

Total Gas Pressure in the Mainstem Columbia

Water Use Plan Discussion Review



BC Hydro

Columbia Water Use Plan

- Mica Dam
- Revelstoke Dam
- Hugh Keenleyside Dam
- Also Reviewed in other Columbia WUP's
 - Whatshan
 - Spillimacheen
 - Duncan

Mica Dam/GS

- Spillway rarely used
- Operational practices in place to minimize TGP levels in draft tube associated with synchronous condense operations
- FTC Recommendation
 - TGP below Mica is very localized and dissipates quickly. This is not a WUP priority

Revelstoke Dam/GS

- Current operating practice to minimize spills
- Localized TGP generation associated with synchronous condense Operations
- Four Units now capable of S/C operation.
 - Monitoring occurred March - October 2003
 - Best Management Practice to be developed
 - TGP monitoring during WUP Implementation

Hugh Keenleyside Dam/ Arrow Lakes Generating Station

- TGP Generation results from both Low Level Port and Spillway Use.
- Modeling of DGS production by the HLK Dam in 1995 and examined methods of modifying the operations of the dam
 - studies led to a revision to the dam's local operating orders that significantly reduced river DGS levels

WUP Review

- Water Use Plan to assess the implications of different operating alternatives on TGP
 - Monthly flow modeling created a challenge for the TGP Performance Measure.
 - Used the following to assess TGP
 - Head differential (estimates spillway use)
 - Number of days above threshold (TGP %)
 - Average TGP
 - GBT Risk

Table 1: Results of Operational Alternative Risk Factor Analyses.

HLK and ALGS						
			Base Case	Alt 7B 1MAF	Alt 7B 2MAF	Alt 11B
# days head differential > 17m			1041	1807	1201	486
average head differential (m)			12.5	14.4	14.2	12.1
# days over all 15 years above 115%			170	92	193	39
# days over all 15 years above 120%			12	18	26	1
ave TGP June, July, August across 15 year			109	108	109	107
total GBT risk (115%), summed over all 15 years			531	337	545	92
total GBT risk (120%), summed over all 15 years			114	182	194	6
HLK only - no ALGS influence						
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ave TGP June, July, August across 15 year			115	121	109	110
total GBT risk (115%), summed over all 15 years			33796	98594	32195	11550
total GBT risk (120%), summed over all 15 years			33336	98418	31479	11343

Columbia WUP

- FTC Decision
 - GBT risk associated with ALGS operation is extremely small
 - Cumulative Risk Assessments not sensitive enough among Alts to make valid comparison
 - Unable to assess impacts on larval sturgeon at Waneta
- Monitoring
 - Monitoring GBT associated with recommended TGP thresholds (115/120) to confirm impacts to fish are low.

Further Detail

- BC Hydro TGP Database
- Aspen Applied Sciences Reviews
 - TGP Performance Measures for the Mica Water Use Plan: A Derivation Summary
 - TGP Performance Measures for the Columbia River Water Use Planning Process: A Review and Evaluation of Relevant Information and Data
 - TGP Performance Measures for the Columbia River WUP: A Brief Summary
- TGG Contact: Gary Birch