Northwestern Division

The U.S. Army Corps of Engineers has eight division offices throughout the United States. These divisions manage Corps civil works activities accomplished by districts whose boundaries are based on river basins rather than state lines.

On April 1, 1997, the North Pacific Division and the Missouri River Division were realigned and combined to form the Northwestern Division with corporate headquarters in Portland, Oregon, and an additional office located in Omaha, Nebraska. The Northwestern Division Engineer directs all Corps of Engineers water resource activities in a 14-state area that contains about 25 percent of the nation's continental land mass.

The Northwestern Division Engineer and senior staff provide direction and guidance for five subordinate district offices located in Kansas City, Missouri; Omaha, Nebraska; Portland, Oregon; Seattle, Washington; and Walla Walla, Washington. They coordinate technical policy and budgetary issues that cross district boundaries and interact with other Federal and state agencies, congressional leaders, interest groups, and international commissions. The division office oversees management, coordination, and analysis of various division-wide programs, ensuring that processes, procedures, and activities performed by the districts result in top-quality products and services to Corps customers.

Technical Support Services

Water Management Division—Columbia Basin

The Water Management Division is responsible for managing the system of Corps-managed reservoirs in the greater Columbia River Basin and the coastal streams in Oregon and Washington. This is accomplished through developing, coordinating, and implementing reservoir operation plans to balance the competing demands for water. Because of the interconnection with many non-Corps projects, this effort also encompasses both federal

and non-federal reservoirs in the basin owned and operated by different interests. Altogether, some 75 projects are involved. During flood control operations, the Corps is empowered, through various Congressional authorities, to operate non-Corps reservoirs in a cooperative effort with other private and public agencies.

The Columbia Basin Reservoir Control Center (RCC) in the Water Management Division in Portland, Oregon, manages the day-to-day regulation of the projects for flood control, navigation, power generation, recreation, fish and wildlife, and other purposes. Utilizing weather, streamflow, and project data, along with forecasts of future streamflow and present system requirements, RCC develops regulation strategies for the system and issues operating instructions to the dams. Close coordination with agencies and individuals affected by any operation is important to ensure the best interests of the public are being served. RCC also coordinates with Bonneville Power Administration to request releases from the Canadian reservoirs under the terms of the Columbia River Treaty, discussed later in this section.

The RCC is one of three main branches within the Water Management Division. The other two branches (the Hydrologic Engineering Branch (HEB) and the Power Branch (PWR) (specialize in hydropower planning, hydropower economics, flood control, water quality, and river forecasting. They prepare studies that establish reservoir operating plans and criteria for hydropower and flood control, and make analyses to address hydropower impacts of operational scenarios developed to increase fishery survival. As with the day-to-day operations, extensive coordination is also required for long-term hydropower planning. This coordination affects the northwest electrical utility industry, environmental agencies, and other water resource agencies, often through established regional coordinating entities such as the Northwest Power Pool, the Pacific Northwest Coordination Agreement, the Columbia River Treaty, and the Columbia River Water Management Group.

Another important Water Management Division function performed by the RCC is chairing the Technical Management Team (TMT), an adaptive management inter-agency group charged with implementing Federal Columbia River Power System operations to assist salmon migration. The TMT is composed of federal fish managers from the National Marine Fisheries Service, U.S. Fish and Wildlife Service, and the states of Oregon, Washington, Idaho, Alaska, and Montana; and representatives of the Bureau of Reclamation, Bonneville Power Administration, the Corps, and the 13 sovereign Indian tribes. It meets at least weekly during the migration season and provides a forum for the federal action agencies to receive and discuss recommendations from federal, state, and tribal fishery interests.

Still another critical mission occurs during periods of high runoff, when the Water Management Division, working cooperatively with other federal, private, and Canadian agencies, ensures that flood control criteria are met. The Corps also works with Bonneville Power Administration to manage the system to optimize production of hydroelectric power for the region and, when possible, for export to other regions. During low runoff, Water Management Division's work is no less critical, since a careful balancing of all water uses is needed to minimize adverse impacts associated with drought conditions.

Regional Issues

Columbia River Treaty with Canada

The Columbia River Basin spans the boundary between the United States and Canada. To address jurisdictional and operating problems and promote regional growth, the United States and Canada signed the Columbia River Treaty in 1961, which was ratified three years later. The Treaty provided for the construction of three dams in Canada -Mica, Hugh Keenleyside, and Duncan— and one in the United States— Libby Dam on the Kootenai River in Montana. The treaty provides that 15.5 million acre-feet of storage space be made available for power production. Of that, 8.45 million acre-feet is reserved for flood control storage in Canadian reservoirs.

The Treaty ensures Canada will operate storage features to provide downstream flood control and optimum power generation in the Basin. Libby's reservoir, Lake Koocanusa, extends 42 miles into British Columbia. Canada assumed all costs of construction and operation of that part of the reservoir in Canada. All four of the projects under the Treaty are constructed and have been in operation since 1972.

In return for constructing and operating the three Canadian projects, Canada was paid a one-time lump sum payment of $64.4 million for 50 percent of the flood damages prevented in the United States during the 60-year life of the treaty. Canada also receives half of the additional power produced downstream as a result of the added Canadian storage. The United States does

not receive any payments for downstream benefits that Canada receives from the operation of Libby Dam in Montana. The Treaty Flood Control Operating Plan document can be found at www.nwd-wc.usace.army.mil/report/colriverflood.htm.

Canada sold its share of this additional power to the United States for $254 million for a 30-year period. The Columbia Storage Power Exchange (CSPE), a non-profit U.S. corporation, was established for the purchase. Power is divided among 41 public and private utilities. Participants' shares range from 0.5 to 17.5 percent.

These power allocation agreements phase out in stages from 1998 through 2003. After 2003, the United States is obligated to deliver half of the additional power attributed to Canadian storage operations back to Canada.

The Columbia River Treaty signed with Canada addresses Canadian operational needs for flood control and power. In 1995, a dispute occurred when Libby Dam was first operated for listed species. The U.S. and Canadian entities disagreed on how to determine downstream power benefits for the years after August 2000.

The Bonneville Power Administrator and the Northwestern Division Engineer are designated by Presidential Executive Order as the U.S. Entity. The British Columbia Hydro and Power Authority acts as the Canadian Entity. Both have established operating and hydro-meteorological committees to develop and implement operating plans for Canadian storage and to collect real-time hydromet data needed to operate the system.

Northwest Power Planning Council

In December 1980, Congress passed the Pacific Northwest Electric Power Planning and Conservation Act that established the Northwest Power Planning Council. The Council is composed of two members each from Idaho, Montana, Oregon, and Washington appointed by their respective governors. The Council is charged with preparing and adopting a regional conservation and electric power plan and a fish and wildlife plan which puts fish and wildlife considerations on an equitable basis with power planning and other purposes for which hydroelectric facilities were developed.

In December 1994, the Council passed amendments to its Fish and Wildlife Plan which called upon the region to implement certain actions for Columbia and Snake River salmon. The amendments, called the Strategy for Salmon, laid out a number of actions for the Corps, including operational changes to the hydro system and physical changes to the dams. Many of these actions also appeared in a Biological Opinion issued in March 1995 by the National Marine Fisheries Service under the Endangered Species Act concerning listed Snake River salmon species.

The Corps, while considering Council plans to the greatest extent possible, has a legal mandate to fulfill Endangered Species Act requirements, with a high priority on implementing measures contained in the Biological Opinion. The Council is currently in the midst of a public process to amend its Fish and Wildlife Plan.

Fish Mitigation Program, Oregon and Washington

The Columbia, Oregon Coast, Snake, Willamette, and Rogue river basins provide habitat for anadromous salmon and steelhead. Anadromous fish hatch in freshwater rivers and tributaries, migrate to and mature in the ocean, and return to their place of origin as adults to spawn. Salmon generally spend two to five years in the ocean before returning to spawning areas.

From estimated highs in the early 1800s of eight to 16 million fish returning annually, populations of West Coast salmon and steelhead have declined sharply in the past 120 years. Chum salmon populations in the

Columbia Basin have declined to less than 1 percent of their former levels. Only about 8,000 to 12,000 wild salmon return annually to the entire Willamette Basin. Recent returns of spring-run chinook salmon to the Upper Columbia River have averaged only 5,000 naturally produced fish. Willamette River steelhead returns during 1995 were the lowest in 30 years of record keeping.

Most salmon and steelhead in the region are affected to some extent by the hydropower system. Fish destined for the Upper Snake River must pass eight hydroelectric dams operated by the Corps on the Columbia and Snake rivers. Besides interfering with fish migration, the dams create reservoirs that alter water velocities and temperature regimes, which improve conditions for predators. Major dams upriver from Corps dams on the Columbia-Snake system do not include fish passage facilities for either juvenile or adult fish.

To help adult fish returning from the ocean swim upstream to their spawning beds, fish ladders were built into each of the eight lower Snake and Columbia river dams. The ladders provide adult fish a series of graduated steps and pools, allowing the fish to scale the rise in elevation from the tailrace to the forebay of the dams. The ladders have proven effective.

Juvenile fish must pass the dams on their way downstream to the ocean. There are a number of ways for juvenile fish to pass the dams: through the spillways, through the juvenile bypass systems, in specially

designed barges, and through the turbines. The need for some way to help juvenile fish past the dams was recognized by the 1950s. Juvenile passage via screened bypass systems and fish transport programs has evolved since that time, with improvements consistently implemented as more is learned about juvenile fish behavior and requirements, and their response to various ways of passing the dams. To help the Corps continue that development, Congress, through the Energy and Water Development Appropriations Act of 1989 (PL 100-371), authorized the design, testing, and construction of new or improved juvenile fish bypass facilities for the Columbia River projects.

Despite these efforts, fish populations continued to decline in the 1980s. In response to growing concerns, the National Marine Fisheries Service (NMFS) conducted a scientific review of Pacific salmon in 1991 and concluded that the low numbers cannot be explained by ocean cycles or other natural events and that these species are at risk of extinction primarily due to human activities such as over-fishing, habitat destruction, hydropower development, hatchery practices, degraded water quality, and other causes.

Fifteen unique populations of salmon, steelhead, and sturgeon have been listed as threatened or endangered under the Endangered Species Act (ESA). An endangered species is "in danger of extinction throughout all or a significant portion of its range." A threatened species is "likely to become endangered within the foreseeable future throughout all or a significant portion of its range." In December 1991, the NMFS listed Snake River sockeye salmon as endangered; in May 1992, it listed Snake River spring/summer chinook and fall chinook salmon listed as threatened. In August 1997, NMFS listed the Upper Columbia steelhead as endangered and Snake River steelhead as threatened under ESA. Less than a year later, in March 1998, Lower Columbia steelhead were listed as threatened, and in

August 1998 Oregon Coast coho salmon were listed as threatened. In March 1999, six species were given threatened status: Lower Columbia chinook, Upper Willamette River chinook, Upper Columbia chinook, Columbia River chum, Upper Willamette steelhead, and Middle Columbia steelhead. Also in March 1999, the NMFS listed the Upper Columbia River spring-run chinook salmon as endangered. The U.S. Fish and Wildlife Service (FWS) listed the Kootenai River white sturgeon as endangered in October 1994.

Activities Resulting from the Biological Opinions

Under the ESA, no federal agency may fund, permit or carry out any activity that will jeopardize the listed species' continued existence. Where activities of state and local governments and private citizens harm listed species, the ESA requires harm to be controlled so it does not lead to extinction. The rule applies to ocean and inland areas and to any authority, agency, or private individual subject to U.S. jurisdiction. To determine whether actions will jeopardize the species, the listing agency consults with agencies whose actions could affect the listed species. These agencies present a biological assessment for managing their actions to the listing agency. If after reviewing the plan, the listing agency determines that proposed actions would jeopardize the continued existence of the listed species, the listing agency issues a biological opinion with recommended measures to avoid jeopardy for the species.

On March 2, 1995, the NMFS issued a biological opinion for operation of the federal dams on the Columbia and Snake rivers for 1995 and future years. A supplemental 1998 biological opinion by NMFS addressed newly-added steelhead listings. The biological opinions called for a variety of actions and studies for improving conditions for salmon migration throughout the Columbia and Snake River system. The Corps has since operated the system in accordance with the NMFS biological opinion.

The Corps' Columbia River Fish Mitigation Project has served to implement many of the terms of the Biological Opinion. Oversight of the salmon recovery efforts is performed by the Pacific Salmon Coordination Office of the Corps' Northwestern Division in Portland, Ore., and the fish recovery measures are carried out by the Corps' Portland and Walla Walla districts. Seattle District projects also are used for flow augmentation. The Corps, in cooperation with the Bonneville Power Administration, Bureau of Reclamation, and NMFS, plus state agencies, tribes, and public interest groups, initiated and continues to take the following actions to improve fish passage through hydroelectric projects:

1) flow augmentation (release of water from storage or headwater reservoirs to meet flow targets in the lower river for salmon and steelhead);

2) reservoir operations of headwater projects to provide for spawning, minimize rapid fluctuation in both reservoirs and unimpounded river reaches, and temperature control;

3) spill measures to send juvenile fish through the spillway rather than through the turbines;

4) transportation of juvenile salmon and steelhead from the Snake River and McNary Dam on the Columbia River for release below Bonneville Dam;

5) evaluation of modifications to existing facilities, such as fish guidance structures and turbines, to improve juvenile passage survival;

6) development of surface bypass technology, and additional fish transport and monitoring facilities;

7) studies to evaluate gas and temperature conditions in the system for potential improvements;

8) a comprehensive Lower Snake River Juvenile Salmon Migration Feasibility Study to examine alternatives for long-term configuration and operation of the lower Snake River dams (Walla Walla District), including breach (dam removal) options;

9) a Phase I study of natural river and spillway crest drawdown options for John Day Dam on the Columbia River (Portland District);

10) additional research efforts on evaluation of in-river migration versus transport of juvenile fish, study of juvenile fish survival and travel time through the reservoirs, and various aspects of fish behavior; and

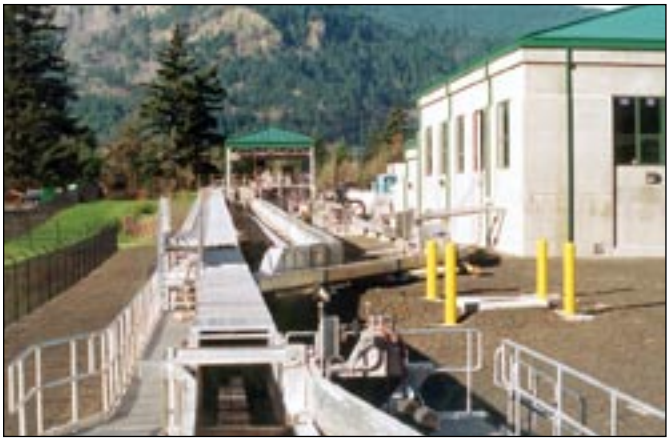
11) adult salmonid studies to evaluate potential losses through the system and methodologies to improve survival.

Recent Activities

Extended (40-foot-long) screens have been installed in the existing juvenile bypass systems at Lower Granite and Little Goose dams on the lower Snake River and at McNary Dam on the Lower Columbia. These screens to increase the percentage of juvenile fish guided away from the turbine intakes and into the bypass channels. Testing of extended screens continued at the John Day Dam. Extended screens may replace existing 20-foot screens in the existing juvenile bypass system there. Passive integrated transponder (PIT) tag monitor-

ing facilities were completed at John Day Dam. At Bonneville Dam's second powerhouse, the existing juvenile bypass system was improved, a smolt monitoring and evaluation facility constructed, and a juvenile outfall two miles downriver from the powerhouse completed.

Drawdown of the John Day pool to minimum operating level (minimum operating pool [MOP) during the juvenile fish migration season was studied in the early 1990s. The Corps' conclusion was that drawdown to MOP would not be an effective way to increase juvenile fish survival. Study of a spillway crest level drawdown



at John Day was requested in the 1995 biological opinion. In 1998, Congress directed the Corps to conduct a Phase I study of two drawdown levels: spillway crest and natural river. The John Day Drawdown Phase I Study was initiated in 1999, with its goal a recommendation to Congress to either do further study (Phase II), or to take further study of John Day drawdown off the regional agenda. The final phase I report is expected to go to Congress in late 2000.

The Walla Walla District's multi-year Lower Snake Study examined the biological, social, economic, and engineering impacts of the various options proposed for breaching or changing operations of the dams. The study will identify a preferred alternative for moving juvenile fish past the four Lower Snake dams in a final environmental impact statement expected in 2001.

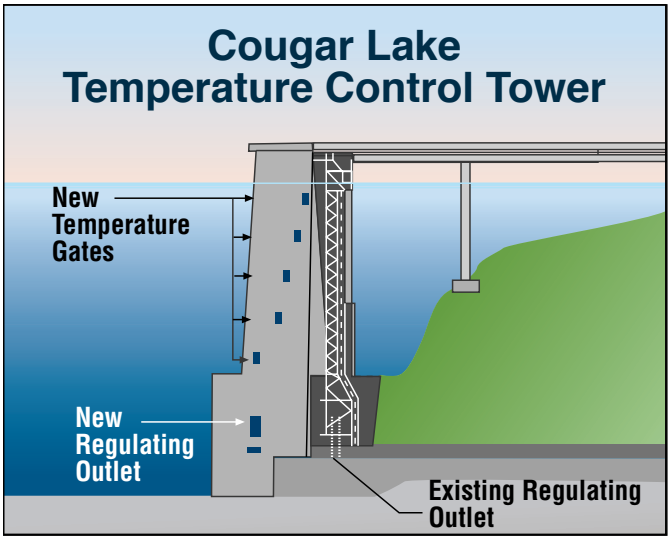
Since 1995, surface bypass prototype systems, which intercept juvenile fish within the upper portion of the water column where they typically migrate, were installed and tested at Ice Harbor, Lower Granite, Bonneville, and The Dalles dams. In 1999, The Dalles Dam sluiceway and spillway juvenile fish survival studies continued in conjunction with the development of future bypass system alternatives. Design work for relocating the sluiceway outfalls and for providing emergency auxiliary water for adult fishways continues.

Beginning in the mid 1990s, federal funding for fish mitigation projects increased. For example, the 1999 fiscal year budget included about $80 million to fund the Columbia River Fish Mitigation Project.

The Corps also is working to improve fish runs in the middle fork of the Willamette River and will design water temperature control structures to modify the McKenzie River water temperatures to benefit migratory and resident fish. In 2000, the Corps plans to begin construction to add temperature control at Cougar Dam.

That work will take about four years. When it is completed, similar work will be done at Blue River Dam.

To assist in river flow monitoring, the Corps formed a Technical Management Team, with representatives from the U.S. Fish and Wildlife Service (FWS), NMFS, Bureau of Reclamation, Bonneville Power Administration, the Corps, the Northwest Power Planning Council, and the states of Oregon, Washington, and Idaho. The team closely monitors river levels and fish migration times and recommends adjustments to operations to improve instream flow conditions when necessary.



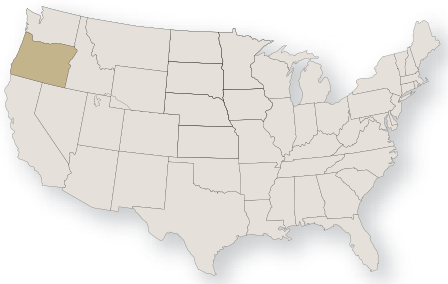
The 1998 addendum biological opinion noted that Caspian terns nesting on Rice Island at the mouth of the Columbia River were jeopardizing salmon by eating up to 10 percent of the juveniles as they passed the area. Rice Island is an artificial land mass made up of material dredged from the Columbia River federal navigation

channel by the Corps. To address the situation, the Corps worked with a multi-agency team including NMFS and the FWS to devise ways to encourage the birds to move to East Sand Island, one of their old nesting sites. About 1,400 pairs of Caspian terns were successfully relocated during the first year's effort. Researchers estimate the terns consumed about 11.7 million salmon and steelhead during 1999. This number, while still large, was significantly down from an estimated high of more than 20 million. The long-term aim is to relocate the entire colony of 20,000 birds.

Publications Available

More information on fish recovery measures is available at the Corps' website: www.nwd.usace.army.mil/ps. Because of regional interest in actions to aid the migration of salmon and steelhead past the dams operated by the Corps, archived issues of Salmon Passage Notes, a Corps' publication, are available on the Corps' website. Other excellent sources of information can be found at www.nwp.usace.army.mil/PM/E/ and links, and at the interagency website: www.bpa.gov/federalcaucus.


LOWER COLUMBIA RIVER BASIN
WASHINGTON
Columbia R.
Columbia R.
Pendleton
26
Portland
The Dalles
John Day R.
La Grande
5
26
97
Deschutes R.
Willamette R.
Salem
WILLAMETTE BASIN
Portland District
MIDDLE COLUMBIA RIVER BASIN
Portland District
Snake R.
COAST BASIN
Eugene
Bend
SNAKE RIVER BASIN
Walla Walla District
Burns
IDAHO
5
97
OREGON INTERIOR BASIN
Portland District
KLAMATH RIVER BASIN
Rogue R.
Grants Pass
Medford
Applegate R.
Klamath Falls
OREGON
CALIFORNIA
GOOSE LAKE BASIN
Sacramento District
NEVADA

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