COLUMBIA RIVER TREATY

HYDROMETEOROLOGICAL COMMITTEE

2007 ANNUAL REPORT

Columbia River at Revelstoke

OCTOBER 2008

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Introduction

The Columbia River Treaty Hydrometeorological Committee (CRTHC) was established in September 1968 by the Entities. The Committee is responsible for planning and monitoring the operation of data facilities in accord with the Columbia River Treaty (CRT). It also assists the Entities in matters related to hydrometeorological and water supply forecasting.

This report summarizes Committee activities during the 2007 operating year (October 1, 2006 – September 30, 2007). The Annual Report focuses on:

- action taken on proposed changes to the hydrometeorological network
- updates to CRT communications and data storage systems
- updates to data exchange requirements
- updates to forecasting procedures
- miscellaneous activities of the Committee

The Committee began issuing regular Annual Reports in 2001. General background information on Committee activities contained in the 2001 and 2002 annual reports is now presented in a separate supplemental document. The

supplement contains general information that does not typically change from year to year. Appendices in the 2007 supplemental document include:

- Appendix A – Introduction to the Committee terms of reference
- Appendix B – Terms of reference for the CRTHMC
- Appendix C – Process for reviewing hydrometeorological data networks
- Appendix D – List of contributors of hydrometeorological data
- Appendix E – Data communication and storage systems
- Appendix F – Data exchange reports
- Appendix G – Treaty studies, models, and forecast requirements

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See 2007 Supplemental Report for a list of Acronyms used in this report

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2007 Annual Summary

The Columbia River Treaty Hydrometeorological Committee (CRTHC) was established in September 1968 by the Entities and is responsible for planning and monitoring the operation of data facilities in accord with the Treaty and otherwise assisting the Entities as needed. The Committee consists of four members as follows:

UNITED STATES SECTION	CANADIAN SECTION
Nancy L. Stephan, BPA Co-Chair	Stephanie Smith, B.C. Hydro, Chair
Peter Brooks, USACE Co-Chair	Doug Smith*, B.C. Hydro, Member

*There have been 2 changes in the Canadian Member in 2007. Wuben Luo replaced Doug McCollor as Canadian Member of committee on November 7, 2006. Doug Smith replaced Wuben Luo on August 1, 2007.

The CRTHC met once in the 2006-2007 water year. The meeting took place November 8, 2006 in the BC Hydro offices in Burnaby.

The CRTHC 2006-2007 Annual Report was completed in August 2008 and distributed to the Columbia River Operating Committee (CRTOC) at the November 5, 2008 CRTOC meeting.

Station networks

The Committee process for reviewing proposed changes to the operation of stations within the hydrometeorological network is described in Appendix C of the 2007 Supplemental Report. The process is intended to ensure that changes made to the network do not negatively affect the monitoring, planning, and operations of Treaty facilities. Schedule 1 summarizes the Committee's response to changes to stations of the CRT hydrometeorological network in 2007.

Communication and data storage systems

Columbia Basin Telecommunications (CBT), other communication systems, and the Columbia River Operational Hydromet System (CROHMS) are described in Appendix E of the 2007 Supplemental Report. The CBT system, operated by the US Army Corps of Engineers (USACE) in Portland, is the primary communications system for transmitting data from the Columbia River Treaty hydrometeorological network. Agencies, including the Northwest River Forecast Center (NWRFC), USACE, and BC Hydro, also use other communication systems to exchange data. CROHMS is the central system for collecting and re-distributing hydrometeorological data used to support the operations of Treaty projects.

Data exchange

Appendix F of the 2007 Supplemental Report describes current data exchange procedures. Data exchanged among operational projects and entity agencies may be categorized according to the type of data and the frequency of transmission. Types of data include project data, weather and streamflow data, forecasts, as well as reports and messages. The frequencies of transmission may be hourly, daily, or monthly.

In addition to the standard reporting, there were additional actions and issues during 2007. These are summarized as follows:

- A data discrepancy for Kootenay Lake was reported and traced to problems with loading the Queens Bay storage table correctly into CROHMS.
- The Committee initiated a data working group at the November 2006 meeting, but with few issues to discuss, the group has not met as yet.
- The USACE requested BC Hydro to provide information on disaster recovery plans for data systems in the event of a major system disruption. BC Hydro has yet to respond.
- BC Hydro noted that the NWRFC was publishing daily reservoir inflows and water levels for Canadian projects on their website that were in many cases incorrect. Given the sensitive nature of the information, BC Hydro requested that NWRFC remove all daily information about Canadian projects from their website. NWRFC will continue to publish water supply volumes and forecasts for Canadian projects, but detailed daily and hourly observations for the major reservoirs will no longer be available. These data are still available in CROHMS for Treaty purposes.

Forecasting

The Committee is involved with various Treaty planning studies and models from time to time. These studies and models and associated forecasting requirements are described in Appendix G of the 2007 Supplement Report.

NEW CANADIAN TREATY PROJECTS VOLUME RUNOFF FORECAST PROCEDURE

BC Hydro completed the redevelopment of their water supply forecast procedures for the Canadian Treaty projects including new early-season forecast procedures to produce forecasts in November and December for the February through July forecast period. The CRTHC recommended the November through July forecast equations and their associated cross-validation standard errors (CVSEs) to the CRTOC at their September 12, 2006 meeting. The CRTOC approved the December through July equations and the new CVSEs, but decided not to use the November equations for Canadian projects. The only project using a November forecast equation is Dworshak.

The new forecasting procedures were developed over the last several years and some of the new techniques being used (such as using the cross-validation standard error rather than standard error) warranted an update to the Principles and Procedures (POP). Appendix 8 to POP provides a summary of the Hydromet Committee's work on error statistics and forecast methodology and their use in Treaty Storage Regulation (TSR) studies, including tables of monthly distribution factors, errors and hedges. The CRTOC chairs accepted the final draft of the Appendix 8 for inclusion in POP via email on August 10, 2007.

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Schedule 1 Changes to the hydrometeorological network in 2007

The following pages document some of the station issues for the Columbia River Treaty Hydrometeorological Network that were dealt with by the committee in operating year 2007. All of the stations listed below are in Canada. There were no issues reported for Treaty stations in the U.S.

- **Tete Jaune climate station - closed**: Tete Jaune climate station is in the headwaters of the Fraser River in BC, but was used in the past as a reference station for the Upper Columbia as well. This is a volunteer observer station and the observer moved away. The station is no longer used operationally by BC Hydro for forecasting, nor was any objection made by the U.S. The station closed December 8, 2006 and will not be replaced.

- **Slocan River at Crescent Valley hydrometric station – at risk**: BC Hydro was notified in January 2007 that the lease for the land where the Slocan River gauge is located is up as of November 2007, and that Water Survey of Canada is having difficulties renegotiating with the current landowner to renew the lease. As this is a critical gauging point with a long period of record, both BCH and the province of BC

requested that every attempt be made to secure the site going forward. At the end of the operating year the issue was still unresolved.

- **South Slocan climate station – at risk:** Environment Canada informed BCH in January 2007 that the South Slocan climate station may be closing as the station is currently maintained by a Fortis BC employee who is retiring. As the station is used as an input by the NWRFC for their forecasting for Queens Bay (Kootenay Lake), Slocan and Waneta volume runoff and streamflows/inflows, BPA requested that efforts be made to maintain the station. As of September 2007, the station is still operating, but data are only available during the work week, and the future of the station has not yet been resolved.

- **Fernie climate station - resolved:** The ongoing problems with getting observations from the Fernie climate station were finally resolved in November of 2006, with BCH providing funding for purchase of a PC and an internet setup for the observer at the Fernie Municipal Works yard. This enabled the observer to submit the data to Environment Canada daily, instead of once or twice a month. Daily data are now available from the site in near real-time, with the station reporting about 90 percent of the time.

- **Mount Templeman snow course – resolved:** The risk of avalanche at Mount Templeman prompted the BC Ministry of Environment to propose closing the snow course site. After further discussions, it was determined that only the helicopter landing site was at risk of avalanche, and that the snow course could remain open if the landing site was moved to a safer location. The Mount Templeman snow course will remain open.