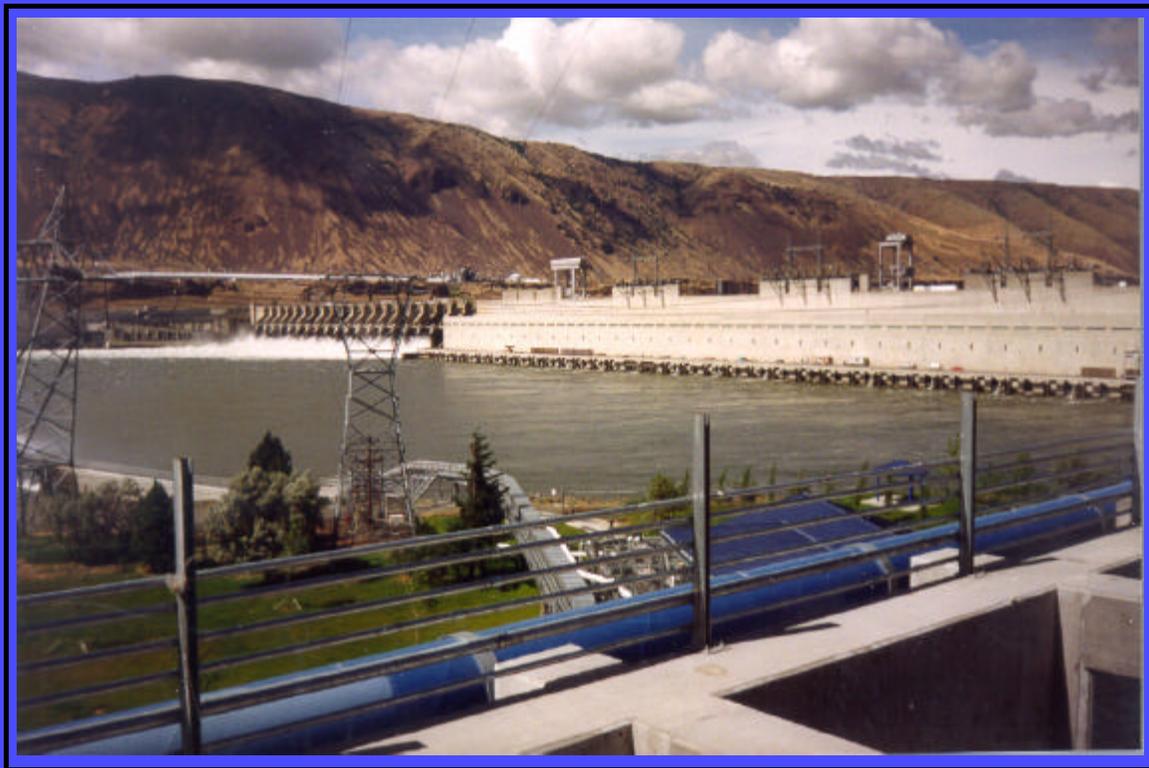


**COLUMBIA RIVER
WATER MANAGEMENT REPORT
Water Year 1999**



**Columbia River Water Management Group
APRIL 2000**

COLUMBIA RIVER WATER MANAGEMENT GROUP

I. Purpose.

The Columbia River Water Management Group will act as a committee to consider problems relating to operation and management of water control facilities. Upon review and discussion of the problems the group will make tentative recommendations for consideration of the individual agencies having primary responsibilities in these areas. Particular emphasis will be placed on coordination of river system operations including the efficient operation of the hydrometeorological system required for each operation. The basic objective of the group is to facilitate agreement among the agencies in the interest of more effective and efficient public service in the use of water resources of the Pacific Northwest.

II. Composition.

The Columbia River Water Management Group will be composed of the representatives of the States and of the Federal agencies involved in the operation and management of water control facilities or forecasting of streamflows related to water management activities in the Columbia River basin and contiguous areas in western Washington and Oregon. Each State and member agency will designate an official representative, together with an alternate, who will be delegated to set forth his agency's position on problems related to water management and river regulation. It is envisioned that these representatives will be supervisory personnel who are actively directing or allied with water management problems. Meetings would be open to representatives of other public and private organizations concerned with the activities of the group.

The Chairman of the Group will be from one of the three U.S. Federal Project operating agencies, namely, Bonneville Power Administration, Bureau of Reclamation, and the Corps of Engineers and this position will rotate annually. The Group normally will meet monthly throughout the year, or at such other intervals of time at the discretion of the Chairman. The permanent secretary will be provided by the Corps of Engineers, or as mutually agreed among the three Federal operating agencies.

III. Functions.

1. Coordinate seasonal program for system and project operations and the resolution of operational problems.
2. Prepare an annual report of significant water management events and such special reports as warranted.
3. Coordinate compilation of project operation data and water-use requirements, both at the reservoir sites and at downstream locations, for common use by all operating agencies.
4. Coordinate and perform as required the development of seasonal runoff forecasting procedures for Columbia River and tributaries, and coordinate the use of such forecasts by operating agencies.
5. Explore adequacy and propriety of short and medium range streamflow forecasts, and coordinate the use of such forecasts by operating agencies.
6. Coordinate the maintenance and expansion of the existing cooperative hydrometeorological reporting network for the Columbia River basin, including automation of reporting, communication requirements, and data bank facilities required for project operation.
7. Such other functions as are mutually agreeable among the operating agencies.

PREFACE

There are several things the editorial staff feels will help the readers understand this report. First, the material in this report was prepared by many Federal and State agencies as well as other non-governmental organizations. These contributions were of varying sizes and subjects, and were edited only to have a consistent format, thus maintaining the original author's style and intent. They also contain the numeric values calculated at their agency, which in some cases may differ slightly from those of other agencies due to calculation procedures. Minor differences were not resolved.

Second, there is a difference in spelling the names of some of the rivers, depending upon the spelling preference in the country. The proper spelling are consistent with the location being discussed. Example of these differences include:

<u>United States</u>	<u>Canada</u>
Kootenai River	Kootenay River
Okanogan River	Okanagan River
Pend Oreille River	Pend d'Oreille River

Third, is the inclusion of equivalent metric units. The inclusion of metric values is limited to the introduction and historical portions of this report with the one exception: water quality data, including water temperatures, which is measured and reported in metric units. Regarding the other hydrologic and meteorologic data, the agencies that collect and distribute these data do so in English units, *i.e.*, feet, inches, acre-feet, degrees Fahrenheit, etc, and are published as such in this report. Standard SI unit conversions are used in this report.

Fourth, all pool, reservoir, and lake surface levels are expressed in elevation, *i.e.*, feet above mean sea level. Streamgage heights, on the other hand, are expressed in feet above a datum specific to each individual gage.

Unless otherwise noted, a standard 30-year period (1961-90) is used to compute means for hydrologic data. (In Canada this is computed on a calendar year basis whereas in the United States a water year period is used.) These mathematical means will be referred to as "normals" with arithmetic means of other time periods referred to as "averages." Except for temperatures all departures from normals are expressed in percent of the normal value.

Finally, this is a report on water management activities that pertain to the operation of dams and reservoirs. Other water-related activities, for example, dredging of coastal harbors and their associated, water quality studies, as well as adjudication of groundwater rights, are not project operations activities and, therefore, are not included in this report.

Copies of some of the back issues of this report, dating back to 1971, are still available. Copies may be obtained by contacting the Secretary to the Columbia River Water Management Group listed inside the back cover of this report. As time permits these publications will be added to the CRWGM web site.

This report contains information submitted by representatives of the state and Federal agencies belonging to the Columbia River Water Management Group and was edited and published by the US Army Corps of Engineers, Northwestern Division-North Pacific Region, Water Management Division. Peter Brooks, Chief, Hydrologic Engineering Branch, gave overall guidance for this report format and content. The editor, Roger Ross, coordinated the compiling, editing, and preparing of this report. Rae Lyn Jones, did data entry and word processing, Debra Peterson did the web site work, and Richard Delaney, the computer graphics.

Special appreciation goes to Cheryl Woodall who were always ready with a camera and whose photographs appear in this report.

- Cover photograph of John Day Dam on the Columbia River. In the foreground is part of the new fish bypass system built to aid in the passage of downstream migrating fish.

"Thank you" also goes to the participating agencies whose staffs contributed articles for this report.