



AWRA Panel Discussion: Columbia River Treaty, From Here to Where?

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Why did we want a Treaty?
*About 1/3 of the Columbia
River comes from Canada.*

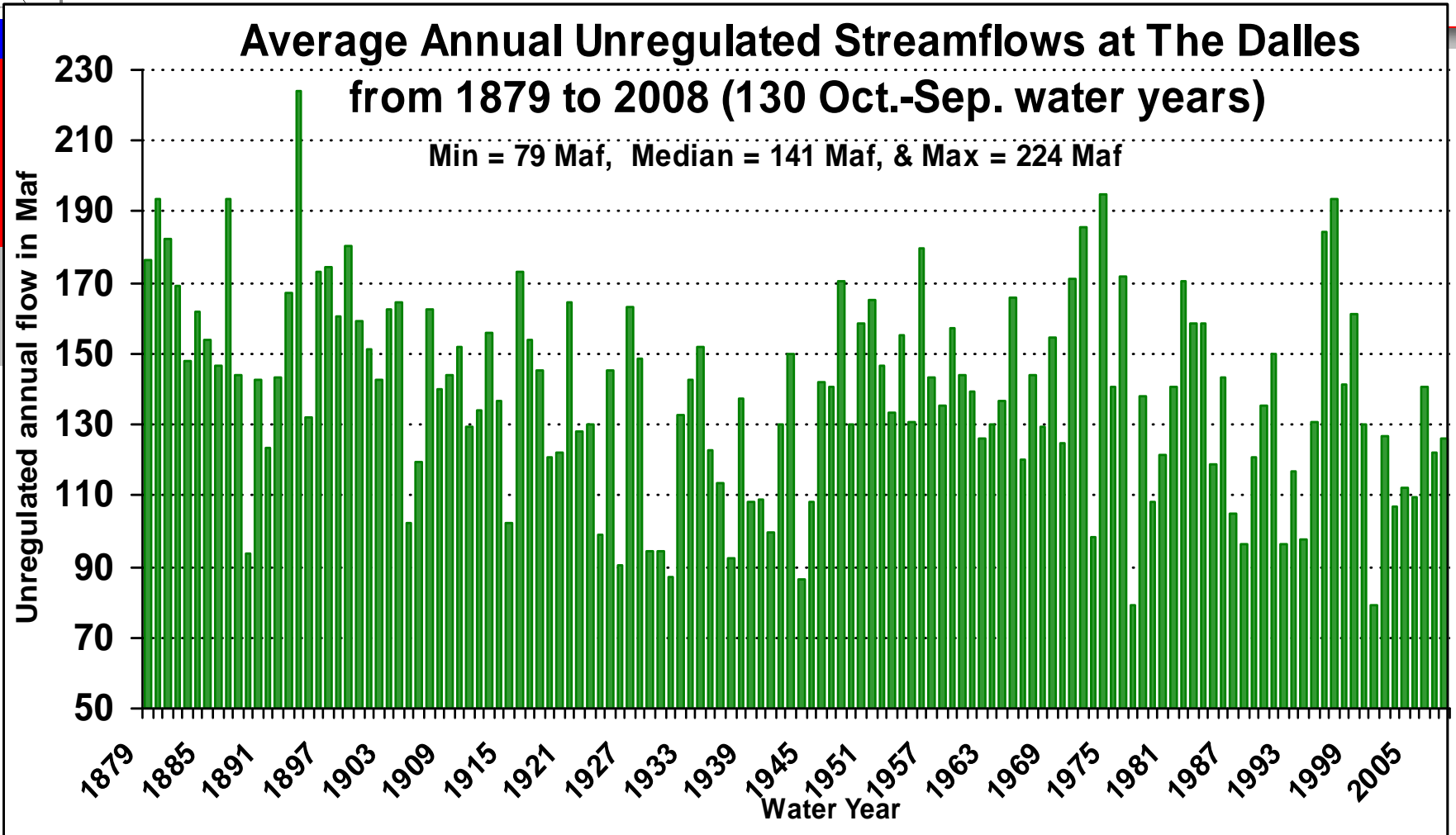
Columbia
River
Basin



10 November 2009



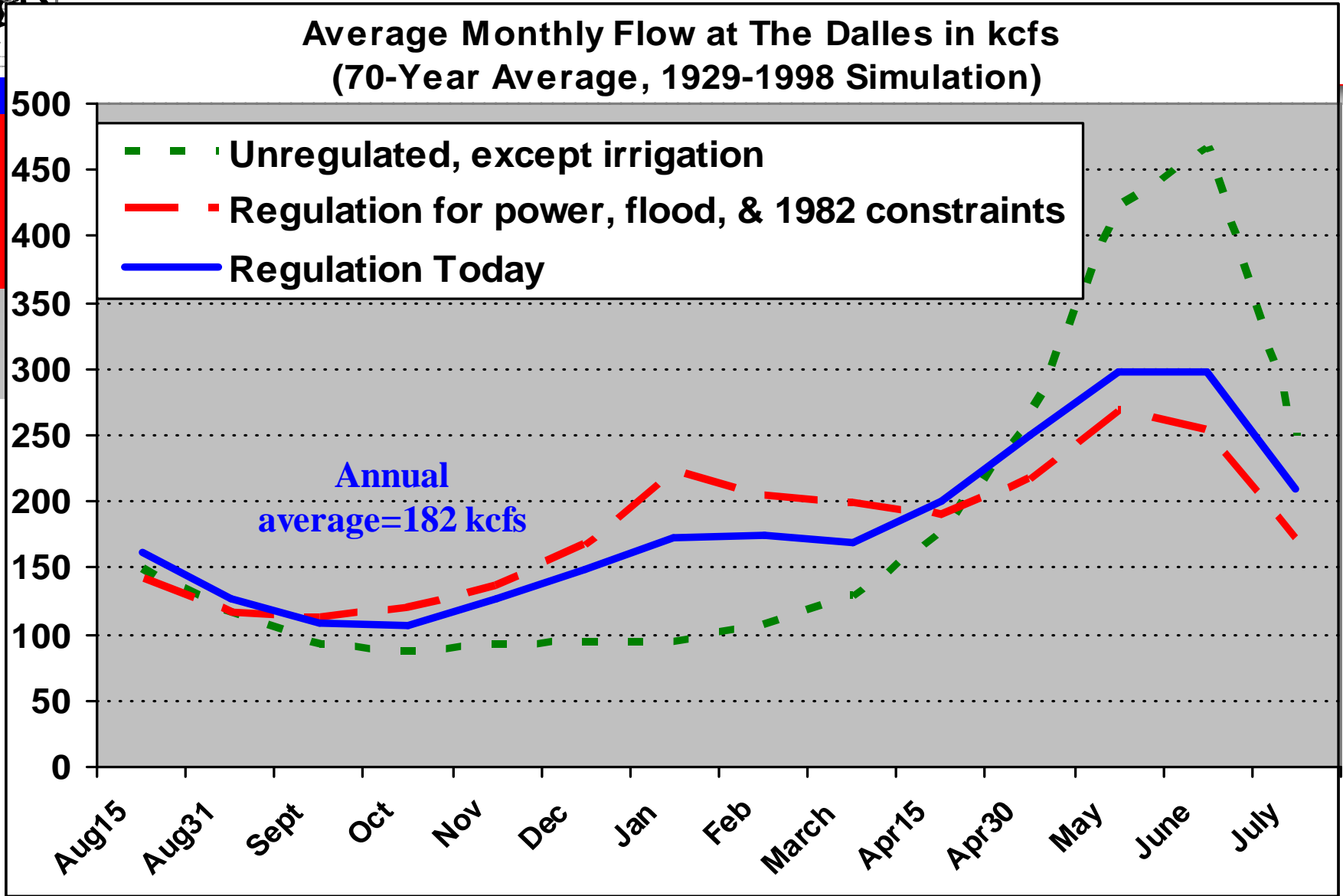
Why did we want a Treaty?
*Large and unpredictable year to year variation
in average annual flow, as much as +46/-41% from
the average at The Dalles*



Long-term trends are apparent over time, but year to year variations are almost random, with no reliable next year forecast.



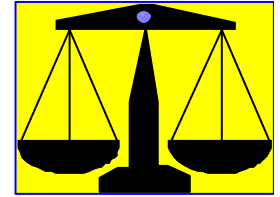
Why did we want a 'Treaty'?
*Large seasonal variation in flows,
and forecasts are not very good.*





How did we get the Treaty?

17 years of studies and negotiations to sign treaty,
and 2-1/2 more years to ratify.



◆ In 1959, after 15 years' work, International Joint Commission issued report that recommended a Treaty with development plans and principles for apportioning the downstream benefits.

◆ Formal negotiations began in Feb. 1960, led to signing Treaty Jan. 1961.

◆ U.S. Senate approved, but province of British Columbia refused to give consent. They wanted a long term sale of the Canadian Entitlement

◆ Negotiations in 1963 led to a Treaty Protocol in Jan. 1964 that clarified and limited Treaty implementation and allowed a long term sale of the Canadian Entitlement.

◆ Purchase of Entitlement by PNW utilities for \$254 million.

◆ Treaty implemented Sept. 16, 1964.





How did we get the Treaty? Many interrelated agreements were needed.

- ◆ PROTOCOL
- ◆ CANADA-B.C. AGREEMENT
- ◆ CANADIAN ENTITLEMENT SALE.
- ◆ ALLOCATION and EXCHANGE AGREEMENTS
- ◆ PACIFIC NW COORDINATION AGREEMENT.
- ◆ POWERHOUSE EXPANSION
- ◆ PNW-PSW INTERTIE
- ◆ PNW Preference Law

LBJ in Portland for Sept. 17, 1964, Treaty/Intertie Victory Breakfast →

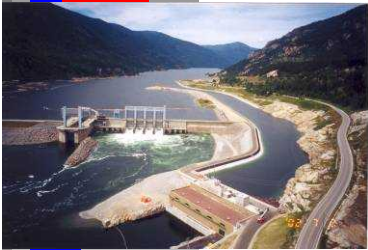
10 November 2009





What Does the Treaty Do?

Main requirements



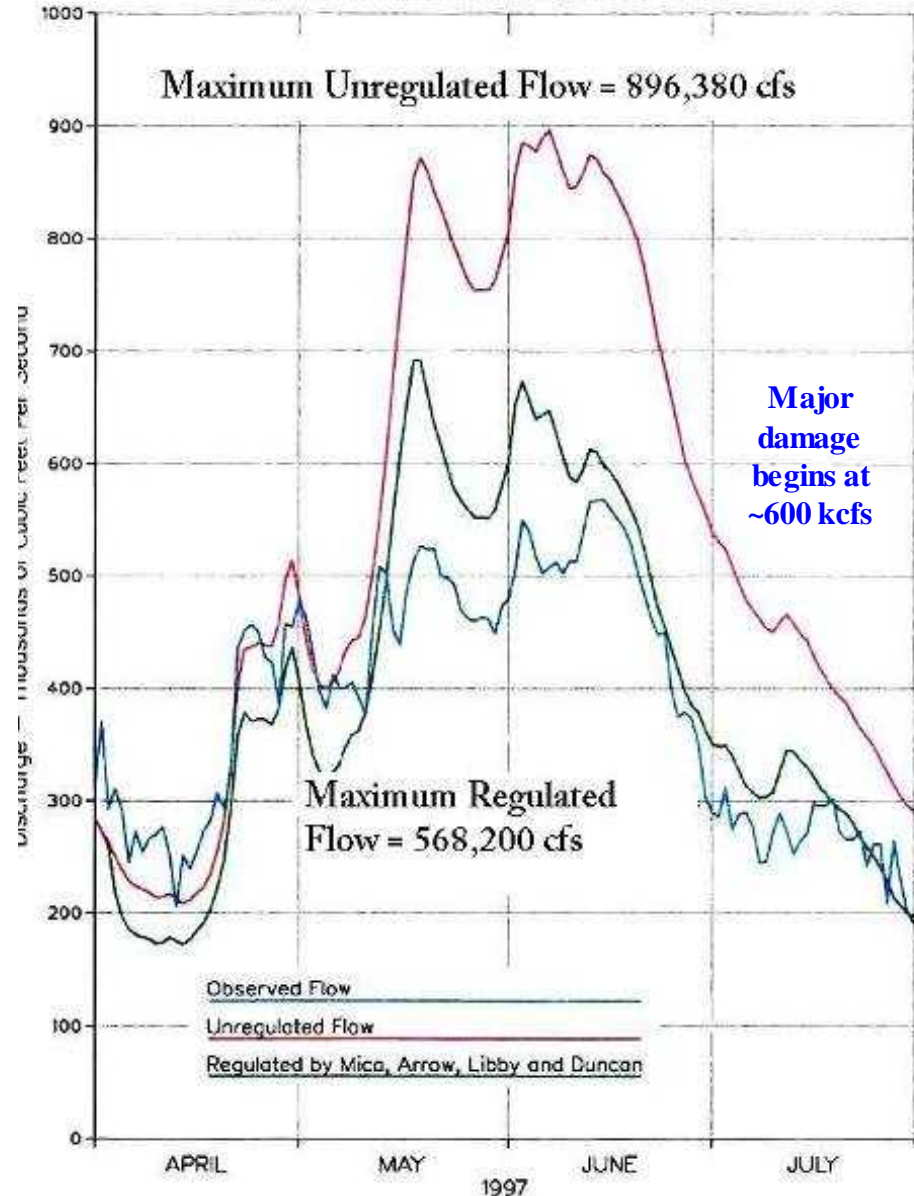
- ◆ The Treaty requires Canada to construct and operate 15.5 Maf of reservoir storage in the upper Columbia River basin at Mica, Arrow, and Duncan for optimum power generation and flood control downstream in both Canada and United States.
- ◆ U.S. paid Canada \$64.4 million for one-half of the estimated future U.S. flood damages prevented through 2024, and the U.S. must deliver to Canada annually one-half the estimated downstream power benefits generated at U.S. dams.
- ◆ The Treaty allows the U.S. to construct and operate Libby dam with 5 Maf storage on the Kootenai River in Montana for flood control and other purposes. Lake Koocanusa backs up 40 miles into BC. Both countries realize downstream power and flood control benefits, but no compensation is required.



Flood Control

- ◆ **Canada must operate 8.45 Maf of storage** at Arrow, Duncan, and Mica for flood control until 2024 to minimize damages in both Canada and U.S.A..
- ◆ **Additional 7 Maf of Treaty Storage and 5 Maf of Non-treaty storage** available “on call” for large floods at cost of \$1.875 million for each of the first four requests (This option has never been used).
- ◆ **U.S. paid Canada \$64,400,000** at completion of Canadian Treaty dams for 1/2 of the estimated present worth of 1964-2024 flood damages prevented
- ◆ **After 2024 (60 years) whether or not Treaty is terminated,** Canada must operate any storage when called-upon, as long as U.S. need exists, Canadian projects exist, and U.S. has first made effective use of its own projects for flood control. U.S. must pay Canada’s operating costs and economic losses.

COLUMBIA RIVER FLOW AT THE DALLES
APRIL THROUGH JULY 1997



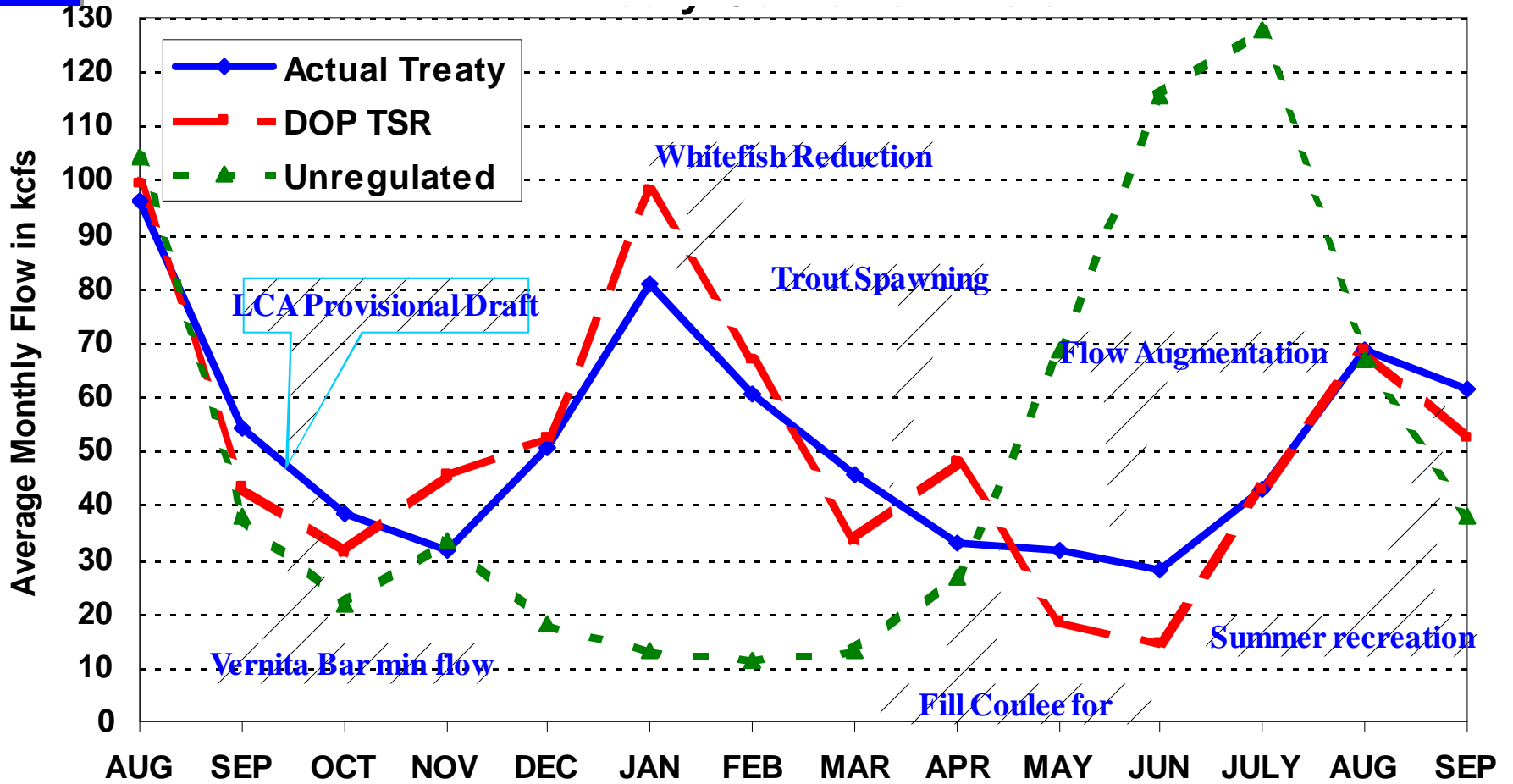


Assured and Detailed Operating Plans and Canadian Entitlement

- ◆ **Assured Operating Plan developed each year for the sixth succeeding operating year for optimum power and flood control benefits in both countries, and a determination of the resulting estimated downstream U.S. power benefits.**
- ◆ **Most modern nonpower requirements (e.g. fish & recreation) cannot be included in the AOP.**
- ◆ **Canada is entitled to receive one-half the estimated downstream U.S. power benefits. The amount varies from year to year. Current amount 567 average annual MW delivered at rates up to 1352 MW. Value decreases in Aug. 2010 and will decrease in the future as the U.S. adds thermal resources.**
- ◆ **Present worth of Canadian Entitlement of approximate 500 MW average annual energy through 2024 is roughly \$2.1 to \$3.4 billion**
- ◆ **Each year the Entities prepare a Detailed Operating Plan that includes procedures to develop supplemental operating agreements for other mutual benefits.**
- ◆ **Actual Treaty storage operations based on weekly flows at the border.**



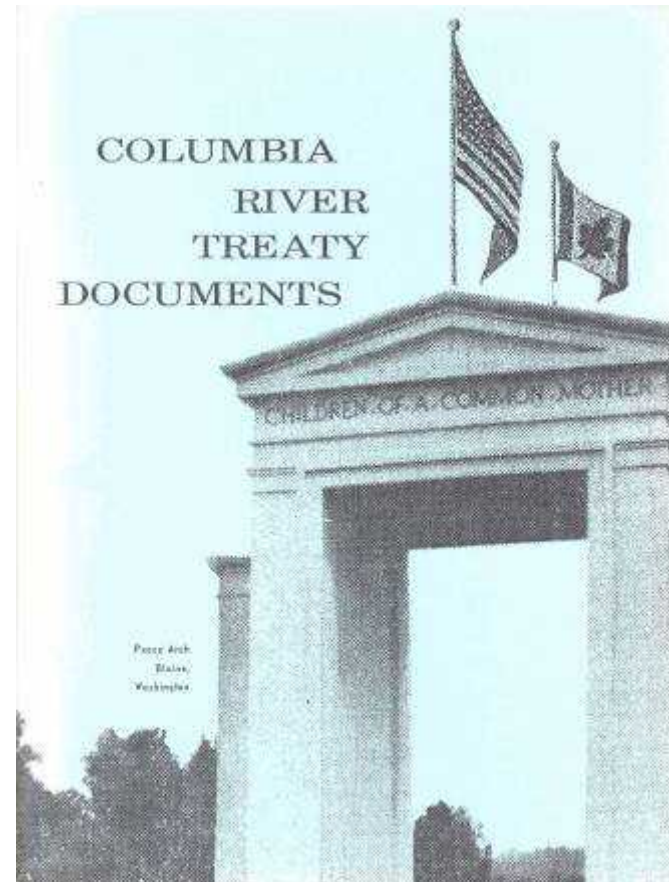
Changes allowed by DOP





Why a 2014/2024 Review?

- 1) The Treaty has no specified end date; however, it does have a provision allowing either nation to terminate most of the provisions of the Treaty in or after 2024, with a minimum 10 years' written advance notice, hence the name "2014/2024 Review".
- 2) Current flood control operating procedures will end in 2024, independent of Treaty decision.





Phase 1 – Initial Joint Studies

Phase 1 is only a starting point toward understanding the future of the Treaty, it is not the answer

Goals and Objectives

- ◆ Conduct fundamental studies to look at potential flood control operations, power operations, and Canadian Entitlement under scenarios with and without the Treaty.
- ◆ Gather and establish baseline information to inform future analysis and decisions on how to proceed.
- ◆ Prepare to answer basic questions expected from governments, stakeholders, and the public.

Coordination

- ◆ Studies have been undertaken jointly by the Entities.



If the Treaty is terminated

- ◆ B.C. will operate Mica, Arrow, and Duncan for the benefit of Canada (subject to Boundary Waters Treaty), except for called upon flood control operations. The U.S. will continue to coordinate with Canada on the operation of Libby.
- ◆ Canadian Entitlement will cease to exist, and the U.S. will retain all incremental power at downstream U.S. projects from the operation of Canadian storage.
- ◆ Without Treaty planning and coordination in place, Canadian storage operations (except for flood control) could be potentially uncertain and un-coordinated.
- ◆ Flood control provided by Canadian projects transitions mainly to a "Called Upon" operation after 2024 for the life of the projects.





If the Treaty NOT terminated

- ◆ B.C. will continue to operate their Treaty storage for optimum power generation downstream in Canada AND the United States.
- ◆ Canadian Entitlement will continue.
- ◆ Certainty in Canadian storage operations through Treaty planning and coordination.
- ◆ Flood control provided by Canadian projects transitions mainly to a "Called Upon" operation after 2024 for the life of the projects

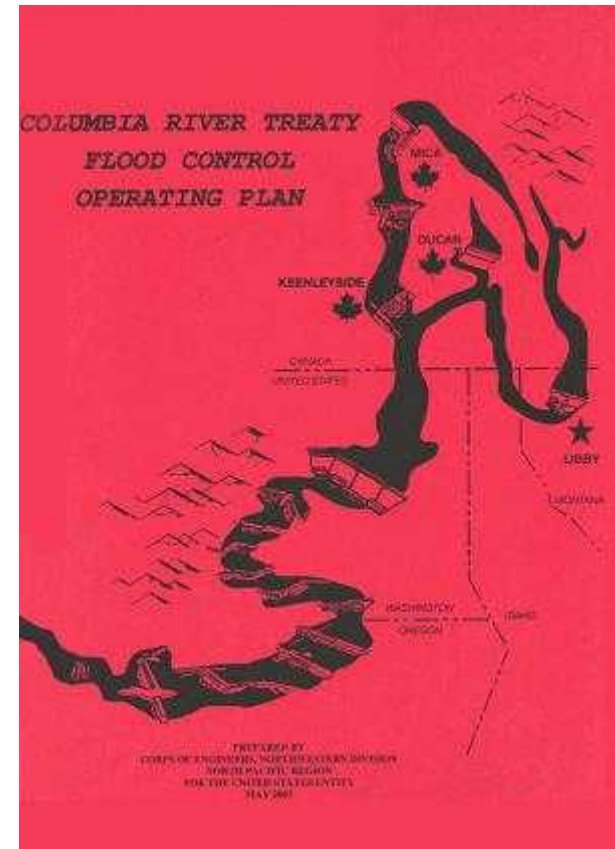




Post-2024 Flood Control

Flood control provided by Canadian projects transitions mainly to a "Called Upon" operation after 2024 for the life of the projects:

- U.S. requests for "called upon" limited to potential floods that could not be adequately controlled by all related (effective) U.S. storage
- "called upon" to provide no greater degree of flood control after 2024 than prior to 2024
- U.S. must pay for operating costs and any economic losses in Canada due to the "called upon" operation
- Implementation details to be addressed in further studies





Phase 1 – Joint Technical Studies

*Study I**

Cont. of Existing Procedures

- *Columbia River Treaty continues*
- *Current Flood Control Operating Plan continues*
- *Entitlement return continues*

Study II

Minimum Action

- *Columbia River Treaty continues*
- *Called Upon flood control (based on a target flow at The Dalles)*
- *Entitlement return continues*

Study III

Treaty Terminated

- *No coordination, except on Libby*
- *Called Upon flood control*
- *Various possible Canadian operations*
- *No Entitlement return*

←----- 2024-25 Loads and Resources -----→



Expected Key Outcomes

- **Benefits/limitations/impacts of "called upon" flood control**
- **2025 & 2045 Canadian Entitlement**
- **2025 U.S. Power estimates**
- **Range of potential flows and end-of-period reservoir elevations and contents**
- **Joint Entity Phase 1 Report (available early 2010)**



Additional 2014/2024 Efforts

◆ CORPS' Flood Risk Management Studies

◆ RMJOC Climate and Hydrology Data Set Project

- Participants

- Lead: River Management Joint Operating Committee (Reclamation, BPA, Corps)
- UW Climate Impacts Group
- Regional reviewers and collaborators

- Products and Deliverables

- Modeled climate change streamflow and weather data sets
- Corresponding seasonal runoff volume forecasts
- Corresponding reservoir operating rules for flood control and hydropower



Flood Risk Management Studies

- ◆ Phase 2A: Flood Risk Assessment
 - Objective: Collect and manage data and develop tools and processes necessary to produce quantifiable estimates of flood risk management benefits and costs
 - Complete by January 2011
- ◆ Phase 2B: Flood Risk Management
 - Objective: Evaluate flood risk management benefits and costs associated with alternative treaty strategies
 - Complete by January 2013
- ◆ Phase 2C: Flood Risk Communication
 - Objective: Inform U.S. treaty decision by September 2014



There is more than one possibility for the future of the Treaty...

- ◆ Treaty remains in place
- ◆ Treaty remains in place – achieve additional benefits through Entity implementation agreements
- ◆ Treaty remains in place – achieve additional benefits through government approval and Entity agreements
- ◆ Treaty is amended
- ◆ Treaty is replaced with a new treaty
- ◆ Treaty is terminated with no new treaty





Moving Forward

- **Through Spring 2010, continue one-on-one outreach discussions with sovereign entities and key stakeholders to understand their interests and concerns with respect to the Columbia River Treaty.**
- **Complete Phase I Technical Studies in cooperation with the Canadian Entity and share findings with sovereigns and stakeholders by Spring 2010.**
- **Complete Flood Risk Assessment by early 2011.**
- **Determine if there is a need or benefit to doing additional joint Entity studies.**
- **Based on Phase 1 results, Outreach feedback, and further questions, determine what additional technical studies and analyses will need to be done to inform decision makers.**
- **Continue close coordination and communication with the State Department throughout the Review and decision process.**
- **Develop strategies for future stakeholder and public outreach.**