COLUMBIA River Treaty

Columbia River Treaty Socio-Economic Integration

Public Info Session – Columbia System

January 30, 2023

Columbia River Treaty Socio-Economic Integration Team – Cindy Pearce, Lauren Rethoret, Ryan Macdonald, Avery Deboer-Smith

AGENDA

Background

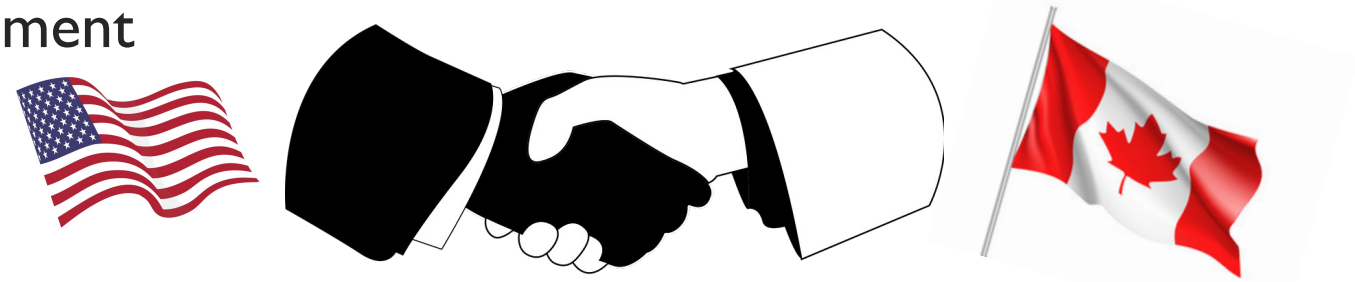
Recommended performance measures

Next Steps

Background

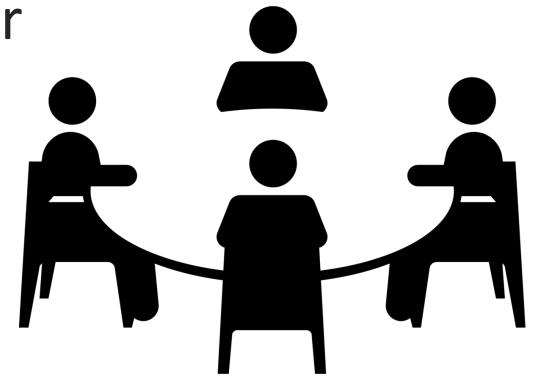
What is the CRT?

- Canada-USA transboundary water management agreement ratified in 1964
- Objectives are power generation and flood management
- Required Canada to build 3 dams (Duncan, Hugh Keenleyside, Mica) and allowed US to build Libby dam in MT, which creates a reservoir that floods into Canada and impacts downstream flows
- Inundated 110,000 ha of ecosystems, displaced over 2,300 people in approximately 30 small communities, impacted economic activities
- Provides benefits to BC through: a) one-time pre-payment for 60 years of assured flood risk management and 30 years of half of the incremental US downstream power potential – Canadian Entitlement; and b) annual delivery since 1995 of the Canadian Entitlement



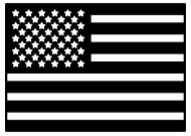
CRT Status

- Flood risk management shifts in 2024 to a more ad hoc 'called upon' approach
- In 2014, CRT Reviews in BC and the US Pacific Northwest recommended modernizing the Treaty, not terminating it – see the BC Decision
- Canada-US negotiations began in 2018
- Canada leads the Canadian negotiating team, with full participation of BC and regional Indigenous Nations (Ktunaxa, Syilx-Okanagan and Secwepemc Nations)
- See updates on the BC CRT website and sign up for the Newsletter



Why do this work?

CRT Negotiations Advisory Team (NAT) needs to understand:



How U.S. proposals for Treaty changes will impact Basin interests

How the Treaty can be modernized to increase flexibility for how Canadian Treaty dams are operated to improve conditions for B.C. Basin interests

What is the CRT LGC?

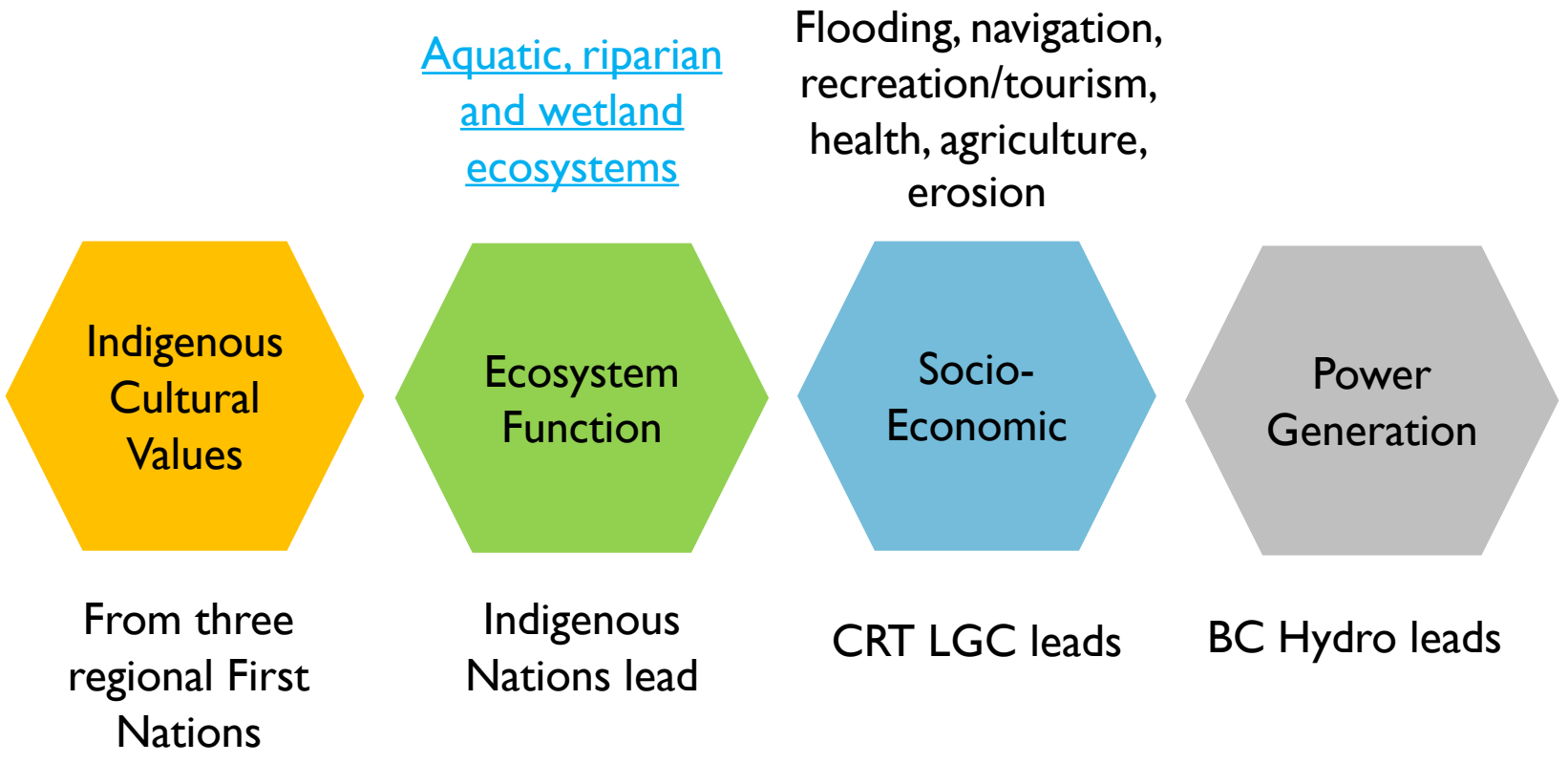
- Formed in 2011 to ***ensure the voices of Columbia Basin local governments and residents are heard in decisions related to the future of the Treaty***
- 10 elected officials – two appointed by each of RDCK, RDEK, RDKB, CSRD and one appointed by the Village of Valemount and AKBLG
- Provided Recommendations to governments in 2014 and 2021
- Ongoing contact with the Negotiating Team, BC CRT Team and CRT Indigenous Nations representatives
- Liaise with the BC CRT Team to resolve local concerns
- Lead the CRT Socio-Economic Integration work

CRT LGC website

Member list

CRT Related Basin Interests

- Interests impacted by river flow levels or reservoir elevations



CRT Modelling

What Matters

Indigenous Cultural Value

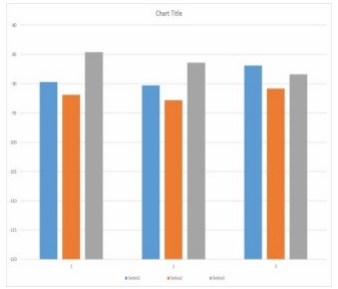
Ecosystem Function

Socio-economic

Power

Goals
Objectives
Performance Measures

River Management Model



Performance Measure Outcomes

Inform Negotiations

Alternative Hydro Operations - Scenarios

What is a Performance Measure?

Kinbasket Reservoir: Recreation and Tourism Example

Why?

Maximize community benefits from quality and diversity of recreation and tourism

Where?

Kinbasket Reservoir

When?

May 1 – Oct 30

What?

Days/year when water levels are between 2434 and 2473 ft. More is better.

Types of Performance Measures

Combined PMs – For initial scenario evaluation

Sub-measures – For specific interests for detailed scenario evaluation

- Ensure results for the combined PMs do not obscure negative results for specific interests

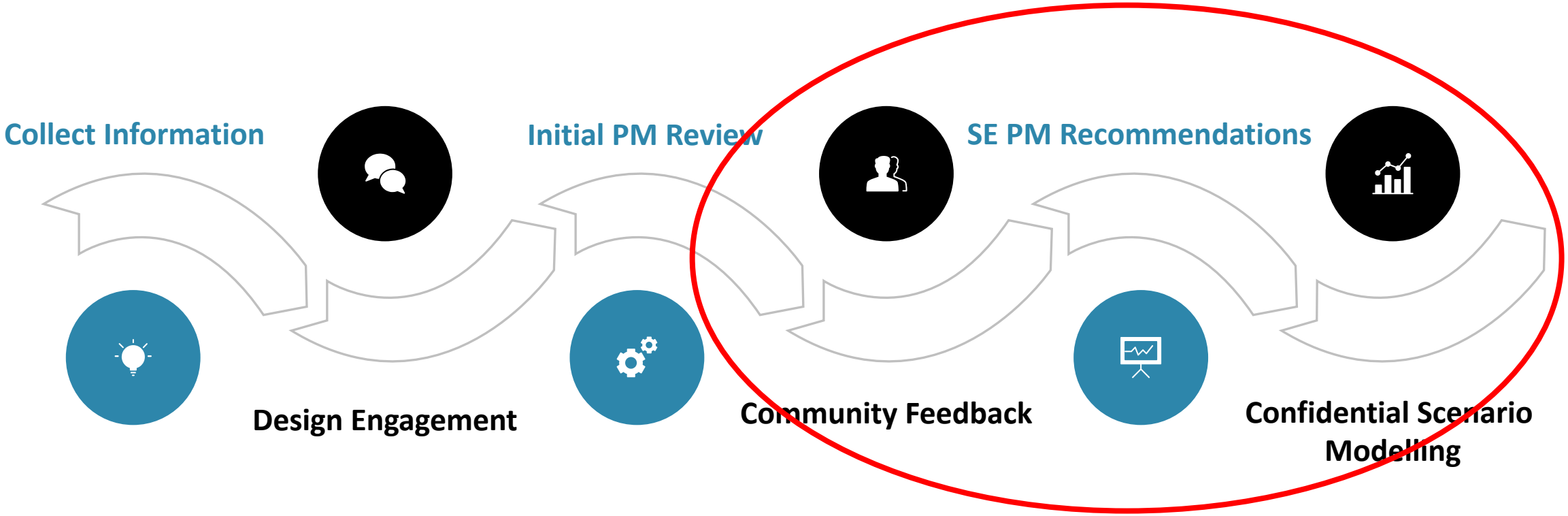
Kinbasket: Recreation and Tourism Example

Combined PM - Days/year when water levels are between 2434 and 2473 ft. More is better.

Sub-measures

Sub-Measure Objective	Season	Elevation Range
High water debris	May 1 – Oct 31	Above 2373ft/753.8m, in the years the elevation is above this level
General shoreline preference (Columbia Reach)	May 1 – Oct 31	2444ft-2473ft (744.9m-753.8m)
Motorized boating preference (Canoe Reach)	May 1 – Oct 31	2434ft-2470ft (742m-752.9m)
…		

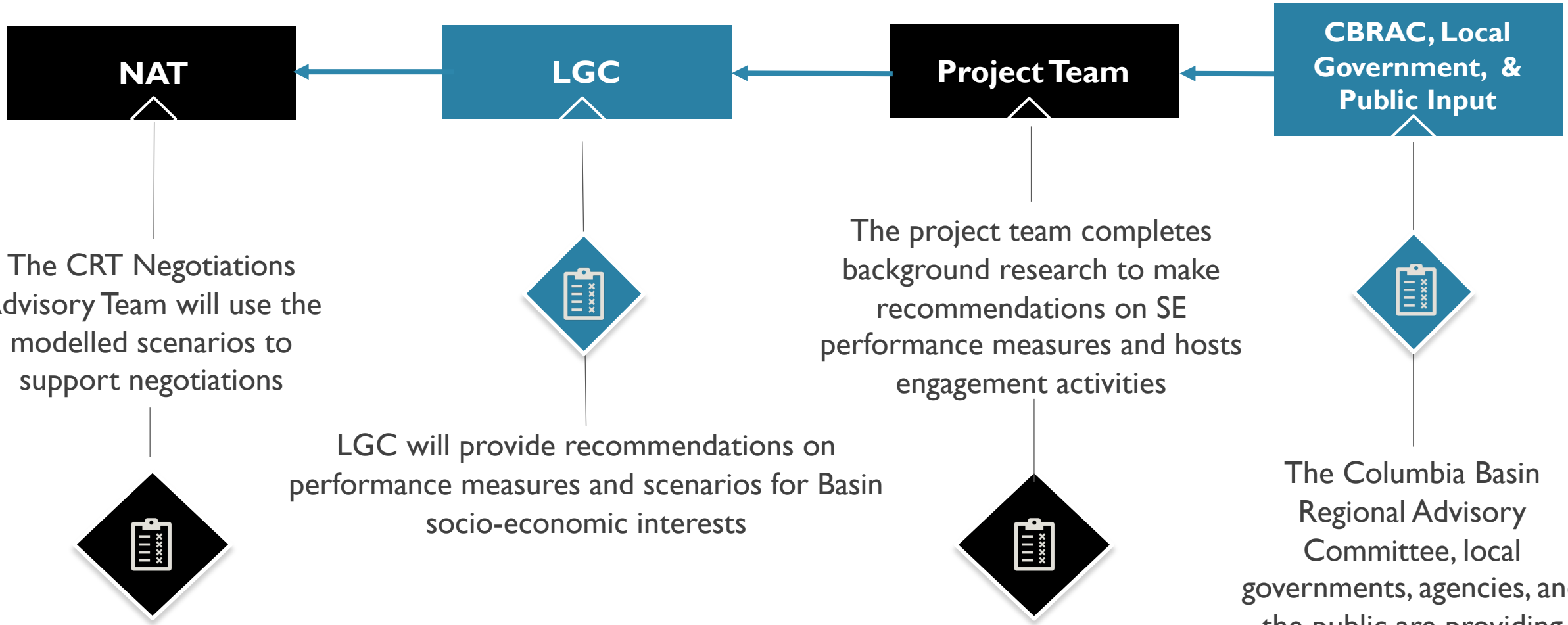
Socio-Economic Integration Process



Draft CRT Socio-Economic Measures

Location	Flooding	Navigation	Recreation/ Tourism	Health	Agriculture	Erosion
Columbia						
Kinbasket Reservoir		X	X			?
Lake Revelstoke						
Arrow Reservoir		X	X	X	X	?
Lower Columbia River	X		X			
Kootenay						
Koocanusa Reservoir			X		X	New
Duncan Reservoir/Lower Duncan River	X		X	X		
Kootenay Lake	X	X	X			
Corra Linn to confluence						

Summary

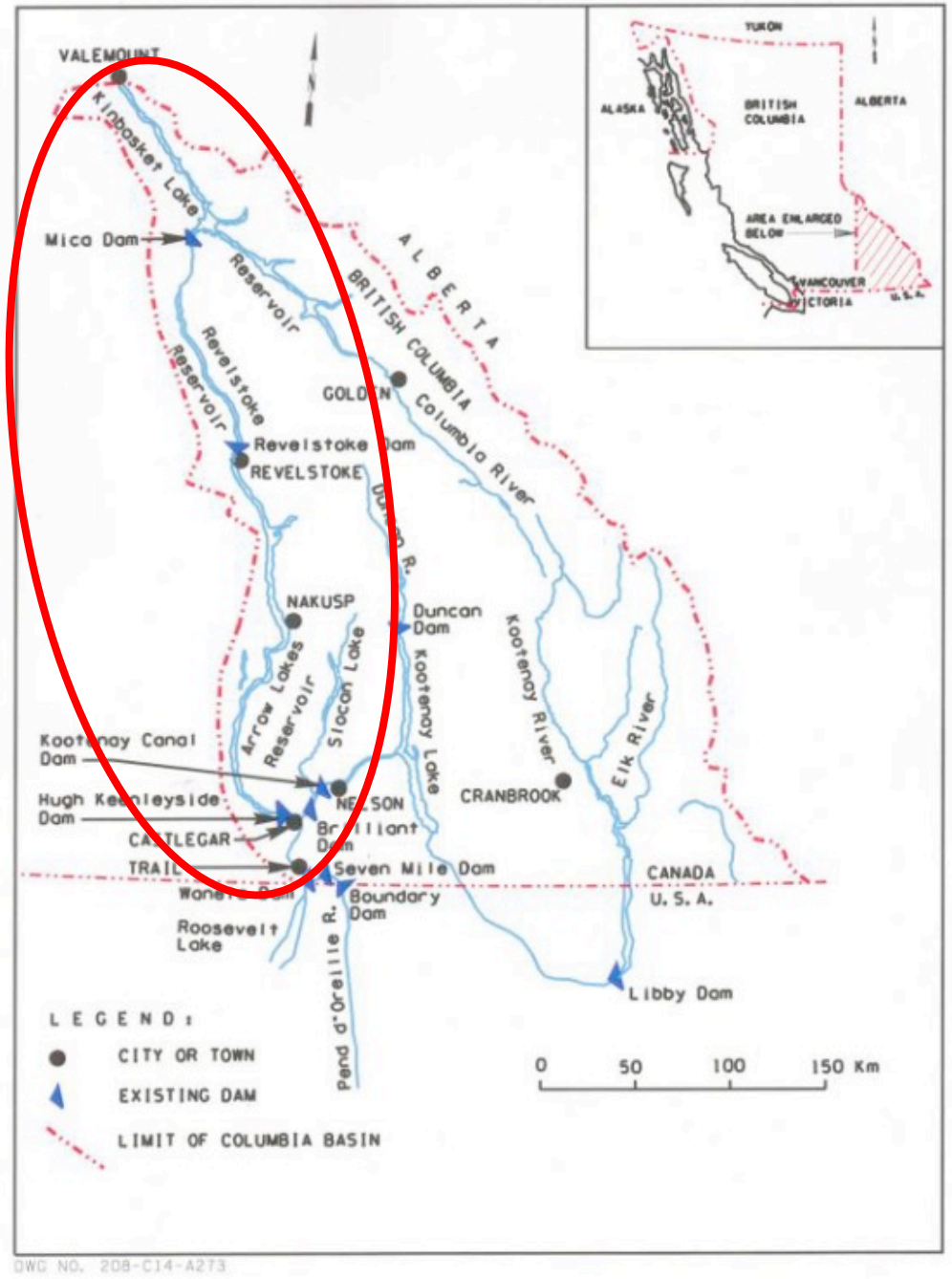


Revisions ongoing based on new information

Questions?

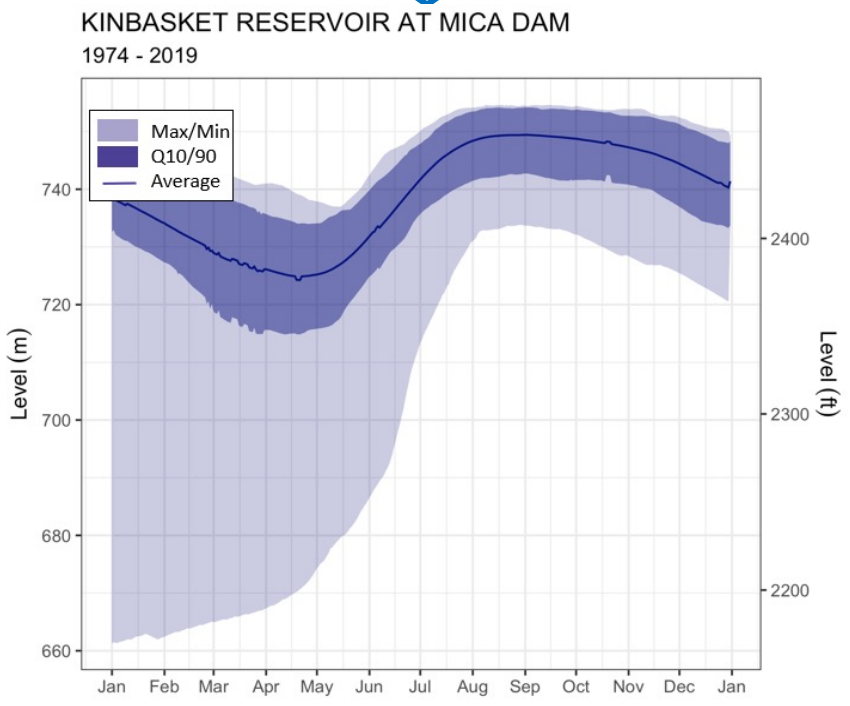
Socio-Economic PMs

Columbia System Overview



Reservoir Elevations – result of inflows less dam outflows for:

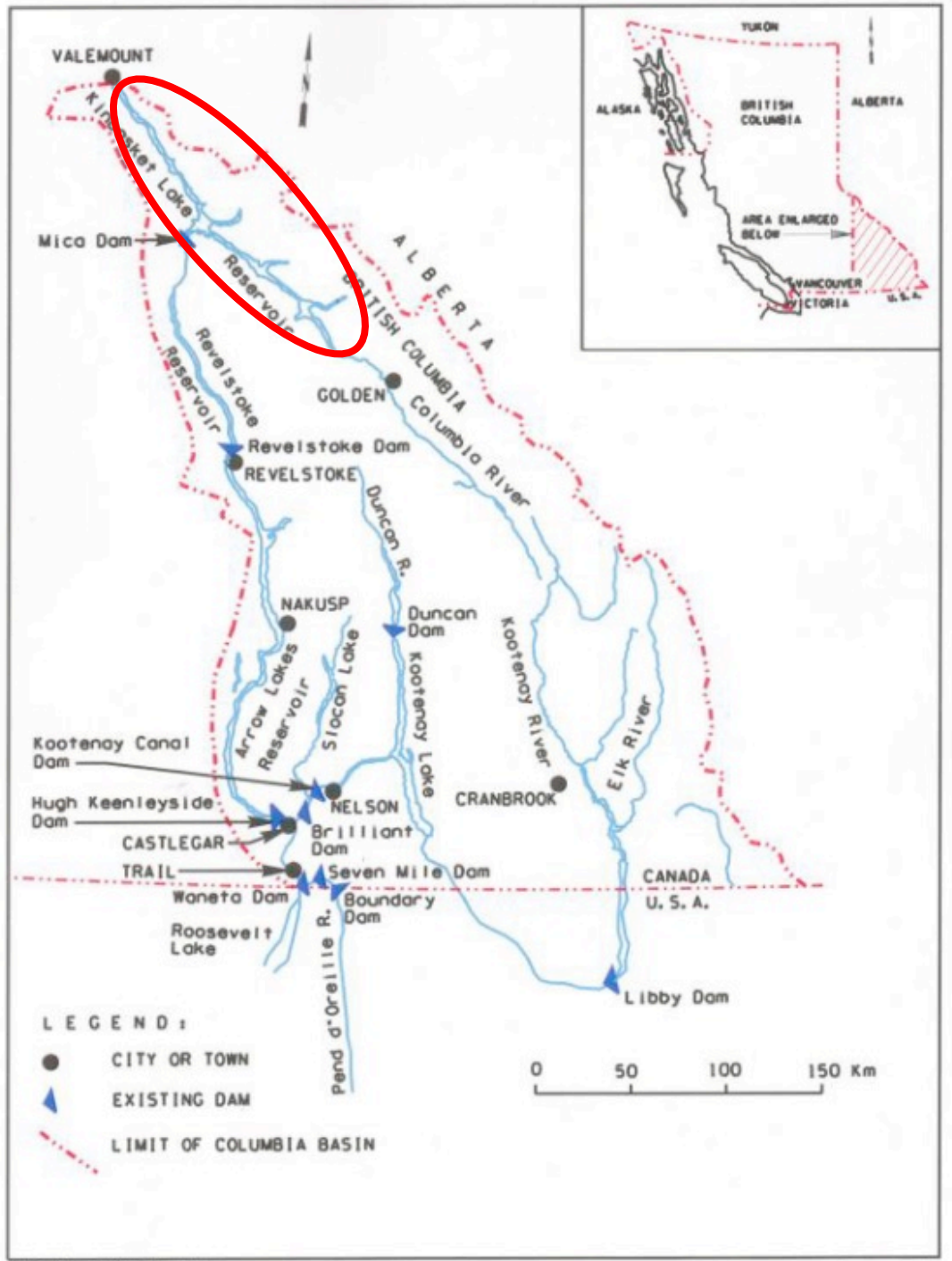
- CRT - flood risk storage, US power generation and non-power uses
- Non-Treaty Storage Agreement
- Domestic power generation
- Water Use Plan (WUP) requirements



Kinbasket Reservoir Quick Facts

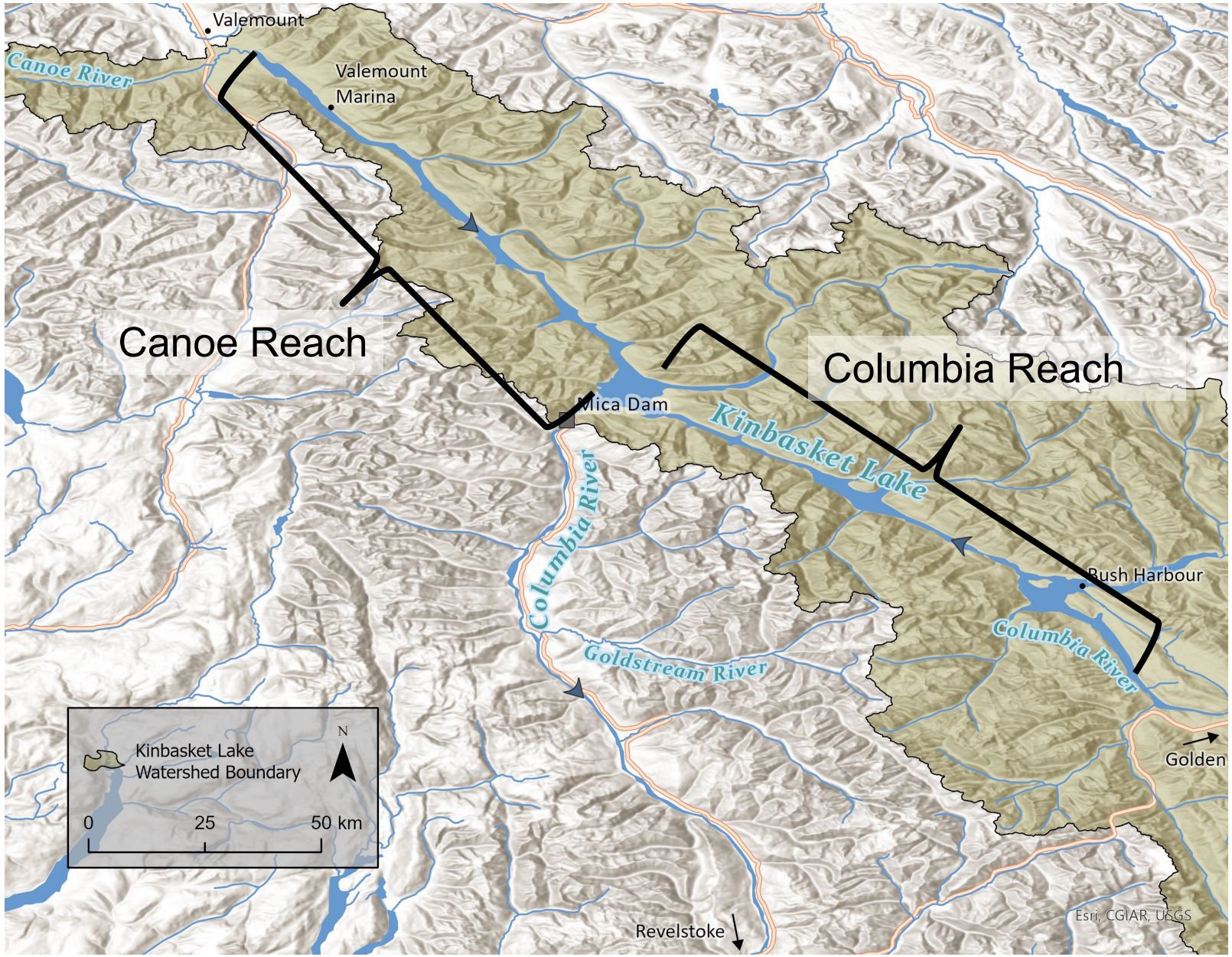
'System workhorse'

- 216 kms long
- Inflows - All natural
- Outflows - Mica Dam with downstream Revelstoke Dam are large BC Hydro power producers
- Largest storage – 12 million-acre feet (MAF)
- Annual water level fluctuation – Up to 155 ft. (47 m.)



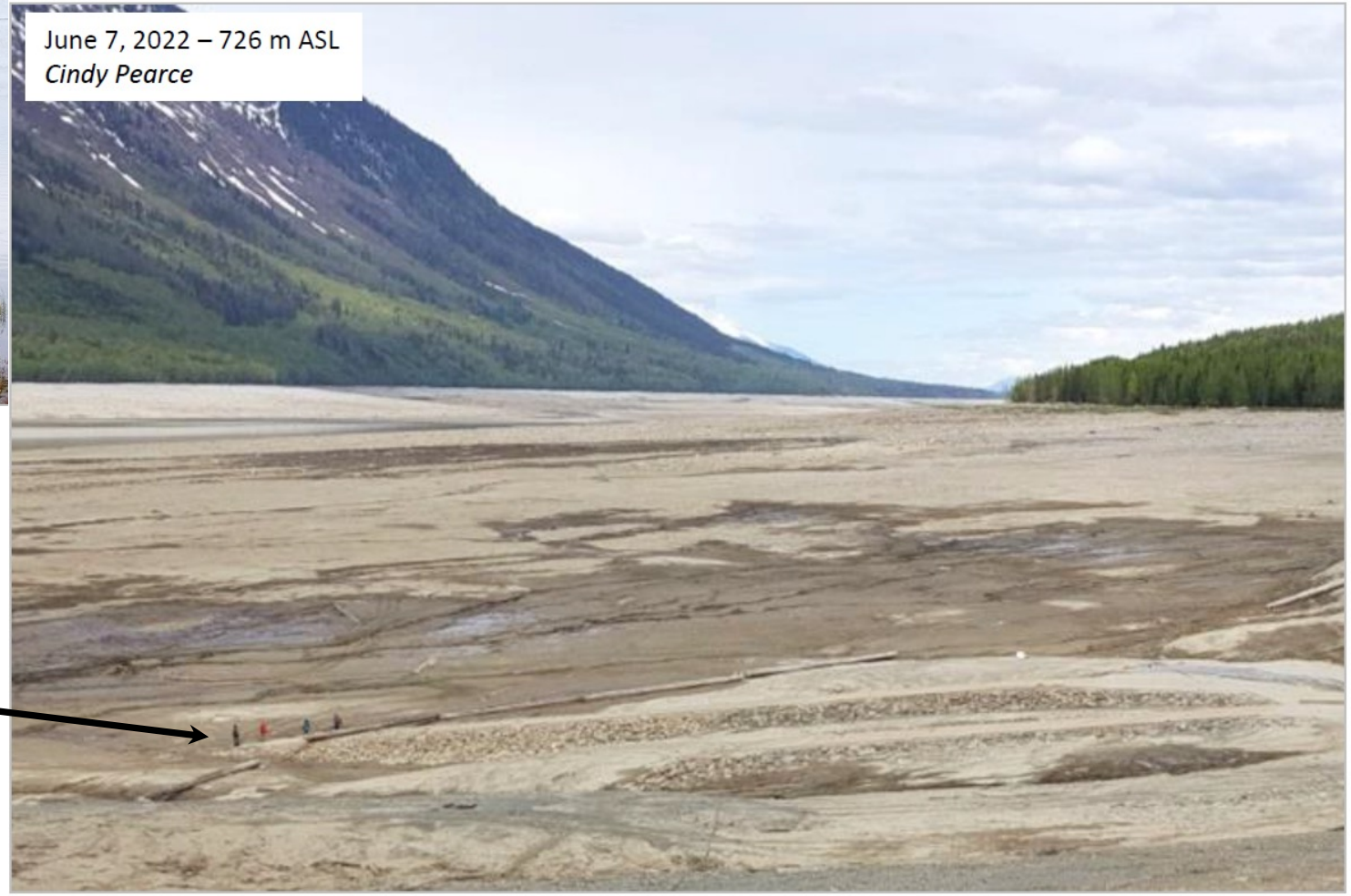
Kinbasket Reservoir CRT Socio-Economic Goals

- **Navigation** - Minimize disruptions to commercial navigation and transportation.
- **Recreation/tourism** - Maximize the community benefits from quality and diversity of recreation and tourism.
- **Erosion** at various sites is a concern –a goal has not yet been developed.



Valemount Marina
Kinbasket Reservoir

July 19, 2020 – 749 m ASL
Stewart Rood

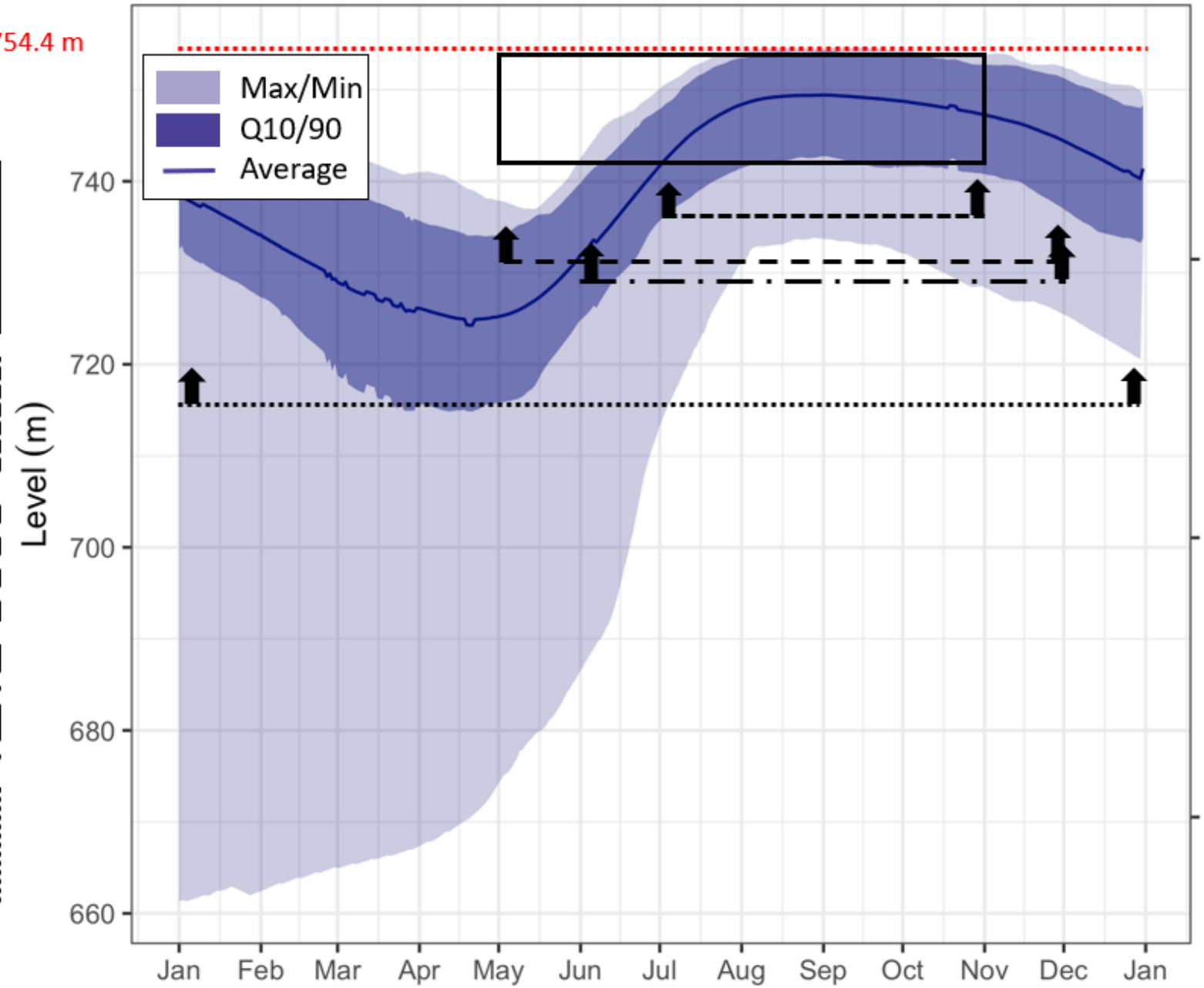


June 7, 2022 – 726 m ASL
Cindy Pearce

People

KINBASKET RESERVOIR AT MICA DAM

1974 - 2019



Recreation and Tourism: # days between 742 and 753.8 m, May 1 – Oct 30

Navigation (Harvey Ck): # days above 736.1 m, June 30 – Oct 31

Navigation (Schlichting Ck): # days above 731.5 m, May 1 – Nov 30

Navigation (Brown Ck): # days above 729.2 m, Jun 1 – Nov 30

Navigation (Wood R.): # days above 716.3 m, Year round

Recreation and Tourism: # days between 2434 and 2473 ft, May 1 – Oct 30

Navigation (Harvey Ck): # days above 2415 ft, June 30 – Oct 31

Navigation (Schlichting Ck): # days above 2400 ft, May 1 – Nov 30

Navigation (Brown Ck): # days above 2392 ft, Jun 1 – Nov 30

Navigation (Wood R): # days above 2350 ft, Year round

Kinbasket Reservoir Navigation and Recreation/Tourism

Objective	Location	Units	Elevation		Season	Preferred outcome	Notes
			feet	metres			
Navigation	4 barging ramps	Navigable days/year	Above 2415 2400 2392 2350	Above 736.1 731.5 729.2 716.3	 June 1 – Oct 30 May 1 – Nov 30 June 1 – Nov 30 Year-round	More is better	• From industry users
Recreation /Tourism	Reservoir	Recreation days/ year	2434 - 2473	742-753.8	May 1 – Oct 30	More is better	• Min elevation:- Valemount Marina boat ramp access; avoid unsightly visuals • Max elevation: shoreline use; avoids debris • Season: from local reps

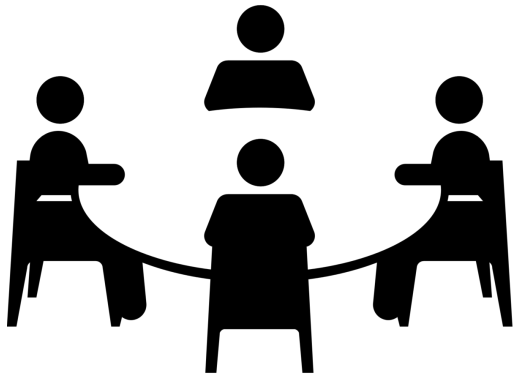
Kinbasket Reservoir – Recreation and Tourism

Sub-measures for: access needs and preferences for individual activities, sites, and issues

Sub-Measure Objective	Season	Elevation Range
High water debris	May 1 – Oct 31	Above 2473ft/753.8m, in the years the elevation is above this level
General shoreline preference (Columbia Reach)	May 1 – Oct 31	2444ft-2473ft (744.9m-753.8m)
Motorized boating preference (Canoe Reach)	May 1 – Oct 31	2434ft-2470ft (742m-752.9m)
Motorized boating access (Canoe Reach)	May 1 – Oct 31	2390ft (728.5m) and above
Motorized boating access (Columbia Reach)	May 1 – Oct 31	2381ft (725.8m) and above
Motorized boating preference (Columbia Reach)	May 1 – Oct 31	2375ft – 2470ft (723.9m-752.9m)
Valemount hot springs access	Mar 1 – Apr 30	2358ft (719m) and below.

Kinbasket Reservoir – Erosion

- Erosion concerns known for:
  - Valemount Marina
  - Private properties and resource roads along Columbia Reach
- Erosion is influenced by much more than reservoir levels
- ***A multi-disciplinary group is convening to discuss how best to incorporate erosion -performance measures into CRT modeling***

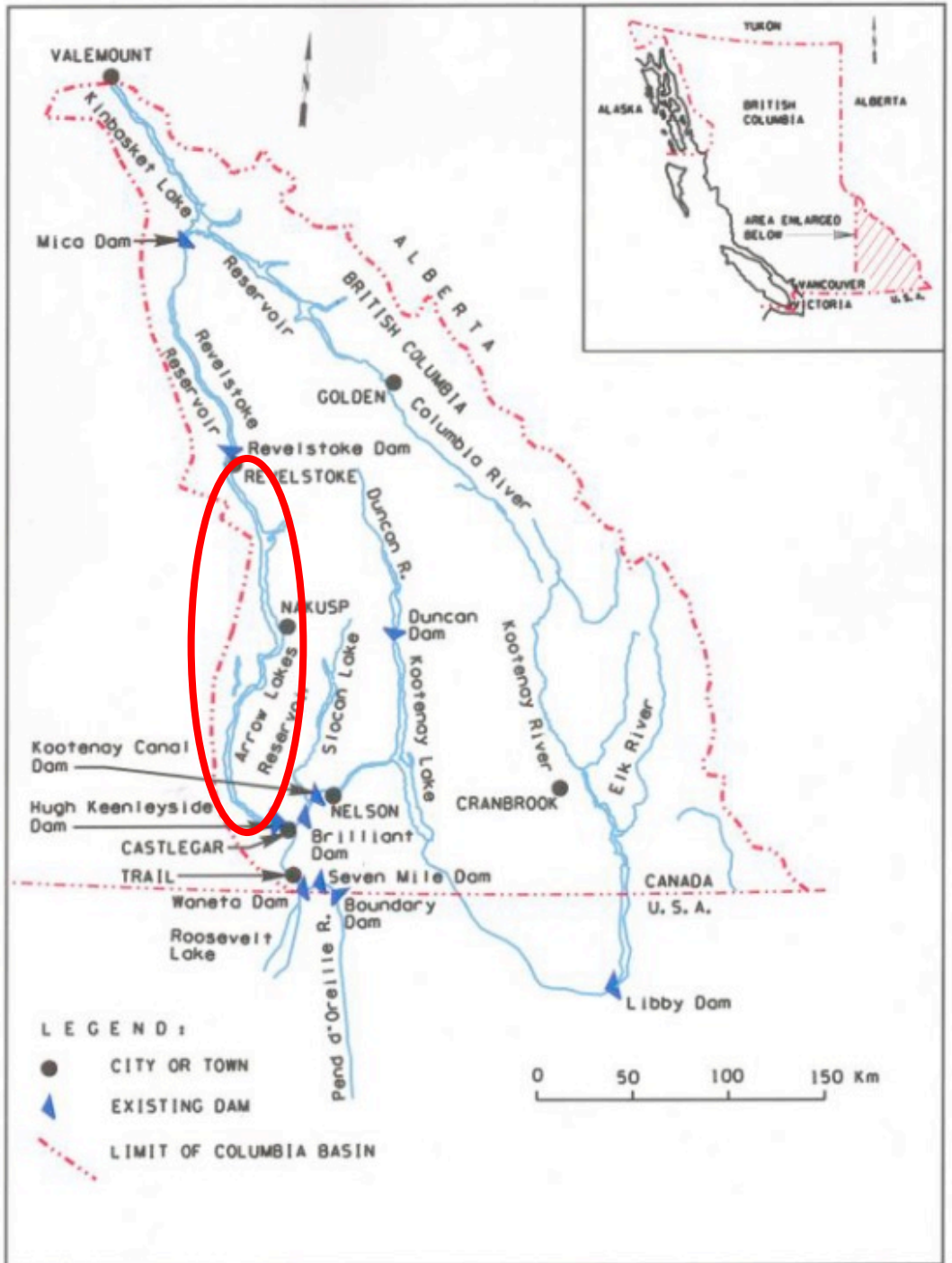


Questions?

Arrow Reservoir Quick Facts

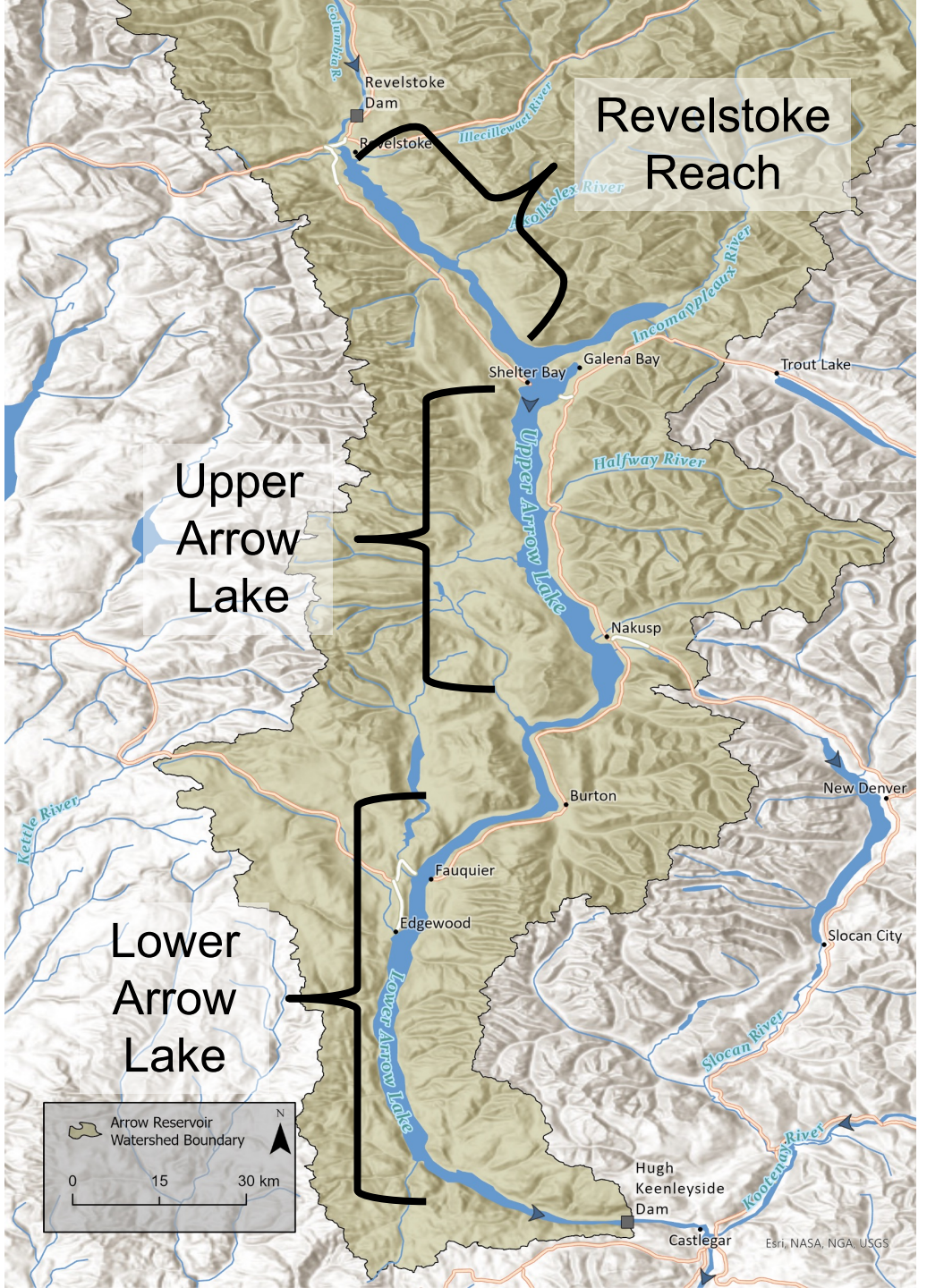
'Most important for regulating flows to US'

- 250 km long
- Inflows – Natural plus regulated from Revelstoke Dam
- Outflows - Hugh Keenleyside (HLK) Dam (BC Hydro - no power generation) and Arrow Lakes Generating Station (ALGS - Columbia Power Corp. – small power generator)
- Storage – 7.1 MAF
- Annual water level fluctuation – Up to 66 ft (20 m)



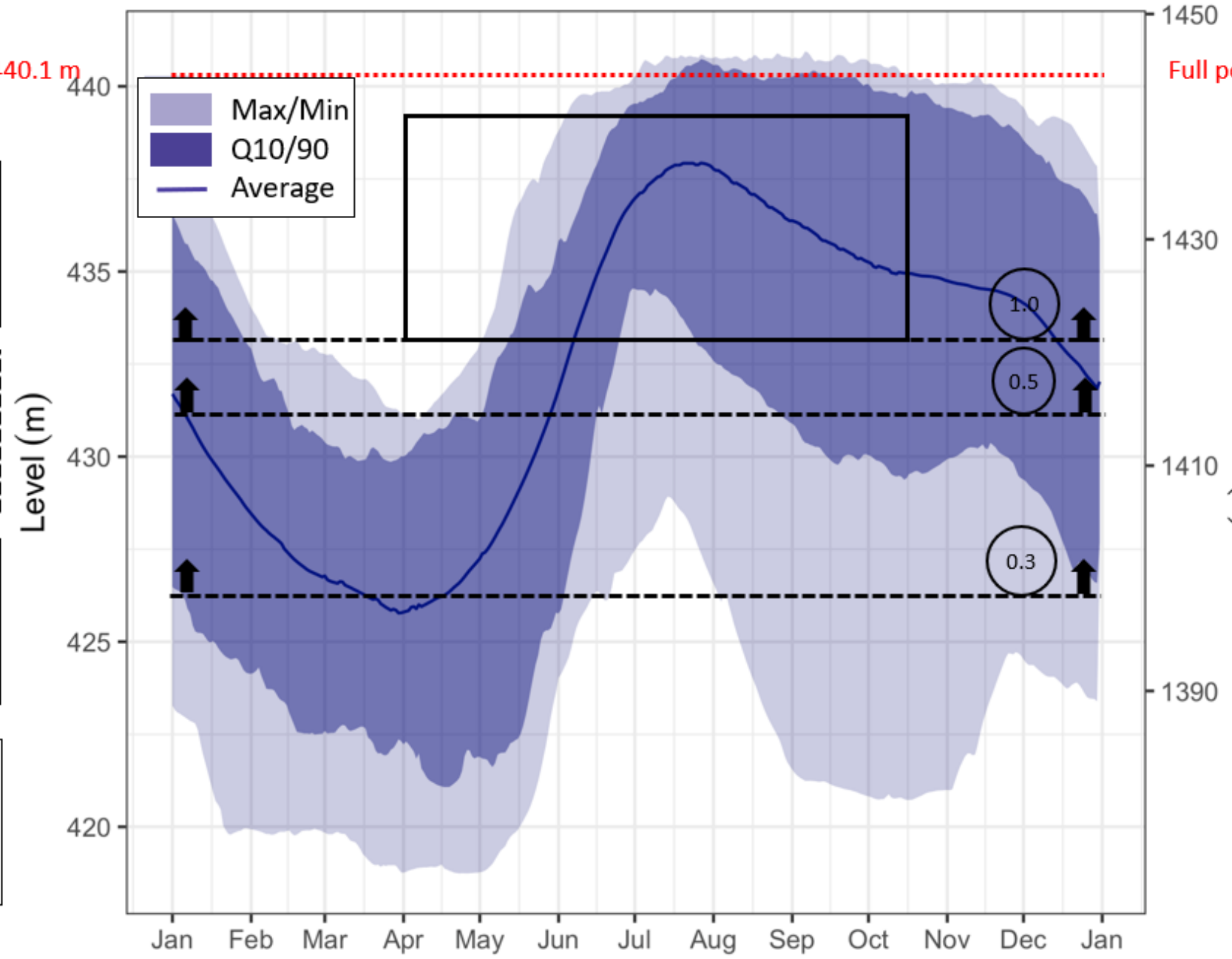
Arrow Reservoir
CRT Socio-Economic Goals

- **Navigation** - Minimize disruptions to commercial navigation and transportation.
- **Recreation/Tourism** - Maximize community benefits from quality and diversity of recreation and tourism
- **Dust potential** - Minimize dust generation.
- **Agriculture** - Maximize agriculture opportunities.
- **Erosion** at various sites is a concern – goals have not yet been developed.



ARROW RESERVOIR AT FAUQUIER

1969 - 2020



Recreation and Tourism: # days between 432.8m – 438m, 1 Apr to 15 Oct

Navigation: # days annually:
- +432.8 m: weight = 1
- 431.3 – 432.8: 0.5
- 426.7 – 431.3: 0.3

Agriculture: # hectares of the mapped area is exposed, April 1 to September 15

Not shown

Dust: # hectares-days the mapped area is exposed, April 1 to Oct 15

Not shown

Recreation and Tourism: # days between 1420ft – 1437ft, 1 Apr to 15 Oct

Navigation: # days annually:
- +1420 ft: weight = 1
- 1415 – 1420 ft: 0.5
- 1400 – 1415 ft: 0.3

Agriculture: # hectares of the mapped area is exposed, April 1 to September 15

Not shown

Dust: # hectares-days the mapped area is exposed, April 1 to Oct 15

Not shown

Arrow Reservoir Navigation and Recreation/Tourism

Objective	Location	Units	Elevation		Season	Preferred outcome	Notes
			feet	metres			
Navigation	Narrows	Navigable days/year	Above 1400; weighted to 1420	Above 426.7; weighted to 432.8	Year-round	More is better	• From Interfor based on log raft towing limits
Recreation /Tourism	Reservoir	Recreation days/ year	1420-1437	432.8 – 438	Apr 1 – Oct 15	More is better	• Min elevation:- Rev. Reach use; avoid damage to Nakusp Marina • Max elevation: Revelstoke boat ramp access • Season: past reports

Arrow Reservoir – Recreation and Tourism

Sub-measures for access needs and preferences for individual activities, sites, and issues,

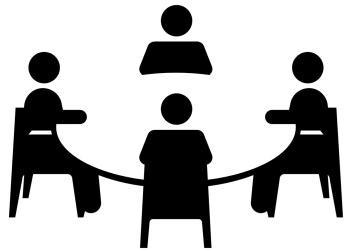
Sub-Measure Objective	Season	Elevation Range
Nakusp beach floating dock use preference	Jun 15 – Sep 15	1437ft (438m) and above
Motorized boating access (Revelstoke Centennial Ramp)	Apr 1 – Oct 15	1437ft (438m) and above
Private boat launch and dock use preference	Apr 1 – Oct 15	1430ft–1435ft (435.9m–437.4m)
Scotties Marina preference	Apr 1 – Oct 15	1428ft–1430ft (435.2m-435.9m)
General shoreline preference (Shelter Bay to Hugh Keenleyside Dam)	Apr 1 – Oct 15	1425ft–1435ft (434.3m-437.4m)
Syringa beach preference	Jun 15 – Sep 15	1425 –1435 ft (434.3 - 437.4 m)
Motorized boating experience preference	Apr 1 – Oct 15	1424ft–1435ft (434m-437.4m)
Motorized/non-motorized access to the Revelstoke reach drawdown zone	Apr 1 – Oct 15	Below 1424ft (434m)
Nakusp Marina dock damage avoided	Apr 1 – Oct 15	Above 1420ft (432.8m)
Motorized boating access (Scotties Marina boat ramp)	Apr 1 – Oct 15	1408ft (429.2m) and above
Motorized boating access (BC Hydro Boat Ramps)	Apr 1 – Oct 15	Above 1401ft (427m)

Arrow Reservoir Dust and Agriculture Potential

Objective	Location	Units	Elevation feet metres	Season	Preferred outcome	Notes
Dust Potential	Around Burton	Hectare-day/year	Based on mapped area around Burton	Apr 1 - Oct 15	Less is better	• **Team invites pictures of dust storms in other inhabited areas**
Agriculture Potential	Revelstoke Reach, Burton, Fauquier. Edgewood, Renata, Deer Park	Hectares / year	Area not inundated within existing leases and previously cultivated lands	Apr 1 - Sept 15	More is better	• Seasonal crops and grazing only • Aligns with areas with potential for ecosystem restoration

Arrow Reservoir – Erosion

- Erosion concerns known for:
  - Fauquier golf course
  - Edgewood boat ramp
  - McDonald Ck Provincial Park beach and waterside sites
  - Nakusp beach and waterfront walkway
  - Private properties in Nakusp West Employment Lands
  - Highway between Burton and Fauquier
  - Agricultural land in the Narrows
  - Recreational routes in the '9 Mile' area of the Revelstoke Reach
- Erosion influenced by much more than reservoir levels
- ***A multi-disciplinary group is convening to discuss how best to incorporate erosion -performance measures into CRT modeling***

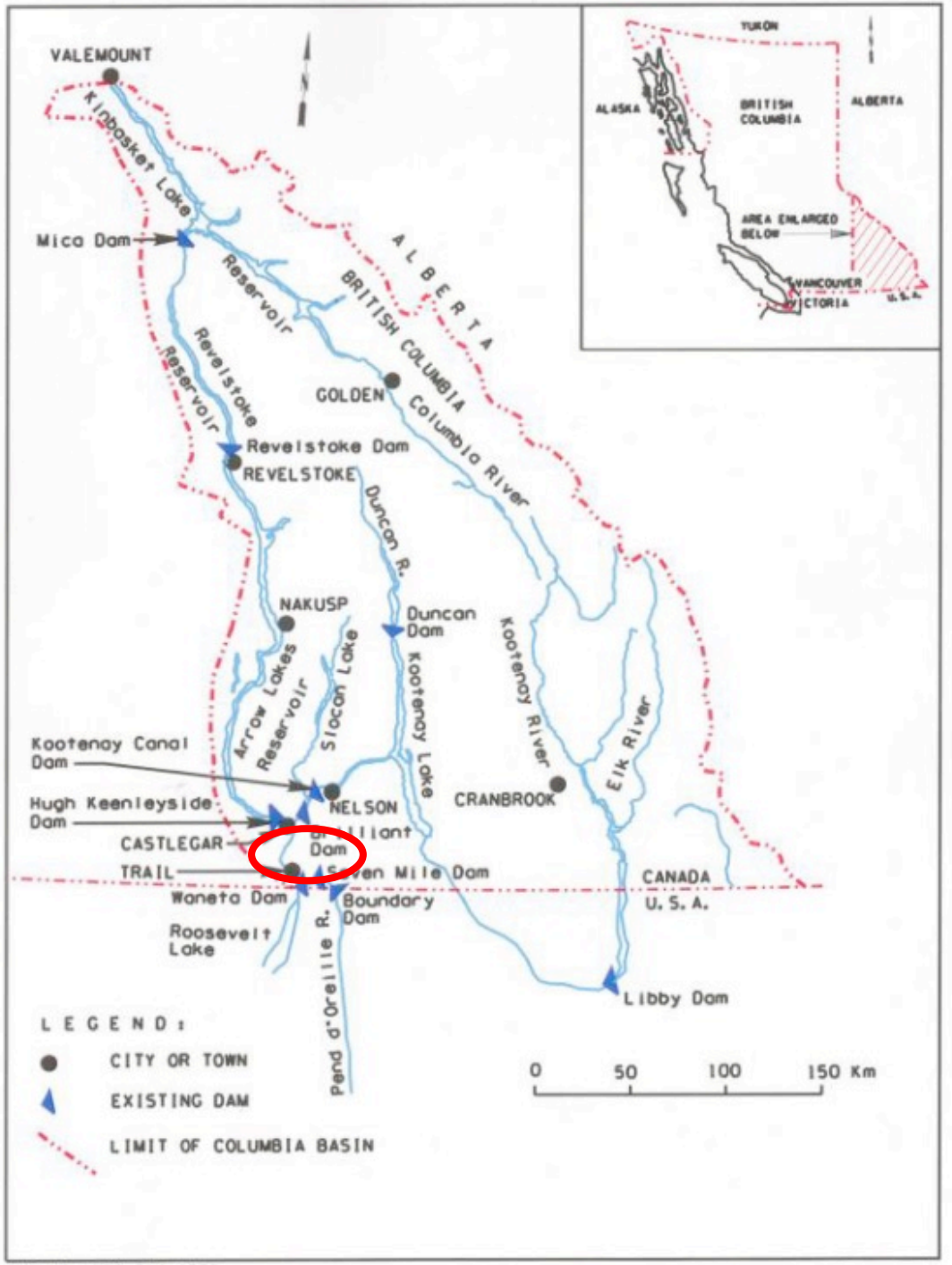


Questions?

Lower Columbia Quick Facts

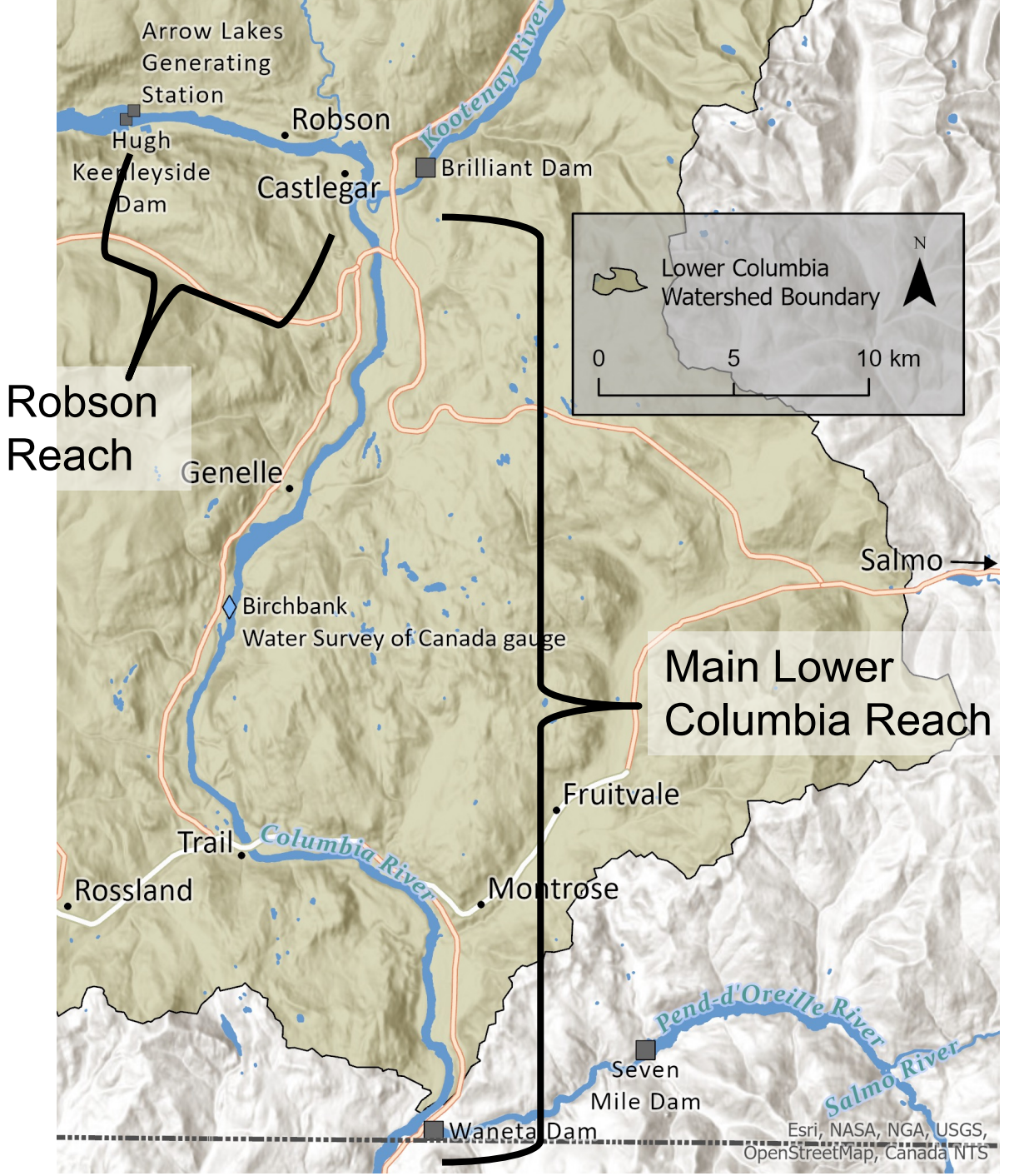
'Delivery route for flows to US'

- 86 km
- Inflows – Natural plus regulated from:
  - Columbia River – Hugh Keenleyside Dam (BC Hydro) and Arrow Lakes Generating Station (Columbia Power Corp)
  - Kootenay River- regulated by Brilliant Dam and Expansion Project (Columbia Power Corp)
  - Pend d'Oreille River – regulated by Waneta Dam (BC Hydro) and Expansion (Columbia Power Corp)
- Weekly fluctuations to meet BC fish flows and flow requirements to the US



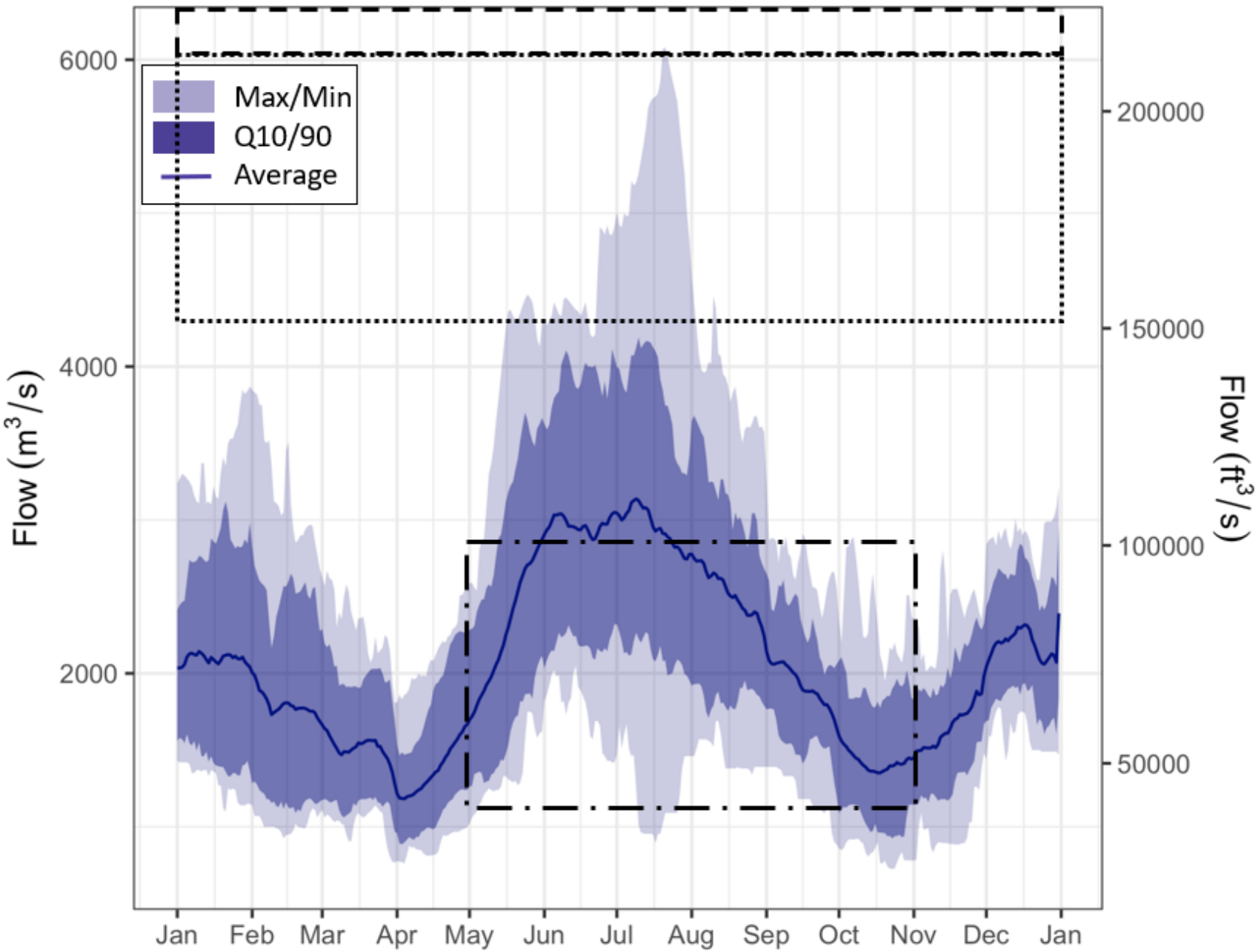
Lower Columbia
CRT Socio-Economic Goals

- **Flooding** - Minimize damage to private property and community infrastructure, and injury to people.
- **Recreation/tourism** - Maximize the community benefits from quality and diversity of recreation and tourism.



COLUMBIA RIVER AT BIRCHBANK

1995 - 2020



Flooding (Infrastructure Damage): Total number of days when average flow ≥ 214,000 cfs ≥ 6,509.8 cms

Flooding (Low Lying Areas): Median # of days per year when daily average flow ≥ 4,290 to <6,059.8 cms

Recreation and Tourism: # days per year between 1133 and 2832 cms, May 1 - Oct 31

Flooding (Infrastructure Damage): Total number of days when average flow ≥ 214,000 cfs ≥ 214,000 cfs

Flooding (Low Lying Areas): Median # of days per year when daily average flow ≥ 151,500 to <214,000 cfs

Recreation and Tourism: # days per year between 40,000 and 100,000 cfs, May 1 - Oct 31

Lower Columbia –Flooding

Objective	Location	Units	Flow cfs	Flow cms	Season	Preferred outcome	Notes
Flooding - Low lying areas	Length of reach	Days/ year	151,500 – <214,000	4,290 to <6,059.8	Year round	Less is better	• Recreation areas flooded
- Infrastructure damage	Length of reach	Days/ year	Above 214,000	Above 6,059.8	Year round	Less is better	• Castlegar sewer ponds, recreation infrastructure; Genelle access and septic systems damaged • **Recommend joint LG flood inundation mapping**

Sub-measures		
Flow (kcfs)	**Total no. of days flow is reached**	**No. of years when flow is reached**
300-350		
280-299		
250-279		
225-249		
214-224		

Lower Columbia Recreation and Tourism

Objective	Location	Units	Flow		Season	Preferred outcome	Notes
			cfs	cms			
Recreation/ Tourism	Length of reach	Days/ year	40,000 - 100,000	1,133 - 2,832	May 31 – Oct 1	More is better	• Lowest level – preferred for boat angling • Highest level - preferred upper flow for non-motorized boating, swimming and shore-based angling • **Information dated - user studies recommended**

Lower Columbia – Recreation and Tourism

Sub-measures for access needs and preferences for individual activities, sites, and issues

Sub-Measure Objective	Season	Flow Range
Whitewater kayaking access: Industrial Hole	May 1 – Oct 31	124,000 cfs / 3,500 cms and above
Whitewater kayaking access: One Shot Wave	May 1 – Oct 31	88,000-106,000 cfs / 2,500-3,000 cms
Swimming	June 15 – Sep 15	78,035 – 99,327 cfs / 2,209 – 2,813 cms
Motorized boating preference	May 1 – Sep 15	70,902 – 156,035 cfs / 2,008 – 4,418 cms
Other non-motorized boating (excepting whitewater kayaking)	May 1 – Oct 31	70,902 - 102 823 cfs / 2,008 – 2,912 cms
General shore-based recreation	May 1 – Oct 31	60,309 - 99,327 cfs / 1,707 – 2,813 cms
Shore-based angling	May 1 – Oct 31	60,309 – 99,327 cfs / 1,707 – 2,813 cms
Whitewater kayaking access: Trail Wave/Hero Hole	May 1 – Oct 31	50,000 cfs / 1,416 cms and below
Boat-based angling preference	May 1 – Sep 15	40,000 – 60,000 cfs 1,133 – 1,699 cms

Questions?

Next Steps

Please Provide Your Feedback

More information: https://www.crtlgc.ca/copy-of-crt-socio-economic-pm-s-for-r

Survey Link: https://www.surveymonkey.com/r/public-crt-se-pm

Feedback Deadline: February 19, 2023

Please remember:

- Interests must be related to **river flows or reservoir levels** to be assessed in the CRT modelling
- This is a **long-term endeavor** – we won't get it all right in this phase and there will be revisions over time

Timeline

Nov 2020-Dec 2021
Collect Information
Community interest and SE PM data collected from a wide range of sources

Feb-Nov 2021
Design Engagement
Methods for engaging CBRAC, local governments, Indigenous Nations and the public

May-Dec 2022
Develop PMs
Revise previously-used PMs based on new info and develop new PMs where needed

Oct 2022-Feb 2023
Community Feedback
Feedback from CBRAC, local government and public collected

Nov 2022-Ongoing
SE PM Recommendations
Feedback reviewed/incorporated and LGC recommends SE PMs to NAT

Dec 2022 - Ongoing
Confidential Scenario Modelling
PMs finalized and used to model scenarios

Questions?

Thank you!

More questions? Email info@crtlgc.ca