V. COLUMBIA RIVER WATER MANAGEMENT GROUP

A. MEETINGS

The Columbia River Water Management Group met every month, except August. At each meeting, agency representatives reported briefly on various events which occurred during the preceding month in their respective areas of water management interest: weather and flood summaries and runoff forecasts by the NWS-River Forecast Center; streamflow by the US Geological Survey; snow accumulation/melt by the US Natural Resources Conservation Service; energy usage and outlook by the Bonneville Power Administration; water supply in irrigation reservoirs by the Bureau of Reclamation; flood control operations and reservoir regulation by Reclamation and the Corps of Engineers; water quality by the Corps, Reclamation, and other agencies; fisheries by the Corps, National Marine Fisheries Service and other agencies; project licensing by the Federal Energy Regulatory Commission; state activities by the member states; and additional comments by other organizations present. The Hydromet Data, Water Quality, and Forecast Committees, and the Depletions Task Force, also reported on their water management activities.

1. Meeting Summary

The following are highlights of significant items discussed or reported at the CRWMG meetings, not discussed elsewhere in this report.

! The Corps announced that they were developing a replacement for the Columbia Basin Telecommunication (CBT) system that will be an "E-mail" type and is scheduled to be installed by the end of September 1998.

! A new set of Brownlee flood control rule curves was developed by the Corps, in consultation with Idaho Power Company, to eliminate dramatic changes in flood control storage requirements even for small changes in the runoff volume forecasts. The curves were sent to Idaho Power Company for their review.

! After discussions extending over many months it was the Group's consensus that the "normal" period for hydrologic data would remain at a 30-year interval and that after water year 2000 the tables would be updated for the 30-year period ending with water year 2000. This would be in concert with the practices of the National Weather Service (NWS) and the World Meteorological Organization (WMO). Tests of precipitation data for 30- (1961-90) and 40-year (1956-1995) periods done with the Western Climatological Center data base, showed little change in data statistics. The dry years of the 1930s and 1940s must be included before significant changes are seen in long term averages.

! The Western Governors Conference is concerned about the El Niño possible causing a drought during the summer of 1998 and were developing plans of action for such an event.

! The CRWMG minutes and agenda began publication on the Corps' website in January 1998. Hard copies will no longer be mail, although members and interested parties were notified in advance either by announcement in the minutes, by mail, or by e-mail.

! The River Forecast Center announced that their publication of **Water Supply Outlook, Columbia River and Pacific Coast Basins** would be published on their website beginning in October 1998.

! The NRCS is looking at possible SNOTEL data sites in the Dungeness and Elwha basins on the north side of the Olympic Peninsula.

! Many power projects are coming due for re-licensing in the next few years and consideration will be given to their removal. Elwha and Condit dams are considered possibilities to loose their licenses.

! Data collection agencies are expanding their use of their websites to distribute their data.

! In May, Washington state declared Okanogan River at Zosel Dam a disaster area because it has less than a 75% of normal water supply this year.

2. Lower Columbia Projects and Hanford (WNP2) Tour

The purpose of visiting these dams was to better understand the efforts being made to increase the efficiency of passing juvenile salmon past the dams and how these efforts affect other system purposes. The purpose of the Group's visit to WNP2 was to better understand operating procedures of the nuclear plant and how it integrates with the hydropower generation of the Columbia River system.

Bonneville Dam. At Bonneville Powerhouse 2 a new $62 million juvenile salmon bypass system in being installed which consists of drilling a four-foot hole through the dam into the fish passageway, installing a buried two-mile long, a four-foot in diameter flume that is made of high density poly pipe, a juvenile monitoring facility at the end of the pipe, and a two level outfall into the river. This flume is designed to reduce the rapid pressure changes, high velocities, and turbulence associated with other means of passing the dam that disorient the juveniles and make them easy prey for predator birds and other fish. Dennis Schwartz and Dwight Gill, fisheries biologists at the project, said that the pipe will have slope of .001, a capacity of 30 cfs gravity flow, and that the smolts will take 35 minutes to traverse the pipe. Provisions are being made for a similar system to be installed at the first powerhouse and tie into the bypass pipe above the monitoring facility. The outfall will deposit the juveniles in faster moving water that will make it more difficult for birds and squawfish to catch them. The pipe is constructed of 60-foot sections that are heat-joined to make a smooth, non-abrasive joint.

At the first powerhouse two slot, four-unit prototype surface bypass collectors will be tested this year. The fish entrance will have adjustable slots: one is five feet wide, the other 20 ft wide, to compare the fish behavior with the two configurations. "Fish friendlier" turbines with minimum gap runners between the turbine blades and their hub, are also being installed this year. These improvements are expected to raise survival of juvenile chinook salmon from the current level of 88% to approximately 95%.

There are over 200 researchers from many agencies and organizations working of various research studies at the Bonneville Project.

The Dalles AVM. Measuring the discharge from The Dalles Dam presents a challenge in that the high velocities and flat slope caused by the Bonneville Dam pool render the traditional means of measurement, staff gage with stage discharge curve or a set of slope gages, ineffective. An Acoustic Velocity Meter (AVM) and a pressure sensor connected to a nitrogen pressure conoflow system (commonly called a bubble gage) are connected to provide accurate reading of the river discharge below the dam. The AVM (the new model is now called an Ultrasonic Velocity Meter or UVM) transmits a 200 kHz acoustic signal diagonally across the river to a second electronic unit which detects the signal and transmits another signal back to the initial transmitter/receiver. Special electronics measures the difference in transmission time between the two signals (the Doppler effect) which is proportional to the velocity, and discharge, of the river. A 1700-ft long cable connects the two transmitter/-receivers. Stage and velocity data are recorded every 30 minutes.

The Dalles Dam. At The Dalles Dam the ice/trash sluiceway currently passes 43% of the downstream migrating salmon while consuming only 3% (3500 cfs) of the water past the project. Studies are underway to relocate the sluiceway outfall from the present site adjacent to the powerhouse to a site downstream with fewer undesirable currents caused by the cross-channel discharge from the powerhouse. Other studies are underway to keep more of the juveniles surface-oriented to take advantage of the sluiceway. The juvenile bypass system currently in use for the remainder of the juveniles requires the fish to sound 70 ft, which they prefer not to do, to be guided by the fish screens into the current bypass channel. This diving subjects them to high pressures and velocities which are detrimental to their downstream passage. A surface-bypass system that would eliminate these hazards and direct the juveniles into the ice/trash sluiceway is being studied. Improvements on the fish ladders are also being considered.

John Day Dam. At John Day Dam a new smolt monitoring and bypass system is in operation. The

downstream migrants that approach the powerhouse are now directed into a 1200-foot long elevated chute and travel at speeds of 4-5 feet per second. Near the end of the flume they pass a PIT (Passive Integrated Transponder) tag detector which reads the tag, which contains information on the juveniles hatching, tagging site, and condition at the time of tagging, and are directed either into a research facility or back into the river below the dam. These tags can also be read on returning adults to help study the survival and return rates of hatchery and wild fish. With the completion of this facility tagging and monitoring of fish at five of the eight dams on the lower Columbia and Snake rivers. From the walkway along side the flume numerous shad were observed resting in the pools of the fish ladders.

Washington Public Power Supply System's Plant 2 (WNP2). WNP2 is one of four power plants owned by WPPSS; the other three are Centralia coal plant in western Washington, Boardman coal plant in eastern Oregon, and Colstrip coal plants in eastern Montana. The Plant has a nameplate rating of 1154 MW of electric power which compares to 1080 MW at Bonneville Dam, 986 MW at McNary Dam, and 810 MW at each of Lower Monumental, Little Goose, and Lower Granite dams on the lower Snake River. Six mechanically driven cooling towers dissipate residual heat from the cooling system water. Unlike the natural draft used in tall cooling towers at other thermal plants, the dry air of the desert prevents the development of a natural draft, necessitating a fan-driven cooling towers. Five crews rotate through the control room: one crew is in training and retraining, one on vacation, and three on work rotation. The steam turbine turns at 1800 rpm as compared to 3600 rpm at the Clark Public Utility turbine rate of 3600 rpm, and Bonneville Dam turbines at approximately 76 rpm. WNP2 has an energy in-energy out efficiency of about 35% to produce electric power at 20.8 mils/KWh as compared to 54% efficiency at about 23 mils/KWh at the Clark PU natural gas fired steam turbine, and 95% efficiency at about 10 mils/KWh at the Corps' hydroelectric plants.

Several items were notable at WNP2. First, was the security, not only to get into the facility but also to get to the various components within the facility. Second, was the use of airlocks and positive and negative air pressures, depending upon location, to eliminate or contain any contaminated air. The third was the great attention to detail and caution used in the control room to bring the plant back on line after refueling.

3. Hydromet Data Committee

The Hydromet Data Committee (HDC) is a standing committee of the Columbia River Water Management Group that handles matters pertaining to hydrometeorological data. The work of this committee is directed mainly toward the coordination and development of the automated Columbia River Operational Hydromet Management System (CROHMS). To date, the major emphasis has been getting data into the CROHMS data bank facility and in the development of viewer-oriented data files for users of CROHMS data. Although emphasis will continue on entering data into the CROHMS data bank facility, a new emphasis is being applied to data transfers between computers, primarily in computer retrieval of data from the CROHMS data bank facility.

Committee activities this year consisted of coordinating activities between the various agencies, working on a station priority listing, discussing better methods of data distribution, and how to computer generate new hydromet station maps.

4. Depletions Task Force

The Depletions Task Force did not meet this year due to other work priority.

5. Forecast Committee

The Forecast Committee did not meet this year due to other work priority.