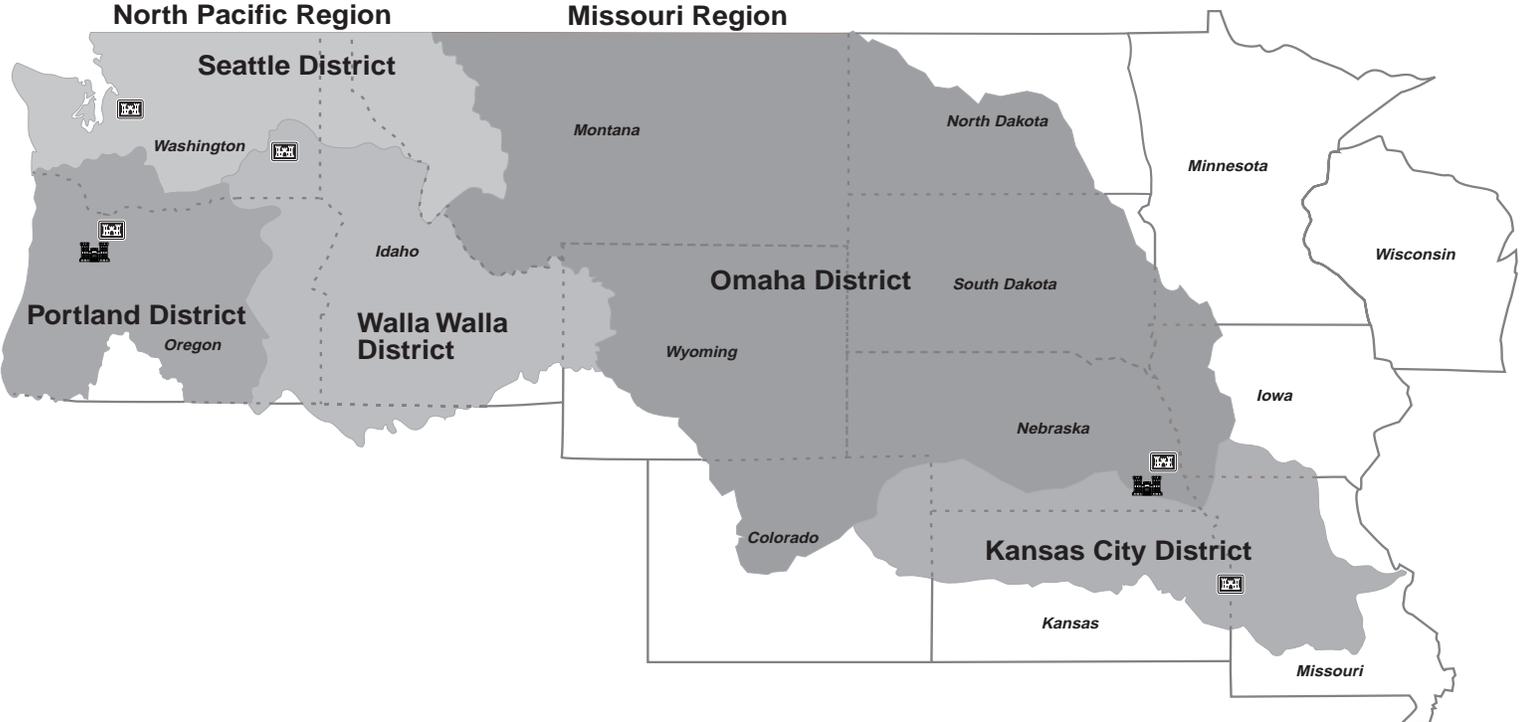


# Northwestern Division



Legend	
	Division Headquarters
	District Headquarters
	Civil Works Boundaries
	Military Boundaries





## Northwestern Division

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

On April 1, 1997, the North Pacific Division and the Missouri River Division were realigned and combined to form the Northwestern Division. The former headquarters

offices of both divisions became regional headquarters through which the Northwestern Division Engineer directs all Corps of Engineers water resource activities in an area that comprises more than one-quarter of the nation's land mass.

The two regional offices located in Portland, Oregon, and Omaha, Nebraska, 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 regional offices oversee 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

The Water Management Division is responsible for managing the system of Corps reservoirs in the 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 Reservoir Control Center (RCC) in the Water Management Division 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 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, and make analyses to address concerns such as fishery survival and mitigation. As with the day-to-day operations, extensive coordination is also required for long-term planning. This includes 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 function is chairing the In-Season Technical Management Team

(TMT), an adaptive management approach to implementing special federal Columbia/Snake river system operations during the juvenile salmon out-migration. The TMT is composed of federal managers from the National Marine Fisheries Service, the Bureau of Reclamation, Bonneville Power Administration, U.S. Fish and Wildlife Service, and the Corps, as well as representatives from the states of Oregon, Washington, Idaho, Alaska, and Montana, and 13 sovereign Indian tribes. It meets at least weekly during the migration season and provides a forum for the federal action agencies to receive 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 Corps responsibilities for flood control are met. The Corps also works with Bonneville Power Administration to manage the system to maximize production of hydroelectric power for the region and, when possible, for export to other regions. When low runoff occurs, Water Management Division's work is often more 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 pact 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 allocated for power production, of which 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.

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 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 which 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 extent possible, has a legal mandate to fulfill Endangered Species Act requirements, and has placed higher priority on the measures contained in the Biological Opinion.

## Anadromous Fish

The Columbia River Basin provides 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 live two to three years in the ocean before returning to spawning areas.

A number of factors have contributed to the current depressed state of salmon stocks in the Columbia and Snake River Basin. Adverse effects of dams, logging, mining, cattle grazing, and pollution on spawning and rearing habitat; increased competition for food and spread of disease from hatchery stocks; dams that impede the migration of salmon from their upriver rearing areas to the ocean and as they return as adults to spawn; overharvesting

— historically in the 1800s and since then by incidental ocean take and sport and commercial fishery in the basin; poor ocean conditions that have also brought coastal salmon and steelhead stocks to similar levels of decline; all of these have combined to reduce survival chances of the wild salmon stocks.

Despite regional efforts to stop declines in numbers of salmon and steelhead in the Columbia/Snake River Basin, three species of salmon have been listed under the Endangered Species Act (ESA). Effective December 20, 1991, the National Marine Fisheries Service (NMFS) listed Snake River sockeye salmon as endangered; effective May 22, 1992, Snake River spring/summer and fall chinook salmon were listed as threatened species. In an August 1994 emergency action, NMFS changed the status of the two listed chinook species to endangered. On August 11, 1997, NMFS listed the Upper Columbia steelhead as endangered and Snake River steelhead as threatened under ESA.

The Corps' eight hydroelectric dams on the Columbia and Snake rivers are a major factor in the decline in numbers of wild Snake River salmon stocks. Besides physically impeding fish migration, the dams create reservoirs that alter water velocities and temperatures, interfering with juvenile migration patterns and improving conditions for predators.

Adult fish ladders have been built into each of the eight lower Snake and Columbia river dams. These allow adult fish to follow a series of graduated steps and pools to scale the 100-foot rise in elevation from the tailrace to the forebay of the dams. The ladders have proved effective.

In the years since the dams have been in operation, many additions and improvements have been made to juvenile fish passage routes at the dams. There are a number of ways for juvenile fish to pass the dams: over the spillways, through the juvenile bypass systems, in specially designed barges, and through the turbines.



## Activities for Salmon

Under the ESA, the Corps prepares a biological assessment of the effects on listed species of planned operation of the federal Columbia River power system. Following consultations between NMFS and the Corps, NMFS issues a biological opinion.

In its March 2, 1995, biological opinion for 1995 and future years, NMFS found that the planned operation of the federal Columbia River power system would jeopardize the continued existence of the three listed Snake River salmon species. Accordingly, the biological opinion provided reasonable and prudent alternative measures to avoid jeopardy.

On March 10, 1995, Maj. Gen. Ernest J. Harrell, Division Engineer for North Pacific Division (retired in July 1995), signed a record of decision documenting the Corps intent to implement the measures in the biological opinion.

The biological opinion called for a variety of actions and studies for improving conditions for salmon migration throughout the Columbia and Snake River system. During



the 1995 operating year, the Corps implemented operational measures such as flow augmentation, spills, juvenile fish transport, and lowered reservoir levels, as contained in the biological opinion. These operational measures continued in 1996 and 1997. A technical management team of representatives from five federal agencies (U.S. Fish & Wildlife Service, NMFS, Bureau of Reclamation, Bonneville Power Administration, and the Corps), the Northwest Power Planning Council, and the states of Oregon, Washington, and Idaho monitor river and fish conditions and recommend adjustments to operations during the migration season.

In accordance with the biological opinion, extended submerged 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 to increase the percentage of juvenile fish guided away from the turbine intakes and up through the bypass channels. Extended screen installation is planned for John Day Dam by 1999.

Construction of a conventional juvenile bypass system at Ice Harbor Dam on the lower Snake River was completed in 1996. Two more juvenile fish barges are under construction. Passive integrated transponder (PIT) tag monitoring facilities will be installed at John Day in 1997 and at Bonneville Dam by 1999.

For the long term, the NMFS biological opinion calls for evaluation and implementation of further improvements to the existing fish bypass systems, as well as study of alternative structural configurations at the dams such as reservoir drawdowns and surface bypass systems. The Corps is evaluating natural river level drawdowns of the four lower Snake River reservoirs — Lower Granite, Little Goose, Lower Monumental, and Ice Harbor. The idea behind drawdowns is to increase the velocity of the river by decreasing the cross-sectional size of the reservoirs.

Drawdown of the John Day pool to minimum operating level during the juvenile fish migration season, and study of a spillway crest level drawdown at John Day also are requested in the opinion.

Surface bypass is a relatively new technology that holds promise of more efficiently and effectively bypassing juvenile fish at the dams. Surface bypass systems would intercept the fish within the upper portion of the water column, where they normally migrate. There is a potential for reduced spill with these systems. In 1995, the Corps installed and tested several types of guidance systems for surface bypass at Ice Harbor and The Dalles dams. A prototype surface collector was tested at Lower Granite in 1996 and 1997. A more extensive test is planned for 1998.

Other studies focus on improved gas abatement during spill; refined turbine design to reduce turbulence, negative pressures, and light/sound generation; and physical barriers to guide fish.

Research efforts are continuing concurrently, including 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.

## **Publication Available**

Because of regional interest in actions to aid the migration of salmon and steelhead past the dams operated by the Corps, a publication, Salmon Passage Notes, is

published several times a year. Individuals who wish to be on the mailing list should write to Editor, Salmon Passage Notes, Northwestern Division, U.S. Army Corps of Engineers, P.O. Box 2870, Portland, OR 97208-2870. A limited number of back issues is available.