Columbia River Treaty Review Scenarios – Kootenay System

Presented at Creston Public Consultation Session

15 November 2012

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Strategic Decision in 2013

- Should BC recommend Treaty termination at earliest possible date?
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- Should BC pursue Coordinated Flood Risk Management?
- What elements would BC like to see in Treaty Plus?

Strategic Decision Scenarios

- Called Upon Flood Control (with Effective Use of U.S. reservoirs including Libby) exists in all scenarios

Terminate	Treaty Continue	Treaty Plus
→ Libby drafted deeply for U.S. flood control often (~ 30% of years)	→ Libby drafted deeply for U.S. flood control less often (~5% to 10% of yrs)	→ Similar Libby operation for flood control
→ Minimal coordination between U.S. & Canada	→ add Coordinated Flood Risk Management ?	→ Coordination Plus - enhance for ecosystem and other interests
	→ Coordination - similar to existing	

CRT Review Tasks - Kootenay System

→ Analyze impacts on Koocanusa and Kootenay Lake / River

- have developed some new draft performance measures

→ Investigate Coordinate Flood Risk Management (CFRM)

- requires further discussions with U.S.

→ Investigate other Libby operating alternatives that are, or may eventually be, within US and Canadian Laws:

- Pre-1993 conditions: Standard Flood Control curves & Libby operation for optimal power [Scenario 2]
- Early refill of Koocanusa Reservoir by: (a) 1 June, (b) 30 June [Scenarios 3 (a) & (b)]

Koocanusa Reservoir - interests

- **Recreation** – preferred range of reservoir levels earlier and maintained throughout summer
- **Wildlife/Vegetation** – lower reservoir levels in growing season to promote establishment of vegetation
- **Fisheries (recreation)** – angling effort
- **Fisheries (ecosystem)** – kokanee abundance
- **Dust** – reduce dust by vegetation or reservoir levels.

Kootenay Lake - interests

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- **Creston Flats Farming** – erosion of dykes and draining the fields by early spring so farmers can work on their land
- **Creston Wetland area** – desire to keep levels below 1750 ft by mid-June to better manage Creston wetland areas.
- **Duncan-Lardeau Valley** – increased flooding with high lake levels could provide better vegetation for wildlife
- **Recreation –** keep lake level within preferred recreation level range
- **Fisheries** – potential kokanee spawning dewatering (West Arm)
- **Flooding** – minimize peak lake levels causing flood damage (the 2012 event caused an estimated $3 to $5 million in damages).

Kootenay River (below Nelson) - interests

- **Wetland area** – a small wetland area at Bird Creek can become inundated when the Corra Linn Dam has a high spill discharge

- **Total dissolved gas** – increased spill at Kootenay River dams can cause elevated dissolved gas levels in river, potentially causing harm for fish

Draft performance measures – an example

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Koocanusa Reservoir – recreation days per year

Description:

CBT (2004) found that recreation stakeholders preferred the Koocanusa Reservoir level to be within the range, 2445' to 2455', from Victoria Day to Labour Day.
[Normal full pool for Koocanusa Reservoir is 2459'.]

Negative impacts at lower levels include the emergence of sand bars, the potential for dust storms, and unpleasant aesthetics.

Negative impacts from higher reservoir levels include reduced beaches and flooded vegetation.

Calculation Summary

Preferred recreation days = number of days when the reservoir level is within the range 2445' to 2455' during the 24 May to 8 September period.

Location	Lake Koocanusa
Objective	Recreation, private property
Sub-Objective	Aesthetics, beach access and dust prevention
Performance Measure	Preferred elevation days
Calculation Summary	Days in range of 2445' (745.2m) - 2455' (748.3m), 24 May to 8 September
Directionality	Higher is better
Source	Columbia Basin Trust (2004)

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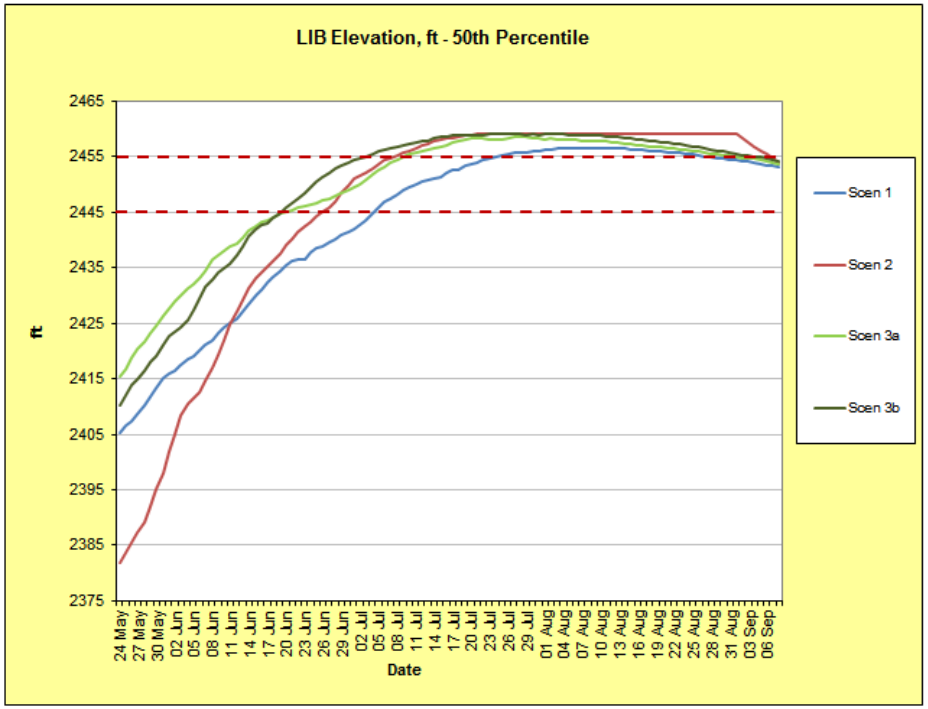

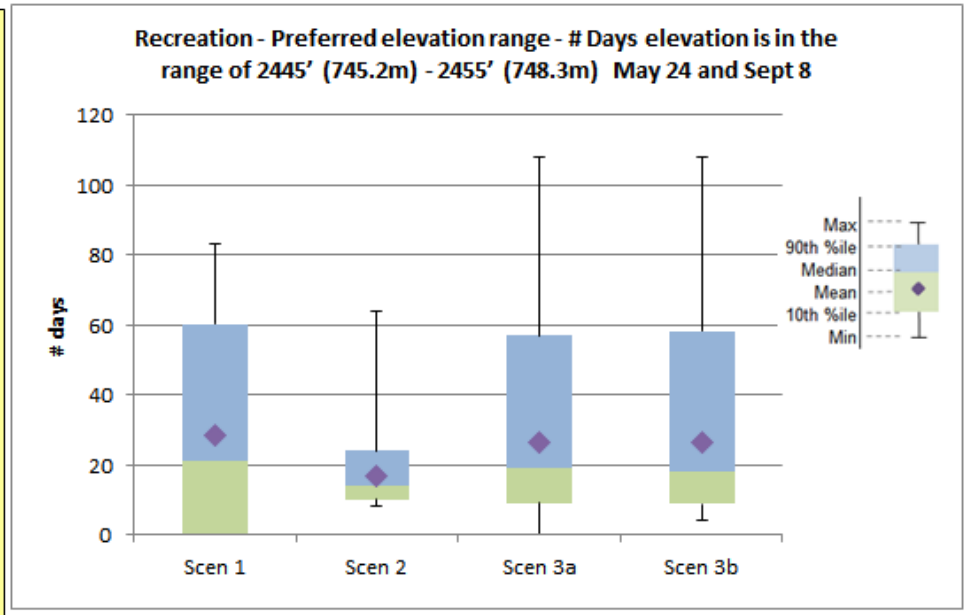

			Scen 1	Scen 2	Scen 3a	Scen 3b
Koocanusa	Recreation - Preferred elevation range	# Days elevation is in the range of 2445' (745.2m) - 2455' (748.3m) May 24 and Sept 8	28.5	16.7	26.3	26.5

Message: Koocanusa recreation performance measure is lowest in Scenario 2 (pre-1993), where ~40% fewer days occur in the preferred range relative to Scenario 1 (current conditions).

Earlier Koocanusa Reservoir Refill

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- Alternatives to target full pool by 1 June and 30 June
  – higher Koocanusa levels earlier in refill season
  - less flood risk management for downstream communities

Benefits (+)	Impacts (-)
Koocanusa: • Boat access – duration unchanged (new boat ramp goes to 2407') • Recreation – duration within preferred range (2445' - 2455') unchanged • Fishing - angler-days/year increased by ~ 20% Kootenay Lake • Creston Valley farming – no change in pumping or planting-access days	Koocanusa: • Vegetation – up to 10% more vegetation flooding for early refill • Reservoir surcharge - increased risk Kootenay Lake • Peak lake levels – more frequent & higher peak levels Kootenay River • increased spill in June-July, impacting wetland & total gas pressure Net financial loss: • 300 to 400 GWh/yr ($10 to $15 million/yr) in Canadian generation

Climate Change – Trends expected

- Warming trend continues for entire region
- BC expected to get slightly wetter. Precipitation increase remains within the range of historic variability.
- Seasonal shift in runoff → earlier
- Glacier retreat reduces late-summer flows
- Columbia/Kootenay remain snowmelt-dominated basins
- Canadian river basins not impacted to the same degree as US basins
- Increased runoff variability likely – more to follow in later report

Climate Change - implications

- Reservoir storage helps operators adapt to climate change.
- Impacts in Canada will likely be less than in the U.S.
- U.S. may require more coordination with Canada in future
- On the Kootenay River system, BC is both an upstream and a downstream party, so coordination with U.S. is important
- Mechanisms to adapt over time are important to both countries

Questions for Feedback

1. Strategic Decision on terminate or continue the Treaty ?

2. Is Coordinated Flood Risk Management worth pursuing ?

3. Feedback on characterization of impacts (Performance Measures) ?