentile flows for hydrographs 1, 2, 3, and 4

#12: Convert percentile flows to %LT mad

#13: Compare EFNs derived with presumptive instream flow standards to EFNs from percentile flows using hydrograph 1

#14: Compare EFNs to fish and fish habitat data and any historic EFN work

Do EFNs need modifying?
No
Yes → Modify

#15: Quantify impact of existing water use on habitat using hydrograph 2

#16: Estimate impact of existing licensed water use on habitat using hydrograph 3

#17: Estimate additional impact if faced with a proposed water allocation using hydrograph 4

#18: Consider usefulness of short duration higher flows

#19: Provide technical advice on consequences of future flow reductions

#20: Review "Other Considerations" in Section 5.2 and modify EFN if required

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Okanagan WUW

#1: Complete Okanagan Tennant method

#2: Confirm reach(es) of interest

#3: Confirm species and life stages of interest

#4: Assemble information

#5: Define the flow range of interest

#6: Determine intensity level

#7: Select and pin transect locations

#13: Compare Okanagan Tennant EFN targets to the WUW results

#12: Define the WUW width vs. flow relationships for each species/life stage

#11: Enter width, depth and velocity data into Excel or alternative

#10: Choose HSI curves

#9: Obtain other data as required to understand factors controlling aquatic populations

#8: Measure depths and velocities over range of flows

#14a: Convert WUW to index values over range of interest using hydrograph 1

#14b: Convert WUW to index values over range of interest using hydrograph 2

#14c: Convert WUW to index values over range of interest using hydrograph 3

#14d: Convert WUW to index values over range of interest using hydrograph 4

#15a: Plot index values against percentile flows to generate the WUW index curve for hydrograph 1

#15b: Plot index values against percentile flows to generate the WUW index curve for hydrograph 2

#15c: Plot index values against percentile flows to generate the WUW index curve for hydrograph 3

#15d: Plot index values against percentile flows to generate the WUW index curve for hydrograph 4

#16: Provide technical advice on consequences of future flow reductions