

A Program With a Future

NEZ PERCE PROJECT



Will Provide the Northwest

POWER *for Growth*

FLOOD CONTROL *for Security*

RECREATION *for Pleasure*

In Complete Harmony With

CONSERVATION

of Fish Resources

This brochure was prepared by Washington Public Power Supply System and its affiliated utilities to promote better understanding of the Nez Perce Project with special emphasis on the facilities proposed to safely pass migratory fish through the middle reach of the Snake River. For additional details, please address inquiries to:

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

130 Vista Way

Kennewick, Washington

OBJECTIVES OF THE NEZ PERCE PROGRAM

POWER FOR GROWTH: Nez Perce Project will put the full power potential of the Middle Snake and Lower Salmon Rivers to work for the maximum economic benefit of the region, as soon as feasible and at the lowest possible cost. This will mean new industries and more jobs for the Pacific Northwest.

FLOOD CONTROL FOR SECURITY: Nez Perce Project will be constructed and operated for maximum flood control benefits as determined by the U. S. Corps of Engineers. This will protect the lower reaches of the Columbia River System by helping to prevent a recurrence of such disasters as the Vanport flood. It also will contribute to the utilization of the Snake River for commercial shipping and pleasure boating below the Salmon River especially above navigation dams now planned.

RECREATION FOR PLEASURE: The Nez Perce Plan of development will include facilities for boating, camping, picnicking, sports fishing, hunting and spectacular sightseeing. This will mean an estimated influx of 400,000 tourists annually as compared to 4,000 visitors who take advantage of this area for recreation purposes now.

CONSERVATION OF FISH RESOURCES: Nez Perce Project will include facilities for the safe passage of migratory fish runs of the Snake and Salmon Rivers. Washington Public Power Supply System is fully aware of its responsibility to preserve this valuable natural resource and to this end already has provided the Federal Power Commission with detailed plans and cost estimates for fish passage facilities in the Nez Perce Project design. Furthermore, the Supply System pledges its full cooperation to work with responsible agencies to insure efficient design, proper installation, foolproof operation and a continuing program of research and testing to improve fish passage.

GENERAL INFORMATION ON THE NEZ PERCE PROGRAM

WASHINGTON PUBLIC POWER SUPPLY SYSTEM proposes to build Nez Perce Project on the Middle Reach of the Snake River. Present membership of the Supply System consists of 16 public utility districts. Some 40 other utility systems in Oregon, Idaho and Washington are affiliated with WPPSS in support of the Nez Perce license application now pending before the Federal Power Commission.

A COMBINE of four private companies, Pacific Northwest Power Company, has applied for a license to construct Mountain Sheep Project 2½ miles upstream from Nez Perce. Only one of the two projects can be built.

NEZ PERCE will be the largest generating plant in the Western Hemisphere, surpassing Grand Coulee in size and capacity. Nez Perce will produce annually more than 2½ times the amount of electricity used by all residential consumers in New York City each year. Power will be sold at cost, without profit to the Supply System. Transmission facilities will be integrated into the present federal system.

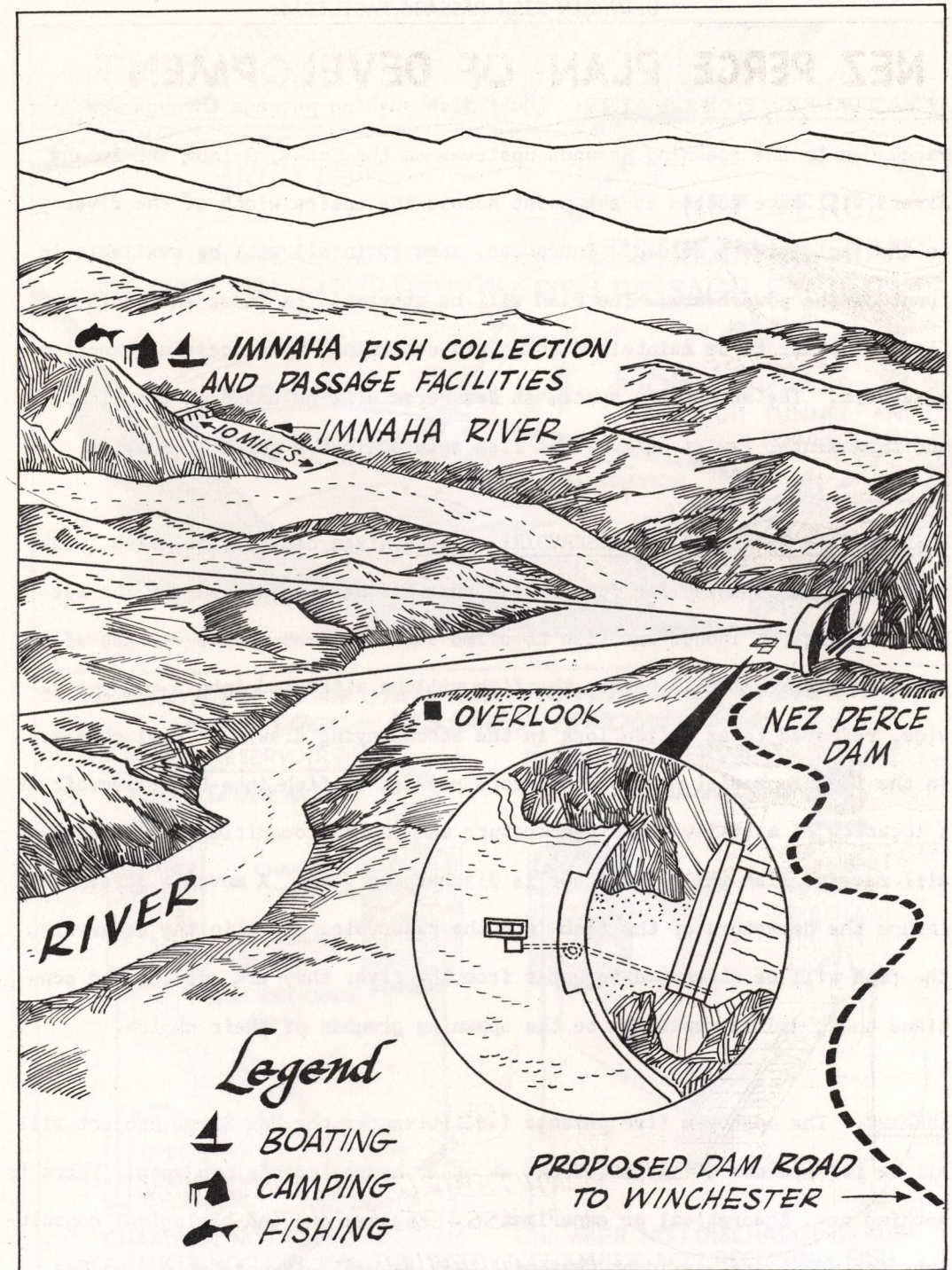
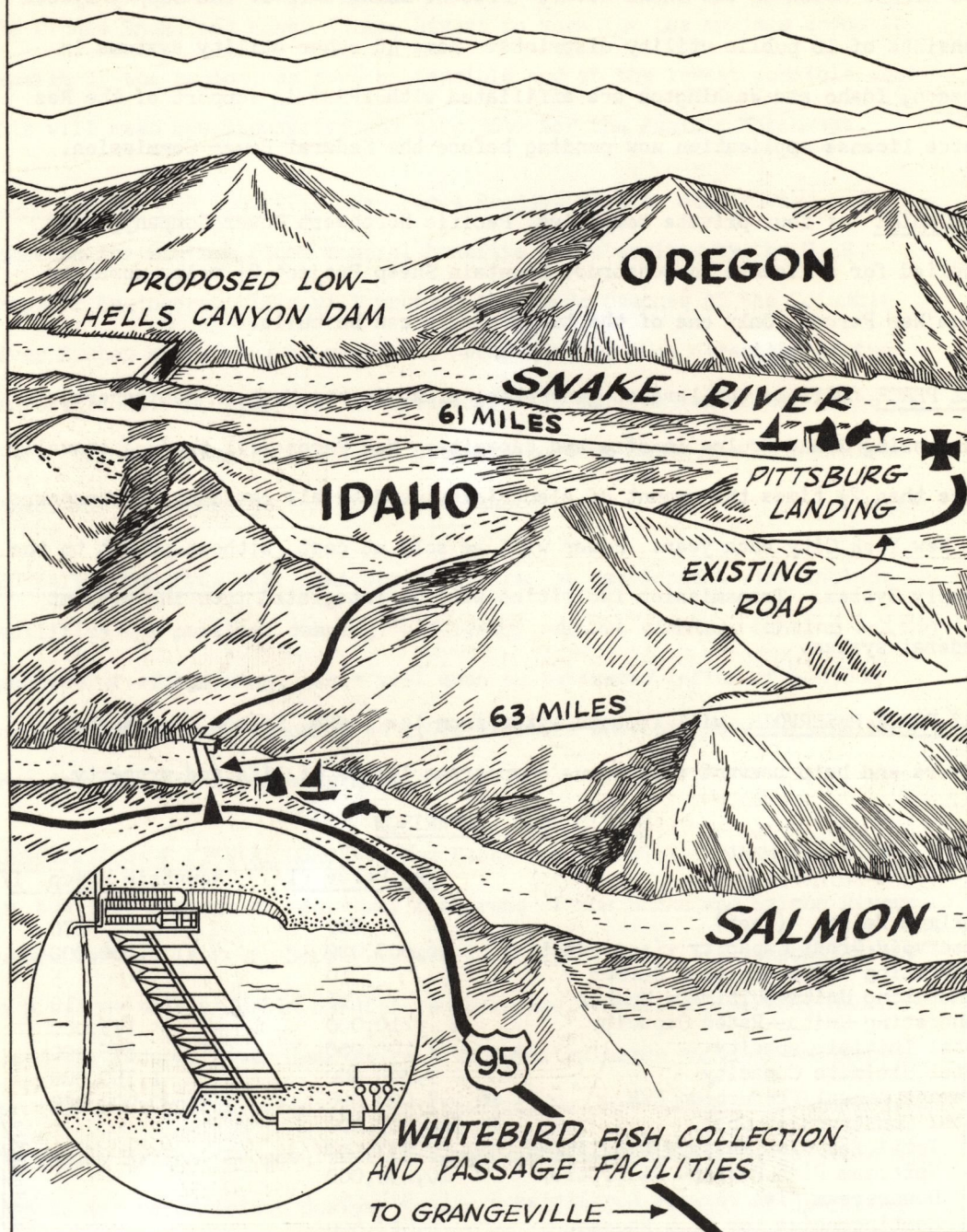
NEZ PERCE RESERVOIR will impound water from the Snake, Salmon and Imnaha Rivers and help prevent disastrous downstream losses of life and property.

STATISTICAL COMPARISON

	<u>Nez Perce 1/</u>	<u>Mountain Sheep 1/</u>
Maximum Height (feet)	700	670
Reservoir Gross Capacity (acre-feet)	6,600,000	3,600,000
Generating Units--Initial Number	10	5
Generating Units--Ultimate Number	16	10
Generating Units--Rated Capacity	210,000	175,000
Total Initial Capacity	2,100,000	875,000
Total Ultimate Capacity	3,360,000	1,750,000
Average Annual Production KWH	10,197,000,000	5,600,000,000
Total Construction Cost	\$ 348,500,000	
Total for Fish Passage Facilities	27,937,500	
Upstream Fish Passage Facilities	10,436,000	
Downstream Fish Passage Facilities	11,914,000	
Contingencies for Fish Passage	5,587,500	

1/ Data from Nez Perce and Mt. Sheep License applications.
2/ Data not available from license application.

NEZ PERCE PLAN OF DEVELOPMENT

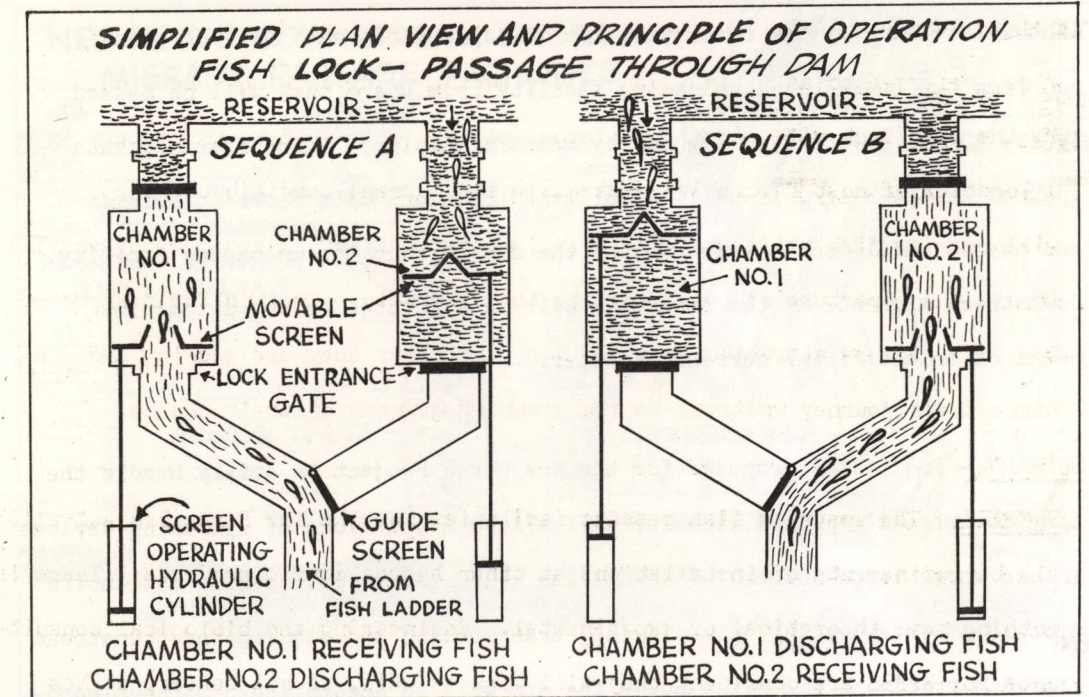
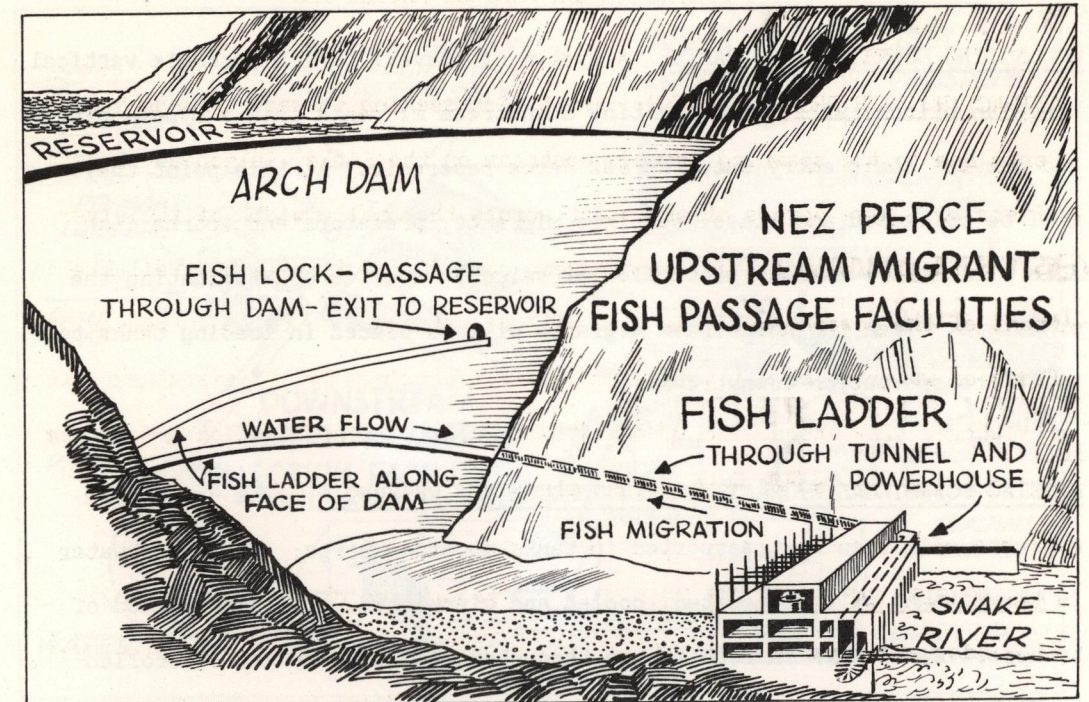


UPSTREAM FISH PASSAGE FACILITIES

ATTRACTING FISH FROM THE RIVER: Adult fish seeking passage through Nez Perce Dam to the spawning grounds upstream on the Snake, Salmon and Imnaha Rivers will have access at any point across the entire width of the river to the facilities provided. Entrances, some 20 in all, will be available in front of the powerhouse. The fish will be attracted to these entrances by flows of water to be maintained at levels determined by successful experience elsewhere. The attraction system at Nez Perce will be based on the simple and fundamental law of nature that fish swim against a current of water.

PASSING FISH SAFELY TO THE RESERVOIR: A modernized conventional fish ladder with adequate capacity for future fish runs has been specified for the Nez Perce Project to induce the fish to climb some 200 feet up the surface of the structure. At this point, the fish will be attracted into a passage device, referred to as a fish lock in the accompanying drawing. Dual chambers in the fish lock will permit continuous passage of fish into the reservoir at a location of most favorable temperature and current conditions. One chamber will receive fish while the other is discharging fish. A movable screen will insure the departure of the fish into the reservoir. Once in the reservoir, the fish will be attracted to water from the river they are seeking and continue their journey upstream to the spawning grounds of their choice.

SUMMARY: The upstream fish passage facilities for the Nez Perce Project will all be refinements of installations at other hydroelectric projects. There is nothing new, theoretical or experimental. Engineering and biological consultants for WPPSS are confident they will work as well, if not better, at Nez Perce as at other sites.

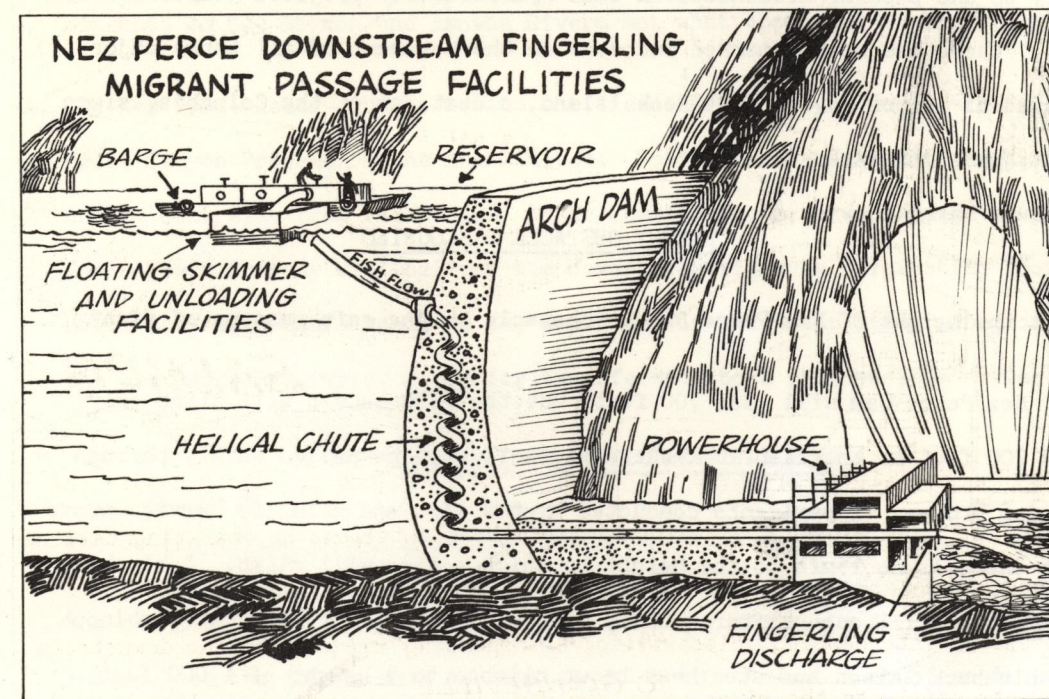
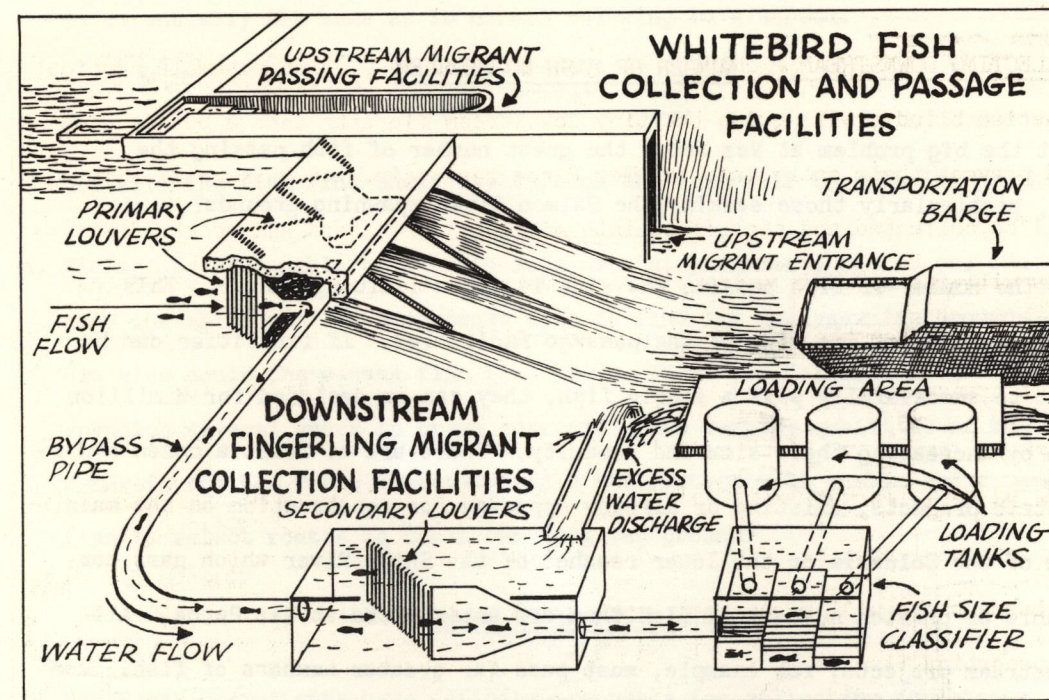


DOWNSTREAM FISH PASSAGE FACILITIES

COLLECTING DOWNSTREAM MIGRANTS: A system of louvers, which resemble vertical Venetian blinds, will guide the tiny downstream migrants into a bypass pipe and prevent their entry into the Nez Perce reservoir. At this point they will be collected and classified into migrants, predators and sports fish. This will insure maximum protection of valuable species by eliminating the predators. Then the downstream migrants will be placed in loading tanks to await transportation downstream.

PASSING DOWNSTREAM MIGRANTS SAFELY THROUGH THE RESERVOIR: The downstream migrants will then be transported in tanks aboard a barge; the river water in these tanks will be aerated, cooled and circulated. The tank method of transporting fish is in regular use throughout the country and controlled tests have shown no losses attributable to this method of transporting fish. At the lower end of the reservoir, the downstream migrants will be transferred from the tanks to an unloading facility from where they will be passed safely to the river below the dam by means of a pipe. Downstream migrants spawned in the reservoir will be collected by means of a floating skimmer and passed safely to the river below the dam through the unloading facility. Downstream migrants in the reservoir will be attracted to the skimmer by means of an artificial current of water.

SUMMARY: Facilities proposed for the Nez Perce Project to safely handle the tiny downstream migrants likewise will all be adaptations of operating devices in use where large numbers of downstream migrants are collected. The entire process of intercepting, classifying, transporting and passing the downstream migrants safely to the river below the dam will be accomplished without handling.



QUESTIONS AND ANSWERS CONCERNING NEZ PERCE FISH PASSAGE FACILITIES

NUMBER OF FISH NO PROBLEM

Q. Isn't the big problem at Nez Perce the great number of fish passing the site, particularly those seeking the Salmon River spawning grounds?

A. No. The number of fish passing the site is not a limiting factor. This merely determines the size of the passage facilities. If facilities can be built to successfully pass a single fish, they can be designed for a million fish by increasing their size and capacity. There are at least a dozen hydroelectric projects, existing or already approved for construction on the main stem of the Columbia or the lower reaches of the Snake River which pass comparable or greater numbers of fish than are anticipated at Nez Perce. All downstream projects, for example, must pass far greater numbers of fish. Contrary to the popular misconception that hydroelectric projects jeopardize fish runs, "there has been a marked increase in the movement of all three major species of Salmon moving past Rock Island, oldest dam on the Columbia, since counts were initiated in 1933."

HEIGHT OBSTACLE DISCOUNTED

Q. Isn't the height of Nez Perce Dam an obstacle to the safe passage of fish?

A. No. Nez Perce Dam will rise 700 feet, but the fish ladder will climb only some 200 feet to the fish lock where migrants will be passed safely through the dam proper. Experiments conducted by the Fish and Wildlife Service prove that there is no limit to the height to which a fish will climb. A blueback Salmon was still going after a climb of 6,000 feet. In other tests, chinook and blueback Salmon and steelhead trout climbed to a height of 1,000 feet without hesitation. Fatigue was not a factor either, and authorities concluded

ed that the energy expended by a fish in climbing a well designed ladder is essentially the same as in normal swimming in a stream.

HOMING INSTINCT CITED

Q. How will the fish find their way through the reservoir to spawning grounds?

A. Biologists are unable to explain such natural phenomena, but no one can deny the ability of an anadromous fish to find its own spawning grounds. How else could these same fish find the mouth of the Columbia River after spending several years in ocean currents? The varying qualities of the water in the Nez Perce Reservoir and other factors will enable these same fish to select routes to their own spawning grounds

SNAKE RIVER FACILITIES

Q. Nez Perce consultants have definite proposals for collecting downstream migrants on the Salmon and Imnaha Rivers, but what about the Snake River?

A. The Nez Perce Reservoir extends to the licensed but as yet unconstructed Hells Canyon Project on the Snake River. For this reason, and pending notice otherwise from the Federal Power Commission, we have assumed that Idaho Power Company will deliver the downstream migrants originating above Hells Canyon in confinement to the upper end of the Snake River prong of the Nez Perce Reservoir, ready for transference to a safe passage device.

CONSERVATION DEVELOPMENT UTILIZED

Q. Who developed the louver guidance system?

A. The downstream collection facilities proposed by engineers for Nez Perce incorporate the louver guidance system which is an adaptation of an invention by Russell Vinsonhaler, Reclamation engineer, and Daniel W. Bates,

Fish and Wildlife Service, who together with George O. Black, also of Fish and Wildlife Service, hold the patent for this device. In recognition of their achievement, they received a government incentive award of \$12,000, largest ever made to a non-military agency. Their work was acclaimed by the Department of Interior as "one of the outstanding advances in fishery conservation in 30 years."

TESTING PROGRAM PLANNED

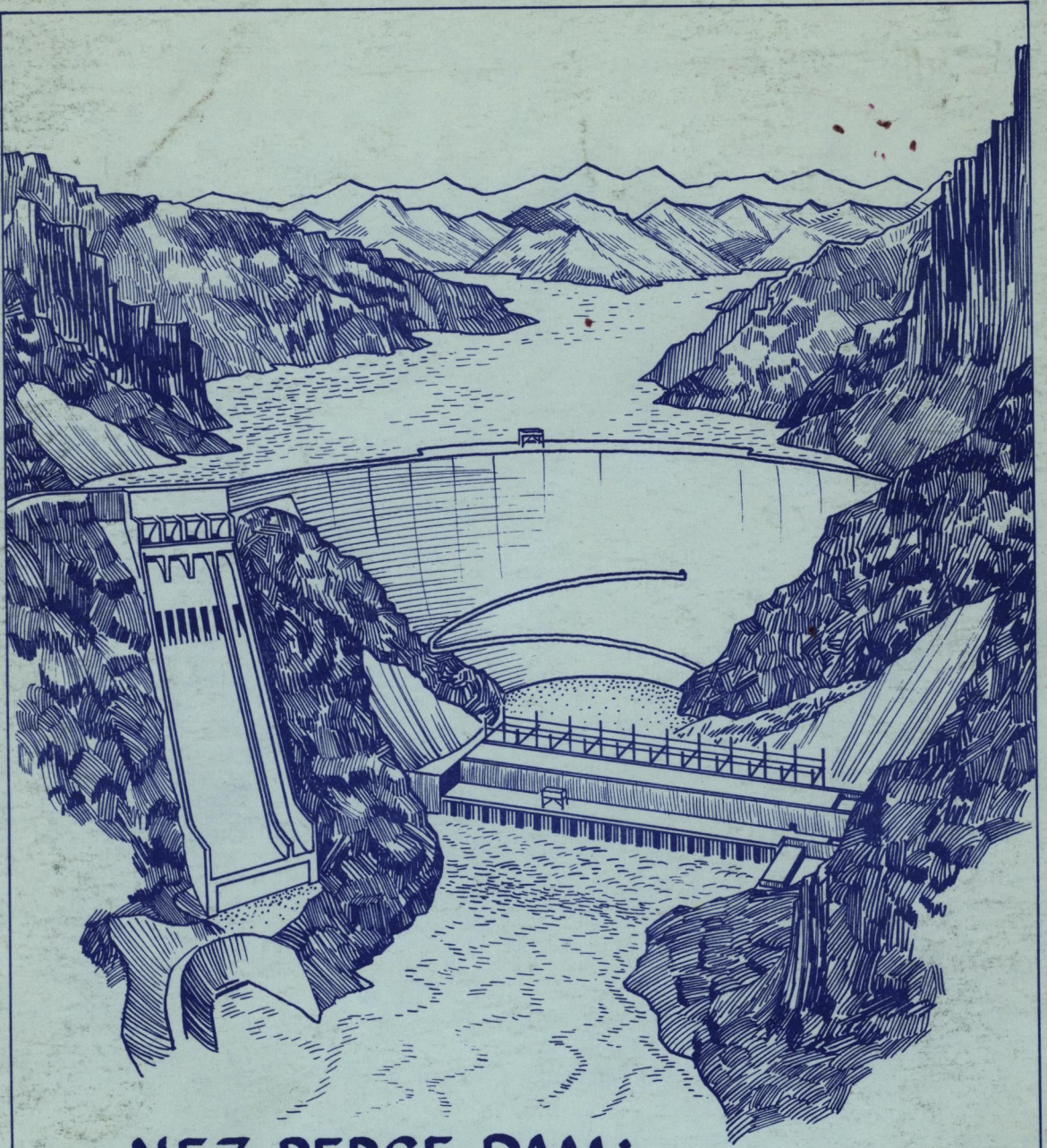
Q. How do we know that these fish passage facilities will work in this reach of the river with these particular fish?

A. These facilities will work because they are all based on existing designs and operating facilities, modified to meet conditions of the Snake and Salmon Rivers. Furthermore, a biological and engineering testing program will be undertaken to insure installation of facilities of proper size and characteristics. Present schedules will permit ample time to carry out the entire testing program.

CRITICS RECOGNIZE MERITS

Q. Why have so many representatives of commercial and sports fishing groups spoken out in opposition to Nez Perce?

A. It is our belief that they have done so without full knowledge of our proposal. In many instances where representatives for the Supply System have appeared before these groups to explain the facilities and answer questions, the merits and soundness of the proposal have been recognized. Responsible fishery authorities have stated the proposal "deserves consideration and can be the answer to the high dam fish passage problem."



NEZ PERCE DAM:

*KEY TO THE FULL DEVELOPMENT
OF THE MIDDLE SNAKE RIVER*