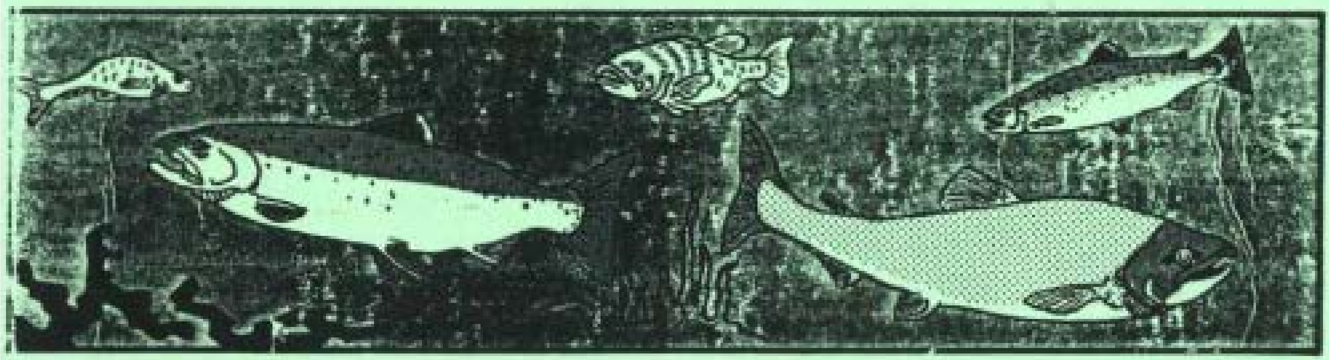
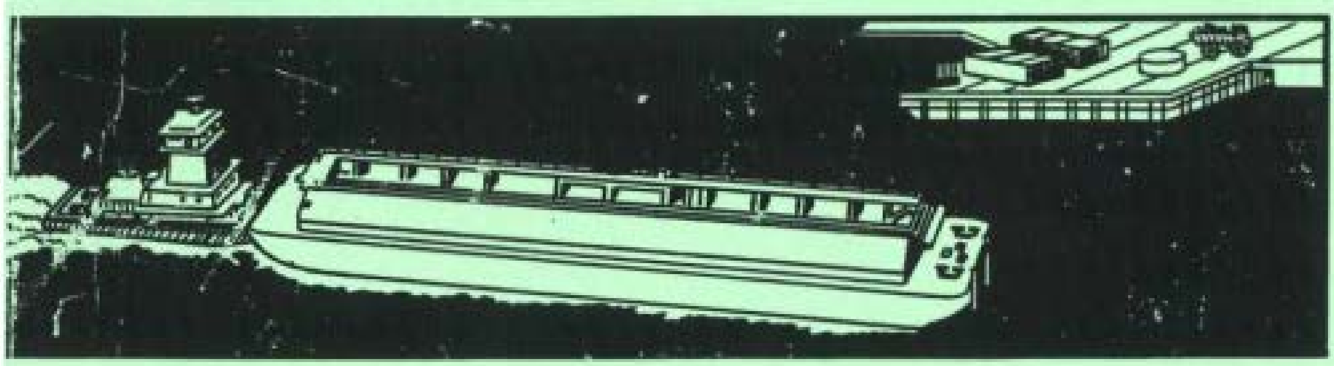
US Army Corps
of Engineers
Walla Walla District

Walla Walla District HISTORY PART III 1975-80





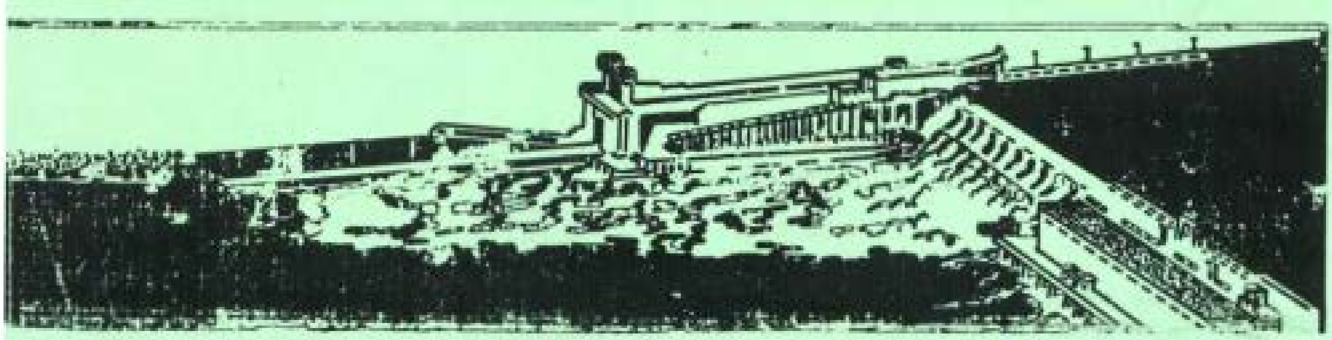


TABLE OF CONTENTS

ACKNOWLEDGMENTS

The Corps of Engineers has such varied responsibilities in diverse areas like energy production, recreation, navigation, fish and wildlife mitigation, dam safety, cultural resources, flood control, and streamflow management, that any research project concerning the Corps, even with a limited time and geographic scope, takes on enormous proportions. Any agency which has responsibility for allocating natural resources in a time of increasing environmental awareness is bound to be involved in controversial issues. We have not avoided such matters, for only by examining the complex problems can the public begin to understand the water resources policies authorized by Congress and undertaken by the Corps. As we have attempted to point out throughout this volume, the Corps is responsive to public demands. We have shown, on the one hand, where proposed projects were cancelled because of public opposition and, on the other, we have given examples of projects initiated specifically because of the desires of local citizens. Throughout the 5-year period, the District solicited public comment and based its policies upon that input. We sincerely hope that this history will help residents of the Pacific Northwest to more fully understand the Corps and its responsibilities.

This history, written by outsiders, could not have been completed without the full cooperation of the Walla Walla District. Throughout the project, the civilian and military staff assisted us in our research by pointing the way to sources, generously loaning us materials, permitting us to photocopy documents, answering our numerous questions with patience, and allowing us access to records, correspondence and photograph files, as well as unlimited use of the fine District library facilities.

Many individuals assisted us in the writing of this volume. Henry Pope, District Security Manager, was our direct contact in

Walla Walla. Henry provided us with supplies, introduced us to the people who could answer our questions, and patiently guided us through the labyrinth of buildings which make up the District headquarters. This "official" duty alone would warrant a special acknowledgment, but Henry's friendliness made us feel at home from the first day.

Virginia Allred of the Office of Counsel and William Holmes, Executive Assistant to the District Engineer, likewise welcomed us warmly and served as "guides" when Henry was out of town.

District Engineer Colonel H. J. Thayer assured us access to records and information and provided us with an insightful interview. Others who took time out from busy schedules for oral history interviews were Robert Kress, Lieutenant Colonel Edward George III, Ray Oligher, LeRoy Allen, Ronald Barrett, Willard Sivley, and Clarence Van Scotter in Walla Walla, as well as Rodger Colgan and Keith Richards at Dworshak, Michael Taylor and Bert Leonard at Granite-Goose, and James Wolcott at the Clarkston Lower Snake Resources Management Office.

Lizbeth Jones helped us find our way around the District library, undertook computer searches, and generously allowed us temporarily to remove a good portion of the library to Pullman. Maynard Hoffer searched the Records Holding Area for applicable materials, while Alice Zbinden and Judee Bates assisted us with research in the Engineering Division Files. Calvin Harbert introduced us to the District's outstanding collection of photographs and Kenneth Pomraning helped us find maps which proved to be invaluable research aids.

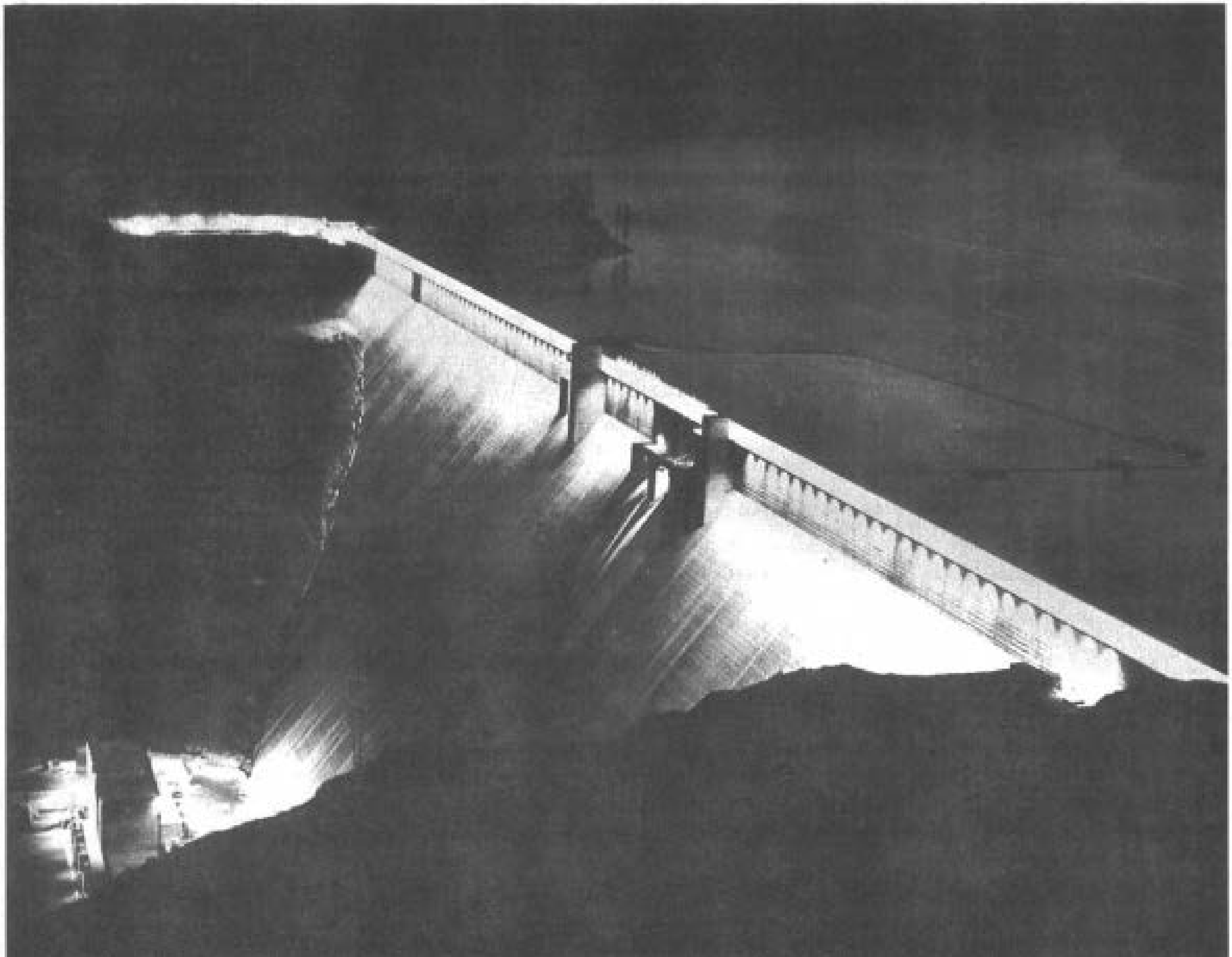
Special thanks go to O. C. "Dug" Dugger and Goldie Connell of the Public Affairs Office who not only provided us with access to news releases, clippings, and other records, but also kept us posted on District activities by mailing us copies of <u>Intercom</u> as well as appropriate releases and clippings. Robert Heins allowed us the use of an office while we were in Walla Walla and also helped to explain some complex legal cases in which the District has been involved.

Finally, we would like to thank some non-Corps personnel who greatly assisted in the project. David H. Stratton, Chairman of the History Department at Washington State University, made initial contact with the District concerning the project, recommended us for the task, and provided office space and encouragement throughout the contract. Ann Trivelpiece, librarian at the Washington State Water Research Center in Pullman, helped us search WSWCRC's outstanding collection of materials. Joe Lientz, biologist at the Dworshak National Fish Hatchery, allowed us to interview him concerning the operations at his facility.

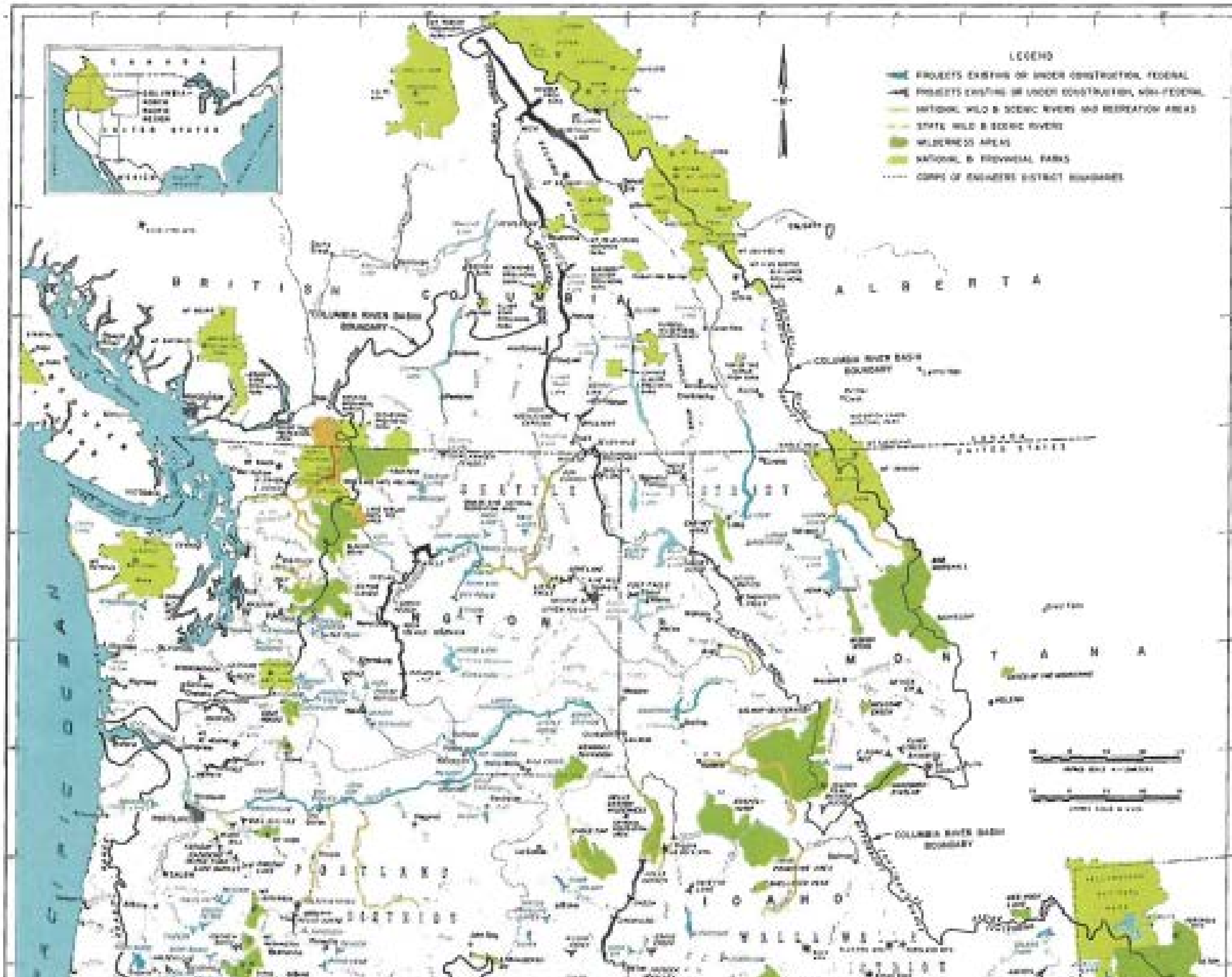
Pullman, Washington
December, 1980

John R. Jameson
Keith Petersen
Mary E. Reed

INTRODUCTION

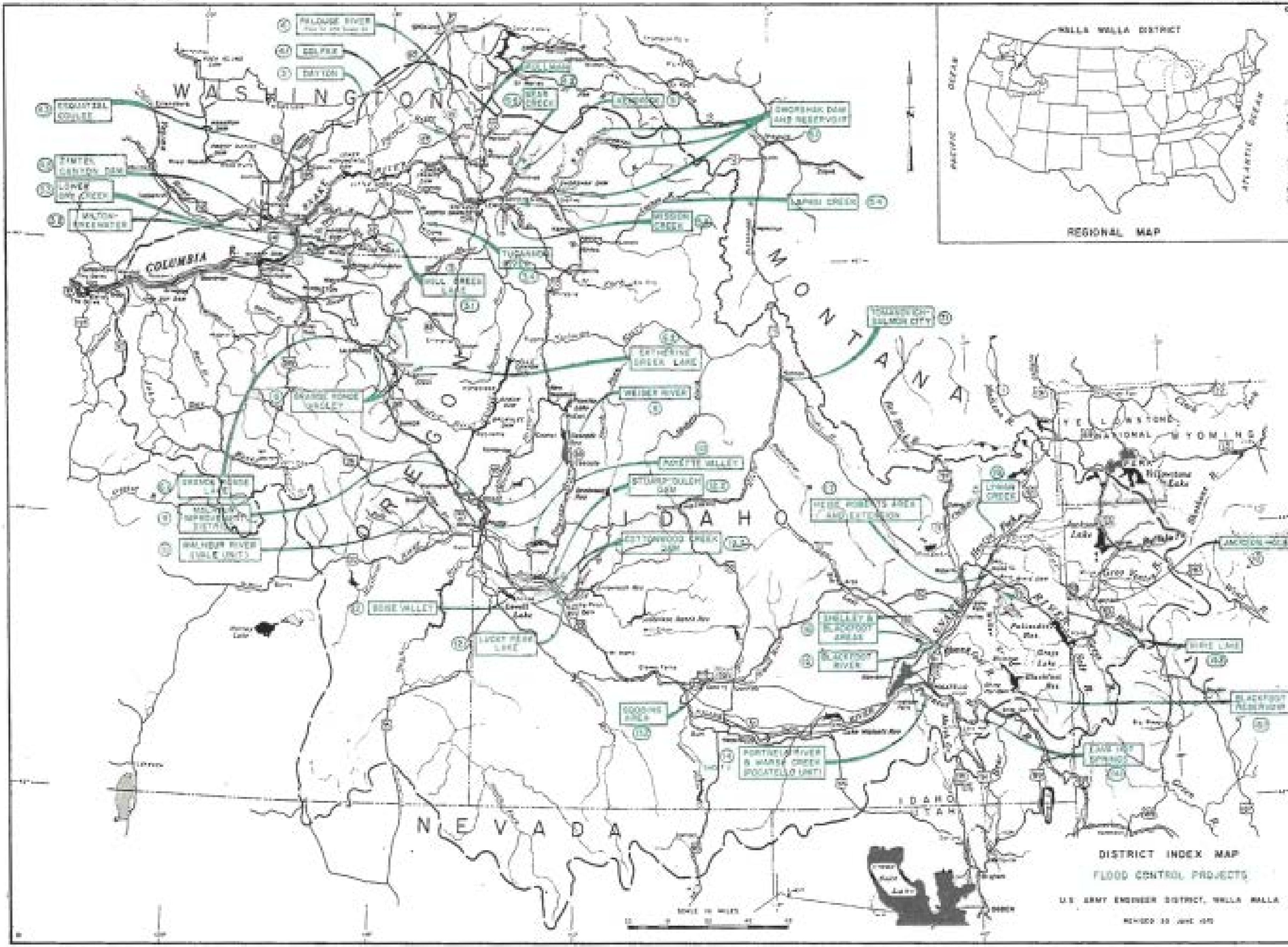


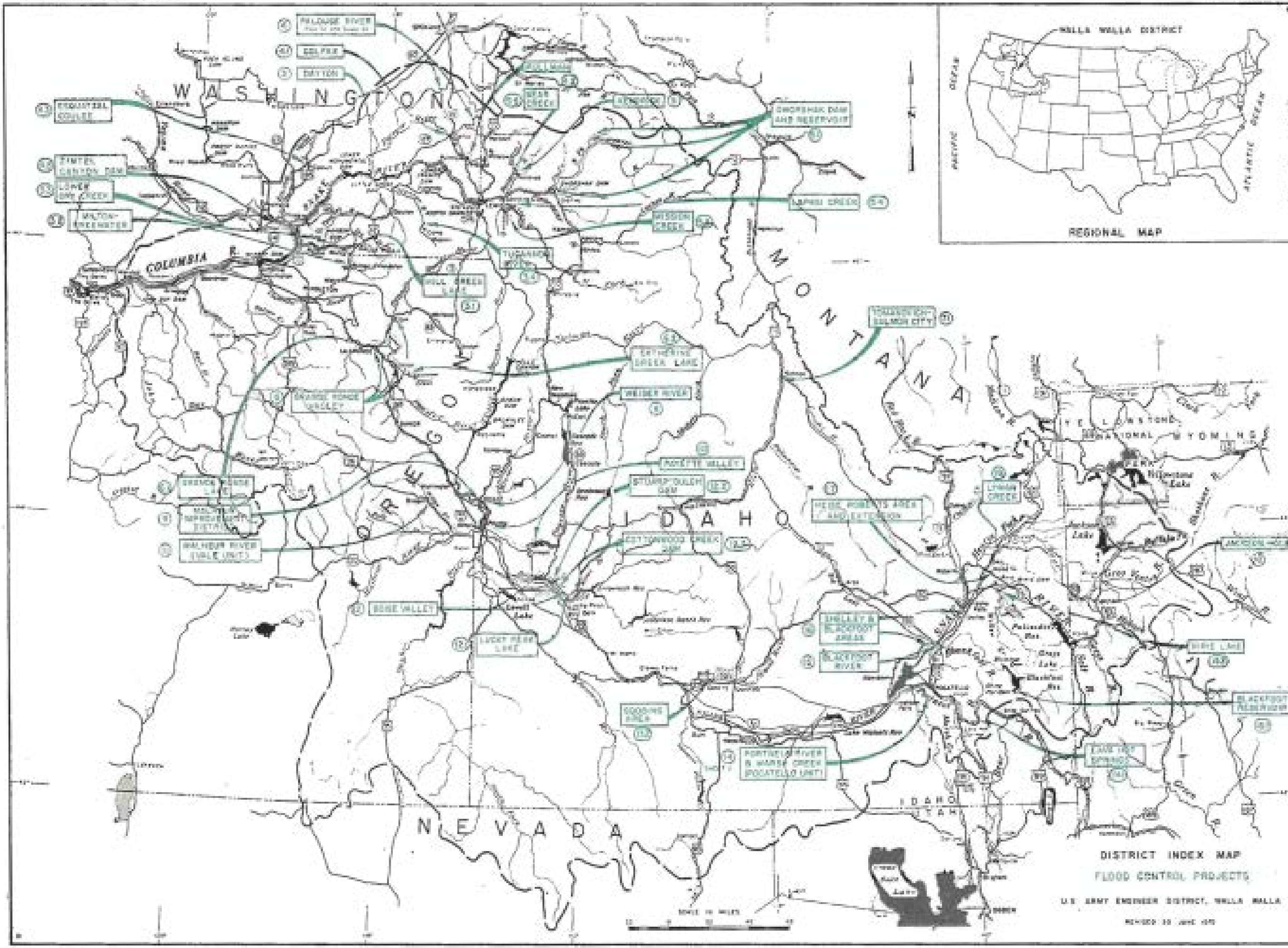
DWORSHAK DAM AT NIGHT


LEGEND
PROJECTS EXISTING OR UNDER CONSTRUCTION, FEDERAL
PROJECTS EXISTING OR UNDER CONSTRUCTION, NON-FEDERAL
NATIONAL WILD & SCENIC RIVERS AND RECREATION AREAS
STATE WILD & SCENIC RIVERS
WILDERNESS AREAS
NATIONAL & PROVINCIAL PARKS
CORPS OF ENGINEERS DISTRICT BOUNDARIES
BRITISH COLUMBIA
ALBERTA
COLUMBIA RIVER BASIN BOUNDARY
CANADA
UNITED STATES
PACIFIC OCEAN
WASHINGTON
MONTANA
OREGON
IDAHO
WYOMING
CALIFORNIA
NEVADA
UTAH
SEATTLE DISTRICT
PORTLAND DISTRICT
WALLA WALLA DISTRICT
COLUMBIA RIVER AND TRIBUTARIES REVIEW STUDY
COLUMBIA—NORTH PACIFIC REGION
WATER AND LAND RESOURCES
U.S. ARMY ENGINEER DIVISION, NORTH PACIFIC
CORPS OF ENGINEERS

CORPS OF ENGINEERS

U.S. ARMY




WASHINGTON
OREGON
IDAHO
MONTANA
NEVADA
COLUMBIA
PALOUSE RIVER
COLFAX
DAYTON
PULLMAN
BEAR CREEK
DWORSHAK DAM AND RESERVOIR
LAPWAI CREEK
MISSION CREEK
MILL CREEK LAKE
CATHERINE CREEK LAKE
WEISER RIVER
PAYETTE VALLEY
MALHEUR RIVER (VALE UNIT)
BOISE VALLEY
LUCKY PEAK LAKE
GOODING AREA
BLACKFOOT RIVER
BLACKFOOT RESERVOIR
JACKSON HOLE
YELLOWSTONE NATIONAL PARK
WYOMING
WALLA WALLA DISTRICT
REGIONAL MAP
PACIFIC OCEAN
ATLANTIC OCEAN
DISTRICT INDEX MAP
FLOOD CONTROL PROJECTS
U.S. ARMY ENGINEER DISTRICT, WALLA WALLA

INTRODUCTION

A dominating theme of life in the Pacific Northwest in the second half of the 1970's was the allocation of water resources. Perhaps at no time since the formation of the Bonneville Power Administration in the 1930's have debates over development of the Columbia River system and the distribution of its resources reached the present level of intensity and public attention. The Walla Walla District of the Corps of Engineers--steward of the region's waterways, hydroelectric production, fisheries and wildlife, and a myriad of other water-related concerns--found itself in the midst of these controversies. In fact, the District contributed to the acknowledgment of the finite nature of the region's water resources with its 1976 Columbia River and tributaries report, Irrigation Depletions/Instream Flow Study. Although those concerned with water resources were aware of the situation before the study's publication, the impact nevertheless crystallized the issue with the unequivocable conclusion that "the Columbia River as presently developed is no longer a surplus resource."

Controversy arose largely from a recognition of scarcity. A drought in 1977 graphically showed that the water resources of the Pacific Northwest were limited. As the population of the region grew, the need for more power increased correspondingly. Further demands on limited water supplies were made by irrigators, fishermen, recreationists, Indians, and environmentalists.

The Walla Walla District actively participated in the decision over streamflow allocations arising from these various concerns. In addition, the District was faced with meeting its traditional responsibilities of flood control and navigation. The Water and Power Resources Service's Teton Dam disaster of 1976 tested the District's ability to react to a large-scale flood, while flood plain studies and flood control projects required constant attention. Ririe Dam in Idaho, a major flood control project, was completed during the period, and planning and design of the proposed Willow Creek Dam near Heppner, Oregon, is in process. Approval to utilize a new construction concept of roller-compacted concrete has been requested there. The completion of the modern "Northwest Passage," bringing slack water to Lewiston, Idaho, in 1975, exemplified the District's navigational efforts, and throughout the period routine improvements of navigable streams were made.

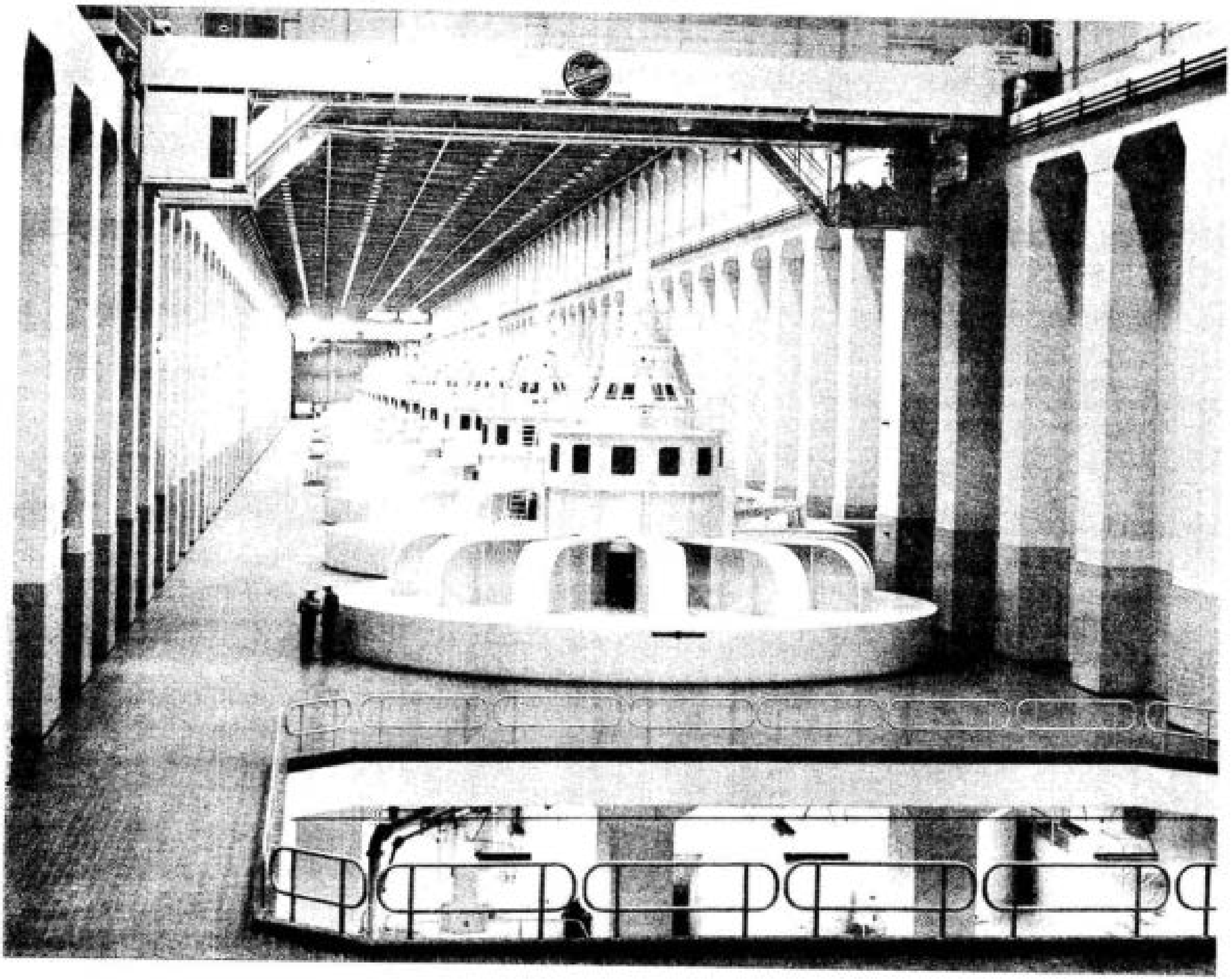
The Teton, Idaho, and Toccoa, Georgia, dam failures led to a nationwide inspection of non-Federal dams, and the Walla Walla District was charged with the duty of assuring the safety of all non-Federal dams in Idaho falling within the established guidelines. The District also commissioned numerous fish and wildlife research projects and began the massive Lower Snake River Fish and Wildlife Compensation Plan. Mitigation efforts led to fish hatchery construction in three states, innovative ways to control nitrogen supersaturation poisoning, and a highly acclaimed juvenile salmonoid transportation system carrying young fish past dams.

Numerous recreational facilities were constructed. At the same time, the Corps wrestled with ways of providing recreation sites during a period of scarce funding for park operation and maintenance, a situation experienced at all levels of government. Cultural resource surveys contracted by the District not only assured the preservation of valuable historic and prehistoric sites and artifacts, but brought a great deal of positive public attention to the agency. Additional generating units were added to several of the existing dams within the District's boundaries, while planning intensified on the McNary second powerhouse. Studies were also made of new ways to meet growing power demands, including wind energy and pumped storage.

The late 1970's were a time of transition for the District, as major construction was limited for the first time in many years. Nonetheless, the Corps' growing responsibilities for power production, flood control, environmental and cultural resource protection, navigation, dam safety, and recreational enhancement, as well as its integral role in determining water resource allocations, dictated an active role in Pacific Northwest affairs for the Walla Walla District. As the following pages will demonstrate, the District was indeed busy, and its activities were carefully scrutinized by the public it served.

CHAPTER 1

POWER



McNARY POWERHOUSE

CHAPTER 1

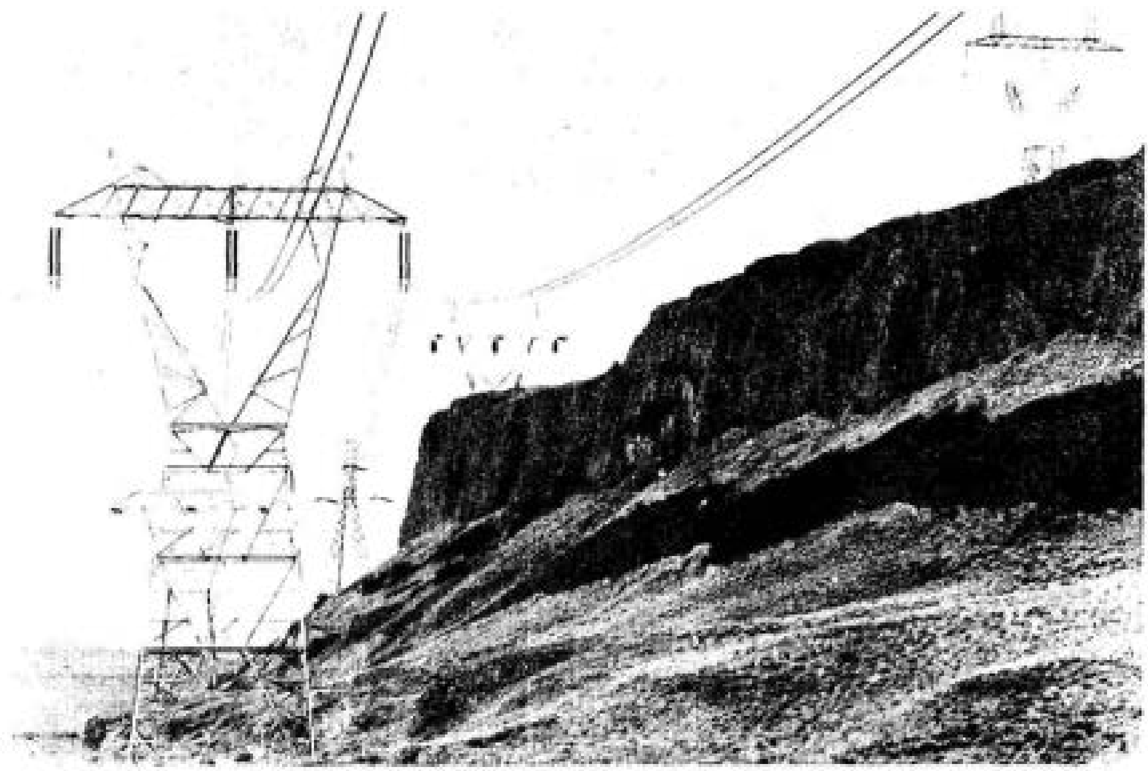
POWER

Since 1824, the Corps of Engineers has been responsible for all navigation and harbor facility improvements undertaken by the Federal Government. These are traditional concerns, but they form only a part of the Corps' larger civil works mission to enhance water resources. As early as 1908, President Theodore Roosevelt stated: "It is poor business to develop a river for navigation in such a way as to prevent its use for power.... We cannot afford needlessly to sacrifice power to navigation or navigation to domestic water supply, when by taking thought we could have all three. Every stream should be used to its utmost."[1]

It was not until the 1920's, though, that Congress authorized comprehensive measures for river development. Between 1923 and 1928 a series of congressional acts empowered the Corps to survey the nation's waterways with an eye toward maximum multipurpose use. One of the waterways examined was the Columbia River system. In 1932, the Corps of Engineers published a report on the Columbia commonly known as the 308 Report from House Document No. 308 which authorized the survey in 1925. The Corps determined that the Columbia and its tributaries could be controlled for floods and at the same time be developed into an excellent navigational and irrigation system and become "...the greatest system of low-cost hydroelectric power in the United States." The Corps proposed the construction of 10 multipurpose dams on the Columbia and numerous others on its tributaries.[2]

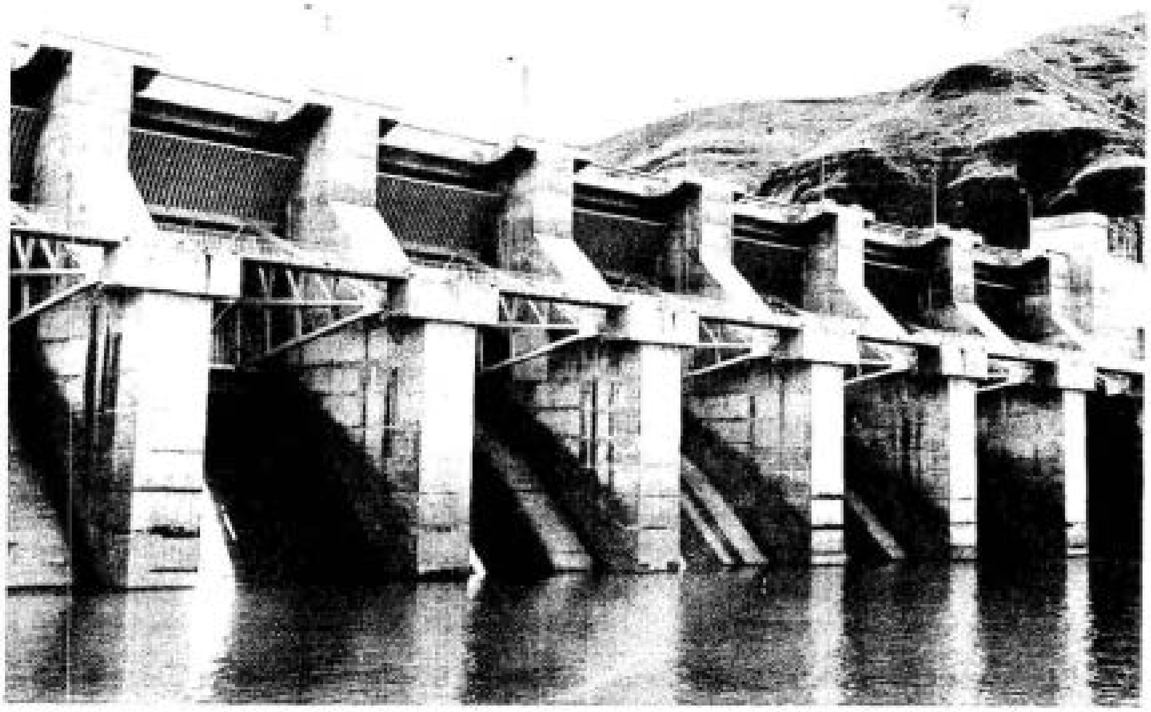
The Puget Sound Power and Light Company constructed the first dam on the Columbia in 1931 at Rock Island below Wenatchee. The first major project outlined in the Columbia 308 Report was Bonneville Dam, to be constructed by the Corps. Work began on this project in 1933 and was completed in 1938. The Bureau of Reclamation also began working on Grand Coulee in 1933 and finished construction in 1942. The Corps then constructed McNary, The Dalles, Chief Joseph, and John Day Dams in relatively quick succession on the Columbia main stem. Other multipurpose projects were subsequently initiated on the lower Snake River and other tributaries. These dams have had such a tremendous impact on the economic development of the area that historians have labelled the period from the 1930's through the 1970's as the "Dam Building Era."[3]

The massive multipurpose dams have had an impact on all aspects of life in the Northwest. Shippers, farmers, recreationists, and fishermen have been affected greatly. But nothing has altered the lifestyle of the Northwest more than the big dams' ability to produce inexpensive hydroelectric power. Cheap power brought electricity to homes and industrialization to cities and towns and, as Woody Guthrie sang of the Columbia in 1941, "Your power is turning the darkness to dawn."[4]



TRANSMISSION TOWERS AT LOWER MONUMENTAL DAM

Prior to the completion of Bonneville Dam, complex negotiations in the executive and legislative branches of the Federal Government resulted in the formation of the Bonneville Power Administration (BPA). Under the agreement reached, the Corps would maintain and operate Bonneville and the other multipurpose dams it constructed on the Columbia and its tributaries, and the BPA--a civilian administration appointed by the Secretary of the Interior, later the Secretary of Energy--would market the energy produced. Once the conflict over public versus private power had been settled, the age of cheap energy arrived in the Northwest. By 1975 the Corps had constructed power-producing dams from Bonneville, Oregon, to Libby, Montana, and the region experienced a great period of economic growth brought on largely by an abundant supply of hydroelectricity.[5]

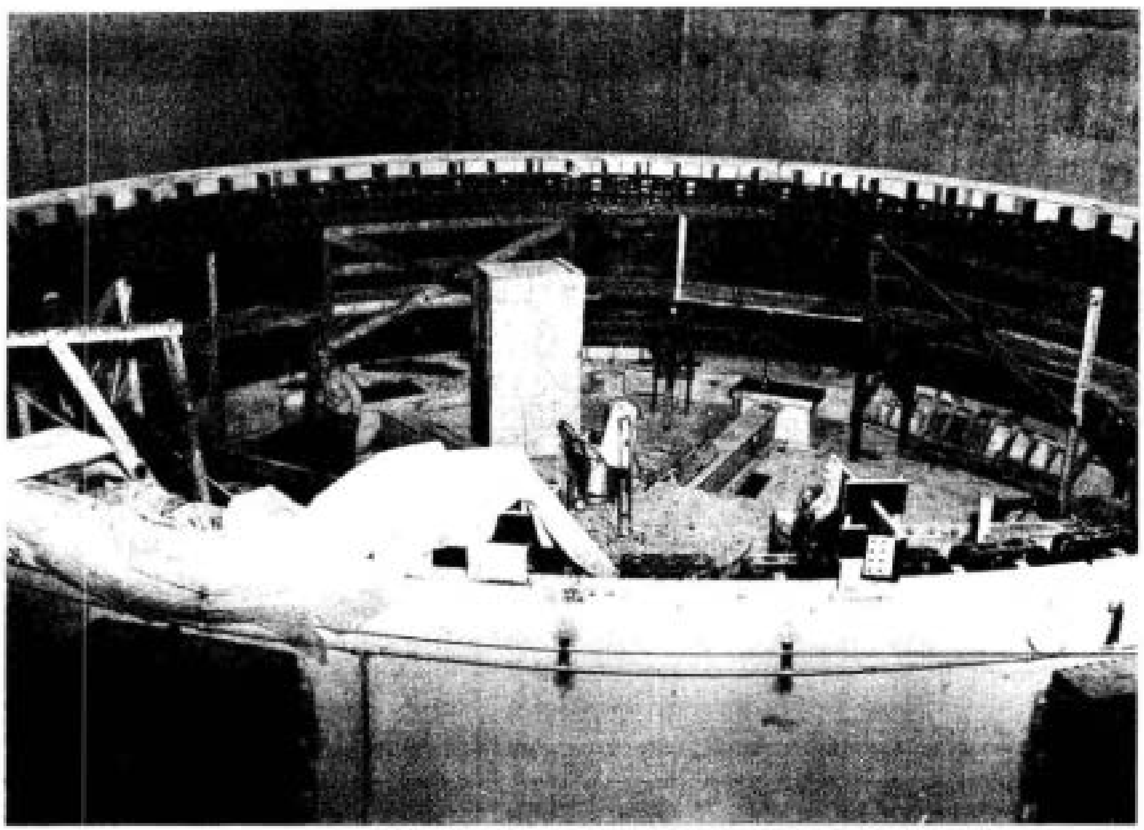


SPILLWAY BAYS
LOWER GRANITE DAM

Bonneville and Grand Coulee Dams received criticism even in the 1930's. Some called them "white elephants in the wilderness," and predicted that the Northwest would never be able to use all of the power they could generate. But with unemployment at 27 percent during the Depression, Congress authorized the projects largely in an effort to put people to work. By the 1970's, the Bonneville Power Administration was marketing power not only from Grand Coulee and Bonneville, but from 29 additional Federal dams and two nuclear plants. Despite this increase in energy capability, the BPA was in trouble. In 1973, it informed private utilities that it no longer had sufficient supplies to sell them power. In 1976 the Administration was forced to inform public power districts that after July 1, 1983, there would be insufficient power to supply new customers. Delays in installing generators at the dams added to the anticipated energy shortage, but even more disastrous according to BPA Administrator, Donald Hodel, was the lack of progress in constructing coal and nuclear plants. In 1976, he claimed the Northwest's hydrothermal program was "in a shambles" and was threatened with more delays due to environmental, safety, and economic concerns.[6]

News of an energy shortage shocked residents of an area that had come to believe their energy resources were inexhaustible. Energy shortages will affect all residents of the area but will most seriously impact the aluminum industry, a prodigious user of electricity, which located in the Northwest specifically because of low electric rates. By 1976 the aluminum industry was directly employing 15,000 people and indirectly providing jobs for an additional 100,000 residents of the Pacific Northwest. "It is inconceivable," stated Lyman Harris of the Western Aluminum Producers, "that the primary aluminum industry of the Pacific Northwest, which produces one-third of the nation's supply of strategic metal, will be shut down because of electrical energy supply policy."[7]

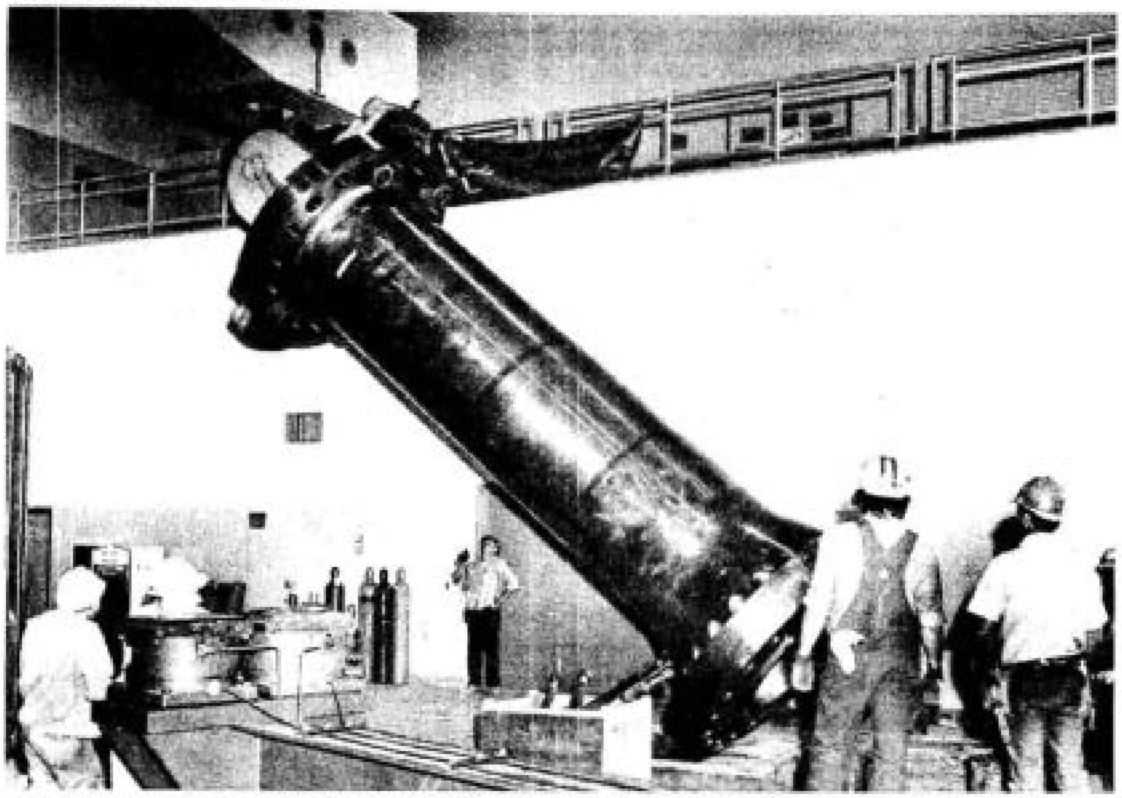
Frustrated that the rapidly increasing demands for power and a possible energy shortage might alter their lifestyles, many residents of that region attacked environmental groups as the cause of the energy problem. "Nuclear and coal are here now," editorialized the Tri-City Herald, "and both must be utilized to the maximum. There are risks of course. But by any but the hysterical standards of the radical environmentalists led by [Ralph] Nader, the risks are low--and acceptable."[8] Washington and Oregon residents voted against nuclear power moratoriums, and even the battles environmentalists felt had been already "won" seemed in doubt as the Northwest energy crisis intensified. For example, the Asotin Dam on the Snake River, which many considered a dead issue when President Ford signed the bill creating the Snake River National Recreation Area in 1976, again became a debatable topic as utility groups urged in 1980 that the project be reevaluated.[9]



ASSEMBLY OF UNIT 6 GENERATOR
ICE HARBOR DAM

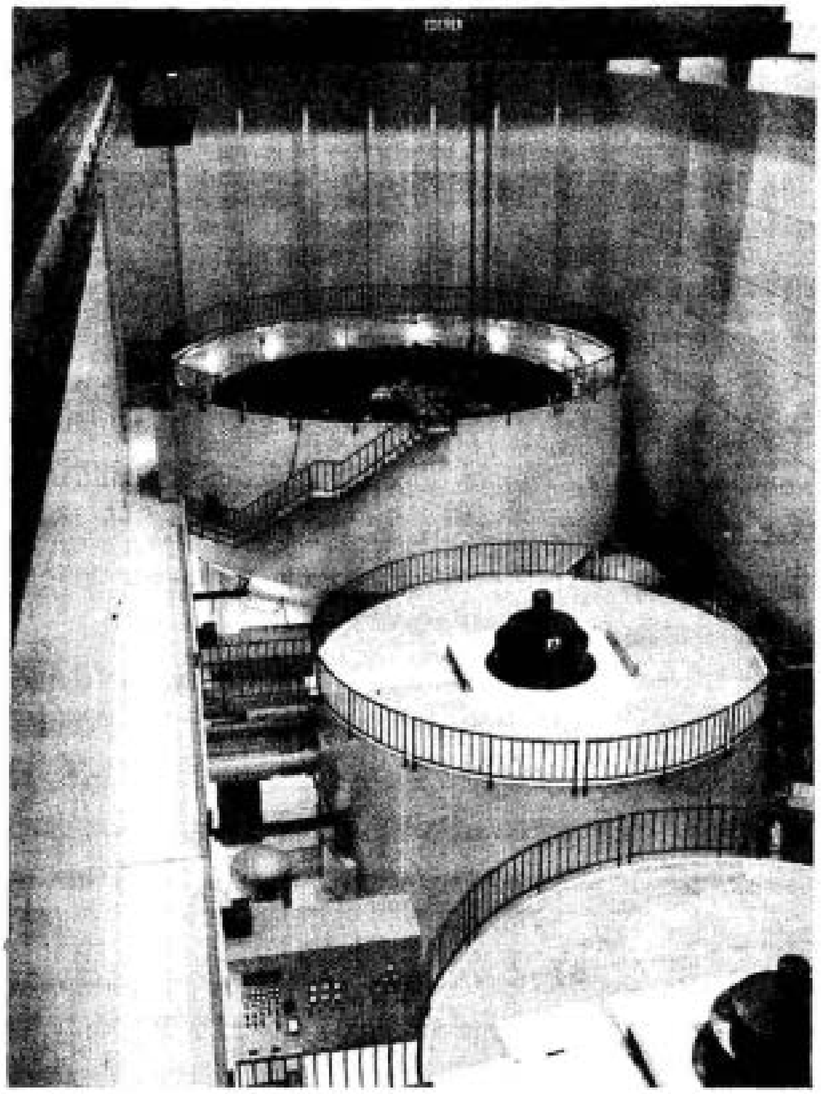
Although hydropower represented only 16 percent of the nation's total electrical production in 1970, in the Northwest it accounted for nearly 50 percent of the total output.[10] Given the importance of water as an energy resource and the Corps' responsibility for water resource development, it is understandable that much of the activity in the Walla Walla District between 1975 and 1980 focused on energy and development.

In February 1974, the District began a multimillion dollar project to double the power generating capacity at each of the four lower Snake River dams. Three additional generating units were added at each project, bringing actual generating capacity on the lower Snake to 3,487,950 kilowatts. Work was completed on the three additional units at Ice Harbor in 1976. The new units went on-line at Lower Granite and Little Goose in 1978 and the last unit went on-line at Lower Monumental in the summer of 1979.[11]



LOWERING THE UNIT 6 INTERMEDIATE TURBINE SHAFT AT THE LITTLE GOOSE DAM SECOND POWERHOUSE

The primary purpose of increased generation on the lower Snake was to provide additional power for peak usage times. Construction of additional units meant that less energy was wasted. Explained Ice Harbor Resident Engineer Douglas Sharpe: "During the spring runoff we used to spill for an average of 81 days a year. That's wasted energy. With the new units and additional storage behind Dworshak Dam in Idaho, we think we will reduce spilling to about 18 days a year."[12]

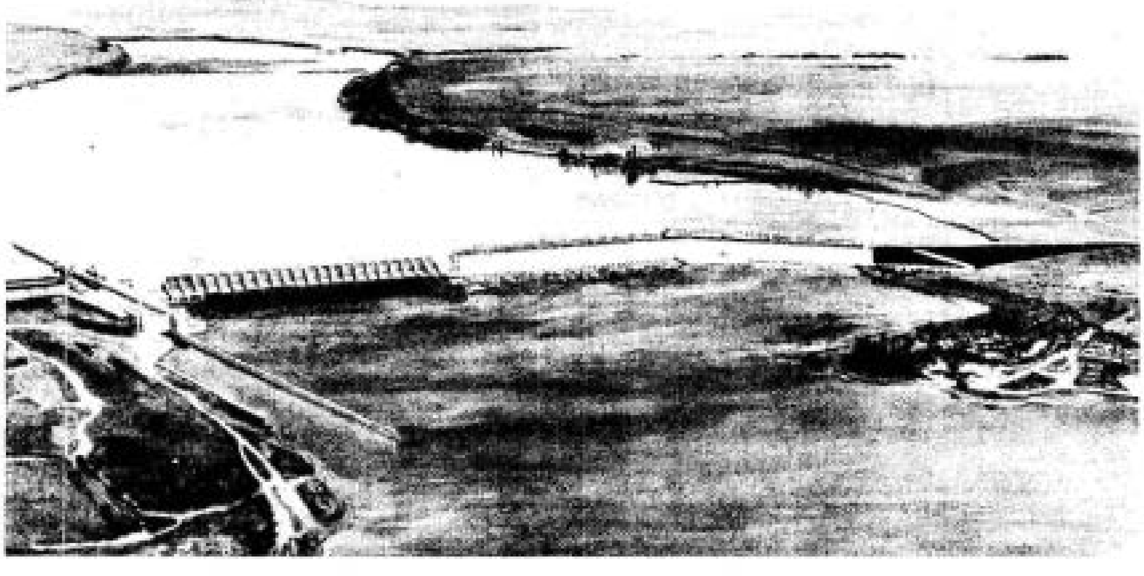


DWORSHAK DAM POWERHOUSE

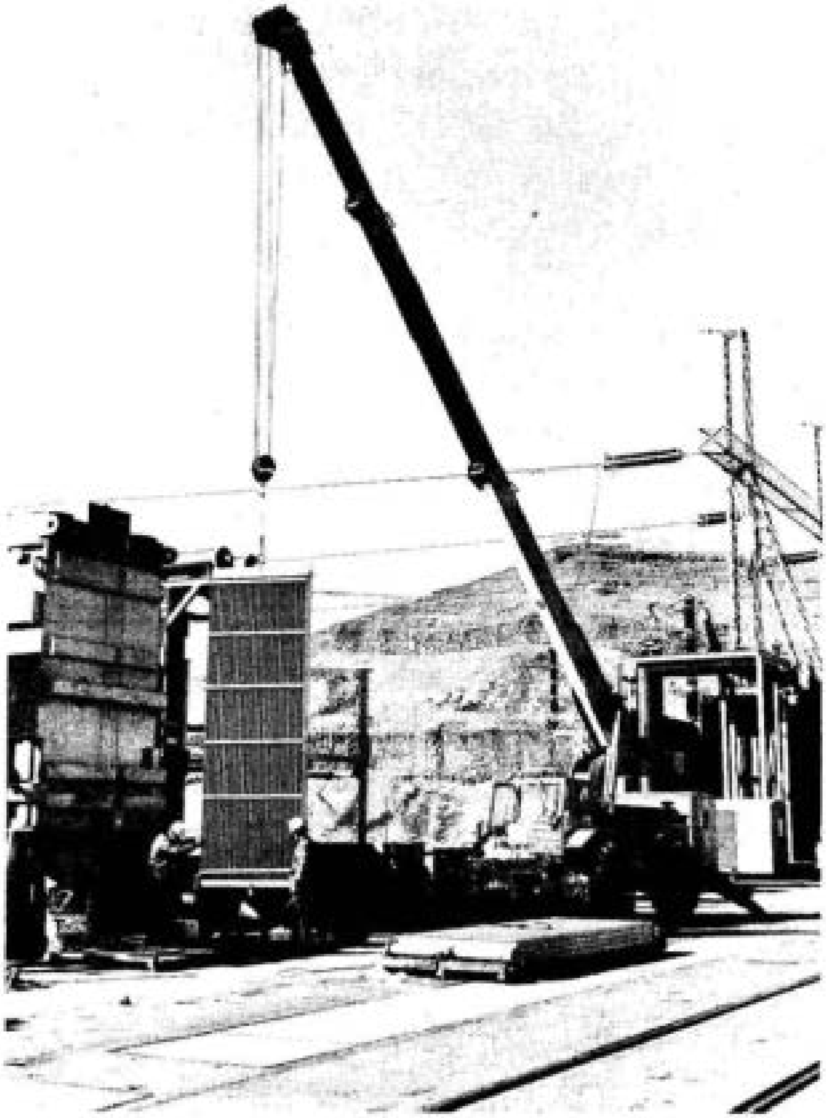
Despite occasional minor delays, construction of the 12 additional generating units on the lower Snake went smoothly, bringing the hydroelectric capacity of the lower Snake River projects into rough equivalency with the generating capability of the entire Tennessee Valley Authority.[13] The District had a more difficult time when it proposed to add additional peaking units to the existing three generating units at Dworshak Dam. Dworshak, like the lower Snake dams, was completed with three generating units on-line and space for three more units. At a public meeting at the Hotel Lewis-Clark in Lewiston in 1970, District Engineer Colonel Richard Connell received a "baptism by fire" when 350 people vociferously expressed their opposition to completing the three additional generators. Area residents were concerned that the additional generating units would increase fluctuations in the river levels and damage fish and plant life. Furthermore, construction of all three units would have required a downstream dam on the main Clearwater River to dampen water fluctuations. This downstream dam became a highly controversial subject. In the viewpoint of W. E. Sivley, Chief of the District's Engineering Division, the public was misinformed about the project in the early 1970's, which caused the Corps difficulties. "We weren't, in that time frame, seriously even going to consider that [downstream] dam, but that wasn't what the various interests said our intent was, and it became emotional."[14]

The political climate changed somewhat as people realized that a Northwest energy shortage was a reality. In the late 1970's, the Corps began to study the effects of water flow fluctuation on the Clearwater River resulting from the possible installation of an additional generating unit at Dworshak. In 1980 over a quarter of a million dollars was spent studying the effects of fluctuation on fish and plants in the river. The studies were to last for 2-1/2 years, the minimum time considered necessary to gather data. As District Engineer Colonel C. J. Allaire stated in 1979, accurate determination of the effects of fluctuation upon fish "...will be critical to acceptance of the project by fishery agencies, the local people, and the State of Idaho." By 1980 installation of all three new units was not being contemplated because of the strong public opposition to a downstream re-regulating dam. The original schedule was to have power on-line at the fourth unit by 1985, but because of the necessity of conducting extensive fishery research, the earliest possible completion date of the project now is 1988. There is strong local opposition to adding even one more generating unit at Dworshak.[15]

Another District proposal to add additional generating units to an existing dam met with less opposition. The District undertook feasibility studies for a McNary second powerhouse project, but final authority to begin construction was delayed. In 1980, however, the Carter administration approved engineering funds for the McNary second powerhouse and the first funds were appropriated in the half-billion-dollar project. Construction will consist of six new generating units, with a capability to add additional units. In addition to the powerhouse, the visitors' center and fish passage facilities will be improved, wildlife will be mitigated, and recreational facilities will be increased.[16]

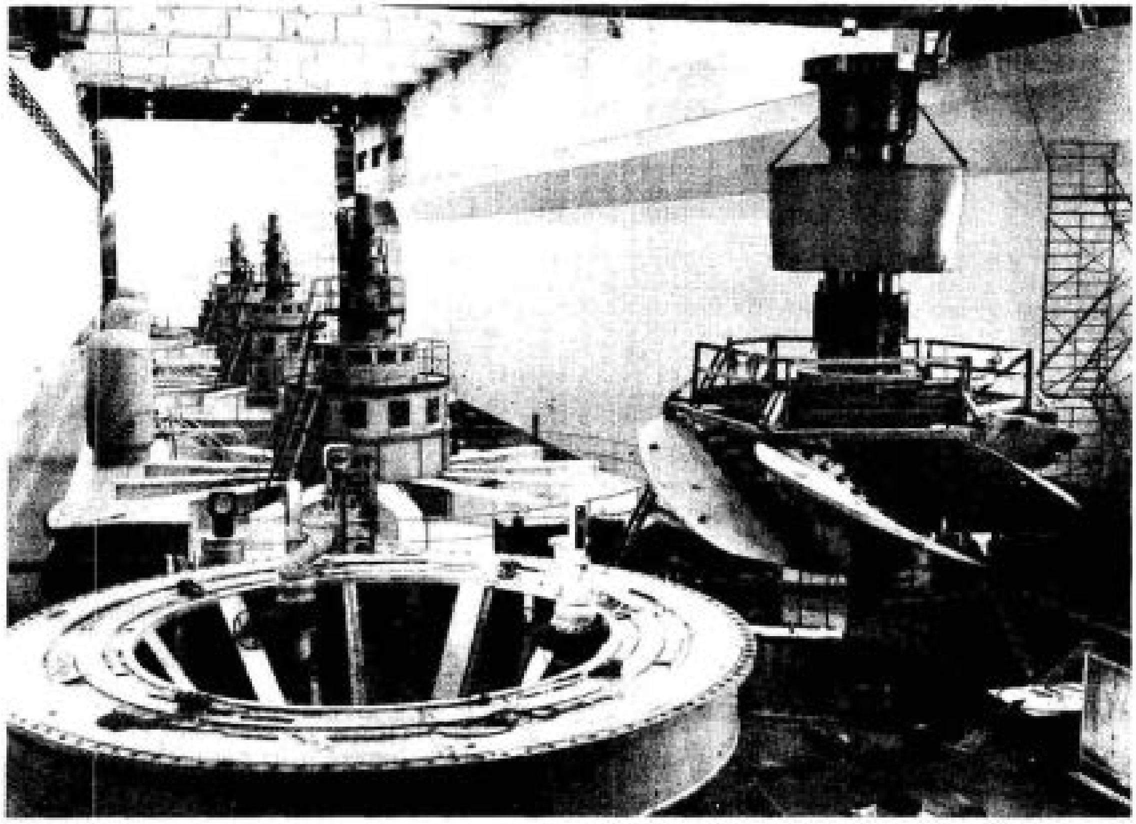


McNARY DAM POWERHOUSE



INSTALLATION OF NEW TRANSFORMER AT LOWER MONUMENTAL DAM

The power to be generated by the McNary second powerhouse, like the increased generating capacity at Dworshak, will be used for peaking capacity. There are limited amounts of water available to go through turbines, but with additional units more can be sent through during times of high demand. Hydropower is relatively simple and flexible--it is easy to turn a generator off and on, and therefore hydropower is used to meet peak demands. In the Northwest, nonflexible nuclear and coal plants are used for base energy requirements. The General Accounting Office and various state agencies have concluded that the future power needs in the Northwest will be for greater peaking capacity, and that base needs will not increase too dramatically. This is the reason for the support shown for the construction of the McNary second powerhouse and the other generating units within the District, and is also the reason for plans now underway for a third powerhouse at McNary if ways can be found to dampen the effects of water fluctuation on fish and wildlife in the area.[17]



CONSTRUCTION OF SECOND POWERHOUSE
LOWER MONUMENTAL DAM

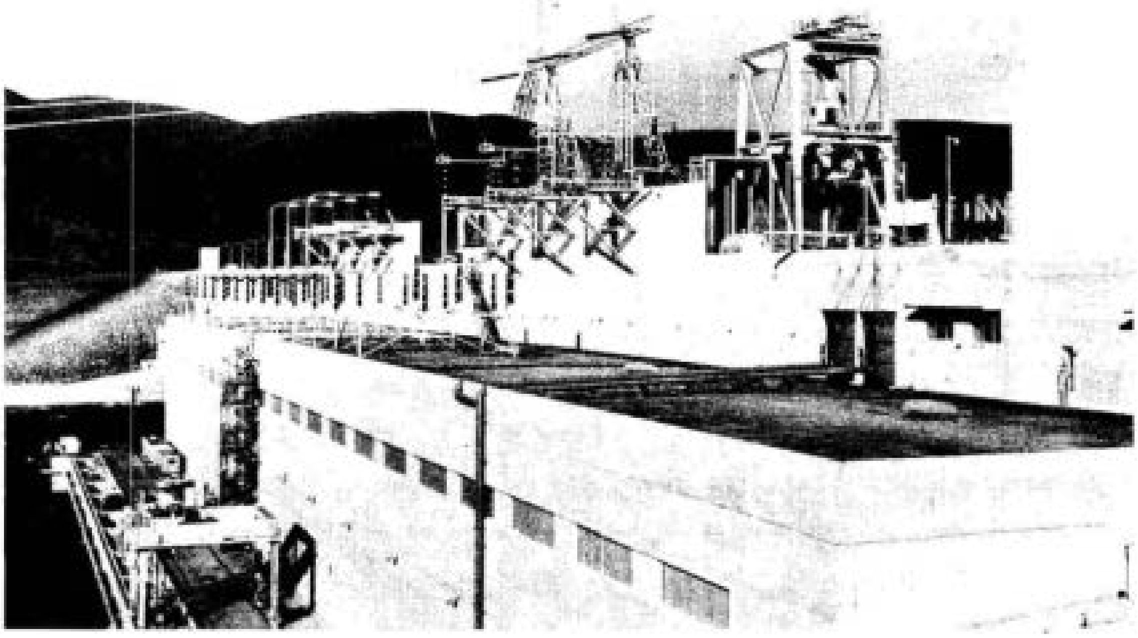
Because the Northwest has learned to rely on hydropower, several studies have been done to find ways to enable existing nonpower-producing dams to contribute to the energy supply. The advent of cheap oil and gas and the development of large utility companies in the twentieth century eliminated many of the small hydro stations throughout the nation. With the rising cost and growing scarcity of oil, the country witnessed a renaissance in the idea of using low-head dams for power generation in the 1970's.[18] In 1978 the Department of Energy earmarked $10 million for the study and development of low-head hydroelectric projects, and promised more money in the future.[19] The Federal Energy Regulatory Commission estimated that over 220 small hydro sites had been abandoned in New England alone since World War II. To some in the Northwest, where spectacular high dams have provided the bulk of the region's hydropower, a search for low-head generating sites seemed unwarranted. The Spokane Spokesman-Review editorialized in 1980, "The Northwest has lots of untapped hydro potential, said Sue Sheppard [of the Rural Electrification Administration]. To take advantage of it, just install [generators] on all of the non-generating.... plants.... Good idea, Sue, except for one thing. Eastern solutions don't always apply to Western problems. Almost every dam in the Pacific Northwest is producing power already."[20]

The Northwest does, however, have significant low-head hydro capability, and there have been many investigations of ways to tap it. "Somebody is looking at every dam that's in existence to see whether you can put power into it," stated Will Sivley. "There are studies and proposals going on even at irrigation canals where there is a considerable drop in the water surfaces."[21] In 1979, the Corps estimated that as many as 5,200 existing dams in the United States could be economically converted to produce electricity. Costs of conversion are comparable to production of new thermal plants and there are fewer environmental problems. Conversion of existing dams is a real possibility in the Northwest, but there are also many outstanding locations for new low-head generation through dams, diversion tunnels, or pipelines. A 1978 study by the Washington State Water Research Center estimated that without considering large damsites, there is enough hydroelectric potential in Washington to produce the equivalent of eight nuclear power plants with little negative impact upon the environment.[22]

LUCKY PEAK DAM, 1978

The Walla Walla District has studied possible low-head damsites on the Snake River at Clear Springs near Bliss and Shelley in Idaho. But the most active role the District played in developing low-head energy in the late 1970's came with proposals to install generators at Lucky Peak Dam near Boise, Idaho. The Corps had constructed Lucky Peak in the 1950's as a flood control and irrigation project. The agency considered installing generators then, but at the time it was not economically justifiable. Soaring costs of energy made a powerplant appear feasible, and in December 1976 the District completed a study which advocated construction of a five-turbine powerplant capable of generating 75,000 kilowatts, or about one-third of Boise's annual electrical requirements. There was no opposition to the proposal when it was presented at a public meeting in Boise, but some concern was expressed that without minimum flow guarantees, fish in the Boise River would be adversely affected and wastewater treatment for Boise residents would be much more expensive. The most controversial issue, however, was over which agency would construct the powerplant. If the Corps built the project, power would be marketed by the Bonneville Power Administration and little of the electricity would be returned to the Boise area. Local interests suggested that the plant be constructed privately by the Boise Board of Control. In March 1980, Idaho Senator James McClure accused the Corps of "...holding hydroelectric power development at Lucky Peak Dam for ransom to the detriment of power consumers in Idaho," and suggested that the Corps was blocking the attempts being made to have the powerplant constructed by private interests. Later in March, the Corps agreed that the project could be undertaken by the Boise Board of Control and plans are now underway for planning, design, and construction of a 79,000-kilowatt plant.[23]

In 1976 the Corps' Columbia River and Tributaries Study (CR&T) found that the river system had reached its maximum use and that "the Columbia River as presently developed is no longer a surplus resource." Many people in the Northwest took this to mean that the region's hydropower development was at capacity. Actually, there are still many good locations for large power-producing dams but they cannot be built without adversely affecting the environment. The public must ultimately decide whether or not it wants more dams or wants to maintain the present river environment. Another possibility is alternative energy sources, such as low-head hydropower and pumped storage.[24] According to the Pacific Northwest River Basins Commission, "...pumped-storage generation offers one of the most promising sources for meeting the region's future peak electrical requirements." In the near future, increased generating capacity at the Northwest's high dams will provide the flexible power to meet peaking requirements. By the mid-1990's, when current hydro projects are fully developed, it is estimated that pumped storage will become a major source of peak generation.[25]



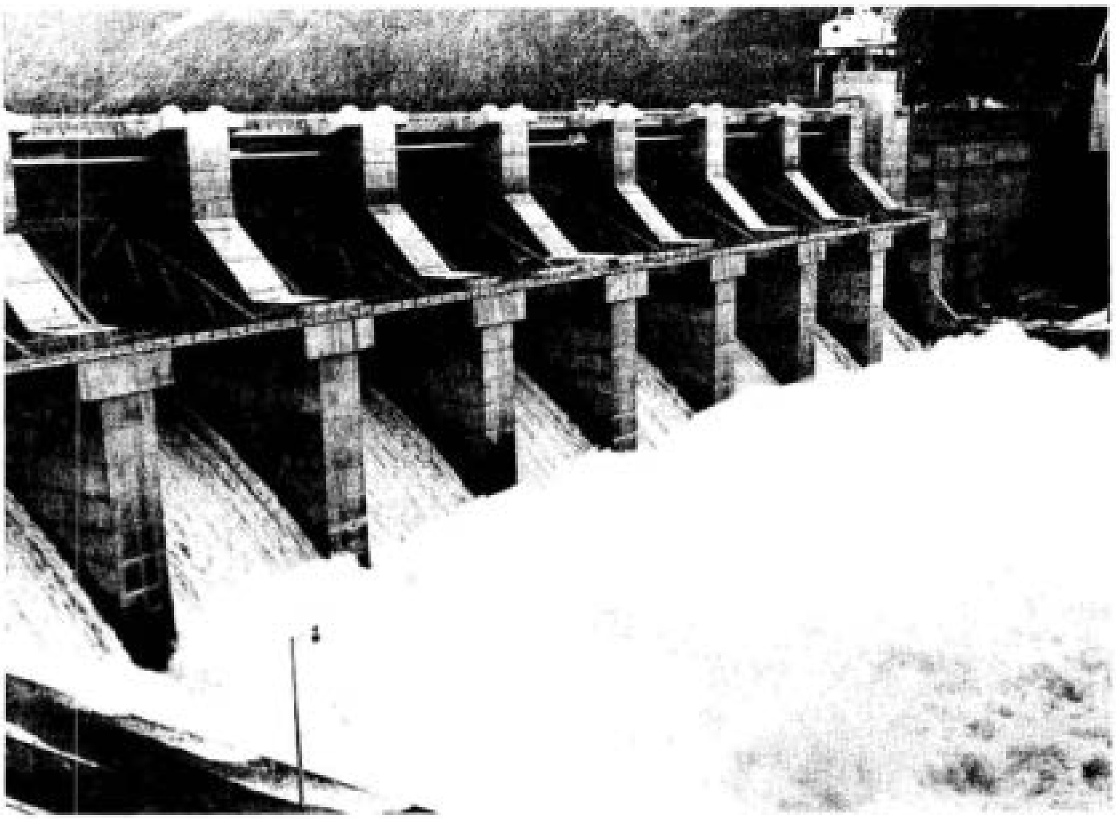
TRANSMISSION EQUIPMENT ON POWERHOUSE ROOF
AT LITTLE GOOSE DAM

Pumped storage is not a new concept. The first plant in the United States, located in Connecticut, was commissioned in 1929 but the idea was developed much earlier in Germany. Surplus water is pumped from a low reservoir to a high one during slack electrical demand periods, primarily at night and on weekends. During times of high demand, water from the upper reservoir is forced through a turbine, producing power. Pumped storage is not an energy-producing system. It takes about 1-1/2 kilowatt hours of pumping energy to generate each kilowatt of usable energy. However, because of the greater need during peak demand times and the consequent greater monetary value of the energy produced, the system is cost effective.[26]

The major limitation to pumped storage in the Northwest is the absence of the necessary thermal power during off-peak times to move water from low reservoirs to high ones. Preliminary studies indicate that such thermal power will be available in the region by the mid-1990's, but until that time the major activity will be to find suitable sites for pumped-storage development. The Corps has been delegated the authority to undertake this preliminary work.[27]

Finding suitable Northwest locations for pumped-storage facilities has been a prolonged and oftentimes controversial undertaking. An inventory by the North Pacific Division of the Corps of Engineers in 1976 listed 530 potential sites in Washington, Oregon, Idaho, and Montana. Screening processes reduced this list to a workable number. Sites which were environmentally, socially, or economically unacceptable were eliminated and the list was culled to 43. The governors of each state were asked to comment, as was the general public, which further narrowed the list to 28. Finally, after a series of public meetings, the list was finalized at eight sites, four in Oregon, three in Washington, and one in Idaho. The sites were chosen because of high benefit/cost ratios, proximity to the Portland and Seattle load centers, and social and environmental acceptability.[28]

During the course of this selection process, the Walla Walla District received many complaints about plans to alter the environment to provide for pumped-storage facilities. At a public meeting in Boise, environmental opposition was voiced against the Sinker Creek and Coyote Butte sites in Idaho and the locations were dropped. Opposition by Orofino residents to the Whiskey Creek site at Dworshak Reservoir brought a cancellation of plans for a pumped-storage site there.[29] Similar concerns voiced by private individuals and governmental agencies gave warning that pumped storage was an emotional issue. But by far the most debated location within the boundaries of the District was a proposal to construct a high reservoir on Union Flat to be fed with water backed up behind Lower Granite Dam, usually referred to as the Palouse Pumped-Storage project.



SPILLWAYS AT LOWER GRANITE DAM

Members of the Pullman-Moscow Resources Committee, the Mayor of Pullman, and the President of Washington State University originally requested the Palouse Pumped-Storage Study. In addition to power, the project would have provided irrigation, recreation, and municipal water for the Pullman-Moscow area.[30] It soon became apparent, though, that local residents were opposed to the site even if it did bring certain benefits. When the Corps set a public meeting on the Palouse Pumped-Storage Study for March 9, 1976, citizens and groups opposing the plan began organizing. More than 175 people, most of them farmers, met March 1 in the Ewartsville Grange Hall to form the Organization for the Preservation of Agricultural Land (OPAL). The group selected Norman Hatley as chairman. Hatley became the most outspoken opponent to the project. "The corps said when...they started this plan that the idea had local support," he stated. "As far as I know, only five people are behind it. The corps understands hydroelectric power and political power.

Now we have to show them we have people power." As a demonstration of "people power," Hatley urged a massive letter campaign to congressmen as well as attendance at the public meeting. The Washington State University branch of the Sierra Club, the Whitman County Commissioners, and other groups and individuals joined with OPAL to oppose the proposal.[31]

Nearly 1,000 people attended the March 9 public meeting, and as a reporter for the Moscow Idahonian remarked, by the end of it "Colonel Nelson Conover...may have felt a little like General Robert E. Lee at Appomattox."[32] Only one person, Moscow Mayor Paul Mann, spoke in favor of continued study of the proposal. Most people spoke out against turning agricultural property into a reservoir and questioned the need for increased power production in the area. Some wondered whether this was not just another attempt to bring development to a rural setting. Many of those who testified had deep roots in the area and did not like the idea of drastic change. "My parents and grandparents farmed land like many of you here tonight," testified one. "There's a hundred years of farming behind me. I oppose this plan. I don't like the idea of my grandfather's ground being inundated by some water from the Snake River."[33]

The public meeting was followed by extensive press coverage of the proposal. The Lewiston Morning Tribune editorialized that "The proposal has all the earmarks of make-work for the Walla Walla district of the corps, which for the first time in many years is not building any dams. The corps, it appears, needs a major project more than the Northwest needs that extra peak power." The Pullman Herald and the Spokane Spokesman-Review also printed attacks on the project.[34]

On March 16, Colonel Conover recommended to Division Engineer General Wesley Peel that the project be dropped and the $300,000 proposed for the study be reallocated to other pumped-storage site possibilities in the Northwest. Peel concurred and the study ended before it actually began. The only funds expended on the project were for brochures, public notices, and other materials necessary to prepare for the public meeting.[35]

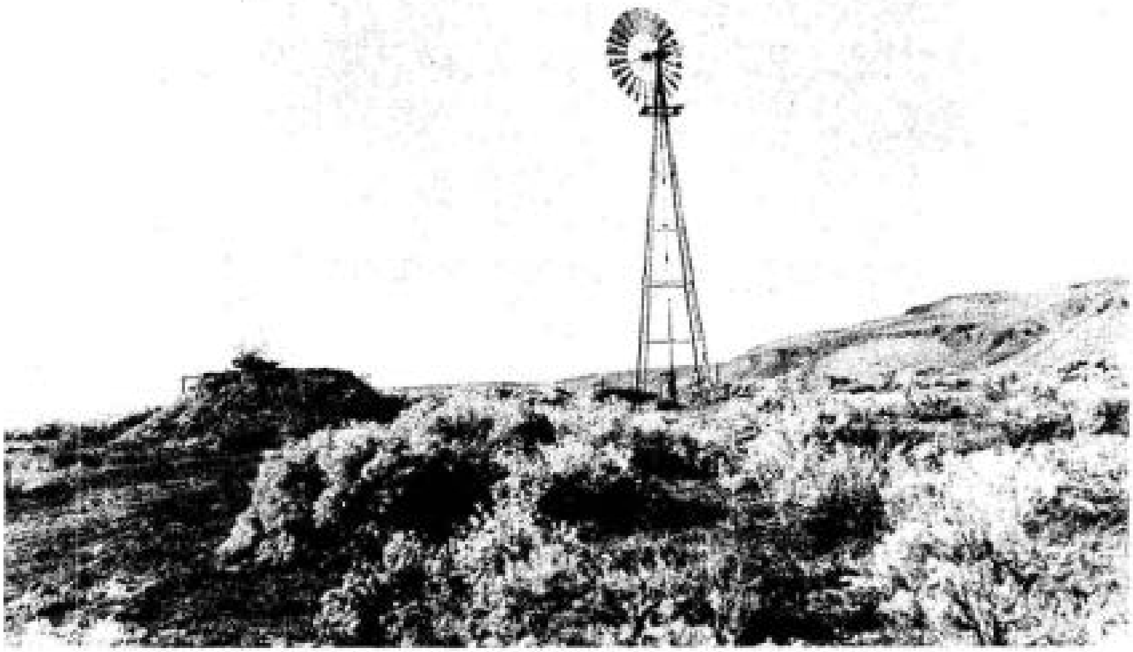
Although many had been critical of the proposal, the Corps' response to public opinion was generally praised. The Pullman Herald, which had been most adamant in its opposition to the Palouse Pumped-Storage study, wrote on March 18: "It took a lot of courage for Colonel Conover to come to Pullman and listen to 6 hours of criticism.... He took it all in, never once raising his voice or expressing displeasure with the way things were going.... What impressed us most was that he seemed to be listening to every word which was spoken that night. Obviously...he got the message."[36] OPAL Chairman Hatley stated: "When we first started talking about this, we didn't think we could have that much impact, but I think this proves the people can have some influence on our government."[37] But as Walla Walla District Public Affairs Officer Frank King emphasized: "That's what these public meetings are for--to find out what people want to do.... This shows that public participation in the early planning stages does work."[38]

The District's reaction to public opinion concerning Palouse pumped storage is an example of the Corps' ability to adapt to public sentiment. Studies of eight potential pumped-storage sites in the Northwest are still being undertaken. The Corps believes that pumped storage will one day provide peaking capability in the Northwest. But because of local opposition, Union Flat is not likely to be one of the sites providing that hydropower.

Another alternative power source investigated by the Walla Walla District in the late 1970's was wind power. Actually, the wind power studies undertaken by the Corps were an adjunct to the pumped-storage studies. Nature is so unpredictable that wind energy is best utilized if it can be stored. Electricity generated by windmills could be used to pump water from a low reservoir to a higher one, and power generated from such a pumped-storage site could be regulated to meet power needs.[39]

In 1977, Oregon Senators Robert Packwood and Mark Hatfield wrote to Division Engineer Brigadier General Peel: "The Columbia River and Tributary pumped-storage studies present a unique opportunity for development of alternative energy generation in the Northwest.... Integration of wind generation facilities into existing hydrosystems may increase the economic feasibility of some pumped-storage sites.... We request the Corps to consider the potential of wind energy in conjunction with ongoing CR&T pumped-storage studies."[40] Brigadier General Peel responded immediately by informing the senators that an investigation would be made, not only of the integration of wind energy with pumped storage, but also to identify geographic sites of high wind energy potential. Brigadier General Peel asked the Walla Walla District to undertake the study, and the District contracted with six scientists from the University of Idaho and Oregon State University to produce an analysis of wind potential in the Northwest.[41]

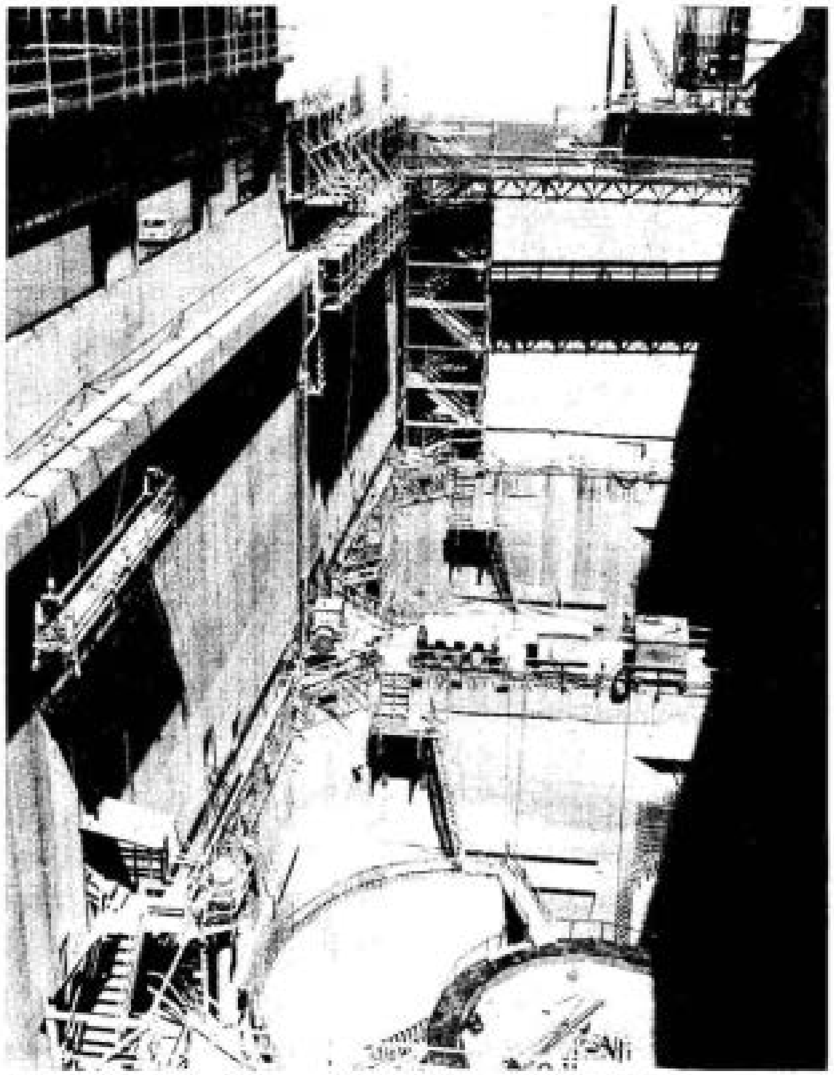
The study found that by the year 2000, wind could provide 10 percent of the nation's energy needs, and would have a greater impact in the Northwest because of the possibility of integrating wind with hydropower facilities. The coastal areas of Oregon and Washington, the Columbia River Gorge, and areas in southwestern Idaho were found to be especially likely localities for future wind generators. The report found that wind energy is especially promising because the technology already exists to make such power competitive with nuclear and coal plants with less disruption of the environment. The scientists also stated that wind power could be integrated successfully with pumped-storage facilities. A similar study by the Northwest Energy Policy Project did disclose that there would be some adverse environmental impacts from extensive wind production. A windmill tower capable of producing 100 kilowatts of electricity, for instance, would have to be 10 stories tall, and the windmill blades would extend an additional six stories. Such structures would arouse public criticism unless located in isolated areas, and present a problem that will have to be solved before extensive wind power can be generated in the region.[42]



IRRIGATION WINDMILL AT BIG FLAT
ICE HARBOR PROJECT

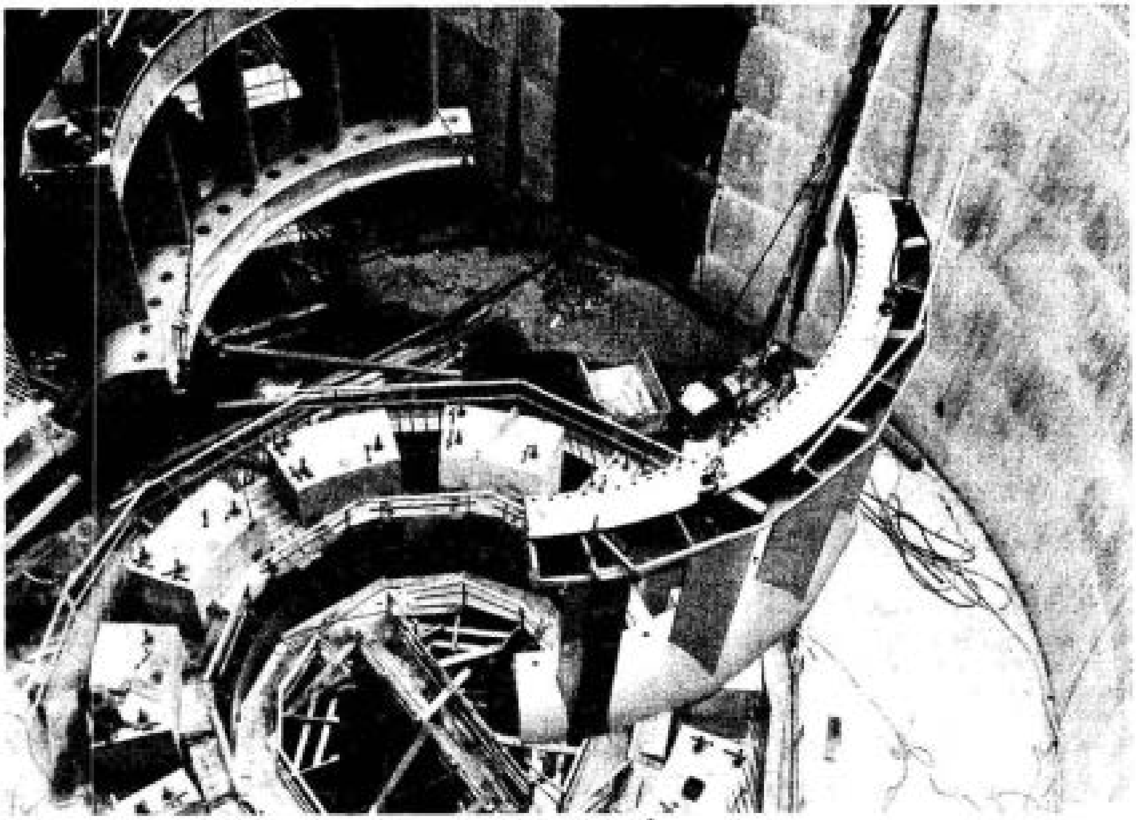
Although primarily concerned with hydropower development, the Walla Walla District was involved in another study of wind power late in the decade. In 1977, the Corps ordered two large windmills patterned after a 1929 design to be placed on the Big Flat site behind Ice Harbor Dam. While the windmills were not intended to produce energy, successful tests of windmills there could have resulted in substantial energy and monetary savings. The test was to determine if windmills could be used to provide irrigation for property isolated from readily available power sources. Specifically, the District hoped the windmills could successfully irrigate property which was to be used for wildlife mitigation. During the tests, the windmills pumped water to large holding tanks. When the tanks became two-thirds full, water automatically siphoned out to irrigate the vegetation the Corps had planted.

"It's really the simplest form of irrigation there is," said Jack Ardner, Corps Resource Manager. "There's very little maintenance. Someone climbs the tower a couple times a year and tightens the bolts."[43]



LOWER GRANITE DAM

Unfortunately, the pilot project was not as successful as the Corps had hoped it would be. Each windmill irrigated only a small area in proportion to the many acres the District needed to plant for wildlife habitat. Consequently, plans were developed in 1980 to install in the area massive underground irrigation systems fed by electric and diesel pumps on the Snake River. The windmills already installed will remain and continue to pump water inexpensively. While the Corps found that in some areas windmills are ineffective, the program provided valuable information on windmill capabilities.[44]



LOWER GRANITE DAM

In 1937, J. D. Ross, the first administrator of the Bonneville Power Administration, spoke of the potential of the Columbia River for hydroelectric production. "A great river is a coal mine that never thins out. It is an oil well that never runs dry. The Columbia River will flow through the Bonneville and Grand Coulee Dams...as long as the rain falls and water flows downhill to the sea."[45] Water has been flowing downstream through the turbines at Bonneville and Grand Coulee since their completion. It now also flows through numerous other dams on the Columbia and its tributaries, producing as it goes inexpensive electricity for a growing region. The rivers of the Northwest are, in a sense, renewable oil wells. But population growth and industrialization in the area have dramatically increased demands for hydropower. It is becoming difficult to find environmentally and economically acceptable damsites. Irrigators and fishermen have placed additional demands upon the rivers, and regulation of streamflows for fish and irrigation reduces the amount of water available to turn turbines. In the coming years, residents of the Northwest will have to conserve, as conservation is the most cost-effective way to gain extra energy. At the same time, they must search for alternative power sources, especially sources of electricity. Electrical energy rose from 13 percent of the country's primary energy sources to 26 percent between 1947 and 1973. The Department of the Interior estimates that it will increase to 42 percent by the year 2000 as the nation conserves depleting stocks of oil and gas for higher priority uses such as transportation.[46]

Traditional sources of electricity--coal, nuclear, and hydropower--will be combined with wind, solar, geothermal, and waste reprocessing to meet the needs of the Northwest. The Corps of Engineers has been concerned largely with hydropower. As was shown with the Northwest wind studies, however, nonhydropower sources can oftentimes be integrated with the area's water power system. It is possible that in the future the Corps may become more involved in nonhydropower research and development.[47] Congressional authorization for projects not related to hydropower has not yet come, and might not in the future. But even if the Walla Walla District retains its interest only in water power, it will continue to play a pivotal role in the growth and development of the Pacific Northwest, where hydroelectricity will always remain a key element of the power pool.

NOTES

1. Quoted in Dorothy O. Johansen and Charles M. Gates, Empire of the Columbia: A History of the Pacific Northwest, 2d ed. (New York: Harper & Row, 1967), p. 516.
2. Ibid., pp. 516-517; History and Tradition of the Corps of Engineers (Fort Belvoir, Va.: U.S. Army Engineer School, 1953), p. 88.
3. Johansen, Empire of the Columbia, pp. 513-541; Steward H. Holbrook, The Columbia (New York, Rinehart and Co., 1956), pp. 292-326.
4. Woody Guthrie, Roll on Columbia, 1941, quoted in Vera Springer, Power and the Pacific Northwest: A History of the Bonneville Power Administration (Washington, D.C.: Department of the Interior, 1976), p. 33. By 1975, Pacific Northwest residents were paying only about 39% of the national average cost for electricity. See Seattle Daily Journal of Commerce, 18 January 1977.
5. For a good analysis of the power debate in the Northwest and the formation of the BPA in the 1930's, see Johansen, Empire of the Columbia, pp. 519-528 and Springer, BPA, pp. 29-41.
6. Tri-City Herald, 21 March 1976; Spokane Spokesman-Review, 18 November 1979; BPA to Richard Chapman, Acting Walla Walla District Engineer, 26 June 1978, in Engineering Division Files, "Energy and Power," 1501-07 (Engineering Division Files hereafter cited as EDF); Springer, BPA, p. 29. For an analysis of the Northwest energy situation in the mid-1970's and prospects for the future, see Donald Hodel, "The Year 2000--Revisited," in Western Energy Congress, Conference proceedings: April 16, 17, 18, 1974 (Wenatchee, Wa.: The Wenatchee World, 1974), pp. 18-37.
7. Tri-City Herald, 21 March 1976. Information on the aluminum industry in the Northwest can be found in Johansen, Empire of the Columbia, pp. 529-531. See also Pendleton East Oregonian, 20 December 1979.
8. Tri-City Herald, 4 November 1976. For a blistering attack on environmentalist-caused delays in energy production on the national level, see Dick Leggitt, "Energy on the Defensive," RE Magazine, December 1978.

9. See Tri-City Herald, 16 January 1980. For more information on the Asotin Dam controversy, see chapter 3 of this volume.

10. See Water Policies for the Future: Final Report to the President and to the Congress of the United States by the National Water Commission (Port Washington, N.Y.: Water Information Center, 1973), p. 172; and Tri-City Herald, 24 January 1977.

11. Tri-City Herald, 14 March 1976, 25 February 1979, 8 July 1979; Walla Walla District news releases, 30 January 1978, 2 February 1978, 21 April 1978, 12 May 1978.

12. Tri-City Herald, 14 March 1976; Lewiston Morning Tribune, 18 May 1977.

13. Civil Engineering, June 1976, p. 45.

14. Interview with W. E. Sivley, Walla Walla, 18 November 1980; interview with Rodger Colgan, Dworshak Project Engineer, Orofino, 12 November 1980. See also Lewiston Morning Tribune, 30 July 1978.

15. Sivley interview; Colgan interview. C. J. Allaire to North Pacific Division Engineer, 6 August 1979, EDF, "Dworshak Fish and Wildlife," Book 8, 1518-01; Lewiston Morning Tribune, 30 July 1978.

16. LaGrande Observer, 23 October 1976; Tri-City Herald, 3 May 1977, 6 February 1980, 24 February 1980; Pendleton East Oregonian, 6 June 1977, 5 October 1978, 11 April 1980.

17. Tri-City Herald, 12 March 1978; Pendleton East Oregonian, 22 January 1979.

18. A low-head dam is defined by the Department of Energy as being less than 64 feet high and having a production capacity of under 15 megawatts.

19. Lewiston Morning Tribune, 17 March 1978.

20. Spokane Spokesman-Review, 19 March 1980.

21. Sivley interview.

22. Pullman Herald, 30 June 1978; Tri-City Herald, 2 October 1979. For a good introduction to the issue of low-head hydropower, see Proceedings from the Midwest Regional Conference on Small Low-Head Hydroelectric Power, May 23-25, Michigan State University (Springfield, Va.: National Technical Information Service, 1978).

23. Boise Idaho Statesman, 20 January 1977; Idaho Free Press, 3 March 1977; Idaho State Journal, 7 March 1980; Idaho Falls Post Register, 19 March 1980; Sivley interview.

24. "Overview of CR&T for Public Affairs Office, NPD, 14 May 1979," in Public Affairs Office, Information Reference Paper Files, "Columbia River and Tributaries," 401-07 (Public Affairs Office hereafter cited as PAO); Irrigation Depletions/Instream Flow Study (Walla Walla: U.S. Army Corps of Engineers, Walla Walla District, 1976), p. I-9; interview with District Engineer, Colonel H. J. Thayer, Walla Walla, 19 October 1980; Spokane Spokesman-Review, 16 April 1976.

25. Review of Power Planning in the Pacific Northwest: Calendar Year 1975 (Pacific Northwest River Basins Commission, 1976), pp. 68-69; Thayer interview.

26. For background on pumped storage, see Converting Existing Hydro-Electric Dams and Reservoirs into Pumped Storage Facilities: An Engineering Foundation Conference (New York: American Society of Civil Engineers, 1975); Pumped Storage Development and Its Environmental Effects: Proceedings of the International Conference Held at the University of Wisconsin-Milwaukee, September 19-24, 1971 (Urbana, Il.: American Water Resources Association, 1971); Gabor M. Karadi, Final Report to National Science Foundation on Pumped Storage and Its Environmental Effects (Washington, D.C.: National Science Foundation, 1974); Pacific Northwest Regional Pumped-Storage Study: Status Report (Portland, Oreg.: U.S. Army Corps of Engineers, North Pacific Division, 1978).

27. Pacific Northwest Regional Pumped-Storage Study, p. 10; Thayer interview; Sivley interview.

28. See Pacific Northwest Regional Pumped-Storage Study, pp. 10-32. For a sampling of comments received during this long process, see EDF, "CR&T Pumped Storage," 1517-01.

29. Idaho Falls Post Register, 15 September 1977; Lewiston Morning Tribune, 21 September 1977; Orofino Clearwater Tribune, 22 September 1977.

30. Moscow Idahonian, 25 February 1976; Lewiston Morning Tribune, 26 March 1976; Pullman Herald, 8 April 1976.
31. See Moscow Idahonian, 25 February 1976; Pullman Herald, 26 February 1976, 4 March 1976; Lewiston Morning Tribune, 2 March 1976.
32. Moscow Idahonian, 10 March 1976.
33. Public Meeting Pullman, Washington, 9 March 1976: Palouse Pumped Storage Study (Walla Walla: U.S. Army Corps of Engineers, Walla Walla District, 1976), pp. 22-23. This publication contains all of the testimony given at the meeting, as well as petitions, written statements, and newspaper and magazine articles.
34. Lewiston Morning Tribune, 11 March 1976; Pullman Herald, 11 March 1976; Spokane Spokesman-Review, 12 March 1976.
35. Lewiston Morning Tribune, 17 March 1976; Moscow Idahonian, 17 March 1976.
36. Pullman Herald, 18 March 1976.
37. Ibid.
38. Lewiston Morning Tribune, 17 March 1976.
39. See James N. Peterson, et al, Pacific Northwest Regional Wind Energy Study (Walla Walla: U.S. Army Corps of Engineers, Walla Walla District, 1978), especially pp. 1-22 and 181-204; Seattle Daily Journal of Commerce, 28 September 1977; Tri-City Herald, 6 December 1977. Two early studies provide a good background for research into wind energy. See E. W. Golding, The Generation of Electricity by Wind Power (London: E. & F. N. Spon Ltd., 1955; reprint 1976); and Palmer Cosslett Putnam, Power from the Wind (New York: Van Nostrand Reinhold Co., 1948).
40. Hatfield and Packwood to Peel, 14 June 1977, EDF, "CR&T--Wind Energy," 1517-01.
41. See Peel to Packwood, 12 July 1977, and L. V. Armacost, Chief Walla Walla District Basin and Urban Studies Section to Herb Kennon, North Pacific Division, Telephone Conversation Record, 15 July 1977, both in EDF, "CR&T--Wind Energy," 1517-01.
42. See Pacific Northwest Regional Wind Energy Study, Walla Walla Union-Bulletin, 18 April 1978.

43. Walla Walla Union-Bulletin, 12 August 1979.

44. For information on the windmills at Ice Harbor, see Walla Walla Union-Bulletin, 18 November 1976, 12 August 1979; Tri-City Herald, 9 March 1980; and Intercom, 17 March 1976, pp. 1-2.

45. Quoted in Springer, BPA, p. 33.

46. See George E. Marshall, Electrical Energy in the Pacific Northwest (Seattle: U.S. Army Corps of Engineers, Seattle District, 1978).

47. Sivley interview.

THIS PAGE LEFT INTENTIONALLY BLANK

CHAPTER 2

FLOOD CONTROL

THIS PAGE LEFT INTENTIONALLY BLANK

CHAPTER 2

FLOOD CONTROL

Mike Galloway, new proprietor of a photography studio in Heppner, Oregon, interrupted a Sunday game of billiards to watch huge drops of water striking the roof of the harness shop across the street. As the rain increased, Galloway left the saloon and stood under the awning waiting for the shower to slacken before walking to May Street Bridge where the water from Willow Creek would be rising. Instead of abating, the rain increased in intensity, accompanied by lightning bolts and rolls of thunder, sending a sheet of water over Main Street and uprooting locust trees. Mike Galloway was immediately thrown into a flood with a 20-foot crest that swept houses from foundations and crumpled buildings. Some victims were pinned within this rubble; others were trapped in upper stories of buildings or on roofs.[1]

This flood of 1903 in Heppner killed 247 and elicited an immediate community and regional effort to bury the dead, remove silt and debris, feed and clothe residents, and reconstruct the town. Total receipts of $61,016 collected for Heppner flood relief represented the gratuitous charity of individuals, lodges, churches, and governmental bodies from all over the nation.[2] The noble response was also necessary to the well-being of the town since at that time there was no Federal relief program for flood victims. The Federal Government's acceptance of responsibility for damages to the welfare and property of citizens from natural causes began with flood control efforts in the lower Mississippi Valley in 1918. The 1936 Flood Control Act granted the Corps of Engineers broader authority to supervise Federal flood control projects. Subsequent flood control legislation augmented the Corps' role in flood control projects to include related activities of power generation, irrigation, water supply, and recreation. Under a 1960 flood control act, the Corps created a Flood Plain Management Service, a move that reflected a new perspective on flood control--reducing potential damages from floods by controlling development in flood plain and floodway areas.[3]

The Federal Government has committed billions of dollars to flood control and mitigation projects. The 1973 report to the President and the Congress by the National Water Commission noted that annual damages from floods averaged nearly $1 billion, and from 1955 through 1969 average annual loss of life from flooding was 83. In view of the high level of human and property losses, the commission urged that the nation improve its methods of handling flood problems.[4]

George Laycock, a naturalist critical of public engineering projects, presented an even more pessimistic evaluation of the negative results of the billions of dollars invested in building dams for flood control. Laycock pointed out in his book, The Diligent Destroyers, that at the time the 1936 Flood Control Act was passed, annual losses were $250 million. Thirty years and $7 billion later, the losses had increased to $965 million annually. Further, the dams themselves increase the flood losses by encouraging development of flood plains supposedly secure from future flooding. Even the Corps recognized that these dams could not eliminate all floods but were designed for the "project flood," the worst type of flood possible. The dams themselves have a finite life expectancy because they increase sedimentation in the reservoirs behind them. This process effectively destroys their usefulness, according to Laycock.[5]

Laycock's argument, however, fails to acknowledge the multipurpose nature of most flood control projects. These dams provide other valuable benefits, including billions of kilowatt hours of electricity, slack water for navigation, recreational opportunities, and exploitation of fertile flood plains for agricultural, urban, and industrial purposes.[6]

Even with the many benefits accruing from structural methods of controlling floods, escalating costs and unrestrained exploitation of flood plain areas have led to serious attempts to formulate nonstructural alternatives to flood control problems. One positive result of this redirection was the requirement that residents of flood plains share the costs of floods through a national flood insurance program, which began with the 1960 Flood Control Act. Under this act, the Corps participated with local and state governments in providing flood plain information to nearly 1,300 communities.[7] Eight years later, that cooperation was expanded under the 1968 National Flood Insurance Program. This program, further strengthened in 1969 and 1973, formulated a system of subsidizing insurance for existing property on flood plains and requiring owners of property subsequently constructed in areas identified as flood plains to pay higher actuarial rates. Moreover, communities occupying flood plains were required to develop plans for minimizing flood hazards by 1976 or become ineligible for Federal aid.[8] In complying with the provisions of flood control legislation, the Corps cooperated with other agencies--the U.S. Geological Survey and the National Oceanic and Atmospheric Administration--to prepare the requisite maps for the flood plain information reports.[9]

In view of the impact floodway and flood plain designations have on communities such as Heppner, it is not surprising that the release of such maps was viewed locally with apprehension. Without some form of flood control for the areas identified on the maps as subject to flooding, such as the construction of a dam, the commercial growth of Heppner and the downstream communities of Lexington and Ione would be virtually halted. The issue of whether or not to build a dam was not new. Since the tragic flood of 1903 and through the decades of recurrent flooding, town residents, local government officials, and Federal agencies had examined and debated the merits of building a dam above Heppner. Floods have plagued Heppner in 1934, 1943, 1949, 1969, and in 1971; the latter causing an estimated $200,000 worth of damage. The endemic flooding of this region can be traced to the four separate streams which unite above Heppner and to frequent and violent thunderstorms. It was such a thunderstorm that created the 1903 flood by inundating the area above Heppner with tons of water, the force of which carved great gashes into the walls of Shobe Canyon and rolled huge boulders downstream. The floodwaters not only took 247 lives at Heppner, but also struck the downstream towns of Lexington and Ione, although without loss of life.[10]

This tragic legacy spurred community efforts to seek methods of controlling future floods. A 1934 Congressional Act authorized preliminary examination of Willow Creek and its tributaries. In the following years, numerous surveys and studies were undertaken, and in the late 1940's the Corps prepared a survey report which recommended constructing a 110-foot-high concrete dam at an estimated cost of $5.5 million. The Heppner City Council pledged full support of the project.[11]

For many years, nothing further developed on the proposed dam because of the marginal economic feasibility of a single-purpose reservoir. In the late 1950's, local citizens requested a reanalysis, and the Federal budget for FY 1960 allocated funds to the Walla Walla District for such a study. In November 1963, the Corps submitted the report which found that water backed up by the dam could be used for municipal and industrial water supplies, irrigation, and recreation, in addition to flood storage. Congress authorized the project on October 27, 1965.[12]

After completing the design memorandum studies in 1973, the Corps considerably altered the scope of the authorized project by proposing a 149-foot earth and rockfill dam to protect Heppner and downstream areas from floods. The irrigation part of the project was deferred to a future date, municipal and industrial water supplies and water quality control were eliminated, and recreational uses were reduced in scope. Congressional reauthorization was necessary because of these changes. A bill granting approval for the new project was passed and then vetoed by President Ford in December 1974. All work on the project ceased in December of that year.[13]

One reason for the veto was that the cost of the undertaking was not warranted by the projected benefits. The proposed dam then found a friend in Senator Mark Hatfield of Oregon, who made the project the centerpiece of his message to Congress in 1978, citing it as an example of poor water resource planning at the Federal level. Hatfield argued that flood control dams should be constructed to protect lives, regardless of whether they meet justifiable benefit-cost ratios. The argument convinced Congress, which approved the project in August 1978. Although President Carter vetoed the $10.2 billion energy bill including the Willow Creek project in October, a compromise bill was passed and approved by the Executive Branch which allocated $500,000 to the project.[14]

This roller coaster of activity at the Federal level matched changing attitudes among local residents. As construction of the dam would be the single largest event in the community since the 1903 flood, it would have been unusual if its construction was not accompanied by public debate. The process of community involvement through public hearings demonstrated the Corps' position as a technical advisor and mediator between the community and the Federal and state governments. After the Ford veto of 1974, the Corps reevaluated and modified the project. In March 1976, all of the 38 Heppner residents attending a public hearing expressed opposition to the dam. "This is nothing more than a political football," declared Mayor Jerry Sweeney. "The Corps has spent $660,000 on surveys and studies. I personally feel we have been led down the primrose path."[15]

Responding to this direction in public sentiment, District Engineer Colonel Nelson Conover wrote to Major General Wesley Peel, North Pacific Division Engineer, that it was apparent local people would no longer tolerate the uncertainty of a project which had been repeatedly proposed and disapproved. Colonel Conover recommended against any further work "unless, and until, there is a clearly expressed change in the desire of the people."[16] Walla Walla District Civil Engineer Gerald Roediger expressed his view that "the Heppner people would like to see a project," but this one apparently was not going to be approved, so they "feel it is fruitless to continue" supporting it.[17]

Early in 1978, public opinion shifted dramatically again, leading Hatfield to ardently declare his support of the project. In the meantime, efforts were continuing to find other ways of controlling runoff. The Heppner Water Control District, which was formed in 1971 and included 67,000 acres, initiated efforts in 1977 to build waterways, terraces, and small ponds. Anticipating that this work would be completed in 1982--four years later--the East Oregonian reported in January 1978 that work had been completed in the Shobe Canyon area and Hinton Creek, was progressing on Willow Creek, and would eventually be extended to Balm Fork. The Soil Conservation Service was contributing to the flood control work by channeling runoffs away from Heppner, and the Federal Government provided flood alarms on Shobe and Balm Creeks. Despite these measures, the flood plain maps and the draft of a comprehensive flood plan predicted considerable damage accruing from future floods.[18]

The flood plain maps became a major issue in the flood control debate. In 1974, Heppner had agreed to participate in the national flood control program, and in 1976 the Corps began the task of gathering field information from which flood insurance rate maps would be prepared.[19] In early December 1977, the Walla Walla District Office announced that the Federal Insurance Agency had requested that the Corps prepare more detailed versions of the flood hazard studies for the three communities of Lexington, Ione, and Heppner. These studies would form the basis for decisions affecting construction on the flood plains and determining flood insurance premium rates for new and existing buildings. The revised studies and flood plain maps, released in early 1978, caused further distress to these three towns.[20] The Heppner Gazette-Times summarized the situation facing the towns as virtual elimination of new construction and remodeling in the commercial and some residential sections. If the dam were constructed, flood plains would be eliminated for all intents and purposes.[21] At a public meeting on February 9, 1978, in Heppner, 33 of those present voted their approval of the dam while 18 opposed it. Steve Hickock, of Senator Hatfield's office, was present, and shortly afterward the senator began working for congressional support of the project.[22]

The persuasive argument to build Willow Creek Dam was not the potential loss of life but the impact of the designated flood plains which encompassed most of the business and residential areas of these three towns. The revised survey prepared by the Corps in the fall of 1978 threatened to halt all new growth or renovation within a large portion of the communities and to increase the cost of flood insurance to prohibitive levels. The flood maps which predicted 3 to 4 feet of water over Ione stunned that community. Ione had prepared comprehensive plans based on previously compiled, less restrictive, maps. Publication of the revised maps prompted city officials and citizens to challenge the Corps' findings, particularly as the Corps had apparently failed to include the flood history of Ione in the computer calculations.[23]

Many citizens criticized the project. "Willow Creek Dam is a total waste of money and waste of good farm land," wrote one disgruntled Ione resident. "The Dam don't even change the flood plain" in Ione and Lexington. A poll of 22 business owners in Heppner revealed unanimous opposition to the project.[24] In view of this apparent shift in public opinion, the Corps asked the Heppner City Council to reaffirm the support it had previously given the project back in 1949. The council balked and referred the issue to the citizens in an election slated for March 28, 1979. The dam was subsequently approved by a 188-135 margin.[25]

Oregon Congressman Al Ullman announced in April 1979 that he would not include the project in funding requests for water development in 1980, based on the low benefits-to-cost ratio. Colonel Allaire admitted that none of the structural options studied had economic justification based on tangible benefits. "However," he pointed out, "the potential for loss of life without protection is very real and should be considered." Allaire recommended that an 11,500-acre-foot reservoir be constructed, justified by the elimination of the potential loss of life.[26]

Other problems plagued the project in 1979, including engineering design. For safety reasons, the District had decided to increase the size of the spillway and reservoir. The delays caused by these alterations worried both Senator Hatfield and Representative Ullman. The District assured them that progress would continue as soon as the design problems were solved.[27] This extra expense and additional work made a roller-compacted concrete (RCC) dam economically feasible. The RCC dam has several advantages. It requires less total volume of material and, consequently, less blasting and quarrying. It eliminates the need for a side-discharge spillway, deep-plunging stilling basin, and high containment walls. Construction time is greatly reduced.[28]

The final proposal for the Willow Creek project is for a 154-foot-high RCC dam which will form a reservoir with 13,750 acre-feet of storage and an estimated cost of $35 million. Rock on the damsite will be crushed, mixed with sand and concrete, spread in 9-inch layers, and compacted with rolling equipment. Willow Creek Dam will be the first RCC dam constructed in the United States. Completion date is scheduled for 1983--eighty years after the flood which spurred the residents of Heppner to begin their search for some means of flood control. "We'll have every expert in the world looking over our shoulder," commented Colonel Thayer of the unique RCC construction method.[29] To the residents of Heppner and the surrounding area, it must seem that experts of various kinds have been looking over their shoulders for a much longer time.

WILLOW CREEK DAM CONSTRUCTION
JUNE 1980

Although the flood control issue deeply affected the lives of people in those three small northern Oregon towns, flood control benefits from structural solutions involve a considerably larger area and population in southeastern Idaho. The Corps' and the Bureau of Reclamation's interest in flood control and water resources in this area dates back to a joint 7-year study in the upper Snake River Basin in 1961. The agencies subsequently prepared supplemental reports on individual projects including Blackfoot Dam and Reservoir, Lower Teton Project, Ririe Dam and Reservoir, and Lucky Peak Dam.[30]

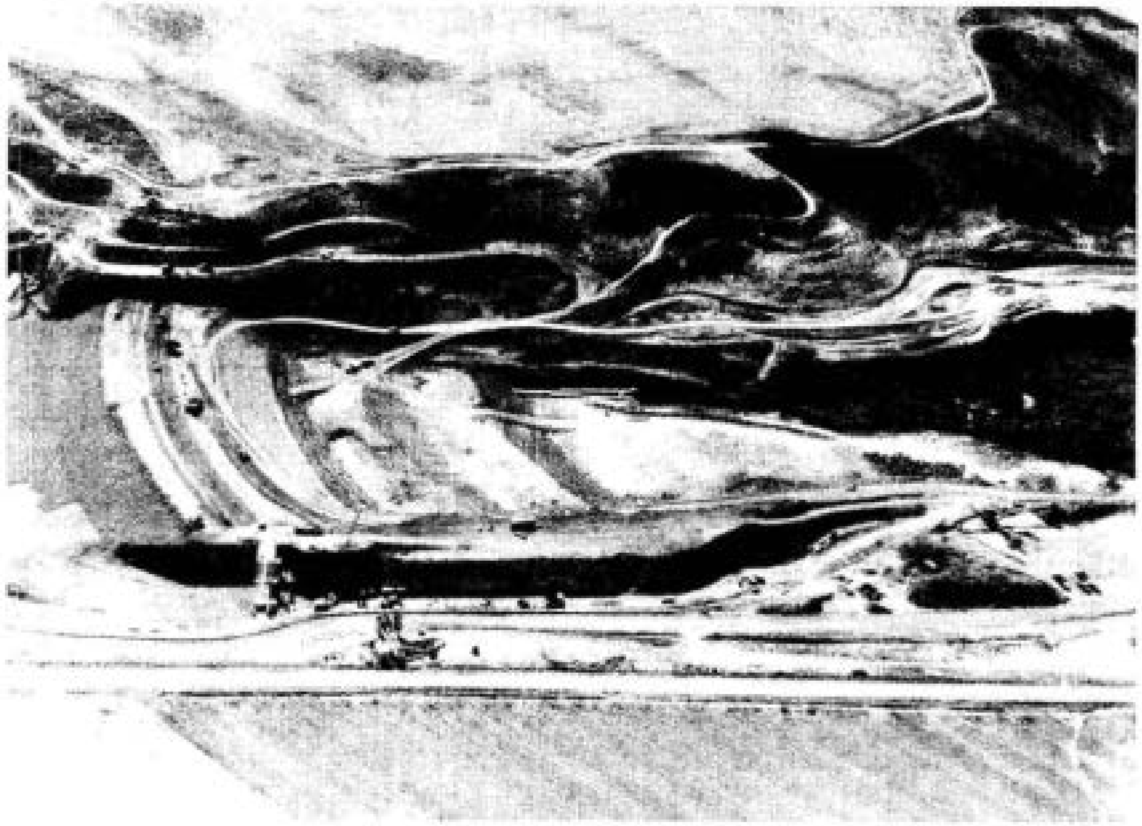
A devastating flood in February 1962 in the Willow Creek-Sand Creek flood plain (not to be confused with Willow Creek, Oregon) was the impetus for the City of Idaho Falls and local Flood Control District No. 1 to request Congress to authorize the Ririe project in the flood control act of that year. The area had experienced 17 major floods since 1911, and residential development of Idaho Falls, the third largest city in the state, was spreading onto the flood plain. In 1962, 64,000 people, with land and improvements valued at over $300 million, lived on the flood plain. Corps officials estimated that recurrence of the 1962 deluge would cause $7.5 million in damages. Although the Ririe project would not provide complete protection, it would reduce destruction by $4.5 million. Planners also recognized that some benefits could not be quantified, such as the peace of mind of residents knowing that they would not be periodically inundated.[31]

Although Ririe was authorized in 1962, construction did not begin until 1967. The estimated Federal cost had originally been $25 million, but funding shortages, disruptive weather conditions, design modifications, inflation, and opposition by environmentalists and disgruntled landowners delayed completion until September 1978, by which time the final cost had risen to nearly $40 million.[32]

The Ririe project consists of a 251-foot-high earthfilled dam with spillway located on Willow Creek approximately 15 miles northeast of Idaho Falls. The reservoir holds 100,000 acre-feet, 90,000 of which is active space for flood control, irrigation, and recreation. The remaining 10,000 acre-feet is for sediment storage and conservation. An 8.1-mile outlet channel with a capacity of 900 cubic feet per second diverts floodwaters directly into the Snake River. The Corps developed five recreational sites, a visitors' center and auxiliary buildings, and purchased 4,000 acres for wildlife mitigation. The water storage potential of Ririe Reservoir elicited strong regional approval as semi-arid southern Idaho depends heavily on irrigation for agriculture. Ririe complements an extensive network of irrigation projects on the upper Snake River, including American Falls, Teton, Blackfoot, Palisades, Island Park, and Minidoka in Idaho, and Jackson Lake in Wyoming.

RIRIE RESERVOIR
1976

The location of Ririe Dam accounted for some of the increased costs of the project. Ririe is in an area of major seismic risk where approximately 20 earthquakes within 100 miles of the dam have been recorded over the past 70 years. The Corps selected an engineering design which provides maximum stability for even the most severe quakes. The design widened the dam crest and increased the height to compensate for any settlement occurring during seismic activity.[33] The Corps also excavated and sealed with steel and concrete a fault zone, described as a "quicksand-like streak" in the middle of the base of the dam. The dam is extensively instrumented with piezometers, an inclonometer, a slope indicator, and seismographs. Close monitoring of the instruments and comprehensive inspections throughout the construction period indicated that Ririe was indeed a sound structure.[34]



RIRIE DAM UNDER CONSTRUCTION

District Engineer Colonel C.J. Allaire announced that a final inspection made before jurisdiction of the project was transferred to the Bureau of Reclamation resulted in a "...clean bill of health.... There are no structural or construction deficiencies."[35]

In addition to flood control protection through Ririe Dam, enlarging Blackfoot Reservoir offered another means of increasing flood control protection in southern Idaho. Congress authorized modifying the Bureau of Indian Affairs dam on the Blackfoot River on October 23, 1962, to add storage space exclusively for flood control. After 17 years of evaluation and planning efforts, the Corps informed the Bureau in 1979 that it did not intend to seek additional funding for the modification because of vociferous opposition.[36]

Blackfoot Reservoir was built in the early 1900's primarily to provide irrigation water to the Fort Hall Indian Agency. The dam, a rockfill structure with a concrete core, is 55 feet high, and the reservoir has a storage capacity of about 340,000 acre-feet. The dam served its irrigation function well, but offered limited flood control protection. Under the 1950 Flood Control Act, a channel project to protect the town of Blackfoot and the surrounding area was completed in FY 1964 at a cost of $400,000. Improved flood control through programmed storage was envisioned when Congress authorized modifications in 1962.[37]

Design studies on the authorized modifications initiated in 1965 seemed to pose no difficulties. These studies projected an additional 38,000 acre-feet of storage space for flood control. The Corps encountered problems, however, because changing criteria on spillway design for flood passage forced the District to request that the spillway capacity be increased from 3,800 cubic feet per second to 21,700 cubic feet per second. This change meant widening the spillway and constructing new gates, significantly changing the original proposal.[38]

Further complications surfaced when the public complained about potential damage to duck habitat and wildlife by raising the reservoir. The loudest outcry came, however, when numerous individuals who owned summer cabins on the reservoir complained to their congressmen about possible inundation of their structures.[39]

The District, responding to public opinion, prepared a supplement to the General Design Memorandum in 1976. The supplement recommended a maximum operating pool of 6120.5 instead of 6126, and eliminating 38,000 acre-feet of flood control storage. This proposal met with full support at a public meeting in Blackfoot on March 29, 1978. Corps headquarters in Washington, D.C., disapproved the modification because it was essentially a correction made for dam safety rather than for the flood control previously authorized in 1962.[40] Although the potential for flooding first recognized in 1962 still exists, currently there is no viable proposal for enlarging or altering Blackfoot Reservoir.

Flood control projects at Willow Creek, Oregon, and Blackfoot Reservoir, Idaho, demonstrated the increasing importance and role of public opinion in decision-making processes within Federal agencies. The last 5 years of the 1970's also witnessed participation of interest groups which assertively and competently defended their own interests in projects affecting the environment. In this period, the most controversial flood control project contemplated by the District was the proposed damming of Catherine Creek in Union County, Oregon.

Over 6,000 Indians had appeared in Walla Walla in the spring of 1855 to negotiate their future with Joel Palmer and Isaac I. Stevens, government agents for Indian rights in Oregon and Washington, respectively. Umatilla Indians present at that confrontation reluctantly signed a treaty whereby they agreed to cede much of their territory to the government and move to a reservation within their former lands. A clause in the treaty gave the Umatillas the "...exclusive right of taking fish in the streams running through and bordering" on their reservation, and "at all other usual and accustomed stations."[41]

In 1948, nearly 100 years after the signing of the Walla Walla treaty, severe floods from Catherine Creek swept through the town of Union. Citizens concerned with the impact of the flood began discussing methods of developing and managing water resources in the area. The Union County Water Development Committee, formed in 1958, asked the Corps in 1961 to study the possibility of a multipurpose dam on Catherine Creek. Congress authorized a Catherine Creek Dam in 1965. The Corps proposed a 210-foot-high earth and rockfill multipurpose dam that would be served by a lake with a storage capacity of 61,000 acre-feet. The project was to provide flood control, irrigation, municipal water supply, fishery enhancement, and recreation for Union County.[42]

However, the Public Law of 1965 which authorized the dam conflicted with the treaty rights guaranteed to the Umatillas in 1855. In late 1972, the Umatillas informed the Corps that they claimed fishing rights on Catherine Creek as a "usual and accustomed" fishing station. After 2 years of discussion failed to produce a compromise, the Indians filed suit in late 1974 in the U.S. District Court to halt construction of the dam. During the subsequent trial, the Umatillas argued that fishing in Catherine Creek required clear shallow water from which fish could be taken by hand, with spears, and gaff hooks. The dam would make such fishing impossible. Judge Robert Belloni, after noting that no judge had ever been asked to rule on such a broad case, questioned, "Can any stream in the Northwest be dammed by a farmer or an irrigation district without violating the Treaty? Can ever a road, dam or city be built without touching those rights? Where do we draw the line?" Nonetheless, the judge ruled on November 11, 1977, that the dam would violate the historic rights of the Umatillas. The Corps chose not to appeal the case and construction of the dam was halted.

The Catherine Creek Dam proposal well illustrates the controversy surrounding historic Indian fishing rights. Even had the Umatillas decided not to pursue their rights, the dam would have been subjected to intense debate. Catherine Creek is used by farmers for irrigation and by the residents of Union for domestic use. During drought years, such as 1976-77, Catherine Creek does not have enough water to meet all demands. Alternately, the creek poses a serious flooding threat during heavy runoff. Because of the need for flood control, water reserves for irrigation, and other uses, a variety of groups supported the dam, including the Union County Water Development Committee, the Oregon Wheat Growers League, the Union County Court, the Union Commercial Club, and many landowners and residents of the impacted area.[44]

Simultaneously, many residents of Union County opposed the project. Although some branded these opponents as "radical environmentalist groups" and a "handful of newcomers," the Committee for Catherine Creek, organized in 1975 to oppose the dam, vehemently refuted such labels. "Most of us would resist the easy, stereotyped label "environmentalist" or "newcomer," the committee's chairman George Venn stressed, "because it is usually used to dismiss questions and avoid points of view."[45] The Oregon Environmental Council, Friends of the Earth, the Blue Mountain Audubon Society, and many others added their support to the committee.[46]

In the early 1970's, the District held three public meetings and made numerous other contacts with groups and individuals concerning the project. After much study, the Corps concluded that the benefits of the project outweighed the costs. It was this benefit-cost ratio that eventually produced the most controversy. The Corps' annual figure for area redevelopment benefits was questioned, along with assertions that construction would greatly benefit the local area. The public also disputed recreation, fishery, and irrigation benefits the Corps had projected.[47]

Oregon Senator Robert Packwood was encouraged by both those who favored the dam and those who opposed it to request an independent benefit-cost study. At Packwood's instigation, the General Accounting Office (GAO) undertook a study of the project in 1976 and found that the benefit-cost ratio had dropped from 1.06 to 1, to .87 to 1 since the Corps' 1971 evaluation. The GAO concluded that the Corps had overestimated recreation, fisheries, and municipal water-use benefits, and had underestimated benefits for irrigation. The GAO study, however, was not meant to be a final report. The Accounting Office stated that their figures only indicated that there were "potential adjustments which could affect the Corps' current ratio" and recommended that if the Umatilla litigation was resolved in the Corps' favor, the Corps should "reexamine the economic feasibility of the project and recalculate the benefit-cost ratio."[48]

The Union County Extension Agent and Water Development Committee both favored a new benefit-cost study.[49] When the Corps lost the Indian litigation case and chose not to appeal, however, the argument over the benefit-cost ratio became moot. Gerald Eyestone, Assistant to the Chief in the Engineering Division, calculated that it cost the Walla Walla District nearly $22,500 in 1975 to respond to queries from the Committee for Catherine Creek and to prepare for public meetings with the group.[50] Had the Corps chosen to appeal the Belloni decision and won, it would have had to undertake a new benefit-cost study and face similar expenses.

The Catherine Creek project not only demonstrated the impact special interest groups can have, but it also emphasized the crucial role of economics. The costs of litigation and the need to economically justify the proposed dam heavily influenced the final decision to abandon the project. In another instance, in the State of Washington, economic realities defeated a proposed dam, this time because the rapid rate of inflation continually outstripped the local community's ability to participate in cost-sharing.

Periodic floods sweeping through Zintel Canyon into the residential areas of Kennewick prompted city officials to seek a satisfactory solution to the problem in the early 1950's. Urban development and industrialization in the Tri-Cities area surrounding the Hanford Nuclear Plant further increased efforts to control runoff created by warm winds which quickly melt snow covering frozen ground.

Studies undertaken in the 1960's indicated that the most feasible solution would be constructing a small detention dam and reservoir. After serious flooding in 1969, Congress authorized the Zintel Canyon Dam. A general design memorandum was submitted in January 1974 which called for the construction of a rockfilled dam which would hold 2,560 acre-feet of water. The reservoir would be temporary, gradually releasing all floodwater after the danger of flooding had passed.[51]

Legislation passed in 1970 authorized a 119-foot-high rockfill dam. By 1974, studies were underway for an alternative optimum gravity dam (OGD) using cement-enriched natural soils. Such a structure would eliminate the need for a separate spillway structure and allow extreme flood flows to spill over the top without causing structural problems. The OGD would, therefore, be only 109.5 feet high as compared to the 119 feet required for a rockfill dam. By 1979, the District was exploring Zintel Canyon as the best location for building an OGD using roller-compacted concrete (RCC).[52]

In 1970, the Corps informed the City of Kennewick that its share would be $200,000, and that the total project would cost approximately $2 million. By 1974, the estimated Federal cost of the project had escalated to $3.5 million with the non-Federal cost rising to $394,000. In 1976, Kennewick City Manager Art Colby, upset over the rising costs, publicly expressed his and the city's frustration with the impact of inflation on the project, funds for which had been requested seven years ago. "It appears to me that cost escalation of this project may have gone beyond the cost-benefit ratio. It may be that it would not be feasible to construct the dam after all." By 1978, the estimated Federal cost was $4.7 million and non-Federal costs, $653,000.[53]

The city's reluctance to assume its part of the financial debt did not reflect disinterest or change in public attitudes toward the proposed dam. Prior to 1975, Kennewick had assured the government of its willingness and ability to meet the non-Federal cost obligations. After 1976, the project was delayed because Kennewick could no longer give assurance that it could meet its financial responsibilities. In the meantime, demands for more residential construction in the area continued to grow, making flood control measures even more imperative. Nonetheless, prospects for the dam are bleak unless more Federal assistance becomes available.[54]

Kennewick's frustrations with the protracted efforts to solve its flood problem were repeated in another Washington community. But in the university town of Pullman, aesthetic issues were more prominent than economic ones. Despite the potential threat of floods to the businesses in the downtown area, the City Council could not easily find a solution acceptable to those concerned with the environmental integrity of the Palouse River.

The impact of three floods in 30 years in the business community and residential areas in the flood plain underscored the tortuous process of negotiation, review, evaluation, and recommendations for an effective flood control project at acceptable financial and environmental costs. Pullman residents had repeatedly rejected a structural solution presented by the Corps in 1963.[55]

A major obstacle in finding a solution was local opposition to any extensive alteration of the river channel because of possible adverse environmental impacts and the appearance of a concrete canal. However, interest in the Palouse River flood control project continued with an April 1979 workshop between city officials and the Corps. From the alternatives presented at that meeting, the Corps selected channel excavation as the only economically feasible plan. Although the excavation would not meet the 100-year flood frequency criteria, the Corps felt the plan would provide protection from all but extremely large floods.[56] Pullman's reluctance to accept this plan led to further refinement for channel capacity to accommodate a 50-year flood at an estimated project cost of approximately $500,000.

Constructing new dams or modifying existing dams is one way of controlling floods. Enlarging the carrying capacity of channels, such as the Palouse River near Pullman, constructing and maintaining levees, and providing information on flood plains are other important methods of reducing or minimizing damages from floodwaters. The Flood Plain Management Services program, described above, provides guidelines to

Federal agencies regarding location of Federal properties and interests in flood hazard areas, and guidance to state and local agencies through flood plain information reports, technical services and guidance, guides, pamphlets, research, and flood damage prevention. In this period, the District prepared numerous flood plain information reports, special flood hazard information reports, including one for the Rexburg-Sugar City area after the Teton Dam failure in 1976, and assisted other areas through the technical services authorization.[57]

The District initiated a flood control study on the upper Snake River between Palisades Dam and American Falls Reservoir in 1977 which investigated both structural and nonstructural flood control solutions.[58] Other flood control projects included a study of the Payette River in Idaho which was later recommended for deauthorization, a study of an evacuation channel project for Mill Creek in Walla Walla, an evaluation of flood protection measures on the right bank of the Snake River near Blackfoot, and a study of a levee system on the Touchet River and Coppei Creek through Waitsburg, Washington. The District completed levee and channel improvement work for two projects in western Idaho along the Payette and Weiser Rivers, and in April 1979 received approval for an emergency streambank project for the south bank of the Payette River. This work eliminated erosion problems endangering the city sewage lagoon at Emmett. Another project on the Little Weiser River removed debris deposited by flood flows and restored full channel capacity to the stream.[59] However, a report completed by the District in FY 1979 found that reduction of flood damage by enlarging the channel and streambank levees of the Weiser River would not be economically feasible. This study included irrigation benefits along with flood reduction benefits accrued from constructing reservoir storage sites.[60]

During this period, the District evaluated flood damage reduction near the Idaho towns of Gooding and Shoshone which were subject to flooding from the Little Wood River. A project proposed for the area would divert flood flows from the river into irrigation canals and adjacent lava fields where the water would evaporate. Kenneth D. Hoyt of the District's Basin and Urban Studies Section pointed out to Gordon Price of the Wood River Resource Area, that the local costs would be quite large for any of the six alternatives providing adequate protection against 100-year floods. This protection was needed in order to circumvent the required flood insurance for Federally insured or subsidized loans.[61]

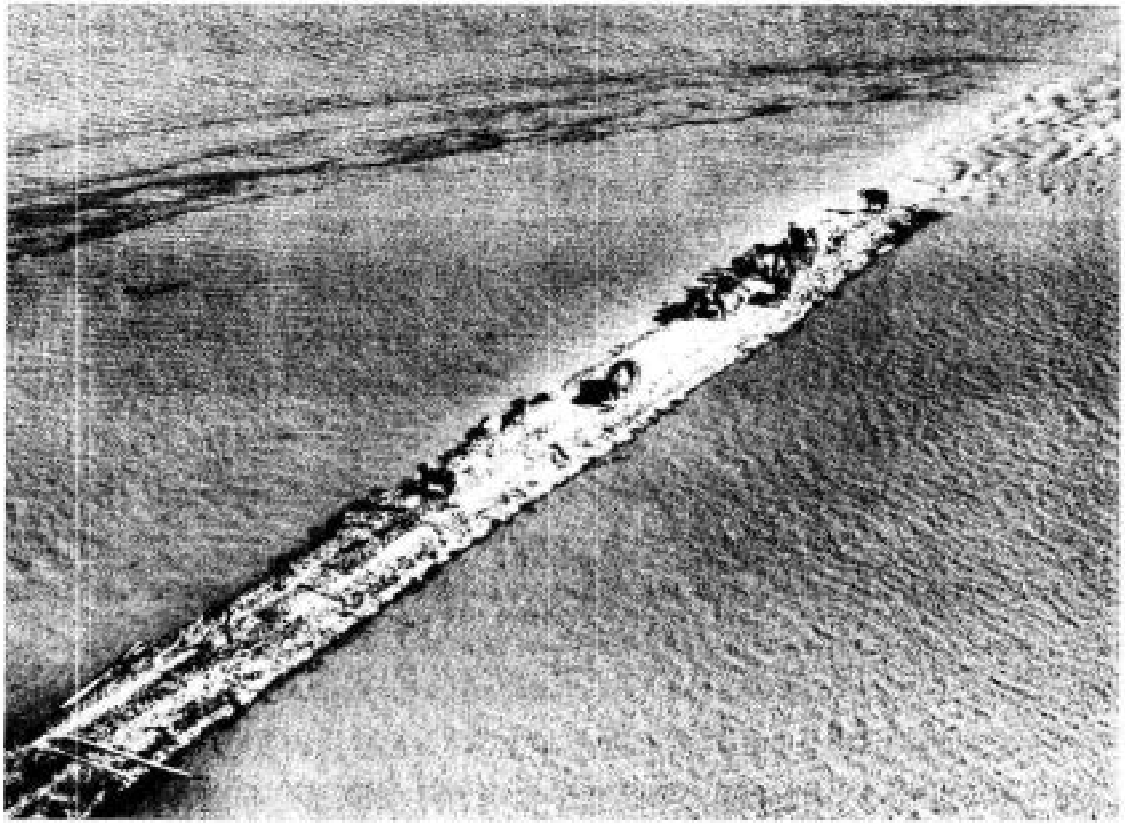
The District also devoted its efforts to protecting the most populous area under its jurisdiction, the Boise Valley. These activities began in 1950 with flood control work to stabilize the Boise River channel above the city at the New York Canal Diversion Dam. Both Canyon County and Ada County withdrew from the first plans to construct a levee system, and a levee restudy was initiated in 1972. This study concluded that the District should pursue nonstructural measures and that construction of levees was not feasible. The levee project was consequently placed on an inactive status. Interest in flood protection continued with the District helping the flood control district and landowners determine flood protection measures. Both the City of Boise and Ada County requested a flood plain information report, and a special flood hazard information report was prepared for the Boise River near Caldwell.[62]

Two structural flood control projects proposed for the Boise River Basin in this period were the Stuart Gulch Dam and Cottonwood Creek Dam, to be constructed in the foothills above Boise. The Cottonwood Creek Dam would be an earthfill structure for detaining floodwaters and releasing them at rates not exceeding the capacity of the creek channel. Consequently, no permanent lake would be formed. Both dams are on an inactive status due to lack of local sponsorship.[63]

The situation in the Boise urban area illustrates how populated areas can plan for smaller floods without undertaking dam control projects. With projected increases in construction expenses and environmental constraints, Boise and other areas may have to resort to other methods of controlling floods. Some of these measures were described by Alice Dieter of Boise who wrote to the Idaho Statesman protesting the Cottonwood Creek project. In her article she described some of the ways the city had been coping with recurring floods from Cottonwood Creek over several decades. Dieter praised the designers of new office buildings who placed their structures on earthen mounds and masonry bases above the projected level of floodwaters. Over the years, the city also constructed holding dikes and placed diversion gates, berms, and spillways to divert runoff from the overgrazed, steep hills above Boise. In addition, the city was planning a system of terraces and plantings to further control runoff.[64] Another flood control method which greatly adds to recreational and aesthetic values of Boise is the development of a greenbelt along the Boise River which divides the city. Although this is not a levee system like the District's levees at Lewiston, the greenbelt and adjoining parks deter uncontrolled building along the river's flood plain.

Responsibility for preventing floods carries another equally important function, that of fighting the floods that do occur despite the existence of dams and levees. The Federal Government has designated the Corps as the primary agency to fight floods. Public Law 84-99 provides that under emergency conditions, the Corps' Districts can spend up to $100,000 for a flood without having to wait for Congressional or Federal approval. Between 1976 and 1980, the Walla Walla District expended more than $2,700,000 in its flood-fighting activities.[65] The Teton flood fight comprised the major portion of this expense and demonstrated the District's ability to immediately organize a large-scale emergency operation and utilize its expertise in a variety of ways.

Soon after the Teton Dam failure, the Acting District Engineer, Lieutenant Colonel George, and five other Walla Walla District officials arrived on the scene, the vanguard of a tightly organized and highly professional flood-fighting team. Lieutenant Colonel George, flying over Rexburg-Sugar City that Saturday afternoon, observed houses and a large trailer home "bobbing like boats" and cattle swimming or drowned. By nightfall, hundreds of thousands of acres were inundated, over a thousand people homeless, and six people known dead, a number that would increase to 11.[66]



CATTLE STRANDED ON LEVEE AFTER DAM COLLAPSE

Immediate flood-fighting activities were necessarily limited to local efforts at downstream communities like Idaho Falls and Blackfoot where sandbags prevented extensive damage to the commercial areas. In addition to its activities in southeastern Idaho, the District dispatched personnel to Boise to attend meetings held the afternoon of the flood with representatives from the Federal Disaster Assistance Administration (FDAA) and the Idaho Disaster Recovery Office.[67] Personnel from the North Pacific Division assessed the potential effects of the Teton Dam collapse at the Reservoir Control Center in Portland. The Center's Chief, Gordon Green, coordinated information with the District offices in Seattle and Walla Walla as the floodwaters continued to surge through the north and south forks of the Teton River and along the south fork of the Snake River.[68]

The flood lasted 5 days before reaching American Falls Dam 100 miles away, but the force had dissipated and only minor damage occurred below Idaho Falls.[69] The President issued a disaster declaration on June 6 which released funds to assist 5 counties impacted by the floodwaters which spread 156 miles downstream, inundating 162 square miles.[70]

Under Lieutenant Colonel George's command, District personnel began organizing flood-fighting activities from a temporary office in an Idaho Falls bank. Clarence Van Scotter assumed the duties of the Emergency Operations Manager. After attending the meeting in Boise and inspecting the damage from a helicopter during the peak of the flood, Van Scotter began procuring heavy equipment and drivers for the post-flood operations.[71] On Sunday, June 7, the District moved 11 trucks, 3 bulldozers, and 3 earth loaders to Henrys Fork near the base of the ruined dam in preparation for the task of strengthening and repairing the levees protecting Idaho Falls, Shelley, and Blackfoot.[72] On Monday the District began one-day training sessions for flood workers, and on Wednesday started preparing the damage survey reports. Peak flows continuing after the dam failure on Saturday, however, delayed the official flood fight until Thursday, June 10, on the Snake River, and the next Sunday, June 13, on the Teton River. An additional 10 people from the Corps' office at Ririe Dam, 17 miles away, joined the team of District personnel that had arrived at Idaho Falls the previous weekend from Walla Walla. The District activated an Emergency Operations Center on June 10 which coordinated the primary functions of repairing levees, removing debris, demolishing buildings, and assisting in preparing damage survey reports. At the peak of the operations, the Corps detachment included 58 Corps officials, 21 temporary workers, and 109 pieces of heavy equipment.[73]

AERIAL VIEW OF FLOODING AT BLACKFOOT

The extent of the work needed to repair the levees was revealed by an inspection of the damage along the Snake River which showed that water had broken through or overtopped most of the levees, completely washing some of them away.[74] Before beginning the levee repair work, however, the District supervised operations to rebuild a dirt road to Rexburg by buttressing an existing road with gravel dredged from nearby fields. This operation took 4 days.[75]

Van Scotter supervised the road building and levee repair work which included arranging for rental equipment and coordinating the movement of equipment. Repairs were made to levees the District had constructed in the Heise-Roberts portion of the Snake River and to levees constructed by other agencies. In reconstructing the levees, the first step was to force the Snake River back into its channel. This operation became especially difficult when the last remaining gap of the rebuilt channel had to be filled. Trucks dumped loads of rock and dirt into the opening until finally the hole was sealed.[76] The extent of the repairs included rehabilitating 7 miles of levees along the Snake River, at one location on the Teton River near Rexburg, and 2 miles of emergency levees constructed near the community of Teton. The construction work was performed as expeditiously as possible because of the spring runoff which was predicted at 160 percent above normal. On one occasion, 2 miles of emergency embankment were constructed on the Teton River main stem and its south fork, with crews working from daylight to dark.[77] As the crews worked feverishly to repair broken levees and roads, National Guardsmen searched for missing people, and the Red Cross and other volunteer organizations, particularly the Mormon Church, administered first aid and distributed emergency supplies to the thousands left homeless in the wake of the flood.

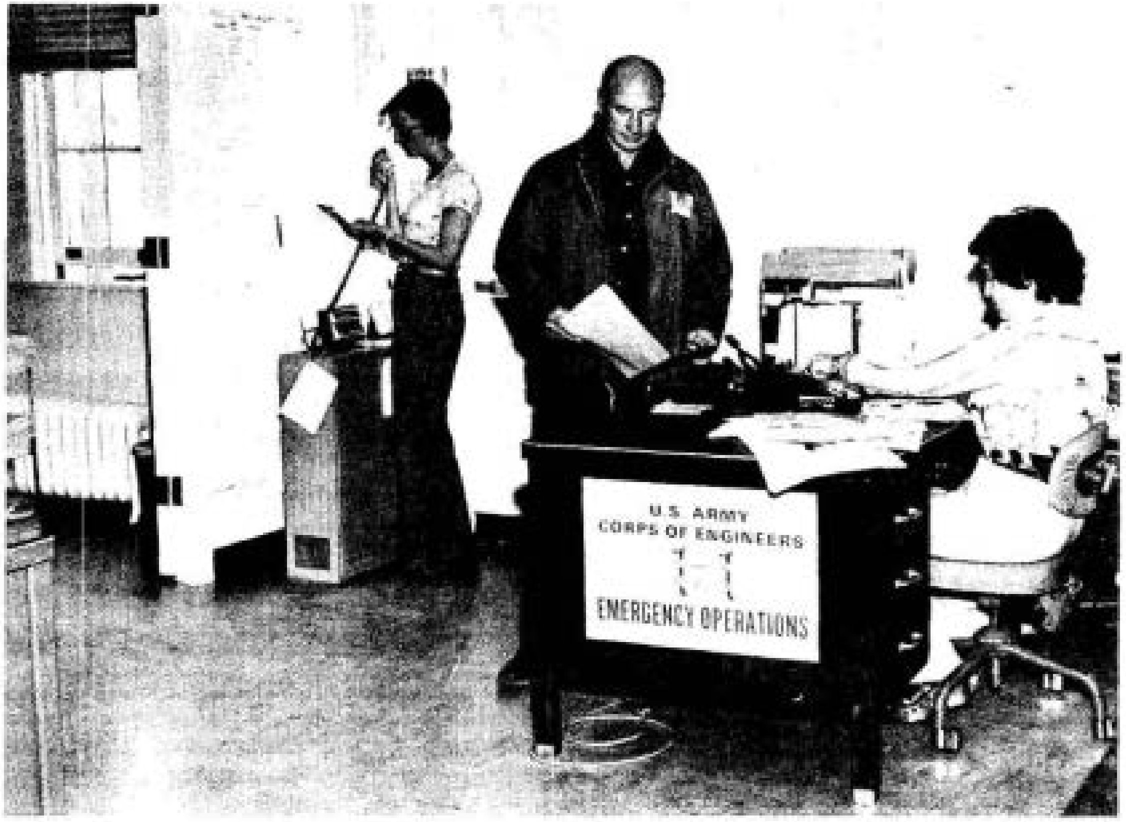
HANK VAN SCOTTER AND LIEUTENANT LANE GRIFFEN
SUPERVISE LEVEE BUILDING

DEBRIS CLEANUP AT REXBURG

While the District reconstructed and repaired the levees, the Soil Conservation Service and the Bureau of Reclamation cooperated in removing debris from farmlands, clearing ditches and county roads, and restoring irrigation to the 500,000 acres of unflooded agricultural land.[78] The District assisted the Soil Conservation Service in these efforts by supervising crews repairing levees, stabilizing riverbanks with riprap, and clearing and removing snags in the Snake River. The Federal Highway Administration aided the flood-fighting efforts by directing the restoration of roads built with Federal funds. The levee work continued into the fall and beyond because of the threat of renewed flooding from spring runoff the next year.[79] The flood fight authorized by Public Law 84-99 ended June 27 on the Teton River and July 2 on the Snake River.[80]

At the same time that it was supervising levee work, the District, acting under the authority of the FDAA, removed debris from public and private property in urban and rural areas upon request of city and county officials, and private property owners. After removing over 147,000 cubic yards of debris from the towns of Rexburg, Sugar City, and Roberts in the month after the dam's collapse, the District proceeded with demolition and removal of flood-damaged buildings. This work continued into October as owners of buildings impacted by the flood decided that the structures could not be salvaged and requested their removal. As in the debris removal mission, the work to demolish unsound and unsafe buildings was done under contract and expedited in as timely a manner as possible.[81]

Assistance in preparing damage survey reports was the third function the District performed under the direction of the FDAA. These reports were prepared to document future claims and damages anticipated or incurred in repairs, restoration, or emergency protective measures to publicly owned structures and facilities such as water lines, sewage treatment plants, recreational sites, and hydroelectric and irrigation plants. The damage survey teams included one representative from the District, one from the State of Idaho, and a representative of the community or county. The FDAA served as a claims adjuster and, on the basis of the reports, allocated assistance to state and local governments under the Disaster Relief Acts of 1970 and 1974. The FDAA assigned separate teams to specific areas, and special attention was paid to the extensive damages incurred to three hydroelectric generating dams and powerplants owned by the Electric Light Division of Idaho Falls. One survey team investigated work completed by local governments in constructing and then removing temporary levees and sandbags, and expenditures made by these governments in procuring additional police and fire protection and disposing of animal carcasses.[82] The final stage, lasting almost 2 years, investigated the completed repairs or replacement and compared the costs of these with the original estimates. Whenever possible, the original team performed the followup inspection. From June through March 1977, the Corps assisted with the preparation of 373 Damage Survey Reports at a cost of $150,000. Thirty-nine contracts were awarded for demolition of 724 structures at a total cost of $481,600.[83]



CORPS' EMERGENCY OPERATIONS OFFICE

Although much attention is paid to spectacular floods like the Teton flood, flood fighting is an intermittent activity most frequently conducted on a small scale. One example of this was the District's flood fight on the Snake River near Blackfoot in January 1979. In anticipation of floods on the ice-clogged Snake River and adjoining irrigation canals, the Bingham County Commissioners immediately requested the District to reinforce the dikes. Upon receipt of this request, the District quickly began repairing the levee which had been destroyed in the 1976 Teton Dam collapse. As the floodwaters rose, the county declared a state of emergency and received a contingent of National Guardsmen. These actions prevented more serious flooding from occurring, although this event was the third major flood in 6 years. The Walla Walla District's response also demonstrated the advantage of having in reserve an organization prepared for immediate activation wherever there is a threat of flooding.[84]

Clarence Van Scotter, Chief of the District's Navigation and Flood Control Branch, explained the District's procedures for anticipating and fighting floods. The District has a 6-man flood-fighting team which can be at a flood site anywhere in the District within a few hours. This team is used to fight an average of 6 floods a year, and each flood lasts from 3 days to 3 weeks and costs $10,000 to $150,000 on the average. In addition to this flood-fighting force, the District's Water Control Section monitors and anticipates runoff from the mountain snowpacks, and evaluates flood potential by comparing this data with weather conditions and stream and reservoir capacity. Despite the thoroughness of data collection and analysis and onsite inspection of streams, Van Scotter emphasized that probably technology would never make his expert 6-person team obsolete. "There will always be floods," he stressed. "You can compute flood water height, but you can compute it wrong. You get the right climatological occurrences and you'll get water that you never heard of. Anytime you get snow in the mountains and the potential for rain, you can have a lot of water come down."[85]

When a flood is imminent, local officials initiate the flood fight with a request for assistance. Then the District's team contracts for equipment through private owners and organizes levee repair and sandbagging operations. According to Van Scotter, the team can generally prevent overbank flooding because of the District's knowledge of the streams and their capacity, and what activities are necessary to prevent flooding. Except in rare cases such as the Teton Dam flood, the District terminates its work when the water recedes.[86]

During the late 1970's, the Walla Walla District repeatedly proved its ability to handle major as well as smaller floods. Experience with the Teton Dam flood verified the necessity of immediate Federal intervention during periods of catastrophy. The District also demonstrated its responsiveness to public opinion and environmental concerns, as well as its ability to work closely with public officials during the prolonged studies and hearings required by dam construction projects. In addition, the successful completion of Ririe Dam and the commencement of construction of a new dam at Willow Creek, Oregon, testify to the Corps' continued leading role in undertaking major engineering works. The Army Corps of Engineers is still the principal national agency for building and repairing flood control structures and for protecting the lives and property of the nation's citizens from the threat of flood. Much of the activity of the Walla Walla District between 1975 and 1980 focused on these twin responsibilities of flood control and flood fighting.

NOTES

1. Giles French, Homesteads and Heritages: A History of Morrow County, Oregon (Portland: Binfords and Mort, 1971), pp. 67-69.
2. Ibid, p. 75.
3. Water Policies for the Future: Final Report to the President and to the Congress of the United States by the National Water Commission (Port Washington, N.Y.: Water Information Center, 1973), pp. 150-151.
4. Ibid, p. 149.
5. George Laycock, The Diligent Destroyers (Garden City, N.Y.: Doubleday & Co., Inc., 1970), pp. 117-118.
6. Ellis L. Armstrong, ed., History of Public Works in the United States 1776-1976 (Chicago: American Public Works Association, 1976), p. 249.
7. Water Policies for the Future, p. 149.
8. History of Public Works, pp. 251-252.
9. In evaluating the flood plains, the Corps applies a 100-year flood frequency criterion which refers to an area having a 1 percent chance of flooding each year. The Federal Insurance Administration (FIA) then supplies detailed maps to communities affected by the 100-year frequency flood ruling in order to facilitate community planning. Such plans are mandatory if communities desire coverage under the FIA, an option that is necessary for continued growth or just to maintain the status quo in view of the high cost of obtaining flood insurance outside the FIA. The flood plain legislation designated the states as the responsible agents for controlling development in the special flood hazard areas using the 100-year flood criterion, and for the regulation and development in the designated floodway as delineated on the flood boundary floodway maps.
10. For background on the floods in the area, see Flood Plain Information: Hinton, Shobe and Willow Creeks, Heppner, Oregon (Walla Walla: U.S. Army Corps of Engineers, Walla Walla District), pp. 12-16; and Robert K. Sutton, "Historical Survey: Willow Creek Lake, Oregon,"

unpublished study, Washington Archaeological Research Center, Pullman, 1980.

11. Heppner Gazette-Times, 15 April 1976, 16 November 1978; Robert Gardner, Social Impact Study of the Proposed Willow Creek Flood Control Project (Walla Walla: U.S. Army Corps of Engineers, Walla Walla District, 1973), p. 17.
12. Howard A. Preston, A History of the Walla Walla District 1948-1970 (Walla Walla: U.S. Army Corps of Engineers, Walla Walla District 1971[?]), pp. 109-110; Annual Report of the Chief of Engineers on Civil Works Activities (Washington, D.C.: U.S. Army Corps of Engineers, 1974), p. 39-18.
13. Chief of Engineers Annual Report, 1974, p. 39-5; Howard A. Preston, Walla Walla District History, Part II, 1970-1975 (Walla Walla: U.S. Army Corps of Engineers Walla Walla District, 1976[?]), pp. 33-34.
14. Heppner Gazette-Times, 17 August 1978, 5 October 1978, 19 October 1978. Hatfield was strongly encouraged by the Walla Walla District to consider loss of life as well as economics. See, for example, Colonel Conover to Division Engineer, North Pacific Division, 10 November 1975, Engineering Division Files, "Willow Creek, Oregon," 1518-01. (Engineering Division Files hereafter cited as EDF.)
15. Heppner Gazette-Times, 25 March 1976; Walla Walla District News Release, 2 April 1976.
16. Walla Walla District News Release, 2 April 1976.
17. Walla Walla Union-Bulletin, 8 April 1976. For further details on the March 19 public meeting, see Gerald Roediger to EDF, 23 March 1976, EDF, "Willow Creek, Oregon," 1518-01. Not all town residents were opposed to construction. See Bob Perry to Conover, 10 April 1976, Ibid.
18. Pendleton East Oregonian, 24 January 1978.
19. The Corps' projected costs for its part of the mapping project were estimated at over $400,000. The maps were prepared by a Pennsylvania engineering firm commissioned by the Federal Insurance Administration, the flood program "overseer" for the Department of Housing and Urban Development. The Corps of Engineers, U.S. Geological

Survey, and the Soil Conservation Service provided data which was applied to the maps, as described in Meridian, Idaho, Valley News-Times, 23 September 1976.

20. Walla Walla District News Release, 5 December 1977.
21. Heppner Gazette-Times, 2 February 1978, 9 February 1978.
22. Gerald Roediger to EDF, 17 February 1978, EDF, "Willow Creek, Oregon," 1518-01.
23. Heppner Gazette-Times, 19 October 1978. Ironically, the proposed dam would have only a minimal effect in preventing flooding downstream from Heppner. According to the Final Environmental Impact Statement, the most recent floods in Heppner have occurred from floods in Shobe Canyon Creek which would not be affected by the dam. See Final Environmental Impact Statement: Willow Creek Lake, Heppner, Oregon (Walla Walla: U.S. Army Corps of Engineers, Walla Walla District, 1973).
24. E. J. Akers to Walla Walla District, 23 January 1979, and Lenna J. Smith to Walla Walla District, 19 January 1979, EDF, "Willow Creek, Oregon," 1518-01. For information on the Corps' 1978 flood studies, see Heppner Gazette-Times, 19 October 1978, 9 November 1978, 7 December 1978; Pendleton East Oregonian, 11 December 1978.
25. Gerald Eyestone to Mayor Jerry Sweeney, report of telephone call made after 15 February 1979, EDF, "Willow Creek, Oregon," 1518-01. For details on the election, also see Heppner Gazette-Times, 15 March 1979, 22 March 1979, 5 April 1979.
26. Colonel C. J. Allaire to Division Engineer, North Pacific Division, 4 May 1979, EDF, "Willow Creek, Oregon," 1518-01. Also see Pendleton East Oregonian, 23 April 1979.
27. Ann Warner, Senator Ullman's Office to Colonel C. J. Thayer, telephone conversation, n.d., EDF, "Willow Creek, Oregon," 1518-01; Senator Hatfield to Colonel Thayer, 24 October 1979, Ibid., and Colonel Thayer to Senator Hatfield, 30 October 1979, Ibid. Also see Heppner Gazette-Times, 22 November 1979.
28. Willow Creek Lake, Heppner, Oregon: Record of Public Meeting, 4 March 1980, EDF, "Willow Creek, Oregon," 1518-01. Also, interview with

W. E. Sivley, Chief, Engineering Division, Walla Walla, 18 November 1980.

29. Record of 4 March 1980 Public Meeting: Pendleton East Oregonian, 6 March 1980.

30. Preston, A History of the Walla Walla District 1948-1970, pp. 81-84.

31. Environmental Impact Statement: Ririe Dam and Lake, Willow Creek, Idaho (Walla Walla: U.S. Army Corps of Engineers, Walla Walla District, 1972).

32. These problems are discussed in Walla Walla District News Release NR 76; Walla Walla District Intercom, 76-21, 31 October 1976; and Chief of Engineers Annual Reports, 1974-79.

33. Environmental Impact Statement: Ririe Dam and Lake.

34. Idaho Falls Post-Register, 18 October 1976.

35. Idaho Falls Post-Register, 18 October 1976.

36. See Chief of Engineers Annual Report, 1974, p. 39-15; Preston, A History of the Walla Walla District 1948-1970, p. 83; and Chief of Engineers Annual Report, 1979, p. 39-2.

37. For background on the Blackfoot Reservoir, see Preston, A History of the Walla Walla District 1948-1970, pp. 95-96, 1942; Preston, Walla Walla District History 1970-1975, p. 29; and Chief of Engineers Annual Report, 1974, p. 39-2.

38. Chief of Engineers Annual Report, 1974, p. 39-2; Preston, A History of the Walla Walla District 1948-1970, p. 142.

39. Ibid.

40. Chief of Engineers Annual Reports, 1976, p. 39-2; 1978, p. 39-2; 1979, p. 39-2.

41. LaGrande Observer, 12 November 1977. For background on the treaties of 1855, see Dorothy O. Johansen and Charles M. Gates, Empire of the Columbia: A History of the Pacific Northwest (New York: Harper & Row, 1967), pp. 249-256.

42. Bill Howell, Acting Chairman, Union County Water Development Committee, testimony received by Senator Robert Packwood at Information Meeting on Proposed Catherine Creek Dam, LaGrande, Oregon, 25 July 1975, p. 17, EDF, "Catherine Creek-Packwood Public Meeting," 1518-01;

Final Environmental Impact Statement: Catherine Creek Dam and Lake, Catherine Creek, Oregon (Walla Walla: U.S. Army Corps of Engineers, Walla Walla District, 1974), p. 1. Also see Public Affairs Office Information Reference Paper Files, "Catherine Creek," 401-07. (Public Affairs Office files hereafter cited as PAO Files.)

43. Final Environmental Impact Statement: Catherine Creek Dam and Lake, p. 6; Pendleton East Oregonian, 24 October 1977, 20 July 1978; LaGrande Observer, 27 October 1977; 12 November 1977. One option the Corps had instead of appealing the case was to solicit congressional authorization to include the taking of the Indian treaty rights. The Union County Water Development Committee encouraged this course of action in a meeting with District engineers in January 1978. However, Congressman Ullman advised that the congressional climate for abrogating Indian treaty rights did not bode well for the passage of such authorization. See G. D. Eyestone, Project Coordinator to EDF, 11 January 1978; and Eyestone, Telephone Conversation Record, Bill Howell to Eyestone, 17 January 1978, EDF, "Catherine Creek," 1518-01.

44. See Bill Howell to George Stubbert, Director, Oregon State Water Resources Board, 4 November 1976; and Wesley Grilley, Executive Vice President, Oregon Wheat Growers League, to Walla Walla District, 13 December 1977, EDF, "Catherine Creek," 1518-01. Also see Packwood Public Meeting for various pro and con testimonies.

45. Testimony of George Vann, Packwood Public Meeting, pp. 23-24. Also see testimony of Ed Patterson and Ralph Robinson, pp. 5, 7-8.

46. See Packwood Public Meeting and Final Environmental Impact Statement: Catherine Creek Dam and Lake, especially pp. 8-35 through 8-91.

47. Packwood Public Meeting, pp. 23-25, 36, 45-46, 61-62.

48. Baker, Oregon Record Courier, 16 September 1976; and Erle C. Misener, Union County Judge, to Packwood, 25 October 1976, EDF, "Catherine Creek," 1518-01.

49. LaGrande Observer, 1 April 1977; Howell to Stubbert, 4 November 1976, EDF, "Catherine Creek," 1518-01.

50. Eyestone to EDF, 4 Dec. 1975, EDF "Catherine Creek," 1518-01.

51. For background on Zintel Canyon, see Preston, Walla Walla District

History 1970-1975, p. 34; Tri-City Herald, 3 March 1976; and Chief of Engineers Annual Report, 1974, p. 39-6.

52. Walla Walla District, "Annual Summary of Accumulated Historical Material," 31 March 1980, p. 2; Sivley interview; Preston, Walla Walla District History 1970-1975, p. 34. For information on the advantages and disadvantages of RCC dams, see R. E. Patton, memorandum for EDF, 7 January 1980, "Willow Creek Project, Meeting on Estimate for RCC vs Rockfill Dam" in EDF, "Willow Creek Oregon," 1518-01; and Herbert Kennon, Memorandum for the Record, "NPD/NPW Meeting on Willow Creek Roller Compacted Concrete Dam," 18 January 1980, EDF, "Willow Creek, Oregon," 1518-01.

53. Tri-City Herald, 3 March 1976. For information on escalating costs, see Chief of Engineers Annual Reports, 1974-1978.

54. Chief of Engineers Annual Reports, 1974-1978. Also see Tri-City Herald, 8 November 1978, for prospects of increased residential construction in Zintel Canyon.

55. For information on cooperation between the District and the city on the flood control project, see W. T. Mitchell, Mayor, and Larry J. Larse, City Supervisor, to District Engineer, 25 April 1969, requesting that the Flood Protection Improvement Project on the Palouse River be reactivated, in EDF, "Palouse River - Pullman," 1518-01.

56. Kenneth D. Hoyt, Basin and Urban Studies Section, to Karen Kiessling, Mayor, 30 November 1978, EDF, "Palouse River - Pullman," 1518-01.

57. Water Resources Development by the U.S. Army Corps of Engineers in Washington (Portland, Oreg.: U.S. Army Corps of Engineers, North Pacific Division, 1979), pp. 6-7. These activities are summarized in the Walla Walla District "Annual Summary of Accumulated Historical Material," 1977-1980. The Flood Plain Information Reports include a history of past flooding and the scope of probable future flooding using maps, photographs, and highwater profiles. Under the Technical Services and Guidance program, the Corps aids state and local governments in preparing flood plain regulations by interpreting data, furnishing additional data, and advising on specific sites.

58. Water Resources Development by the U.S. Army Corps of Engineers in

Idaho (Portland, Oreg.: U.S. Army Corps of Engineers, North Pacific Division, 1979), p. 15.

59. "Annual Summary of Accumulated Historical Material," 1978-1980.

60. W. E. Sivley to Stephen Allred, Director, Idaho Department of Water Resources, 12 July 1979, EDF, "Urban Studies Program," 1517-03.

61. Hoyt to G. Price, Wood River Resource Area, Gooding, Idaho, 23 April 1976, EDF, "Big and Little Wood Rivers," 1518-01.

62. Water Resources Development in Idaho, p. 39.

63. Ibid. Also, interview with Ron Barrett, Planning Branch and Flood Plain Section, Walla Walla, 18 November 1980.

64. Boise Idaho Statesman, 25 January 1978.

65. Chief of Engineers Annual Reports, 1976-1979; and Henry Pope to authors, 12 December 1980.

66. Lewiston Morning Tribune, 7 June 1976; After Action Report, June 1976 Teton Dam Disaster, Teton River, Idaho (Walla Walla: U.S. Army Corps of Engineers, Walla Walla District, 1977), p. i.

67. Walla Walla Union-Bulletin, 7 June 1976; After Action Report, pp. 16-17.

68. Portland Oregonian, 13 June 1976.

69. After Action Report, pp. 7-8.

70. "Annual Summary of Accumulated Historical Material," 31 March 1977, pp. 17-18.

71. Interview with Clarence Van Scotter, Walla Walla, 18 November 1980.

72. Walla Walla Union-Bulletin, 7 June 1976.

73. Lewiston Morning Tribune, 7 June 1976. Also see report, "Teton Dam Disaster, Resume of Walla Walla District Activities," n.d., EDF, "Teton River - Teton Dam Failure," 1518-01; and materials in Installation Historical Files, "Teton Dam Disaster," Box 228-10. (Installation Historical Files hereafter cited as IHF.)

74. L. E. Cramer, President, Cramer Corporation, San Diego, to District, 26 July 1976, EDF, "Teton River - Teton Dam Failure," 1518-01.

75. "Teton Aftermath," Constructor, January 1977, pp. 38-41, 56.

76. Van Scotter interview.

77. "Teton Dam Disaster," IHF, Box 228-10; Quincy, Washington, Herald-Whig, 9 June 1976; Walla Walla District Intercom, 76-14, 7 July 1976.

78. FDAA News Release, 9 June 1976.

79. Rexburg Standard, 20 June 1978. Plans were made in fall 1976 to undertake additional work the next spring, primarily around new bridges and on the north fork of the Teton River, see After Action Report, p. 31.

80. Teton Dam Disaster Resume, EDF, "Teton Dam Failure," 1518-01.

81. FDAA News Release, 28 June 1976. Also see After Action Report, pp. 34-48, for detailed description of debris removal and demolition procedures. The demolition phase was completed 19 November 1976.

82. After Action Report, pp. 52-53; Frank King, report, IHF, "Teton Dam Disaster," Box 228-10.

83. "Annual Summary of Accumulated Historical Materials," 31 March 1978, p. 19; 31 March 1977 with note from Henry Pope attached to p. 17. Also see Water Resources Development in Idaho, 1977, p. 5.

84. Boise Idaho Statesman, 9 January 1979.

85. Walla Walla Union Bulletin, 27 February 1977.

86. Ibid.

THIS PAGE LEFT INTENTIONALLY BLANK

CHAPTER 3

ENVIRONMENT

THIS PAGE LEFT INTENTIONALLY BLANK

CHAPTER 3

ENVIRONMENT

"Building the dams was the easy part," Walla Walla District Engineer C. J. Allaire asserted in 1976. "The nation just recently became aware of the environment."[1]

There was a time when the wisdom of building dams was unquestioned. Dams stopped floods, stored water, produced electricity, and created jobs. Californians built and praised multipurpose dams as early as the 1920's. Woody Guthrie sang about the wonders of Bonneville Dam in the 1930's. In the 1950's, Senator Robert Kerr observed the dedication of a multipurpose dam in Oklahoma. "Here under the cloudless sky were representative Americans who had worked together for the project.... There were farmers in wide-brimmed hats, some of them Indians; a bearded Mennonite with a camera; Future Farmers in blue jeans sitting on the huge earthmoving equipment; women holding their babies; and merchants from the towns." In order to bring the most benefits to the greatest number of people, Kerr believed the country must undertake "...the full and complete development of our river basins."[2]

So little thought was given to environmental concerns during those days that the 1945 authorization for the massive lower Snake River project in the Walla Walla District failed to make provisions to compensate for the losses of fish and wildlife accruing from the construction of four dams. Ray Oligher, Chief of the Walla Walla District's Fish and Wildlife Section, began work as a biologist at the McNary project and recalled the attitudes of the 1950's--"wildlife back then was hardly considered." Oligher noted that projects authorized before the Fish and Wildlife Coordination Act of 1958, and which were 60 percent complete by that time, did not have to meet compensation standards. "So McNary, and really the lower Snake projects, were exempt from compensation. Also, at that time, the [state and Federal fish and wildlife] agencies themselves weren't concerned" about compensatory action.[3]

Even in the early days of dam building, however, there were some whispers of criticism against the Corps and its civil works projects. In 1946, the Director of the United States Fish and Wildlife Service questioned the lack of environmental regulations outlined in the Lower Snake River authorization. "If we are successful in passing the fish over the proposed new dams on the mainstream of the Columbia, we will do so with an indeterminate but significant loss. If these survivors are then confronted with a series of four dams in the Snake there is the strongest doubt that these added obstacles can be overcome."[4] As environmental awareness became more pervasive in the 1960's and 1970's, criticism of the Corps reached a crescendo. "Today, much of America's virgin timberlands is gone;[sic] much of its rich topsoil lies beneath impounded waters and river deltas; its wildlife is depleted, its waters polluted and its scenic grandeur defaced by the acts of man....No one group or agency has done more to bring about this national tragedy than the Civil Works Branch of the United States Army Corps of Engineers," wrote Martin Heuvelmans in one of the most vehement attacks on the agency.[5]

Public attitudes about the environment have changed drastically since the days when dam construction was considered an unqualified benefit. A Yale University report in 1979 found that a majority of Americans favored protecting most species of wildlife even at the expense of jobs, housing, and development projects.[6] Completion of the Tennessee Valley Authority's $111 million Tellico Dam was slowed in 1978 and 1979 because it endangered the life of a 3-inch fish known as the snail darter. A $281,000 Corps dredging project in Minnesota was halted in 1977 when an endangered species of clam was found at the site. And in the Pacific Northwest, a $160 million project of the Idaho Power Company to construct two power-producing dams south of Boise was abandoned in 1979 because of the harmful effects the Swan Falls and Guffey Dams would have on the Snake River Birds of Prey Natural Area and on historic Indian petroglyphs. Oligher cited the Endangered Species Act as one of the biggest environmental issues facing the District in the late 1970's. "Not that we have very many endangered species," he explained, "but we have to go out and look and be sure."[7]

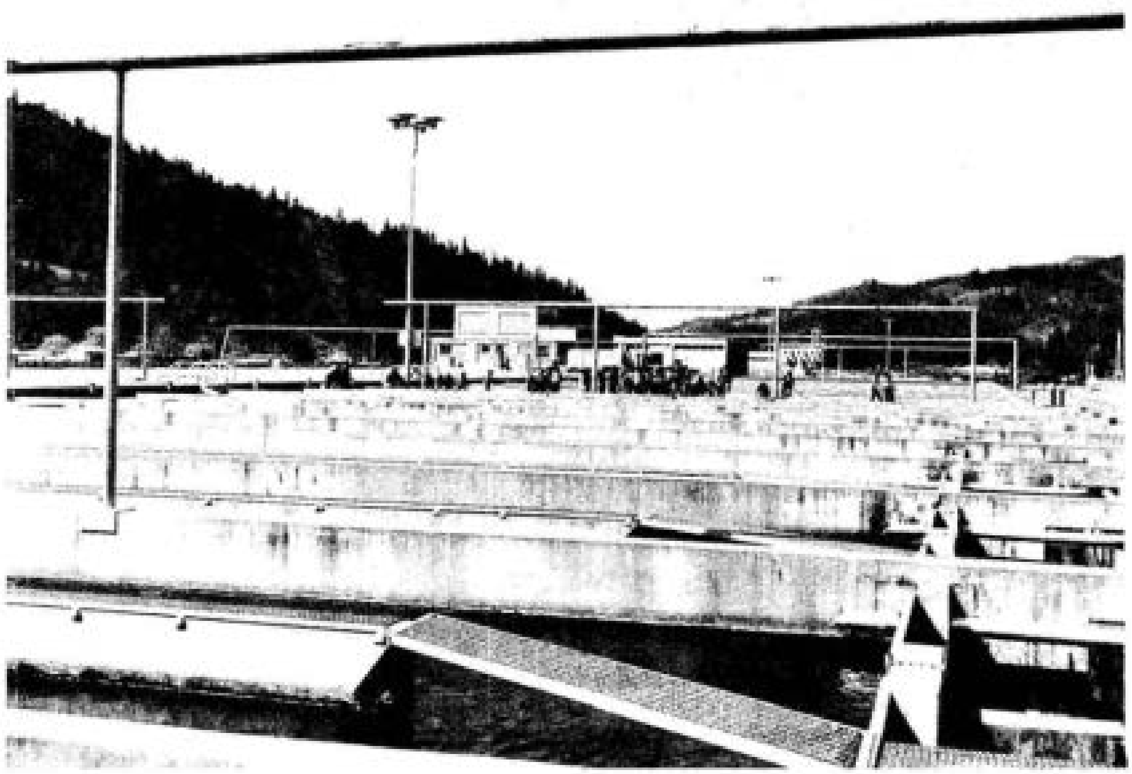
The Corps faced a different public in the 1970's than it did in the 1920's, 1930's, and 1940's. Many wondered whether the agency would be able to change, but by late in the decade even some environmentalists admitted that the Corps was adapting. In a 1975 article, Daniel Mazmanian and Mordecai Lee concluded, "In a relatively short time the Corps seems to be shifted from being the epitome of the stagnant bureaucracy towards a more innovative one," so much so that "there is even appearing cautious praise of the Corps by environmentalists." In 1979, the Brookings Institution published an enlarged version of this article and stated that while most Federal organizations merely paid "lip service" to the environmental regulations established by the National Environmental Policy Act of 1969, the Corps was an exception and was "...making a conscious and serious effort to accommodate itself to the spirit of the environmental movement as well as to the letter of the law."[8]

In the mid-1960's, there were about 75 environmentalists in the entire Corps of Engineers. By 1977 that number had increased by nearly 500. In April 1970, the Corps established a Board of Environmental Advisors and granted it broad powers to examine the existing and proposed policies and activities of the agency.[9]

As the country struggled to find ways to preserve its environmental heritage and still develop natural resources, the Corps was given greater responsibilities. Under Section 404 of the Water Pollution Control Act Amendment of 1972, the Engineers were authorized to regulate dredging and filling operations in the nation's waters. At first, the

Corps applied the law only to navigable waters. As the result of a 1975 lawsuit brought by two environmental groups, the Corps' authority was expanded to include all but the smallest lakes and streams, meaning that the Corps regulates virtually all water-related construction in the country's coastal and inland waters and wetlands.[10] In 1977, the Corps signed an agreement with the Environmental Protection Agency to oversee the planning and construction of municipal waste treatment plants throughout the country.[11]

Changing national attitudes toward the environment and the Corps' increased responsibilities for protecting it have had a dramatic impact upon the Walla Walla District. As Division Engineer Brigadier General Richard Wells wrote to District Engineer Colonel H. J. Thayer in 1980, "Environmental matters must receive the same consideration in our studies and reports as does engineering, economics, and other subjects."[12]



FISH REARING PONDS AT DWORSHAK NATIONAL FISH HATCHERY
1980

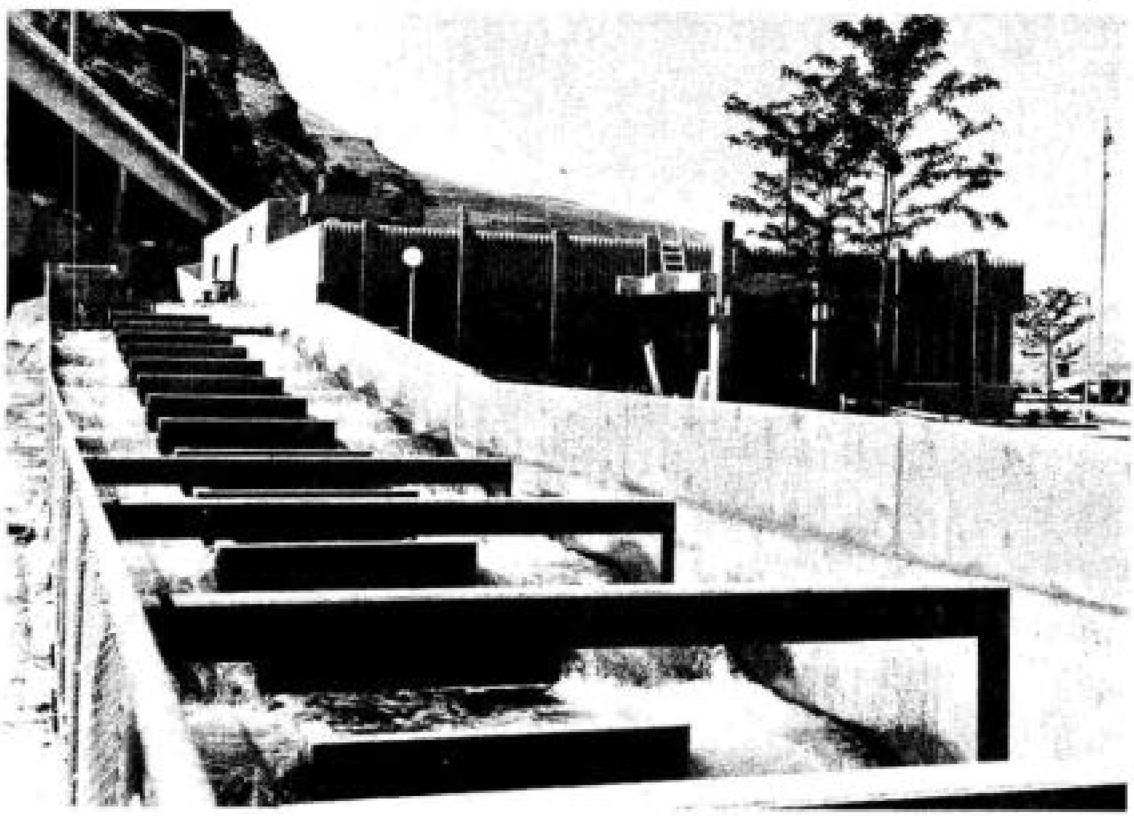
NETTING VOLTAGE-STUNNED FISH ON MILL CREEK RESERVOIR
1980

Consideration for the environmental impact of various projects played a major role in the late 1970's and the District became involved in a wide variety of environmental projects and studies. For example, it funded $5.1 million for fish research at Dworshak Dam, assisted a University of Idaho entymologist with his research in determining the effects of water fluctuations from the dam on insect life in the Clearwater River, and funded a study at Dworshak National Fish Hatchery which found that ozone is effective in sterilizing hatchery water against disease-causing contaminants.[13] At Lake Bryan, behind Little Goose Dam, the District funded a 3-year study to determine the needs and potential for improving warm-water fish habitat in lower Snake River reservoirs.[14] In the mid-1970's, the Corps stocked the Mill Creek Reservoir near Walla Walla with bass, crappie, and bluegill and developed the area into an excellent warm-water fishery. When the Mill Creek Dam required rehabilitation in the fall of 1980, the District, in conjunction with the

LOADING SALVAGED AND SORTED FISH FROM MILL CREEK RESERVOIR INTO TEMPERATURE-CONTROLLED TRANSPORT TANKS, 1980

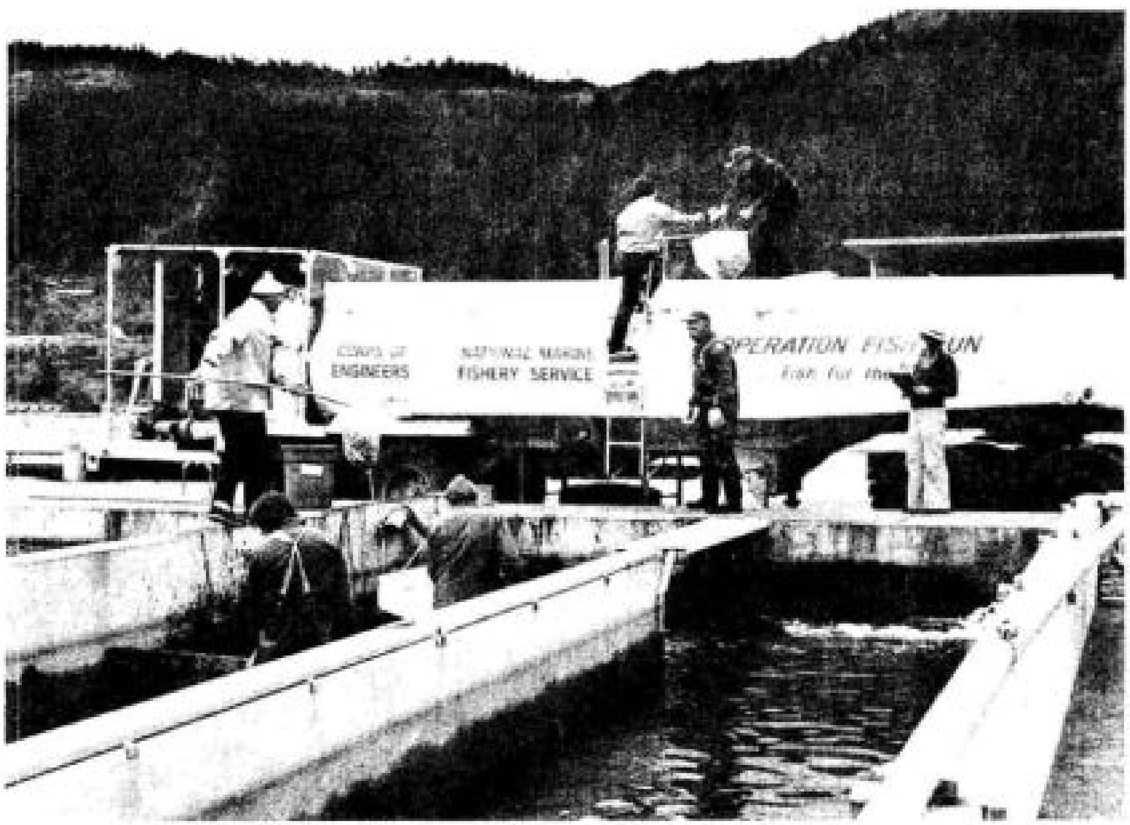
Washington State Game Department, electrically shocked the fish in the reservoir, collected them in boats, and transported them by truck to other ponds prior to draining the lake.[15] Despite this increased awareness and allocation of funds, environmental matters of various types remained one of the most controversial issues within the District. The staff's most serious problem is also its oldest--how to get migrating salmon and steelhead over the series of dams that have been constructed on the Columbia River and its tributaries. The Corps has grappled with this problem for years. Although the first plans for Bonneville Dam in the 1930's made no provisions for fish ladders, lobbying by commercial fishermen saw that ladders were included in the project.[16] As more dams were built, fish migration problems compounded. Dams pose a variety of difficulties for anadromous fish. Salmon and steelhead can be killed in turbines, adults and juveniles can be poisoned because of the supersaturated level of nitrogen in the water caused by spillway discharges, and juveniles can be subjected to increased predation because of the greater amount of time it takes to travel from spawning grounds to the ocean. Furthermore, altered river temperatures in slack water have given rise to a series of diseases and parasites which were not a serious problem before the dams were built.[17]

There is no doubt that anadromous fish runs in Washington, Oregon, and Idaho are smaller now than they were before the dams were constructed. While 40 million pounds of Columbia River salmon were harvested during several seasons in the 1920's, a harvest of over 10 million pounds was exceeded only three times between 1952 and 1976. During that time eight of the river's 11 dams were erected. Steelhead and salmon catches in Idaho have similarly dwindled.[18]



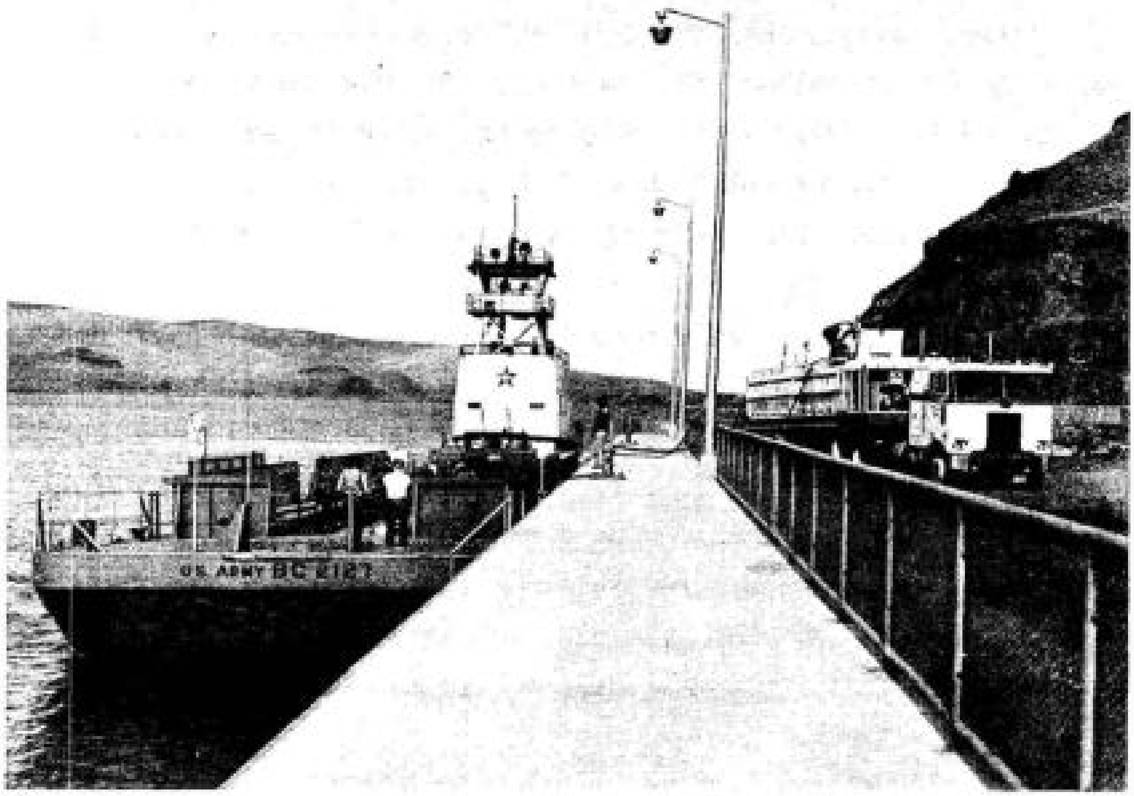
FISH LADDERS AT LOWER GRANITE DAM
1975

Certainly dams are not the sole cause of depleted fish runs. Rapidly expanding commercial and sports fishing in the Pacific Ocean has reduced the number of salmon which enter the Columbia. As resource-based industries such as logging, mining, farming, and grazing have grown, fish habitat has diminished. Abundant leisure time has increased sports fishing in the rivers, and Federal court decisions in the 1970's allotted Indians expanded use of the rivers for fishing.[19] Dams, however, are the major factor in the fish decline and opposition to them has become vociferous. As David Ortmann, Superintendent of Anadromous Fisheries for the Idaho Department of Fish and Game succinctly stated, "The number one problem we have is the mortality of fish at the dams."[20]



HAND-LOADING FISH INTO TRUCK FOR TRANSPORTATION
TO OPERATION FISH RUN BARGE

The plight of anadromous fish in the Columbia system caused a man in Pasco to put tap water in plastic bags, attach labels, and sell them as "invisible fish" for souvenirs. The District found some humor in the subject, too, and produced a brochure which proclaimed "warm water angling is a lot of crappie" and lightheartedly informed sports enthusiasts that there is more to fishing than just salmon and steelhead.[21] But the problem of reduced fish runs, caused at least partially by Corps-built dams, was one that the District treated seriously.



TRANSFERRING FISH FROM TANK TRUCK
TO BARGE AT LITTLE GOOSE

The most publicized of the District's fish conservation programs was Operation Fish Run. In 1965 the National Marine Fisheries Service trapped juvenile salmon and steelhead at Ice Harbor Dam and shipped them by trucks to the lower Columbia, thereby bypassing the treacherous course to the ocean the fish would have otherwise had to traverse. The trip frustrated the homing instinct of few of the anadromous fish, and the survival and return rates were so high that in 1971 the Fisheries Service began cooperating with the Corps in what was believed to be a temporary solution to the fish migration problem--temporary until more fish passage aids and hatcheries could be constructed as part of the Lower Snake River Compensation Plan. By 1977 the operation had turned into a $3.6 million long-term solution in which smolts are gathered at Lower Granite, Little Goose, and McNary Dams and trucked or barged below Bonneville. In 1976 the Corps airlifted some of the fingerlings in an old bomber, but that expensive transportation device was eliminated 2 years later. Barges introduced in 1977 proved so successful that they became a permanent method of transport. Besides those trapped at the dams, some fish are hauled directly to the lower Columbia from upstream hatcheries. The numbers of fish hauled have increased dramatically over the years. Although the irony of transporting fish by barge and truck along rivers that once teemed with salmon so thickly that one "could walk across the water on their backs" did not escape some environmentalists, Operation Fish Run has been widely acclaimed a success. An editorial in the LaGrande Observer in 1977 stated, "The Army Corps of Engineers has had many detractors, especially those who scoffed at the feasibility of the fish trucking program. But this spring's successful run is proof that while much remains to be accomplished, the corps is on the right track." In 1976, the Pacific Northwest Regional Commission also recommended that the transportation program be maintained.[22]

Of all the problems facing migrating fish in the Columbia River system, none has been more deadly than nitrogen supersaturation. One of the largest fish kills in the Columbia and Snake Rivers occurred in 1970 when the fishery agencies estimated a substantial percentage of the downstream migration of salmon and steelhead was killed from high levels of nitrogen in the water. In 1972, the Regional Director of the Bureau of Sport Fisheries and Wildlife called supersaturation "the most serious problem in the Columbia at the present time."[23]

OPERATION FISH RUN BARGE

Salmon and steelhead traveling in waters supersaturated with nitrogen contract what is known as gas bubble disease. The disease is similar to the "bends" in humans. Death can occur from an accumulation of gas, the afflicted fish sometimes having blisters on fins and mouths, or ruptured eyes. At other times, death occurs with no visible symptoms, making the disease difficult to detect. The buildup of gas can make those fish that survive more susceptible to other infections as a secondary effect of nitrogen supersaturation.[24]

The problem is not new. Fish hatchery officials have long had difficulty with supersaturated water entering their hatchery tanks from cold springs and have solved the problem through aeration to release the undesirable gases. But it was not until 1965 that nitrogen supersaturation came to be recognized as a serious problem on the Columbia system. In that year, a Washington Department of Fisheries biologist reported that the Columbia had supersaturated levels of nitrogen all the way from Grand Coulee to Bonneville. Water spilling over the dams fell into deep pools, forcing entrapped air--made up largely of nitrogen--into the water. In free-flowing rivers, no serious problem occurs because natural cascades allow the gases to be released. But in the slack water created on the Columbia and Snake Rivers by dam construction, the gas could not escape into the atmosphere. Consequently, while no serious troubles existed as long as there were few dams, the condition became more acute as more were constructed. The completion of the John Day project in 1968 brought the issue to a head.[25]

Because such high levels of supersaturation were unique to the Columbia system, the Corps came under fire. One untenable solution was to dismantle the dams. That being impossible, the Walla Walla District began searching for ways to protect migrating fish. The Corps took "rapid and positive action," according to Carl Elling and Wesley Ebel of the Northwest Fisheries Center, and introduced a variety of remedial measures. The first step was to insure that future dams would be built with at least one turbine in operation before a reservoir was filled. Water passing through turbines does not become supersaturated. This precaution had not been taken at John Day with disastrous results. Operation Fish Run, initiated in 1971, was primarily intended to prevent losses from gas bubble disease. "Holey gates" were designed in the early 1970's to permit passage of water through those sections of powerhouses that were temporarily without turbines. These slotted gates dissipated the energy of the waterflow, lessening the supersaturation effect. The Corps installed holey gates in 1971 at Little Goose and dramatically reduced nitrogen levels. The gates were then added to other dams. Disclosure in 1972 that a fish kill below Little Goose Dam was directly attributable to injuries sustained by passage through the gates ended the program. While the gates worked well in laboratory conditions, they were not successful when actually installed.[26]

The District finally discovered a workable solution to the problem in "flip lips." These spillway deflectors prevent flows from plunging into stilling basins, consequently reducing nitrogen levels. The District contracted with the National Marine Fisheries Service to conduct fish mortality studies which found that flip lips caused no serious problems to migrating fish. By 1977 the Corps had installed the devices at all the District's dams, excluding Ice Harbor.[27]

The succesful efforts to remedy nitrogen supersaturation problems in no way eliminated criticism leveled at the District by Northwest sports people. A landmark case originally brought against the Corps in 1970 was still being argued in the courts as the 1980's began. The Northwest Steelheaders Association and seven other outdoor groups filed suit against the Corps of Engineers to prohibit construction of dams on the Snake River. The plaintiffs, soon joined by the Washington State Department of Game and Fisheries, claimed dams were ruining fishing and hunting. The suit was one of the first filed under the National Environmental Policy Act. For 7 years, the defendants and plaintiffs argued their cases. Finally, in the fall of 1977 when the case came to court, United States District Judge Manuel Real ruled in favor of the Corps, primarily because the issue had become "moot for the reason that the four dams on the lower Snake River have been constructed and are in operation." The District was, however, ordered by the judge to file with Congress a supplemental proposal to its Special Report on the Lower Snake River Fish and Wildlife Compensation Plan proposing measures for enhancement of fish and wildlife resources in connection with the lower Snake River project. The word "enhancement" came from the 1958 Fish and Wildlife Coordination Act and is the phrase upon which this particular environmental case was argued. The Corps had proposed to compensate for fish losses, but to enhance those losses would mean an increase in fish runs to a level higher than they were prior to dam building. The District filed the requested report on September 30, 1978, and concluded that no additional authorization was needed from Congress to compensate for fish and wildlife losses. According to Ray

Oligher even enhancement is possible, but first compensation must be made for the fish and wildlife losses. As will be seen, the Corps has been having difficulty acquiring the necessary property to make even wildlife compensation possible.[28]

Steelheaders and sports fishermen were not the only ones concerned about further construction of dams within the District boundaries. In 1962 Congress authorized construction of a Corps dam near Asotin, Washington, downstream of Hells Canyon on the Snake River.

HELLS CANYON ON THE SNAKE RIVER

As early as the 1950's, the Asotin site was noted as having outstanding hydroelectric potential. The 107-foot-high dam proposed by the Corps would provide navigation, recreation, and power production, and had a high benefit/cost ratio.[29] The Pacific Northwest Power Company, a conglomerate of investor-owned utility companies, and the Washington Public Power Supply System, an association of public utility districts, lobbied diligently for construction of the dam. "When people begin to face economic disaster, when jobs are being abolished, when electric power is being rationed or power users are faced with mandatory curtailment, then someone will be building those dams," stated a spokesman for the power interests in 1975.[30] Many environmental groups were just as diligent in opposing the dam and found support from Idaho's Governor Cecil Andrus and Senators Frank Church and James McClure. People of the state were aware of the project's benefits, Andrus explained, but they also recognized the "magnificent Hells Canyon setting as a natural wonder of enormous national significance."[31]

The battle lines were drawn and the controversy continued for years. Dworshak Dam, which was also authorized in 1962, had long been completed while the Asotin project was still being debated. Finally, on New Years Eve 1975, President Ford signed a bill declaring much of Hells Canyon a National Recreation Area. The bill specifically prohibited construction of the Asotin Dam.[32]

But the case was not closed. In 1977 Washington Governor Dixie Lee Ray expressed her opinion that the Asotin Dam should be reconsidered. The Idaho Legislature issued testimonials to Congress in both 1977 and 1978 to amend the Hells Canyon National Recreation Area Act to permit construction of a hydroelectric dam. In January 1979 the Pacific Northwest Waterways Association announced that it planned to lobby in Washington for the Asotin Dam. When 17 Pacific Northwest electric cooperatives sought a permit from the Federal Energy Regulatory Commission to reinvestigate the feasibility of a dam at Asotin, it was clear that the matter was still very much alive.[33]

The Bureau of Outdoor Recreation (BOR) in 1977 began a study to determine the feasibility of adding a 35-mile segment of the Snake River, from Asotin to the north boundary of the National Recreation Area, to the National Wild and Scenic Rivers System. Because this designation would have permanently killed the Asotin Dam idea, many power companies opposed the expansion. The Walla Walla District was requested by the BOR to participate in the study and agreed "to the extent necessary to identify potential losses or impacts of inclusion of this river segment in the Wild and Scenic Rivers System on those water resource functions in our area of responsibility; principally navigation, flood control, and hydropower."[34]

At meetings of the study group, it became apparent that a major theme of the positive testimony presented was that wild and scenic designation would protect the river against construction of the Asotin Dam. Paul Fredericks, the District's representative to the study group, recommended accordingly that the Corps' future involvement in the study "be limited to providing input on benefits foregone and impacts on our currently authorized activities." The District clearly did not want to be seen as attempting to prevent the wild and scenic designation because "if we disagree, we will be in the minority and be accused of trying to keep the Asotin project alive."[35]

Although maintaining a neutral position, the District did point out to the study group that failure to construct the dam would result in an estimated power loss of $23 million annually and that large deposits of commercial-quality limestone would be made inaccessible.[36] These conclusions were repeated when the National Park Service asked both the District and the North Pacific Division to comment on its Draft Report/ Environmental Statement on the Snake Wild and Scenic River in 1979.[37]

Although the Corps attempted to maintain a neutral position while keeping all sides apprised of its responsibilities, many have criticized the agency for either doing too much to promote construction of the dam, or for not doing enough. As in other instances, the criticism has not always been accurate. In 1975, District Engineer Colonel Nelson Conover responded to a letter from a disgruntled citizen who opposed the dam. His comments perhaps best describe the Corps' true role in this and similar controversies. "In your letter you implied that the Corps of Engineers has full authority on its own to select or drop projects. The Corps of Engineers does make recommendations, but the final authority to construct or not to construct comes from the Congress." By 1980, the Asotin Dam had been deauthorized.[38]

Although popularly stereotyped as dam builders, the Corps has many other responsibilities concerning the nation's waterways. These responsibilities increased considerably in the 1970's. The country realized in the 1960's and 1970's that water resources were rapidly being depleted. The Water Pollution Control Act of 1972 and the Federal Court Order of 1975 gave the Corps permit authority over virtually all of the nation's waters. The Federal Government granted this broad authority to the Corps with the understanding that what an individual does with a piece of wetland or streambank affects many other people. In theory, most would agree with the logic behind the authority. But in practice, many individuals found the permit authority just one more example of the Federal Government impinging upon their personal lives.

The most publicized case involving the District's permit authority occurred in 1978. In 1972 and again in 1977, a Salmon, Idaho, rancher applied for a permit from the Idaho Department of Water Resources to remove a gravel bar from the Salmon River. The bar was causing serious erosion of his property. On March 27, 1978, he received permission from the state agency to remove the gravel from the river and place it on his streambank to prevent further erosion. The rancher claimed that in a telephone conversation with the Walla Walla District, he likewise received permission to undertake the task and, believing a formal permit was forthcoming, proceeded to construct gravel jetties on his riverbank at a cost of $1,000. On April 27, he received a letter from the Corps stating he had not received a proper permit and that work must cease. A month later, the man received an order from the Corps to have the gravel removed from his bank within 2 days. He refused, claiming the various regulations concerning water permits were impossible to comprehend. He asserted that "the State has extended my permit to December 31, 1979, and are asking me to complete the work.... To obey the state is to disregard the cease and desist order of the Corps and vice versa. Thus, I am caught between two conflicting orders." On October 12, 1978, the Corps brought suit against the rancher, claiming his actions were in violation of the Federal Water Pollution Control Act, and sought damages of $10,000 per day, beginning April 11, 1978. Amazed that a "jetty can be doing $10,000 a day damage to the Salmon River," in March 1979 he asked that the case be dismissed from the United States District Court. The case was still in the courts in 1980.[39]

Loggers likewise found the Corps' new permit authority confusing and sometimes irritating. George Cheek, Executive Vice President of the American Forest Institute, claimed in 1976 that the Corps' expanded 404 permit authority would require the forest industry to apply for 8 million permits annually at a cost of $100 each. In the summer of 1976, the National Forest Products Association requested that Congress reverse the 1975 court case giving the Corps permit authority over virtually all waters and restore that authority to only traditional navigable waterways. "Wetlands is defined so broadly and imprecisely by the corps that the term even covers millions of acres of timber growing lands," stated a spokesman for the association. Several thousand square miles of forest lands are poorly drained, and it was the fear of forest industry officials that these would fall under the definition of wetlands. Permits would therefore be required for such normal day-to-day activities as road building and construction of drainage ditches, culverts, and bridges. In order to ease the fears of Idaho loggers, the Walla Walla District instituted a general permit for Idaho which reduced approval time for small projects from 60 to 90 days to 1 to 2 days and covered the majority of work done by logging operations.[40]

Implementation of the Clean Water Act not only coincided with public frustration over increased Federal infringement on individual rights, but it also came at a time when many western states were strongly advocating states' rights, inherent in such issues as the

Sagebrush Rebellion. The Walla Walla District again found itself under attack when trying to implement a program mandated by Congress. In 1977 Secretary of the Interior Cecil Andrus wrote, "I firmly believe that control over minor tributaries and wetlands should be turned over to the states. Among other things, this would eliminate the red tape and conflicts of the Federal presence in every pond and backyard puddle. It would also allow the Corps to concentrate its efforts in areas where the national interest is most severely threatened; our larger rivers and critical coastal wetland habitats."[41] Idaho Attorney General Wayne Kidwell, who could not have agreed more, worked with the attorney generals offices of several other states to challenge Section 404. "Idaho has a lot of problems with...getting Federal controls we don't want.... As a legal officer of Idaho, I have an obligation to challenge these regulations in the courts." Any agency which had jurisdiction over the nation's waters in the late 1970's would find itself in a confusing and frustrating situation with no easy solutions possible.[42]

USING DREDGED MATERIAL TO BUILD A GOOSE NESTING AREA
NEAR McNARY DAM, 1978

Although the Corps' permit authority through the Federal Water Pollution Control Act increased the workload at Walla Walla, the Federal mandate having the greatest impact upon the District's environmental responsibilities had its roots in an 1888 law. In that year, Congress granted authority to the Secretary of the Army to provide "sufficient fishways" whenever navigational improvements created a problem for fish passage. In later years, the Corps became involved in flood control, irrigation, and power production in addition to navigation.[43]

INSTALLING A FINGERLING BYPASS PIPE AT LITTLE GOOSE DAM
1979

Recognizing the importance of commercial and recreational fishing in the region, the District constructed fish ladders at each dam on the lower Snake for upstream migrating adults and bypass systems for downstream juveniles, at a cost of nearly $40 million. Studies by the National Bureau of Sport Fisheries and Wildlife and the National Marine Fisheries Service found that despite the existence of these on-site devices, nearly 50 percent of the fish were being destroyed because of the dams. In 1976, Idaho Senator Frank Church introduced legislation that would allow the District to compensate for losses incurred by the project. In that same year, President Ford signed the bill authorizing $58.4 million for mitigation on the Snake River. The bill authorized acquisition of 23,400 acres for wildlife habitat and construction of eight fish hatcheries. Initial funding for the proposed 6-year mitigation program came in fiscal year 1979.[44]

The Lower Snake River Fish and Wildlife Compensation Plan called for the construction of eight fish hatcheries. When officials from the Corps testified in the spring of 1976 before the Water Resources Subcommittee of the Senate Public Works Committee about the plan, Idaho Senator McClure quickly made it clear that several of the hatcheries would have to be located in his state. McClure was concerned that the hatcheries might all be placed on the lower Snake to the sole benefit of commercial fisheries and not Idaho sports fishers. "There is no more sport fishery in Idaho," he protested, "and the people of Idaho are entitled to benefits from this plan. If I must return to Idaho and tell my constituents that hatcheries would be constructed downstream, there will be civil war on the Snake River."[45] Fully aware of the need to replenish Idaho waters, the Corps proposed that four of the hatcheries be located in that state with two each in Washington and Oregon. The eight hatcheries would produce over 4-1/2 million spring Chinook, nearly a million summer Chinook, and almost 8 million steelhead.[46]

Announcing that the hatcheries would be built was the easy part. Finding suitable locations for them was a different matter. The search for a hatchery location between Ice Harbor and McNary Dams proved fruitless as the District was unable to find a site with a large enough underground water supply. Water supply problems also slowed the Corps' progress in locating sites in Idaho--particularly in the Clearwater Basin--and in Oregon. Nonetheless, some success was found in locating suitable spots, particularly at Lyons Ferry near Starbuck, Washington.

The Lyons Ferry site possessed such a reliable ground water supply that the District decided to locate both Washington hatcheries there, having had no luck finding a suitable spot near the Tri-Cities.[47]

FISH HATCHERY TEST WELL DRILLING AT THE LYONS FERRY SITE

The Boise Cascade Corporation came to the assistance of the District in locating two other hatcheries. In February 1978, the corporation announced it was donating property at McCall to the Idaho Department of Fish and Game so that a Corps-built hatchery could be constructed there. Then it announced a similar donation on Lookingglass Creek in Oregon.[48]

Dam construction inundated Snake River banks, eliminating hundreds of acres of brush and tree-type vegetation. This fertile area which sustained an estimated 1,800 deer was replaced with a shoreline habitat of dry steep slopes and rocky cliffs. Destruction of the feeding ground eliminated winter range, forcing animals to move to higher open lands which could not support as many head. Deer, quail, pheasant, rabbit, beaver, muskrat, mink, raccoon, skunk, weasel, bobcat, otter, badger, and coyote populations were adversely affected as well as thousands of migratory game birds such as mourning doves, ducks, and geese. To partially compensate for these losses, the District proposed acquiring 400 acres of riparian habitat, 8,000 acres of adjacent farmland in easement for upland game bird hunting, and 15,000 acres of land in easement for chukar-partridge hunting.[49] When word of the District's proposal to acquire over 23,000 acres of compensatory land reached local residents, loud protests were heard.[50]

INCUBATOR TRAYS AT THE McCALL FISH HATCHERY

Opposition to the compensation plan actually began as early as 1973, before the program was finalized. In a public meeting held that year in Colfax, Washington, participants expressed almost unanimous opposition to any increase in government ownership of local lands. The Columbia County Commissioners, who were to become the most outspoken critics of the compensation plan, voiced official opposition in 1973, 1974, and 1975. Most criticism surfaced in 1976, however, after President Ford signed the compensation bill. Eventually, the Washington State Grange, the Washington Association of Counties, the Organization for the Preservation of Agricultural Land (OPAL), the Whitman County Planning Commission, and the Whitman County Commissioners all joined the Columbia County Commissioners in opposing the compensation plan.[51]

Opposition to the proposal was based on several concerns. Many were opposed to the loss of local control of property and the resulting loss of tax revenues. "The Federal and state governments already own approximately one-third of this county," declared Columbia County Commissioner Vernon Marll. "Further acquisition...by Federal and state agencies would serve only one purpose--to lower the economic base and set a trend toward the eventual destruction of the economy of Columbia County."[52] Most opposition, however, was leveled at the Corps' ability to condemn land if necessary in order to acquire it for mitigation purposes. On a trip to the Walla Walla District in 1976, Lieutenant General John Morris, Chief of Engineers, explained that the Corps always attempted to purchase lands utilizing the willing buyer-willing seller approach. But "if no one wants to sell, then I'm left with a problem that I can't resolve." The District recommended to the Office, Chief of Engineers (OCE) that all lower Snake River compensation lands be purchased on a willing buyer-willing seller basis, which caused Morris to proclaim that "if we go that way, it will be the only place in the United States where land is acquired by this manner. Such a plan could be extremely difficult to administer on a national basis." When the District's proposal was reviewed by OCE, the language was altered to include the right of the Corps to condemn land if necessary in order to obtain mitigation property.[53]

This language in the plan elicited strong protests from local residents. "Condemnation amounts to a violation of private rights," stated the chairman of OPAL. The Spokane Spokesman-Review editorialized that "when the Army Corps of Engineers begins talking about 'condemning' farmland as though it is a poverty pocket in the landscape in need of upgrading, strong objections are in order." Washington's two senators drafted a letter to the Corps which stated that they were concerned about the use of condemnation and recommended that "...further consideration be given by the Corps to the original plans as approved in the Walla Walla region."[54] Faced with this opposition, the Corps softened its stand and once again recommended that all land be purchased via the willing buyer-willing seller concept.[55]

The District's problems in implementing the wildlife mitigation proponent of the compensation plan are really twofold. In the first place, it is difficult to find willing sellers. It is possible, however, that a compromise can be reached with farmers. One proposal being scrutinized is the Matulich Plan, named after a Washington State University economist, whereby the Corps would contract with farmers to leave a strip of grain, alfalfa, or whatever they were planting unharvested to be used as wildlife food, and enter into an agreement to allow hunting on their land. Other ways of acquiring the necessary mitigation property are being studied.[56]

A much more difficult problem for the District is the negative public image it has received because of people's conceptions--and misconceptions--about how the entire mitigation proposal has been handled. The Pullman Herald noted that "A basic distrust of the Corps of Engineers was...evident" at a public meeting in Colfax in the spring of 1979. "Norm Hatley [Chairman of OPAL] said county officials and residents have learned to read the large print, small print, and in between the lines of Corps proposals. He added they then turn them upside down and look at them again." An editorial in the Pomeroy East Washingtonian was more specific: "The problem is that none of these officials trust the Corps of Engineers any more. It is not a matter of whether or not the people you are talking to can be trusted, but rather the chain of command. Too many decisions appear to be made at higher levels, by people who do not understand local situations."[57]

In 1983 the Chief of Engineers will report to Congress on the status of the Lower Snake River Fish and Wildlife Mitigation Plan. If, by that time, the Corps has been unable to acquire the prescribed allotments of land, it will either have to develop suitable alternatives or fail to meet wildlife compensation requirements and call the project completed. Either plan is bound to be controversial.[58]

REMOVING EGGS
DWORSHAK NATIONAL FISH HATCHERY

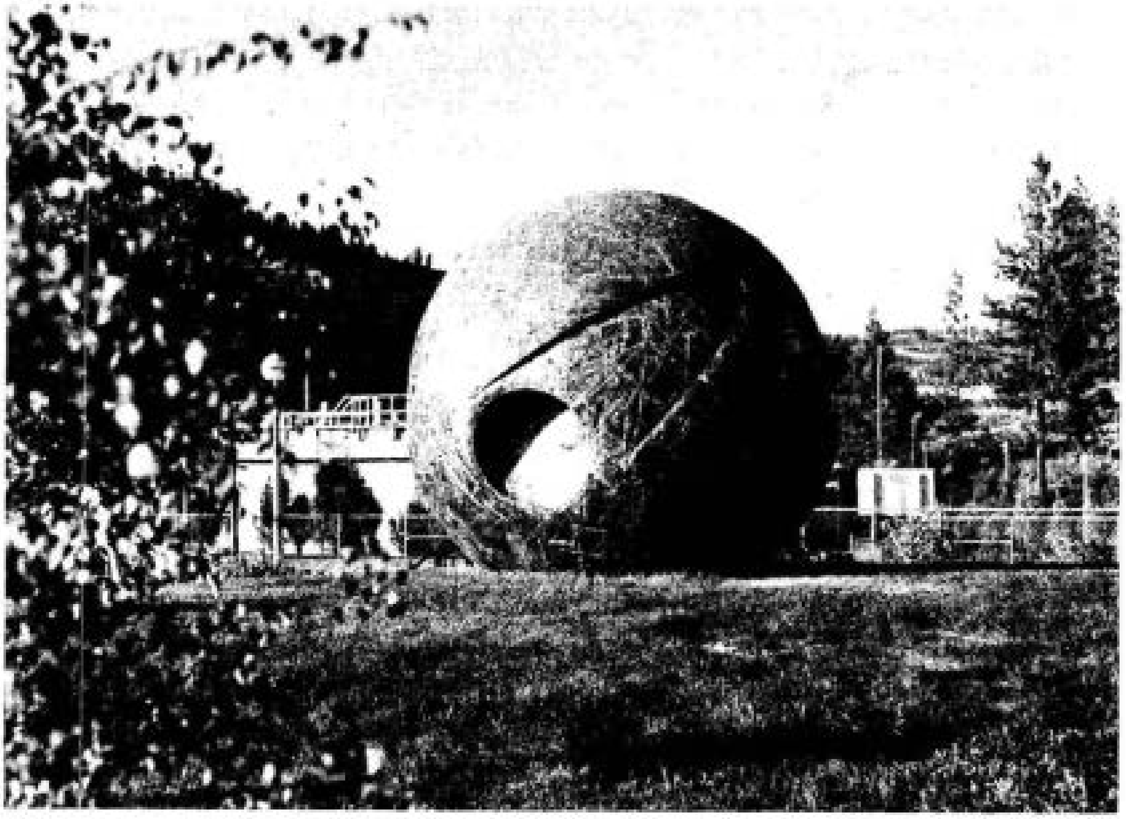
STEELHEAD SMOLT BEING RELEASED INTO THE CLEARWATER RIVER
DWORSHAK NATIONAL FISH HATCHERY

Mitigation at Dworshak Dam began earlier than for the lower Snake project and has not run into as many problems. The Dworshak National Fish Hatchery, constructed by the Corps and operated by the United States Fish and Wildlife Service, is the largest steelhead hatchery in the world and has been operating successfully since the early 1970's. Funding is provided by the Corps annually. By 1980 the District had acquired two-thirds of the necessary property for Dworshak wildlife mitigation. Most land was obtained with none of the difficulty encountered in the Lower Snake River Project. However, when the District attempted to gain land on the north end of the reservoir, it ran into political problems. Much of the property desired for mitigation there was endowment land for the State of Idaho. Condemnation was not possible because by law the lands have to be managed for their highest economic value.

After several years of political pressure, the Corps and the State Land Board undertook a land trade with the Bureau of Land Management for substitute property the Bureau owned in the county. Eventually, the Corps was able to acquire over 5,000 acres of land in a "hard core" elk habitat area; but the hard core area alone was not enough to support game herds during winter months. Therefore, the Corps began negotiating in the mid-1970's for a land transfer with the Forest Service for 4,500 acres on nearby Smith Ridge. Despite prolonged negotiations between the State Land Board, the Forest Service, and the Corps, as well as intercession by Senator Church and many interested groups and individuals, the tedious process of transferring the necessary lands to allow the District to complete its mitigation procedures was not completed by the end of the decade.[59]

The Corps of Engineers has changed greatly in the last decade. The nation's limited energy resources mandate that maximum use be made of the resources available--particularly a renewable resource such as water. On the other hand, there are some areas which should not be altered. Aesthetics must at times take precedence over economics. Furthermore, environmental damages resulting from those projects deemed vital to the public welfare must be compensated for.

Building the dams was truly the easy part, and the Corps is the unquestioned authority in that field. But as times change, the Corps is gaining as much expertise in constructing fish hatcheries, writing environmental impact statements, overseeing the protection of the nation's waterways, saving anadromous fish, and developing habitat for wild game. Difficult environmental challenges lay ahead. The Corps of Engineers, as a leading participant in the development and preservation of America's environment, will be involved in many of those challenges. But the Corps has a background of environmental awareness upon which to build, and a proven ability to adapt to changing times.



FISH EGG SCULPTURE AT DWORSHAK NATIONAL FISH HATCHERY

NOTES

1. Tri-City Herald, 8 October 1976.
2. Robert S. Kerr, Land, Wood and Water (New York: Fleet Publishing Corporation, 1960), pp. 106-107. See also pp. 102-103.
3. Special Report: Lower Snake River Fish and Wildlife Compensation Plan, Lower Snake River, Washington and Idaho (Walla Walla: U.S. Army Corps of Engineers, Walla Walla District, 1975), pp. 1-2; interview with Ray Oligher, Chief, Fish and Wildlife Section, Walla Walla, 18 November 1980.
4. Quoted in Columbia Basin Salmon and Steelhead Analysis (Pacific Northwest Regional Commission, 1976), p. 31. Similar reservations were voiced in 1949 by Paul R. Needham, Director of Research for the Oregon Fish Commission. See Anthony Netboy, "The Dismal Future of the Columbia River Salmon and Steelhead," Portland Oregonian, 16 March 1980.
5. Martin Heuvelmans, The River Killers (Harrisburg, Pa.: Stackpole Books, 1974), pp. 14-15.
6. See Stephen R. Kellert, Public Attitudes Toward Critical Wildlife and Natural Habitat Issues (Washington, D.C.: Fish and Wildlife Service, 1979).
7. Boise Idaho Statesman, 24 January 1979, 28 March 1977, 18 April 1979; Oligher interview.
8. Daniel Mazmanian and Mordecai Lee, "Tradition be Damned! The Army Corps of Engineers is Changing," Public Administration Review, March/April 1975, p. 167. Mazmanian and Jeanne Neinaber, Can Organizations Change? Environmental Protection, Citizen Participation and the Corps of Engineers (Washington, D.C.: The Brookings Institution, 1979), p. 3.
9. Mazmanian, "Tradition be Damned," p. 168; Spokane Spokesman-Review, 29 July 1979.
10. See Water Resources Development by the U.S. Army Corps of Engineers in Washington (Portland, Oreg.: U.S. Army Corps of Engineers, North Pacific Division, 1979), p. 4; Michael Parfit, "The Army Corps of

Engineers: Flooding America in Order to Save It," New Times, 12 November 1976, p. 36; and Idaho Falls Post Register, 24 March 1976. Parfit maintains that the environmental groups brought the suit because of their belief that some control of water development was better than none and because they were heartened by recent pro-environment Corps actions.

11. Spokane Spokesman-Review, 18 September 1977.
12. Brigadier General Richard Wells, North Pacific Division Engineer, to Colonel Henry Thayer, Walla Walla District Engineer, 22 April 1980, in Engineering Division Files, "Environmental Studies," 1517-02. (Engineering Division Files hereafter cited as EDF.)
13. Walla Walla Union-Bulletin, 13 July 1976; Kamiah, Idaho, Clearwater Progress, 2 December 1976; Meredith Motson, "Ozone Sterilizes Hatchery Water," Water Research in Action, April 1978, pp. 1-2.
14. Walla Walla Union-Bulletin, 18 March 1979; Vancouver, Washington, Columbian, 18 October 1979.
15. Oligher interview.
16. Ibid., Tri-City Herald, 31 October 1976.
17. Much has been written about the ill effects of dams on anadromous fish in the Columbia system. Good syntheses of the issues involved can be found in the following: Columbia Basin Salmon and Steelhead Analysis; Robert C. Gibson, "Plight of the Steelhead," four-part series, Lewiston Morning Tribune, 24-27 October 1976; Tri-City Herald, 31 October 1976; and Pendleton East Oregonian, 23 September 1976.
18. Columbia Basin Salmon and Steelhead Analysis, p. 26.
19. William L. Robinson, "The Columbia: A River System Under Siege," Oregon Wildlife, June 1978, pp. 3-7.
20. Lewiston Morning Tribune, 9 April 1976.
21. Tri-City Herald, 17 August 1978; Lewiston Morning Tribune, 4 April 1976.
22. Columbia Basin Salmon and Steelhead Analysis, p. 41; also see pp. 33-34 for background to Operation Fish Run; La Grande, Oregon, Observer, 16 April 1977; and Oligher interview. See Parfit,

"Flooding America to Save It," p. 25 for an "environmentalist" viewpoint of Operation Fish Run. The operation has been written about in several places. The best brief history is in Donn L. Park, Transportation of Chinook Salmon and Steelhead Smolts 1968-80 and Its Impact on Adult Returns to the Snake River (Seattle: National Marine Fisheries Service, 1980). For other background material, see Lewiston Morning Tribune, 5 July 1977; Frank King, "Operation Fish Run," Water Spectrum, Fall 1977, pp. 7-11; Tri-City Herald, 2 June 1977; and "Corps Gives Fish a Ride," American Currents, July-September 1977, pp. 22-24. Also see Colonel Nelson Conover, Walla Walla District Engineer, to Terry Crea, Hayden Lake, Idaho, 17 March 1975, in Public Affairs Office Information Reference Paper Files, "Nitrogen Supersaturation," 401-07. (Public Affairs Office is hereafter cited as PAO.)

23. L. Edward Perry, "Supersaturated Nitrogen, Columbia River," presented at a hearing of the U.S. House of Representatives, Public Works Committee on Nitrogen Supersaturation Problems in the Columbia and Snake Rivers, 6 May 1972, p. 7, in PAO Information Reference Paper Files, "Nitrogen Supersaturation Problems," 401-07. See also Lewiston Morning Tribune, 14 May 1977.

24. Carl Elling and Wesley Ebel, Nitrogen Supersaturation in the Columbia and Snake Rivers--A Disaster or Blessing in Disguise? (Seattle: Northwest Fisheries Center, 1973); John A. Biggs, Washington State Director of Ecology, testimony before Washington Legislative Interim Committee on Fisheries, Game and Game Fish, 24 June 1971, quoted in Heuvelmans, River Killers, p. 157.

25. For background on nitrogen supersaturation, see Elling and Ebel, A Disaster or Blessing?; Perry, "Supersaturated Nitrogen;" and D. H. Fickeisen and M. J. Schneider, eds., Gas Bubble Disease: Proceedings of a Workshop Held at Richland, Washington, October 8-9, 1974 (Oak Ridge, Tenn.: Energy Research and Development Administration, 1976.

26. Elling and Ebel, A Disaster or Blessing?, pp. 10-11; Anonymous, "Presentation to Snake River Editors Conference 30 May 1974: Nitrogen Supersaturation Status Report," pp. 1-2, in PAO Information Reference Paper Files, "Nitrogen Supersaturation," 401-07.

27. Elling and Ebel, A Disaster or Blessing?, p. 11; "Presentation to Snake River Editors Conference," pp. 2-4; Ed Mains, North Pacific Division Environmental Branch, "Fisheries Problems and Programs: Command Inspection, 12 May 1975," p. 6, in PAO Information Reference Paper Files, "Nitrogen Supersaturation," 401-07; Lewiston Morning Tribune, 14 May 1977.

28. Northwest Steelheaders Council of Trout Unlimited, et. al., vs. Clifford L. Alexander, Jr., Secretary of the Army, et. al., United States District Court, Eastern District of Washington, Civil No. 3362, Order of Motions for Judgment, 30 September 1977; Robert Sweeney, Assistant U.S. Attorney, to Robert Heins, Walla Walla District Council, 1 May 1980, EDF, "Fish and Wildlife," Book 8, 1517-02; Heins interview, Walla Walla, 18 November 1980; Oligher interview. Also see Colonel Christopher J. Allaire, Walla Walla District Engineer to R. Kahler Martinson, Regional Director, Fish and Wildlife Service, 16 November 1977, EDF, "Energy and Power," 1501-07; Spokane Spokesman-Review, 19 January 1977. Sports fishers directed other criticisms at the District during the period of this study, generally dealing with streamflow controversies and the limited ability of the rivers to meet all navigation, power, irrigation and fish requirements. These wider issues of allocation of water resources are discussed in more detail in chapter 4.

29. See Asotin Project in EDF, "Wild and Scenic River Studies," 1517-02.

30. Seattle Daily Journal of Commerce, 3 January 1976.

31. Ibid.

32. Lewiston Morning Tribune, 2 January 1976, 3 January 1976.

33. Lewiston Morning Tribune, 3 January 1976, 15 September 1977, 27 January 1978, 15 January 1979, 17 April 1979.

34. Colonel Allaire to Maurice Lundy, Regional Director, Northwest Region, Bureau of Outdoor Recreation, 20 January 1977, EDF, "Wild and Scenic River Studies," 1517-02.

35. Paul Fredericks, Memorandum to Engineering Division Files, 25 March 1977, EDF, "Wild and Scenic River Studies," 1517-02.

36. Colonel Allaire to Lundy, 2 May 1977, EDF, "Wild and Scenic River Studies," 1517-02.

37. Richard J. Pole, North Pacific Division Assistant Director of Civil Works, to North Pacific Division Engineer, 26 June 1979, EDF, "Wild and Scenic River Studies, 1979," 1517-02; W. E. Sivley, Chief, Walla Walla District Engineering Division, to Russell Dickenson, Regional Director, Pacific Northwest Region, National Park Service, 3 August 1977, EDF, "Wild and Scenic River Studies, 1979," 1517-02.
38. Colonel Conover to Rod Becker, 10 March 1975, in PAO Information Reference Paper Files, "Hells Canyon--Asotin Dam," 401-07; Heins interview.
39. Boise Idaho Statesman, 31 May 1978; Idaho Falls Post Register, 23 May 1978, 28 March 1979; Salmon, Idaho, Record-Herald, 16 November 1978; Twin Falls Times-News, 18 November 1978; Heins interview.
40. Coeur d'Alene Press, 20 March 1976; Boise Idaho Statesman, 10 June 1976; Seattle Daily Journal of Commerce, 14 August 1976.
41. Cecil Andrus, "Big Fish in Little Ponds," Orofino Clearwater Tribune, 28 July 1977.
42. Idaho Falls Post Register, 5 March 1976.
43. Charles I. McGinnis, "The Theory and Practice of Mitigation," Fish and Wildlife News, September 1978.
44. By that time, estimated costs of the project had risen to well over $70 million. See Richard Kaden and Roney Heinz, "Today's Northwest Passage," Civil Engineering--ASCE, June 1976, pp. 41-47; "Congress Appropriates $5.2 million FY '79 Lower Snake Compensation Installment," Columbia Basin Salmon and Steelhead, 22 December 1978, pp. 5-8; Lewiston Morning Tribune, 10 June 1978; Vancouver, Washington, Columbian, 15 February 1979; Idaho Falls Post Register, 28 October 1976.
45. Ketchum, Idaho, Tomorrow, 20 May 1976; Moscow Idahonian, 10 May 1976.
46. Boise Idaho Statesman, 1 September 1976.
47. Dayton, Washington, Chronicle, 9 August 1979; Tri-City Herald, 13 September 1979; Walla Walla Union-Bulletin, 14 May 1978.
48. Chuck Anderson, "Boise Cascade Donates Land for Salmon Hatchery," Idaho Department of Fish and Game news release, 8 February 1978, in PAO Information Reference Paper Files, "McCall Hatchery," 401-07;

Enterprise, Oregon, Wallowa County Chieftain, 29 March 1979. For more background on the McCall Hatchery, see "Idaho Hatchery Construction to be First of a Series," Pacific Builder and Engineer, 7 April 1980, pp. 26-28; Boise Idaho Statesman, 15 April 1979; and McCall Star-News, 29 March 1979.

49. Lower Snake River Fish and Wildlife Compensation Plan, pp. 55-95.
50. Pullman Herald, 5 May 1979.
51. Lewiston Morning Tribune, 26 May 1976, 19 June 1976, 3 August 1976; Pullman Herald, 5 May 1979, 9 May 1979; Dayton, Washington, Chronicle, 15 July 1976.
52. Lewiston Morning Tribune, 3 August 1976.
53. Walla Walla Union-Bulletin, 27 August 1976; Waitsburg, Washington, Times, 15 July 1976.
54. Dayton, Washington, Chronicle, 15 July 1976; Lewiston Morning Tribune, 26 May 1976; Spokane Spokesman-Review, 27 May 1976.
55. Dayton, Washington, Chronicle, 9 September 1976; Walla Walla Union-Bulletin, 21 February 1978; Pullman Herald, 5 May 1979; Heins interview; Oligher interview.
56. Walla Walla Union-Bulletin, 5 April 1979; Oligher interview.
57. Pomeroy, Washington, East Washingtonian, 10 May 1979; Pullman Herald, 9 May 1979.
58. Oligher interview.
59. Ibid.; Orofino Clearwater Tribune, 1 July 1976, 9 August 1979, 6 March 1980. For further details on the Dworshak mitigation process, see EDF, "Dworshak Fish and Wildlife" and "Dworshak General" folders.

THIS PAGE LEFT INTENTIONALLY BLANK

CHAPTER 4

WATER RESOURCES

THIS PAGE LEFT INTENTIONALLY BLANK

CHAPTER 4

WATER RESOURCES

"These are magnificent, roaring times of controversy over the Columbia River. Connoisseurs of Columbia River conflict have not had so much excitement since the 1920's."[1] With these stirring words, Marion Marts introduced her analysis of contemporary conflicts over the river. In past decades, the construction of massive multipurpose dams in the Pacific Northwest symbolized an era of abundant water resources for agriculture and recreationists, a seemingly limitless supply of cheap electrical power for cities and rural areas, and development in places previously threatened by floods. These projects insured a continuing prosperity and population growth for this region. Increasing demands on water resources have now outstripped the ability of the dams to gratify all interests and needs, especially with the emergence of environmental issues and enactment of complex regulations during the last 10 years.

The Corps is involved in water resources issues and planning through its delegated responsibilities for maintaining adequate stream-flow for navigation and anadromous fish, hydroelectric production, flood control, and water quality. These duties can and often do conflict with state and private interests in irrigation development, water for industry, recreation, and Indian water rights. With the growing realization that water resources are limited and must be apportioned among users in a manner compatible with local, state, and national interests, Federal and state agencies have increasingly cooperated in long-range planning activities. Congress created the National Water Commission in 1968 to study "all water problems, programs and policies in the context of their relationship to the total environment, including the esthetic values affecting the quality of life of the American people."[2] The Colorado River Basin Project Act of 1968 authorized the Westwide Study for the purpose of "investigating and reporting on water supply availability and needs of eleven western states."[3]

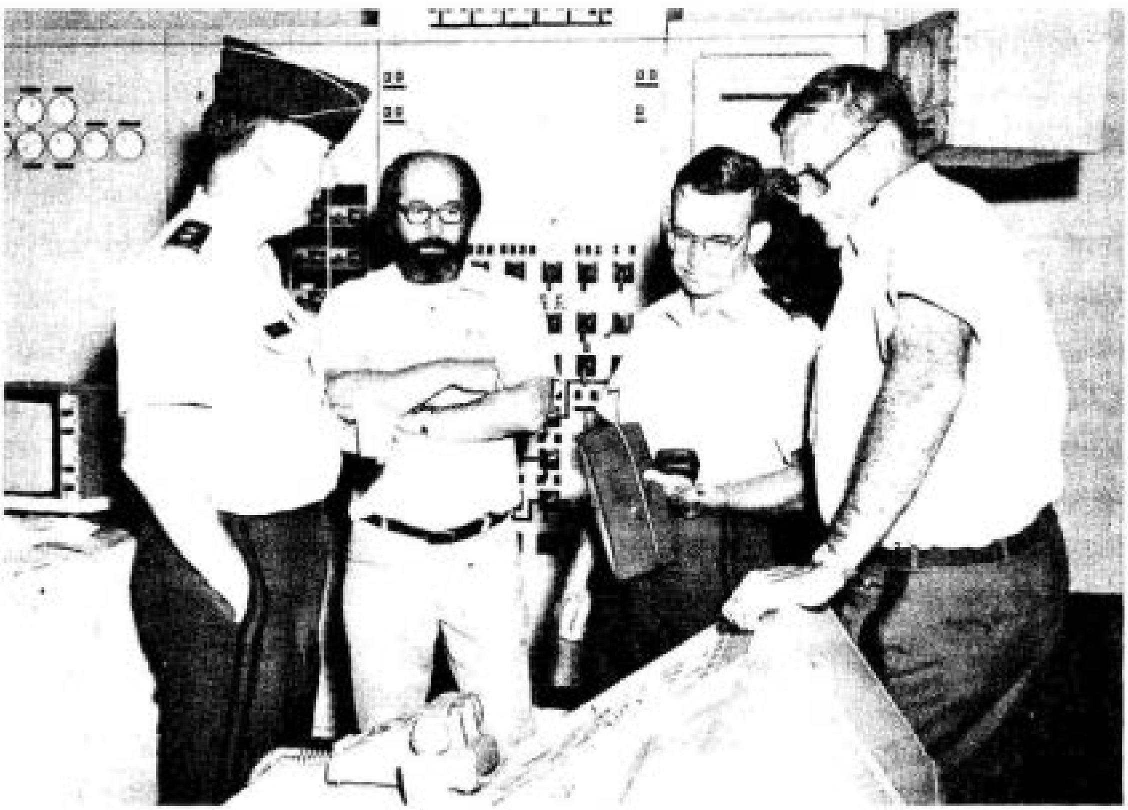
Interest in coordinating water resources on a regional scale in the Northwest can be traced to interagency agreements made in 1939 and 1943 among the three Departments of Interior, Army, and Agriculture, and the Federal Power Commission; creation of a regional commission for the Columbia River in 1961; and establishment of the Pacific Northwest River Basin Commission (PNRBC) by executive order in 1967 under the provisions of the Water Resources Planning Act of 1965.

A strong impetus for regional planning was the proposal discussed in the 1960's and early 1970's to divert water from the Northwest to the Southwest. The spectre of mammoth canals and pipes carrying water from the Columbia and Snake Rivers to the arid Southwest strengthened regional identity and became a centripetal force within the PNRBC.[4] The plans to divert water over such long distances were more speculative than realistic. The Water Research Center in the State of Washington published a report in June 1971 which evaluated the diversion plan from several social, economic, and environmental perspectives. The conclusions were negative, offering slim hope that the diversion could be justified on economic grounds.[5] Another study concluded that the act of subsidizing water diversion to distant agricultural areas at costs exceeding the values of crops produced was not mutual aid but a "national folly representing a very major income transfer without specific social objectives."[6] The ensuing political foment surrounding the project did bring about a Congressional moratorium on further diversion studies in 1968 and 1979 and sparked an interstate conference held in Boise, Idaho, in May 1976, at which participants warned that competition for water would continue through the next century in the West and Southwest as a result of population growth.[7]

Another threat to Northwest water appeared at the end of the decade in the areas of energy development and national defense.

Senator Henry Jackson, who had successfully pushed through Congress the 1968 and 1978 moratoriums on water diversion studies, attempted in April 1980 to extend the moratorium to include other Federal agencies. This action was in response to the EPA's new study on using Columbia River water for energy development projects in the Rocky Mountain States. Some speculated that the Departments of Energy and Defense were contemplating using this water for developing oil shale and for the MX Missile project.[8]

The issue of an interbasin transfer of Northwest water stimulated public and political interest in water resources and contributed to regional efforts to find effective methods of apportioning water among users with conflicting interests. In July 1962, the Senate Committee on Public Works adapted a resolution that requested the Corps to conduct a review of the operation and development of plans for the Columbia River system to insure that all uses were considered and compatible with each other. Studies made under this resolution are collectively known as the Columbia River and Tributaries Study. In 1970, the Senate Committee specifically requested the Corps to review its water resource development plans for possible additional uses of water projects under its jurisdiction. An integral part of the Corps' regional investigations was to insure that water resources were economically used and to protect the welfare of communities from adverse effects of water demands by other communities.[9] In the North Pacific Division, the Corps was to evaluate on a system-wide basis the "extensive physical and economic changes occurring since the previous study in 1962." These changes consisted of the three large storage projects constructed under the Columbia River Treaty with Canada, the high voltage intertie between the Pacific Northwest and the Southwest, construction of a third powerhouse at Grand Coulee Dam, and the rapidly growing need for electrical energy in the Pacific Northwest. In evaluating these physical changes, Congress asked the Division to review the older projects which might not be functioning adequately and to propose modifications to meet future needs. In its preliminary study, the Division identified two areas for investigation. First, the needs and opportunities for incorporating environmental and recreational values into new projects should be assessed; and second, the current values and preferences of the public at local, regional, and Federal levels should be determined. The latter objective would include encouraging meaningful involvement of organizations and individuals in the evaluation process and increasing the "interest, confidence and trust of involved members of the public through effective, two-way communication." In order to carry out this goal, the Division distributed the study proposal to all interested parties with an offer to furnish additional information.[10]



FLOW THROUGH DWORSHAK AND LOWER SNAKE RIVER DAMS IS CONTROLLED BY A CENTRAL COMPUTER AT McNARY. HERE CHARLES COOK OF THE McNARY OPERATIONS SECTION EXPLAINS THE SYSTEM TO NORTH PACIFIC DIVISION AND WALLA WALLA DISTRICT OFFICIALS.

As part of the comprehensive Columbia River and tributaries studies, the Walla Walla District undertook a study of irrigation depletions and instream flows. The official purpose of the irrigation study was to investigate how irrigation impacts on streamflows in the Columbia River system and to determine the interrelationship between irrigation and other users of the rivers. The report's release in 1977 had an immediate and far-reaching effect on the public. The Corps' statement which aroused such intense interest was the unequivocal assertion that the Columbia River as presently developed was no longer a surplus resource.[11] Newspapers in the region reacted to the report by acknowledging the dependency of the region on the Columbia River system and the impending changes a curtailment in future water development would produce.[12]

The irrigation study heightened existing controversies such as Federal interference with states' water rights through its regulations on water quality, Washington State's proposed legislation to limit water permits to 25- and 50-year time periods, and the Idaho water plan which would allow the director of the Department of Water Resources to alter the nature or use of existing water rights and to allocate future water resources.[13] Irrigators and developers were particularly sensitive to the report's conclusions because of their total dependency on water and the lucrative advantages of converting fertile desert land to productive farmland. A statement by Glenn C. Lee, publisher of the Tri-City Herald and secretary of the Tri-City Nuclear Industrial Council, testified to the impact of the report on irrigators and new developments even before the report was released. "When the Corps comes out with that report it may put the brakes on all future generations from developing any new irrigation in Eastern Washington, and that's why I say time is running out."[14]

Russell Smith, President of the State Association of Washington Irrigation Districts, was also concerned that the report might dampen support for irrigation development. The study had warned that allocating more water for irrigation would adversely affect power production and fish. Smith emphasized the crucial role of irrigation for food production and declared that many people in the West who are more concerned with power than food production will have to change their priorities one day. "Power has got to take a back seat to food," said Smith. "I just don't want the other users to gang up on agriculture." Further, the economic loss of $113 million in hydroelectric power, if irrigated farmlands were increased, would be handsomely offset by an increase of $6.5 billion in the value of farm products.[15]

The District also emphasized the primacy of irrigation in the Northwest in a letter to the North Pacific Division which discussed the potential for water conservation measures. Kenneth D. Hoyt of the Basin and Urban Studies Section stated that the greatest consumptive use of water within the District was irrigation. Irrigation use was so great in comparison to other uses of water that the only meaningful water conservation effort would be in that area. However, "jurisdiction of water for irrigation lies with the states and is jealously guarded," Hoyt explained. He then remarked that the Corps could do little to influence this except to point out that it was much more economical from a regional standpoint not to develop additional irrigation along the Snake River in Idaho because the "economic cost in lost hydropower and in pumping costs greatly exceed potential irrigation benefits."[16]

Conflicts over water rights in Washington and Idaho demonstrated how strong and vital the interests of irrigators were when faced with the certainty of limited water resources. In Washington, the Department of Ecology attempted to limit the time periods on new permits and to curtail new permits for large projects, such as the U & I Sugar Company's proposed 100,000-acre project on Horse Heaven Hills near the Tri-Cities. After a bill introduced by State Senator Hubert Donohue in 1976 forbidding any limitations on water permits was defeated, legislation to limit permits was passed.[17] In December 1977, the Washington State Grange sponsored an initiative that was approved in a general election which became the Family Farm Water Act. The act allowed one-person farms of 2,000 acres or less to obtain water permits with no time limit.[18] Another turnabout occurred the next year. After reserving water for the Horse Heaven

Hills irrigation project in 1978, the state in 1980 repealed the measure, partially in response to pressures from other interests such as environmental and fishing groups.[19]

PORT OF COLUMBIA GRAIN ELEVATOR

In Idaho, the development of a water plan by the Water Resources Department heightened the underlying tensions among irrigators, power companies, and environmentalists. At public meetings held throughout the state in 1976 to discuss the plan, farmers expressed their fears that the proposed plan would jeopardize existing water rights. Under the plan, the Director of the Water Resources Department could change existing water rights to protect the public interest or to transfer existing water rights from one use to another as water uses intensified and conflicts arose.[20] Another part of the plan was hardly less controversial. This would allow reclaiming 1.2 million acres for agriculture by the year 2020, buying excess irrigation water from users, and raising water tables through infusions of spring floodwater.[21]

The predicted 200-foot drop in the water table caused by irrigation development would mean that existing pumping equipment would have to be converted to high-lift pumps, which would require more energy to operate. Others were concerned that with more water allocated for irrigation, adequate streamflows could not be maintained and that annual levels of power generated by existing Snake River dams could not be met.[22] The public hearings on the proposed water plan also provided the Idaho Department of Fish and Game the opportunity to explain how decreased streamflows could harm wildlife and recreational values.[23]

Throughout these hearings, the need for water conservation and additional storage sites, compromise among competing interests, and a comprehensive water plan clearly emerged. Another water conservation method, the water bank, was one of the more innovative measures in the Idaho plan. Under the water bank provisions, a farmer could sell his surplus water to the state which could then reallocate the water to other users. In addition, spring floodwaters would be pumped into dry wells for use later in the summer. This method of recharging aquifers would greatly aid water conservation.[24]

The belief that acceptable compromises could be made and that Idahoans, like residents of other states, recognized the need for rational planning of natural resources, was aptly stated by Kenneth Hacking of the Madison County Farm Bureau. "We farmers are proud of our Idaho streams and mountains. We don't want to be the enemy of conservationists. What we need is to work together to maintain the quality of life we have in this area."[25] Sentiments such as those expressed by State Representative Wayne E. Tibbits opposing water planning because it allowed "people who have no ownership in land or water rights to decide what is going to happen" conflicted with the ideas of those who realized that allocation and use of water resources concerned all citizens. The Idaho State Journal expressed the larger viewpoint--one which typifies Federal agencies like the Corps whose mission and clientele are nationwide--that rights to dwindling supplies of unallocated water can no longer be controlled by one group of interests. The Idaho water plan concluded, as did the Corps' Irrigation Depletions and Instream Flow Study, that there was not enough water in the state to satisfy all the projected demands on it in the next 50 years. In light of this reality, the Journal restated the thesis of the Idaho water plan "that the future growth and quality of life in Idaho depends, in large measure, upon the acceptance and adoption of a coordinated, integrated, multiple-use water resource policy, a plan to implement that policy, and a time schedule and assignment of responsibilities for implementation." The Journal stressed that this meant that "ALL uses of Idaho water must be considered, for ALL members of the public."[26] (The words "Washington, Oregon, Columbia River Basin, Pacific Northwest, or the United States" could be substituted for "Idaho.")

Water resource planning and allocation policies had to take into account another group, the American Indian, whose legal rights to water antedated most claims of irrigators and sportsmen. In the 1970's, Indian tribes initiated an intensive campaign through the media and legal channels to assure their historic rights to water within and flowing through their reservations, and to historic fishing areas. In the western states, Indian water rights exist on a Federal level outside the jurisdiction of the states. Rights to water diversion and water use were granted at the time reservations were created. Although the Supreme Court in 1908 upheld the rights of Indians to water originating on, flowing through, or adjacent to a reservation, large irrigation projects--usually constructed by the Federal Government--ignored the question of Indian rights to the water. Because of their cultural bias against farming and scarcity of arable land on most reservations, Indians did not pursue their legal rights to water until much later. A Supreme Court decision in 1963 concerning water rights in the Southwest granted sufficient water to reservation Indians on the basis of "practicably irrigable acreage." The National Water Commission in its 1973 report foresaw the necessity of legal action to settle the question of aboriginal (that is, previous to the creation of a reservation) water rights.[27]

A more recent report, commissioned by the Department of Interior and published in 1975, anticipated that the Indians would use the Federal courts to find some means of obtaining adequate water through development projects or reallocations. The latter means would require some Federal compensation to those users who lose water and are economically harmed.[28]

Indian water rights were addressed in a 1974 review study of the Columbia River and tributaries which inventoried problems and areas of concerns. The study cited the substantial nature of Indian rights and interests in the Columbia River and tributaries, claims for fish mitigation, operation of the Columbia River in a manner consistent to prior commitments to Indians (particularly in regard to fishing rights and burial grounds), and access to fishing sites.[29]

The question of readjusting or reallocating water rights was especially sensitive in the Pacific Northwest where existing water supplies are, or will be shortly, oversubscribed. The Bureau of Indian Affairs initiated its own investigations in the mid-1970's to quantify water supplies and needs.[30] In the Walla Walla District, the issue of reserving fishing rights for Indians at the expense of non-Indian sport fishermen was more publicized than the matter of determining water rights on reservations. In 1976, fishermen in Idaho protested the curtailment or closure of the fishing season for steelhead and salmon in Idaho rivers. Their anger was directed against commercial fisheries on the Columbia River and Indians who enjoyed fishing rights independently of state regulations. Idaho State Fish and Game officials had enforced the closures in an attempt to preserve the small spring runs.[31] The fishermen also blamed the Corps, the Bureau of Land Management, large timber interests, and Canadians for the sharply decreased fish runs, although the debate over whether dams or commercial fishing had destroyed the runs was not resolved.[32] Some also accused the Indians' use of gill nets as helping to destroy the fish runs.[33]

Allen Slickpoo, Sr., a well-respected tribal spokesman for the Nez Perce Indians, responded to the charges against Indian fishing practices and the tribal rights to half of the Columbia River catch. In a letter to the Lewiston Morning-Tribune, Slickpoo pointed out that the treaty fishermen would hardly receive 50 percent of the annual runs as they were competing with hoards of non-Indian fishermen who used trawlers and electronic and sonar tracking gear. According to Slickpoo, the general public was being misled in believing that the treaties dictated to the Indians by the white man now threatened to totally destroy salmon. "History, again, is being repeated with exaggerated sensationalism."[34]

The Corps' involvement in the controversy over Indian fishing rights stemmed from its responsibilities for mitigating the effects of dams on fish and its control of streamflows. One example of this was the suit threatened by the Yakima Indians against the Washington State Department of Ecology's policy of granting water permits for large irrigation projects. The Indians claimed that by diverting the water, the department was jeopardizing salmon runs. The Ecology Department referred the matter to the Corps which, it claimed, was more responsible for maintaining the minimum streamflow.[35]

The debate still continues over Indian treaty rights versus economic losses to commercial fisheries. The issue resurfaced in the spring of 1980 when the Nez Perce Tribe defied the Idaho Fish and Game Department's closure of the Rapid River to salmon fishing. Verbal exchanges and even a display of weapons foretold many years of negotiation ahead for Indians and non-Indians alike.[36]

In the struggle over water rights, the interests of hydroelectric power generation appeared as potentially explosive as Indian treaty rights to water and fish. Production of cheap plentiful power was especially critical in an era of energy crises and dwindling oil supplies. In agriculture, increased reliance on sprinklers fed through high-lift irrigation signaled a dilemma. More power for irrigation meant that the expansion of irrigated land would further deplete water needed to generate the energy for pumping. A 1978 report by the University of Idaho and Washington State University stated that farming with high-lift irrigation pumps was second only to the aluminum industry in intensive electricity use. According to the Bonneville Power Administration, 2.85 billion kilowatt hours of electric energy are expended annually in irrigating the Columbia Basin. Sterling Munro, BPA Administrator, remarked to the Spokane Chamber of Commerce in early 1979 that power allocated to irrigators was becoming an issue and, even though farmers claimed they used less than 5 percent of all power consumed, contributed greatly to the regional and local economies.[37] Robert F. Vining, the North Pacific Division's Assistant Manager for the Columbia River and Tributaries Study, pointed out in April 1976 that other power sources, such as coal and nuclear powerplants, would have to be developed to meet the projected expansion of irrigated land in Washington from 7 to 11.2 million acres. This expansion would reduce the generating capacity of the Columbia and Snake Rivers from 23,000 to 22,000 megawatts, a loss of about $115 million annually. However, Vining continued, an additional five coal- or nuclear-fired plants of 1,000 megawatt power would be needed to pump the water to the fields.[38]

The impact of the Corps' conclusion from its irrigation depletion study that the Columbia River no longer contained surplus water was reinforced by the BPA's statement in June 1976 regarding the limits on its power resources. The BPA notified its preferred customers that after July 1 1983, it would not be able to meet their increasing energy requirements. After that date, it would supply power on an allocation formula.[39]

The concerns over limited water resources for further irrigation and power development were shared by another sector of society whose interests in these issues were primarily environmental or recreational rather than economic. The environmentalists' major triumph in preventing further hydroelectric power development was passage of the act creating a national recreation area in 1975 which declared the Snake River a wild and scenic river from the Hells Canyon Dam to Pittsburgh Landing. The act banned the construction of dams or other developments in this 33-mile stretch. The fight to enact the legislation involved supporters of power development, including the Pacific Northwest Power Company and the Washington Public Power Supply system, versus governors and senators of the States of Idaho, Washington, and Oregon, State Fish and Wildlife Departments, the Marine Fisheries Center, and a coalition of environmental groups. It was described by the Seattle Daily Journal of Commerce as a "classic battle over whether the need for more energy and the corresponding economic impact justified what environmentalists considered destruction of a unique natural area."[40]

Another intertwining struggle in this part of the District surfaced between the Idaho Power Company, private operator of the Hells Canyon dams, and recreationists, fishermen, and environmentalists who preferred to sacrifice power production for a larger streamflow. The conflict intensified during the summer drought of 1977. Owners of three jet boat businesses and private boaters asked that Idaho Power release water on certain days of the week to enable them to navigate the Snake River downstream from Hells Canyon Dam. The District, which was involved in the issue because of its responsibility for maintaining navigation, and the Idaho Power Company announced in August a plan to permit regular navigation from Lewiston up the Snake River two days a week.[41]

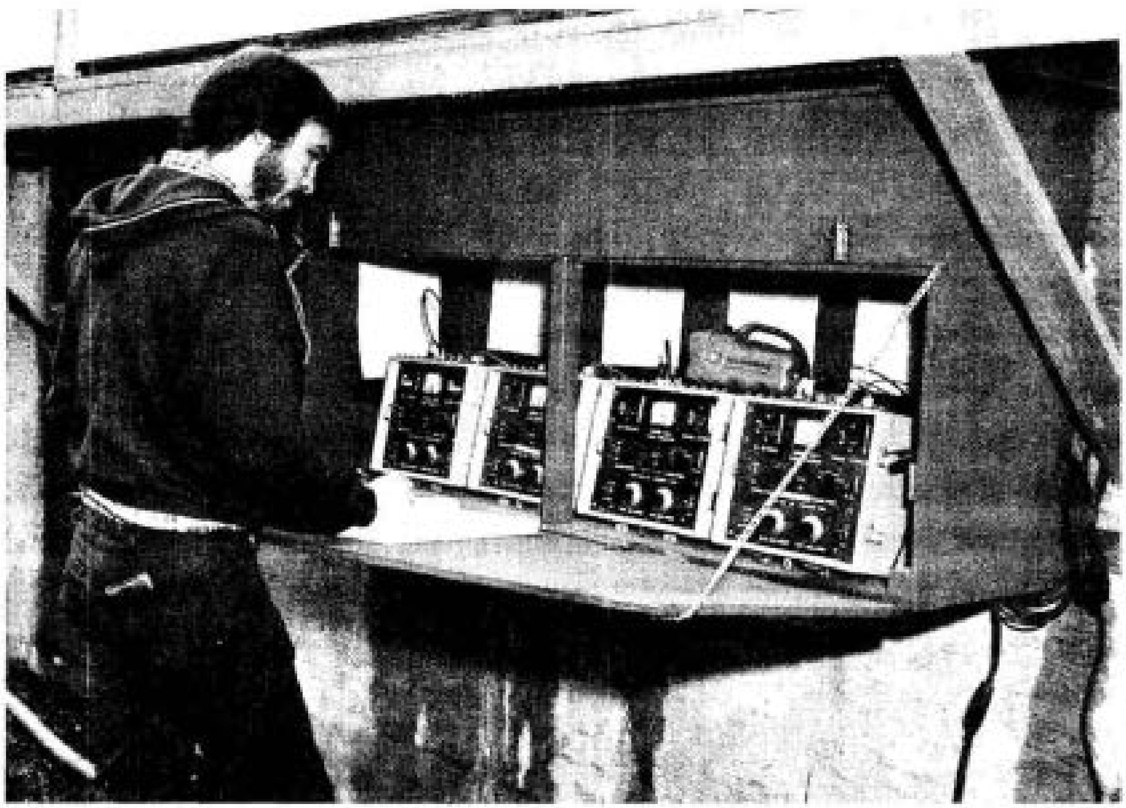
Sportsmen and environmentalists shared the boaters' concern for adequate streamflow in the Snake and other rivers in the region. Sufficient streamflow, plant production, and water temperatures are crucial to the spawning, growth, and migration of fish. Although all fish are affected by these factors, anadromous salmon and steelhead are particularly sensitive to water quantity and quality. Water temperature is important because major fish runs occur during the warmest months when streamflows are lowest. Attraction of migrating fish upstream and movement of young fish downstream also depend on an adequate flow of water. Without a sufficient spring flow, the downstream journey is prolonged, increasing the mortality of fish by predation. Under low-flow conditions, these losses are estimated to reach 70 to 85 percent as compared to 35 to 45 percent when water flow is high.[42]

PLEASURE BOATS IN LOWER MONUMENTAL LOCKS

The Corps, strongly committed to protecting anadromous fish, recognized the importance of streamflows to the downstream migration of fish. John McKern of the Walla Walla District's Recreation and Resource Management Branch pointed out the impact of the enormous irrigation projects on fish runs, a problem that could only become more serious with completion of planned projects. With major withdrawals for irrigation water, "The carrying capacity for the runoff is being diminished which is a real concern to agencies of all three states.... A reduction in flow upstream reduces the number of fish migrating downstream."[43]

Conversely, high flow conditions, or extreme fluctuations in stream levels over short periods of time can be as harmful to fish as low streamflows.

In addition to sudden or extreme changes in river levels, pollution of rivers, lakes, and reservoirs from agriculture, mining, and logging has destroyed or degraded a large amount of fish habitat and fish runs. Chemical pollutants and sedimentation from construction projects have destroyed spawning areas, and even urban developments along stream channels have depleted vegetation and lowered water quality.[44]



RACEWAY FISH COUNTERS AT LOWER GRANITE DAM

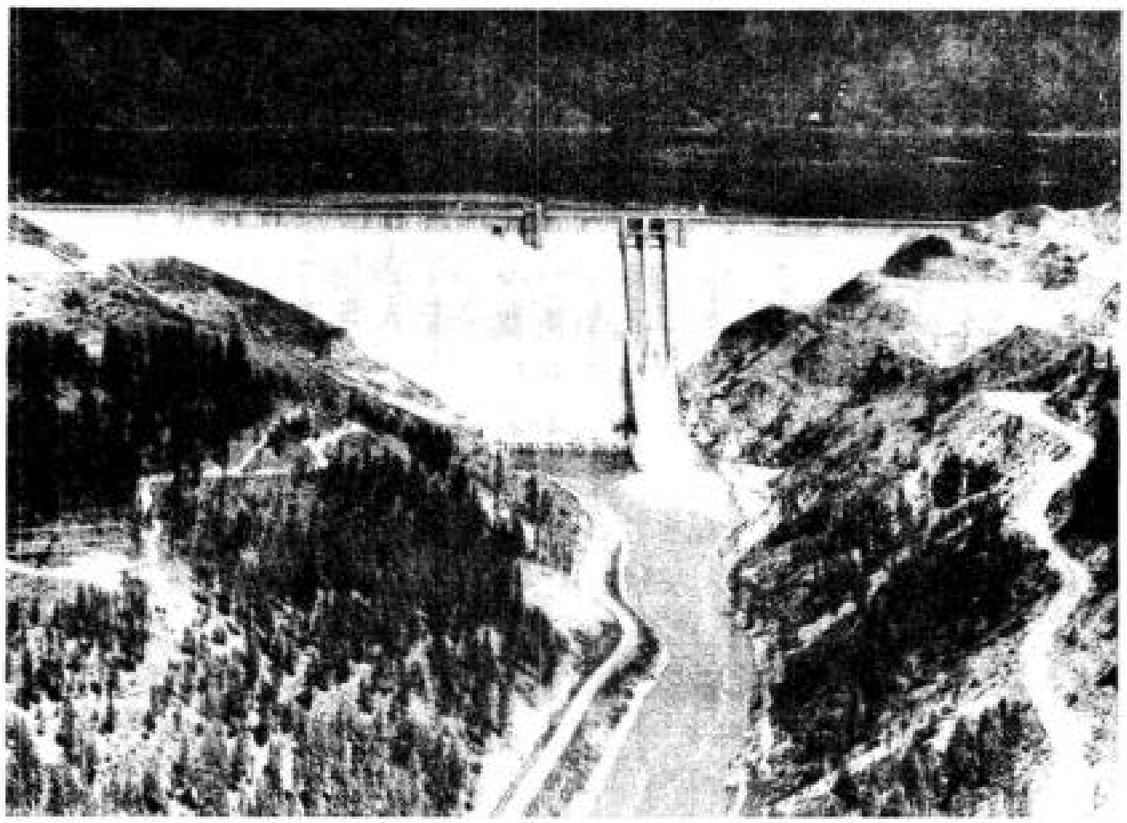
Regulating streamflow levels is just one of the many overlapping and conflicting demands on the use of water resources which involves the Corps. The District's handling of the complex problems arising from balancing streamflow with power production and flood control storage is well illustrated at Dworshak Dam, the District's most recent multipurpose dam, completed in 1971. Normally, the Division Reservoir Control Center establishes reservoir levels, and the BPA sets power generating schedules. This information is transmitted to the project engineers at the various project offices throughout the District by teletype. The Division prescribes reservoir levels and downstream flows according to various resources and needs. For example, regulations for Dworshak Dam are constrained by a flood control requirement that the reservoir have 700,000 acres of space by December 15. Within the daily power requirements and fixed regulations, project engineers must work within general guidelines provided by the reservoir regulation manual. According to Rodger Colgan, Project Engineer at Dworshak Dam, the optimum situation for allocating water resources exists at different reservoir levels for various times of the year for diverse purposes. Since Dworshak is a multipurpose project, Colgan views recreation as having a fairly significant value during the summer vacation period, from mid-June to the end of August. At that time, the reservoir level is maintained at a high enough level to accommodate boaters, campers, and fishermen. From the first of August through September, the reservoir is gradually drawn down to prepare for fall and winter runoff. This drawdown does not conflict much with users of the river or reservoir during those months. Throughout October--the period of steelhead recovery and prime period of steelhead fishing--the drawdown is suspended to allow fishing on the Clearwater River below the dam to Lewiston. This interim period, according to Colgan, occurs with the mutual agreement that steelhead fishing has historically been recognized as important in this area and continues to be regarded as such. From November 15 to December 15, sufficient water is evacuated from the reservoir to prevent potential floods from heavy rainfall and runoff. This evacuation conflicts with the wishes of steelheaders who would prefer lower water levels to extend the fishing season. However, the constraint that the reservoir be drawn down by December 15 is inviolable. In late winter, releases from the reservoir are stabilized to prevent sudden upward fluctuations of water that would destroy goose nests.[45]

OPERATOR EXPLAINS CONTROL ROOM AT DWORSHAK DAM
TO VISITING SCHOOLCHILDREN

Drawdown decisions affecting fish are particularly subject to public scrutiny at Dworshak because of the easy accessibility of the river to sportsmen. A sudden fish kill in late November 1977 below the dam focused public attention on the Corps. The Corps, in its attempt to match the temperature of the water flowing through the turbines with the temperature of the river, drew off water from the bottom of the reservoir, creating a slight current that attracted the landlocked salmon, or kokanee, to the turbine intakes.[46]

Caught in the dilemma of meeting regulations for reducing reservoir levels and an angry public, the Corps responded openly to the press that although the fish mortality would continue during the drawdown period, the amount of dead fish represented only a "very small fraction of the total kokanee population in the reservoir." The corps also noted that millions of kokanee had been planted above the slack water in the Clearwater River and in streams flowing into the lake since the dam was completed in 1971.[47]

W. E. Sivley, Chief of the District's Engineering Division, in an internal memorandum dated August 11, 1978, outlined the numerous steps the Corps had undertaken to insure water quality and quantity for the reservoir and stream fish. These included funding various studies by the Idaho Fish and Game Department and the University of Idaho in addition to monitoring water quality. Sivley stressed the urgent need for a study that would concentrate on the immediate problem of determining the extent of kokanee killed and whether the numbers were significant, as well as proposing solutions.[48]



DWORSHAK DAM

Travelers along Highway 12 to Missoula or Lewiston can briefly glimpse the massive structure of Dworshak Dam in its setting of wilderness and sparse human population. Despite its isolated position, Dworshak as a power generating resource is firmly connected to dense urban centers through its hydroelectric lines to the Northwest and through the Southwest intertie as far away as Southern California. For these far distant users, water stored behind Dworshak Dam represents a source of energy for irrigation and summer peak power demands. In 1976, the Bonneville Power Administration proposed that Dworshak and Libby, Montana, reservoirs be included with others to provide an "advanced energy draft." This draft would entail loaning power to the BPA during the summer by drawing down pool elevations, with a stipulation that such a draft would be repaid. The BPA discussed the advanced energy draft plan at a May 1976 meeting of the North Pacific Division and District Corps representatives. The BPA requested that the Corps prepare an environmental assessment of the effects of drawing down the two reservoirs in order to supply summer power to industries, particularly the aluminum industries in the Northwest. The Division declined to agree to a "general advanced energy draft" unless it would be granted on an annual basis only. In noting the eagerness with which the BPA pressed its proposal, Robert G. Rickel of the District's Hydrology Section contended that the lowered pool level could have adverse environmental impacts not previously addressed in the Final Environmental Impact Study (EIS) of 1975. The proposed withdrawals would lower the reservoir about 9 feet each month from August through November. As the District was responsible for representing local interests to the Division on this issue, Rickel urged that a thorough analysis be made, one which would include input from the State of Idaho. The drawbacks in agreeing to the advanced energy draft, according to Rickel, would become acute during short-water years and result in an overall decrease in Dworshak's firm energy reserves. Local fishing and recreational interests had as great a right as power interests to the water resources impounded by the dam. One problem in trying to analyze the draft, Rickel pointed out, was comparing the monetary value of power for industry with the intangible losses to recreation and fishing; for example, losses of bass hatch. In summarizing his position, Rickel requested that a strong case be made against this type of operation, or "the use of Dworshak storage will be entirely different from that originally envisioned, with a very disastrous effect on local recreation and fishing, much of which was enjoyed before Dworshak."[49]

The BPA's request also encountered firm opposition from Dworshak Dam Project Engineer Rodger Colgan, other Corps personnel, and fishing interests who contended that a summer drawdown would reduce recreational values and boat access to wilderness areas. The Corps, however, did agree to evaluate the effects of increased drawdowns.[50] Stephen W. Pettit of the Idaho Department of Fish and Game explained in reaction to the study that such a drawdown in July would endanger the smallmouth bass which build nests and spawn in shallow, warm, water. Under the drawdown, the fish would not have a constant water level for building their nests and temperatures would fluctuate. Sudden releases of water would disrupt the steelhead fishing season as well.[51]

Fortunately for Idaho recreationists and fishermen, the proposed 1976 summer drawdown plan was abandoned, largely due to vocal opposition by Idaho Governor Andrus. At a meeting with the BPA and Colonel Allaire in August 1976, Andrus expressed his view that feeding a proposed second electrical intertie line to Southern California was not what the people of Idaho wanted to do with their water. Both agencies agreed to drop Dworshak from the study to examine the power potential of the Columbia River system.[52]

A dry fall and winter in 1976-77 demonstrated the Pacific Northwest's economic dependence on hydroelectrical power. In January 1977, the BPA again requested a release of water from Dworshak Dam. In view of the fact that energy shortages threatened to lay off thousands of workers, the Division agreed to evacuate 10 feet of water from Dworshak and Libby Dams. The Division agreed to this release on the condition that the BPA "pay back" the loan of 10 feet in the spring by allowing the reservoirs to rise this amount. However, in that winter and spring of continuing drought, the prospects of refilling the Dworshak Reservoir (which was only 65 percent of normal in January) to its average capacity were not assured. In assessing the impact of the BPA's request for additional water power, Idaho Governor John Evans expressed his concern for the spring run of salmon and steelhead. Major General Wesley E. Peel, Division Engineer, remarked at that meeting with Don Hodel, Director of the BPA; officials from the Idaho Department of Water Resources; and Governor Evans, that the Corps faced a problem of balancing the needs of power generation, irrigation, navigation, fishery management, recreation, and other uses of water in the river drainage. As a result of the drought, the Corps had initiated water conservation methods. Hodel informed those at the meeting that the BPA was also looking into the possibility of obtaining power from Canada in case power from Northwest hydroelectric plants was curtailed.[53]

The Tri-City Herald, describing the "awesome" responsibilities of General Peel for equitably distributing water shortages among farms, factories, and fish, gloomily predicted the life-or-death consequences arising from those decisions. Peel remarked in that newspaper article that his decisions were guided by authorizations granted for each dam and recommendations from governors and congressional delegations. One of these gubernatorial recommendations to release water for the upcoming salmon migrations had already been approved.[54] In explaining his January decision to draw down Dworshak Reservoir for energy production, Peel stressed that he had "put jobs ahead of fish." Now, with the impending migration of fingerlings to the Pacific Ocean, he had decided to spill water for the fish in order to protect a natural resource. This additional water, Peel informed the BPA, could be used to generate surplus power to sell.[55]

Decisions on allocating water resources, especially in drought years, have economic and political consequences. Representative Thomas S. Foley of Washington, Chairman of the House Agriculture Committee, expressed a serious concern about the impact of the lowered reservoirs on logging, water supplies, and power production. Foley contacted Peel in March 1977 and learned that the Division was considering a possible alternative to spilling 3.6 million acre-feet of water. The alternative included monitoring fish movement in order to time fish migration with the release of water.[56] Cecil Andrus, then Secretary of the Interior, entered the struggle in April by telegramming three central Washington public utility districts to cooperate in the efforts to save fish by releasing surplus water through their dams.[57]

With the realization that the decades of surplus water resources had ended, and the fact that droughts in the Pacific Northwest historically occurred in cycles of 8 to 10 dry years, no one could assume in April 1977 that the lowered reservoirs would be replenished for the next seasons's water demands. David Rockwell of the Division office warned that if 1978 were a relatively dry year, the integrity of the Northwest power system would be jeopardized. This would mean region-wide mandatory rationing of electricity to prevent depleting reservoirs before the 1978 spring runoff. On an even darker note, Joel Haggard, a Federal representative to the Columbia River Compact Commission, predicted a dramatic increase in conflicts involving industry, agriculture, navigation, and other uses. "We cannot avoid the conflict. It will come." The Corps estimated that the cost of releasing water in April and May to save the salmon run would be 3,400 lost megawatt hours of electricity, the equivalent of 5 months' supply of power to industrial users in the Northwest. The BPA had cut back by one-half interruptible power, which had caused a loss of 500 jobs in the aluminum industry, and a predicted 50-percent chance of mandatory electricity curtailment in the region. Even the amount of water needed to save the fish was disputed. The Corps had proposed a compromise figure of 2.5 million acre-feet in contrast to the 3.5 million acre-feet the fisheries experts judged as necessary to sustain the runs.[58]

Although the plentiful fall and winter rains and snowfall following the 1977 summer drought refilled lakes and reservoirs, agencies and individuals concerned with water resources realized the need for effective regional cooperation. The PNRBC's 1979 four-volume report on water resources warned against individual piecemeal actions that did not fit into a regionally acceptable plan or which conflict with other actions or options in the future. Moreover, growing conflicts over water use among all interests could destroy existing regional cohesiveness.[59] The Corps' long involvement in the Columbia River and Tributaries Studies and its cooperation with other agencies and local communities testifies to its commitment to regional planning as a means of protecting and enhancing water resources.

The 1976-77 drought not only revealed the pitfalls stemming from years of unabated development when pressing problems of limited water resources were ignored, but also proved that agencies and individuals can cooperate in water conservation programs. The decision to allow additional energy generation at Dworshak Dam at the expense of recreationists and the subsequent decision to spill water for fish runs, were examples of successful regional cooperation and compromise. Other measures included the request by the Idaho Department of Water Resources that irrigators suspend diversion operations in the fall of 1977 so that reservoirs drained by the drought could refill, closures or curtailment of fish ladder operations at dams on the Snake and Columbia Rivers, and reduced lockages for pleasure boats on the four lower Snake River dams.[60] The drought and its aftereffects also spurred research on the optimum uses of water for downstream fish migration. Walla Walla District fish biologists began studying methods of selectively spilling groups or schools of fish instead of maintaining ongoing spills. Using sonar equipment and observing diurnal and nocturnal fish movements, the researchers hoped to identify patterns in the movement of fish as they approach dams and to determine the ideal volume of water and time to spill water.[61]

The drought and the District's report on the shrinking water resources of the Columbia River system focused regional attention on methods of conserving irrigation water. The Tri-City Herald suggested in

August 1976 that the states should decide among themselves which land was best suited for irrigation, and allocate water on that basis.[62] The PNRBC's 1979 report also identified irrigation as an important area for conservation practices. Of the three major water uses in the Pacific Northwest, irrigation was evaluated as having the most potential, anadromous fish runs less, and hydroelectric generation the least potential for water conservation. The report discussed other water conservation methods, including ground water management, weather modification, runoff forecasting, evaporation suppression, vegetation management, alpine snowfield management, desalination, intra-regional water transfers, and development of small reservoirs.[63]

Despite the efficiency of water conservation practices, the alternative of maximizing available water resources through new storage sites, offstream or onstream, was an issue that had to be confronted. The District's 1976 study on irrigation depletions and instream flows concluded that with the addition of upstream facilities for 10 to 15 million acre-feet of water, the Columbia River system could provide for projected water use increases with little or no adverse effect on present river uses. The most feasible sites were in the upper Snake River basin and in the Columbia River basin upstream of Chief Joseph Dam.[64]

Brigadier General Peel, commenting on the report, remarked that the Pacific Northwest must face some additional development of the Columbia River system in order to meet increasing needs for water. General Peel conceded that economic and environmental constraints would eliminate many of these sites, but the storage capacity now existing retains only about one-fourth of the runoff.[65]

Interest in additional storage sites continued with the November 1977 announcement by the Bureau of Reclamation that it was investigating 11 irrigation and power generating sites in Washington, a move which the Walla Walla Union-Bulletin applauded.[66] Two years later, the Corps funded a study administered by the Idaho Water Research

Institute to investigate 70 offstream sites in southern Idaho. These sites would be capable of storing 35,000 acre-feet of water without damaging streams and fish.[67]

The PNRBC's study on water resources agreed with the position of the Corps and state agencies that additional storage sites offered an acceptable solution to the water shortage problem. The commission noted in its recommendations that of the recognized means of increasing water availability on a timely basis, only that of additional storage development has the potential to support major increases in the level of water use in the region. Other means would be of lesser or only localized benefit.[68]

The issue of constructing additional dams on the Columbia River system inevitably elicits a strong response from government officials and agencies and the residents of these states who represent diverse and conflicting interests. The public's influence will be considerable. District Engineer Colonel H. J. Thayer, commenting on the need for more energy for the Pacific Northwest, stressed the crucial role of the public. "The public's got to make a decision sooner or later." Thayer expanded on this statement by explaining that there are many feasible sites for dams which are currently unacceptable because of environmental concerns. "But no federal agency can change that--it's got to be the public who live in the area who determine if a section of river must be preserved in its natural form or whether it should be developed." Although the Corps has completed preliminary studies on possible damsites, it now must wait until the public makes its will known. The final decision will not be with the Corps, but with the public the Corps serves.[69]

Through its service to the people of the United States in protecting navigation and flood control, and more recently in power production, wildlife mitigation, and water quality, the Corps has become a major steward of the nation's water resources. In the Pacific Northwest, the Corps is prepared and well qualified to help meet the difficult challenges of equitably distributing a limited amount of water resources among the frequently unlimited or conflicting demands of water users. In the years ahead, fair apportionment of Northwest water will depend on educating all interest groups and the public to accept the fact that only by compromise and cooperation can the interests of all the people and future generations be served. The Corps will play a major role in this effort.

NOTES

1. Marion E. Marts, "The Columbia River - Some Contemporary Conflicts," The Columbia River: An Inexhaustible Resource?. Dale F. Stradling, ed., (Cheney, Wash.: The Northwest Institute for Advanced Studies, 1980), p. 39. This is the proceedings of a conference held at Eastern Washington University in October 1979.
2. Water Policies for the Future: Final Report to the President and to the Congress of the United States by the National Water Commission (Port Washington, N.Y.: Water Information Center, 1973), p. 17.
3. Westwide Study Report on Critical Water Problems Facing the Eleven Western States (Washington, D.C.: Department of the Interior, 1975), p. 1.
4. Charles W. Hodde, "Regional Planning for Water Development," Proceedings of Third Annual Conference American Water Resources, Martha N. Francisco, ed., (Urbana: 1976), pp. 36-43.
5. Millard Hastay, et. al., The Columbia River as a Resource: Socio-economic Considerations of Diversion and the Value of Columbia River Water, Report No. 5A (Pullman, Wash.: State of Washington Water Research Center, 1971), p. 2.
6. Thomas H. Campbell and Robert O. Sylvester, eds., Water Resources Management and Public Policy (Seattle: University of Washington Press, 1968), p. 5.
7. Spokane Spokesman-Review, 5 May 1976.
8. Spokane Spokesman-Review, 7 March 1980.
9. Water Resources Development by the U.S. Army Corps of Engineers in Idaho (Portland, Oreg.: U.S. Army Corps of Engineers, North Pacific Division, 1979), p. 8.
10. "An Introduction to the Columbia River and Tributaries Plan of Study," Coordination Draft, North Pacific Division, 22 December 1971, in Public Affairs Office files, "Columbia River and Tributaries," 401-07 (Public Affairs Office files hereafter cited as PAO). For information on changes in public opinion in the years between the 1971 study report and an overview of the project made in 1979, see

Gail Groenwald's comments at a North Pacific Division meeting, 14 May 1979, in the same file.

11. Irrigation Depletions/Instream Flow Study (Walla Walla: U.S. Army Corps of Engineers, Walla Walla District, 1976), Phase II of the study is being prepared. The study will include the Idaho Department of Water Resource's evaluation of the status of its proposal to irrigate the additional 2.1 million acres of farmland specified in the 1978 water plan.
12. See for example, Norman Hendrich, "The Columbia--There's No More Surplus Water," Idaho Farmer-Stockman, 5 May 1977.
13. Fremont County Chronicle-News, 22 April 1976.
14. Tri-City Herald, 6 February 1976.
15. Tri-City Herald, 27 August 1976.
16. Memo from K. D. Hoyt, 8 January 1980, in Engineering Division Files, "Water Resources Study," 1517-03 (Engineering Division Files hereafter cited as EDF).
17. Lewiston Morning Tribune, 14 January 1976.
18. Pacific Northwest River Basins Commission, Water Today and Tomorrow, Vol. 3, The States (Vancouver, Wash.: Pacific Northwest River Basins Commission, 1979). (Pacific Northwest River Basins Commission hereafter cited as PNRBC.)
19. Spokane Spokesman-Review, 17 March 1978, 16 April 1980.
20. Eastern Idaho Farmer, 6 May 1976, 13 May 1976; Lewiston Morning Tribune, 13 April 1976.
21. Boise Idaho Statesman, 8 May 1976.
22. Boise Idaho Statesman, 6 February 1976, 8 May 1976. Despite these and other arguments from environmentalists and recreationists, the bill was defeated because of those who feared it threatened agriculture and interfered with the new state water plan. See Boise Idaho Statesman, 9 March 1976.
23. Eastern Idaho Farmer, 13 May 1976.
24. Idaho Falls Post Register, 6 May 1976; Fremont County Chronicle-News, 22 April 1976.
25. Idaho Falls Post Register, 6 May 1976.

26. Pocatello Idaho State Journal, 7 May 1976. The amended State Water Plan, Part II, was adopted in 1978. That same year the legislature passed a bill, "Appropriations in the Public Interest." This provided that the public interest may be included as a criteria in processing and approving or denying application to appropriate water. Other related legislation provided for maintaining instream flows and aquifer recharge. See Water Today and Tomorrow, Vol. 3, 1-18, 1-19.
27. Water Policies for the Future, pp. 473-477.
28. Westwide Study Report, pp. 64-65.
29. Columbia River and Tributaries Review Study: Inventory of Problems and Areas of Concern (Portland, Oreg.: U.S. Army Corps of Engineers, North Pacific Division, 1974), pp. III-153, III-154.
30. Vol. 3 of the PNRBC report, Water Today and Tomorrow, pp. 1-24, 3-24, and 4-43 describe the Bureau of Indian Affairs inventory as a two-phase project. Phase I compiled information on all surface and ground water originating on, flowing across, or adjacent to the reservation as to time of availability and quality. Phase II documented water needs of the tribe for present uses and projected uses to the year 2020.
31. Idaho Falls Post Register, 3 February 1976; LaGrande Observer, 20 March 1976.
32. Pocatello Idaho State Journal, 21 March 1976.
33. Twin Falls Times-News, 31 March 1976.
34. Lewiston Morning Tribune, 8 April 1976.
35. Tri-City Herald, 2 February 1976.
36. Lewiston Morning Tribune, 14 May 1980.
37. Spokane Spokesman-Review, 6 April 1979.
38. Spokane Spokesman-Review, 16 April 1976. Also see Tri-City Herald, 16 April 1976, for a report of the meeting at which the consensus was reached that water use priorities must be established and that a river basin management plan should be developed.
39. Sterling Munro, BPA Administrator, to Major Richard G. Chapman, Acting Walla Walla District Engineer, 26 June 1978, EDF, "Energy and Power," 1501-07.

40. Seattle Daily Journal of Commerce, 3 January 1976.

41. Lewiston Morning Tribune, 21 April 1977.

42. PNRBC, Water Today and Tomorrow, Vol. II, pp. 3-53, 3-55. This section includes data on minimum streamflows for anadromous fish per month for Priest Rapids, Ice Harbor, and McNary Dams, and flow through times for John Day and McNary pools at various levels of flow.

43. Walla Walla Union-Bulletin, 18 January 1977.

44. William L. Robinson, "The Columbia: A River System Under Siege," Oregon Wildlife, June 1978.

45. Interview with Rodger Colgan, Dworshak Project Engineer, Orofino, 12 November 1980.

46. Lewiston Morning Tribune, 21 November 1977, 26 November 1977.

47. Lewiston Morning Tribune, 21 January 1978.

48. W. E. Sivley to District Engineer, 11 August 1978, EDF, "Dworshak Dam Fish and Wildlife," 1518-01.

49. Robert G. Rickel, Chief, Hydrology Section to Chief, Engineering Division, 26 May 1976, EDF, "Dworshak EIS," 1518-01.

50. Orofino Clearwater Tribune, 22 July 1976.

51. Lewiston Morning Tribune, 26 July 1976.

52. Lewiston Morning Tribune, 13 August 1976.

53. Boise Idaho Statesman, 9 February 1977; Lewiston Morning Tribune, 25 January 1977 and 8 February 1977. For details of the meeting and implications of the provisional energy draft for Dworshak, see memo from Phillip L. Cole, Chief of Engineering Division, North Pacific Division, to W. E. Sivley, 28 January 1977, EDF, "Dworshak EIS," 1518-01.

54. Tri-City Herald, 17 March 1977.

55. Tri-City Herald, 1 April 1977.

56. Spokane Spokesman-Review, 31 March 1977.

57. Boise Idaho Statesman, 15 April 1977.

58. Seattle Post-Intelligencer, 27 March 1977.

59. Water Today and Tomorrow, Vol. 1, Program Summary, p. 3.

60. Lewiston Morning Tribune, 24 October 1977; Tri-City Herald, 4 February 1977. The possibility of a set schedule of lockages for pleasure boats became an important issue again in 1980. In the interest of saving water for hydroelectrical generation, the District proposed that locks be open four times daily for recreational craft instead of on demand. The proposal met with unexpected and vociferous opposition. As of the fall of 1980, the plan had not been implemented although it appeared inevitable in view of increasing demands for power production. Interview with Robert Kress, Chief of Projects Operations Branch, Walla Walla, 17 November 1980. Also see a series of articles in the Lewiston Morning Tribune, 29 January 1980, 13 February 1980, 22 February 1980, 6 March 1980, and the Pomeroy East Washingtonian, 14 February 1980.
61. Walla Walla District News Release, 80-22.
62. Tri-City Herald, 26 August 1976.
63. Water Today and Tomorrow, Vol. 2, The Region, pp. 6-23, 6-25, 6-28.
64. Irrigation Depletions/Instream Flow Study, pp. I-10, I-11.
65. LaGrande Observer, 26 March 1977.
66. Walla Walla Union-Bulletin, 1 December 1977.
67. Rexburg Journal, 30 August 1979; Fremont County Chronicle News, 27 September 1977; Weiser Signal, 31 January 1980.
68. Water Today and Tomorrow, Vol. 2, The Region, p. 6-34. Also see pages 6-29 and 6-30 for tabular summaries of major potential storage sites within and outside of established or proposed wild and scenic rivers.
69. Interview with Colonel H. J. Thayer, District Engineer, Walla Walla, 18 November 1980.

THIS PAGE LEFT INTENTIONALLY BLANK

CHAPTER 5

RECREATION

THIS PAGE LEFT INTENTIONALLY BLANK

CHAPTER 5

RECREATION

Shortened work weeks, a dramatic increase in leisure time, and more disposable personal income have enabled Americans to use recreational areas in ever greater numbers. At times, the urge to escape has created such problems as overcrowded parks and wilderness areas. Still, people need relaxation and many choose to journey to outdoor recreation areas to do so. Recreation now ranks among the top 10 economic activities in the United States.[1]

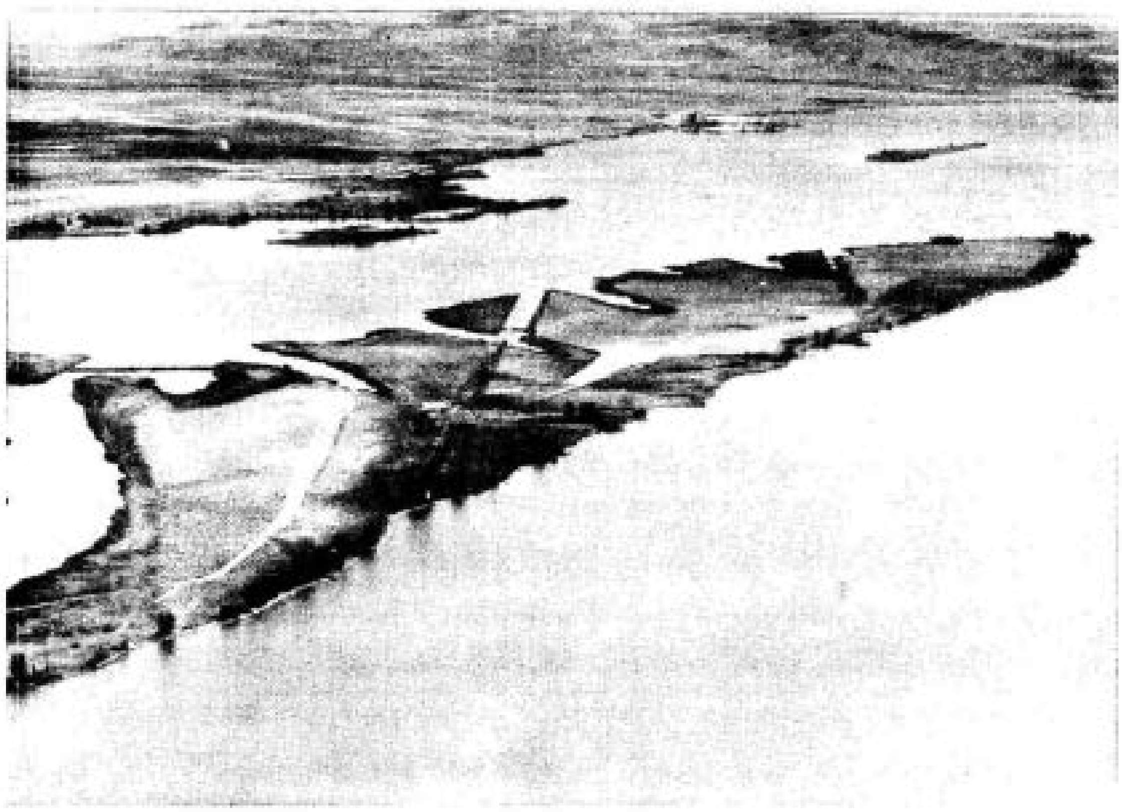
CHARBONNEAU PARK
ICE HARBOR PROJECT

It is not surprising that the Corps of Engineers has become a major recreational agency, since half of all outdoor recreation is water-oriented. The Corps managed 1.5 percent of all Federal lands available for recreation in 1975, but its projects attracted 36.5 percent of all Federal recreation users. Visitation to Corps recreational sites rose from 30 million in 1952 to over 400 million in 1977. Although many people think of the National Park Service and the Forest Service as being the major outdoor recreation agencies in the country, in recent years more recreationists have used Corps projects than the lands of any other Federal establishment.[2]

LEVY PARK, LAKE SACAJAWEA, AND ICE HARBOR DAM

The Corps' responsibilities to provide for recreational facilities stem primarily from two congressional actions. The Flood Control Act of 1944 authorized the Corps to construct, maintain, and operate public park and recreational facilities at water projects. The Federal Water Project Recreation Act of 1965 states that in planning any Federal navigation, flood control, reclamation, hydroelectric, or multipurpose water resource project, "full consideration shall be given to opportunities...which the project affords for outdoor recreation." The act also seeks to encourage non-Federal administration of Federally constructed recreation areas through Federal/non-Federal cost-sharing arrangements.[3]

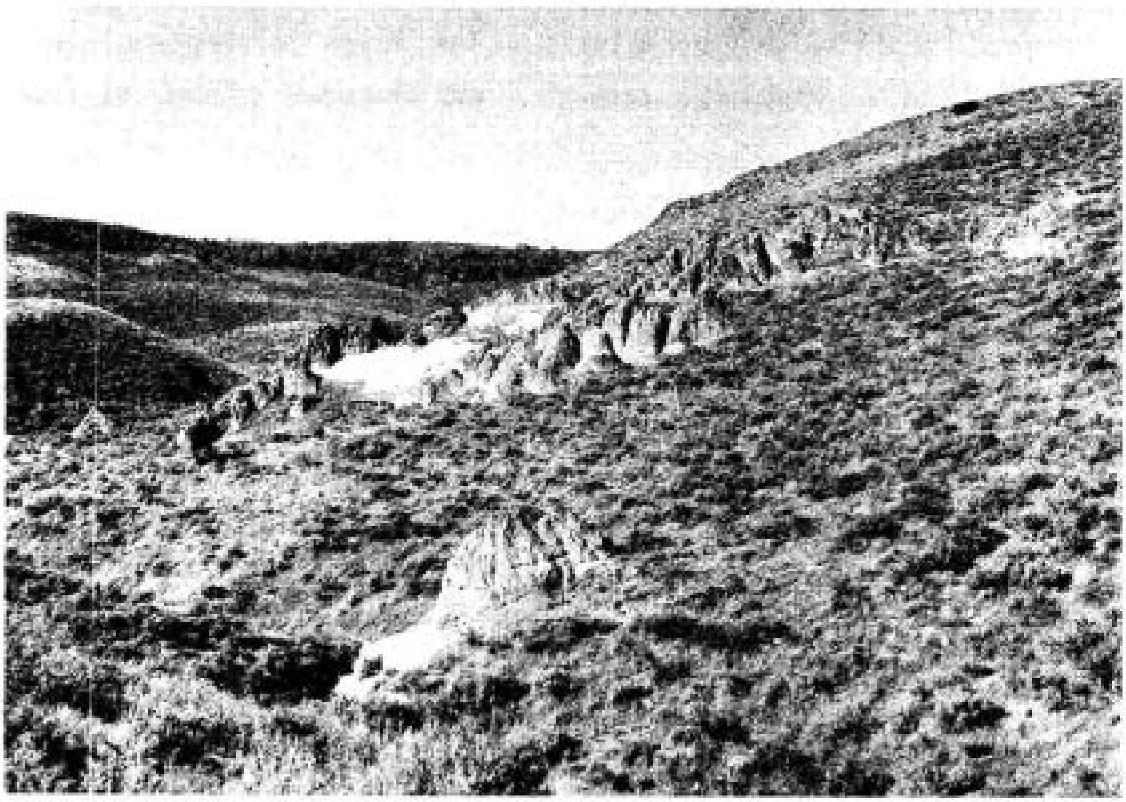
As a result of these laws, the Corps became prominent in developing recreation facilities. But there has been some concern that the North Pacific has been lagging behind other divisions. A memorandum from the Division Engineer inquiring about recreational policies initiated a study of the Division's recreation program in 1978. The study found that, partially because of the spectacular natural environment and vast spaces typical of the region, the Division was not as active in providing recreational facilities as were divisions in more populated places. Furthermore, the study found that the Division emphasized the more traditional missions of the Corps--hydropower, navigation, and flood control--at the expense of recreation. Some employees within the Division believed that the Corps should not even be in the recreation business. Because recreation was regarded as a lower priority, it has served as a prime target in absorbing required personnel cuts. In addition, career development opportunities for people in recreation have been limited. The study recommended improvements in the Division's recreation program and concluded that "...our challenge...is no less apparent nor important than that faced at Corps projects in other regions of the country. We too must cope with increasing user pressures and must strive to provide a safe quality experience for the visiting public."[4]



McNARY NATIONAL WILDLIFE REFUGE

Despite the concern that more could be done within the Division to improve programs, the Walla Walla District's involvement in recreation has been impressive. In 1976, visitation at the District's projects approached 7 million recreation days. In that year, over 4 million people visited McNary Dam/Lake Wallula, making it one of the most popular of Corps recreation spots nationwide. There are over 90 recreational sites located on Corps projects within the District.[5]

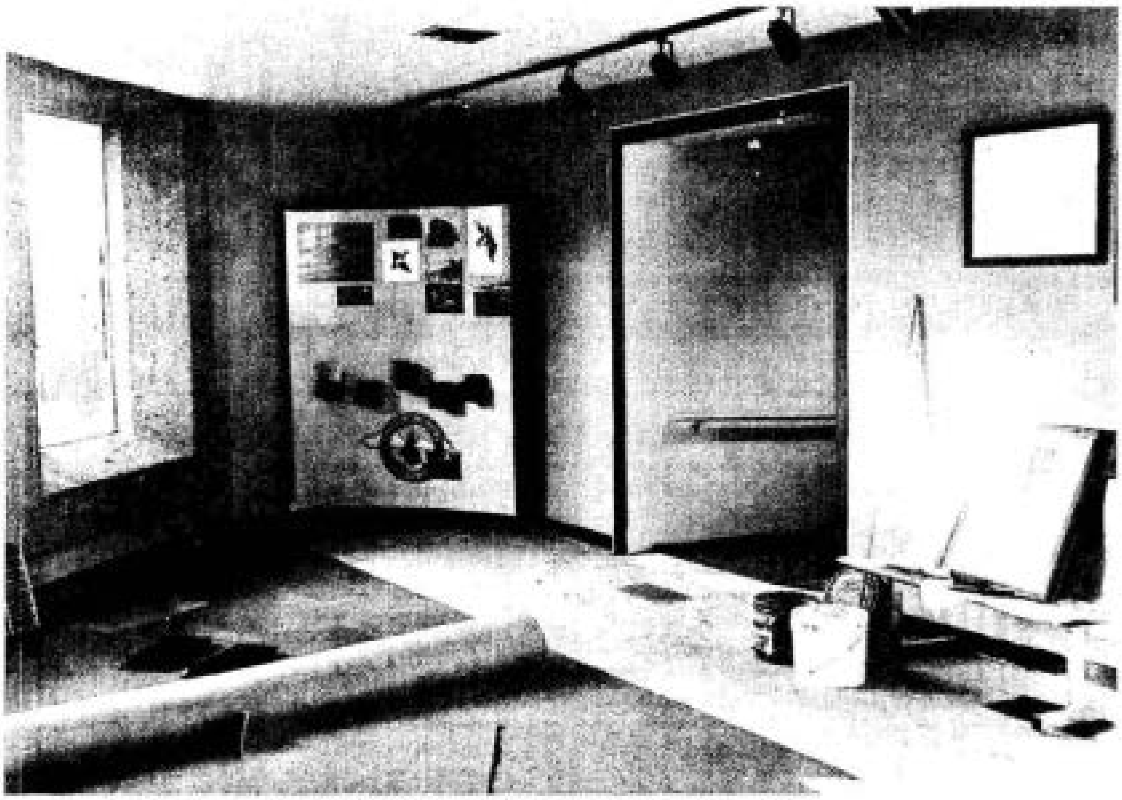
Not only were the District's existing recreation sites well used, new facilities were added. The District has nearly completed a $2 million development of the Freeman Creek site on the north bank of Dworshak Reservoir which will include 65 mobile home sites and 25 tent sites.[6] Above Lower Granite Dam, on Silcott Island, the Corps developed 126-acre Chief Timothy State Park with 66 camping sites, trails for bikers and hikers, and a swimming beach at a cost of nearly $2 million.[7]



BLACKTAIL PARK
RIRIE PROJECT

The Walla Walla District also constructed a park for Whitman County at Wawawai on the Snake River containing nine campsites, picnic tables, a playground, trails, and a unique energy-efficient earth shelter home (cost-shared with the county) for the park ranger.[8] At Ririe Lake, over $2.3 million worth of recreation construction was completed, including a new campground, picnic areas, and boat docks, which were then turned over to the Bureau of Reclamation for operation.[9] A Corps-operated visitors' center at Ice Harbor Dam was completed in 1980 at a cost of over $500,000.[10] Work was undertaken at numerous other recreation sites within the District as well.

The largest recreational construction project initiated in this period was the Lewiston Levee Parkway built on levees required to protect the metropolitan Lewiston-Clarkston area, which cost nearly $2.5 million and is unique in Corps' history. For 11 miles along the Snake and Clearwater Rivers, the District constructed a hard-surfaced trail for joggers, skaters, and bicyclists. The levee development contains three parks, three visitors' centers, and numerous places to picnic, swim, and fish.[11]



FISH VIEWING ROOM, ICE HARBOR VISITORS' CENTER
UNDER CONSTRUCTION

Even though the need for outdoor recreational facilities is recognized, the Corps recreation program is not without its controversial elements. Every Corps project faces the fundamental issue of whether developing recreational facilities is better than leaving an area in a natural state. On the one hand, development provides greater access to more people. There is no question that reservoirs are used by more recreationists than are the free-flowing rivers they replace. But wilderness has a great appeal, and any agency that alters a natural area is bound to anger some people. "The values the American people attach to wilderness have steadily changed from the days when their ancestors

BIG EDDY
DWORSHAK RESERVOIR

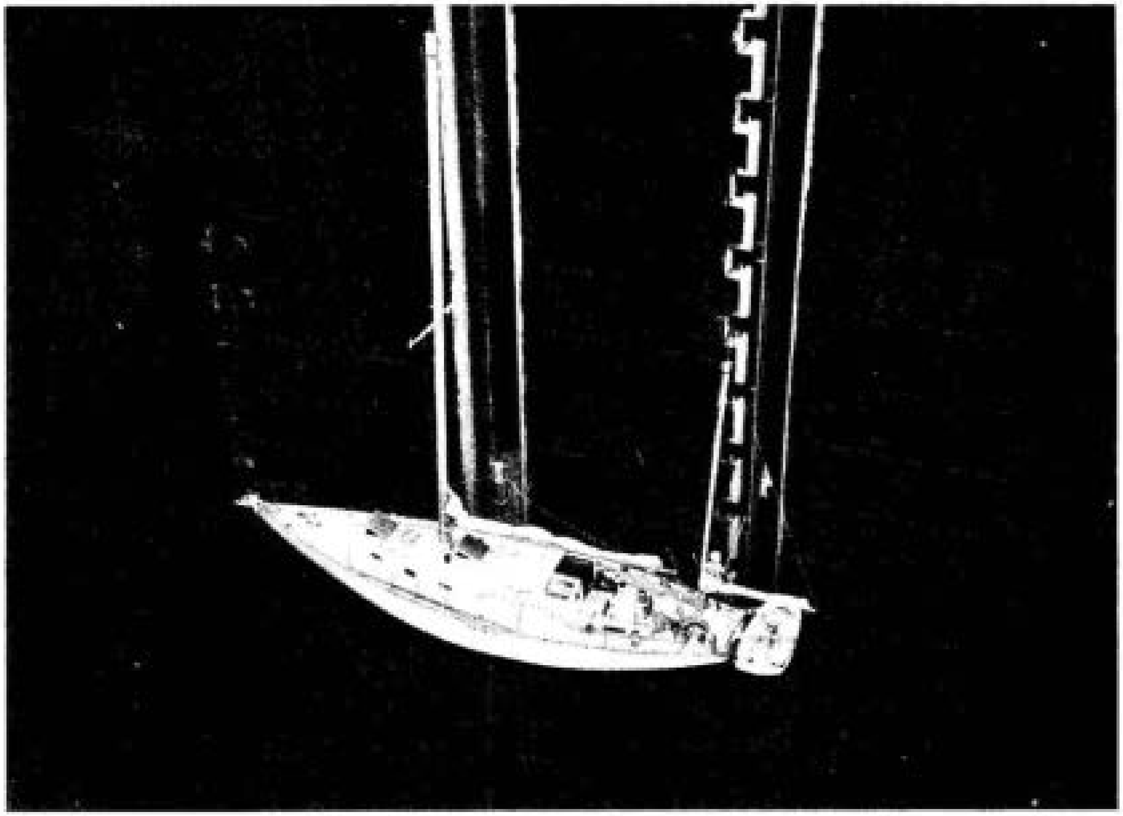
first cleared the eastern forests," stated the President's Council on Recreation and Natural Beauty in 1968. "Wilderness in overwhelming abundance is an entirely different matter from wilderness grown scarce. That which is scarce is valued highly."[12] As the number of free-flowing rivers has decreased, public demand to preserve them has grown stronger. When a dam creates slack water, the very nature of the recreational experience changes. White-water enthusiasts are replaced by water skiiers. Hardy hikers are replaced by families who can travel convenient access roads to picnic sites. Stream fishermen give way to less agile lake anglers.[13]

LEWISTON LEVEE

RIRIE RESERVOIR

Choices must be made. Cities need electricity as well as protection from flooding, farmers need irrigation water, and shippers depend upon slack water to barge materials. The environmental movement of the 1960's and 1970's assured that studies of the advantages and disadvantages of obstructing free-flowing rivers would be made prior to dam construction. Environmental Impact Statements always consider recreational value, and the decision to undertake a project is partially based on the recreational benefits to be gained or lost. But equal consideration must be given to other needs as well.

If a dam is constructed, the recreational use of the river invariably increases. While the merits of development versus non-development are debatable, the fact that more people use planned recreation facilities is not. The filling of Lake Wallula behind McNary Dam, for example, brought not only an increase in recreational users, but a boom to the



ICE HARBOR LOCKS

local economy as well. The number of boat owners living near the dam has steadily increased, as has the popularity of camping, with its attendant purchase of equipment and supplies. Dozens of local people are employed in local parks, marinas, and other recreational facilities.[14] Slack water similarly introduced boating and water-related sports to the Lower Snake River after completion of Ice Harbor, Lower Monumental, Little Goose, and Lower Granite Dams. And Dworshak Dam changed what was once a slightly used piece of real estate with limited river access into a reservoir that received over 266,000 days of recreation use in 1979.[15]

Plans to develop recreational facilities immediately follow the final decision to construct a dam. The Corps always solicits public input before undertaking a project. Nonetheless, controversy sometimes surrounds the endeavor. For example, the Corps' recreational program at times evokes classic debate concerning the role of big government versus private

WATER SKIING ON DWORSHAK RESERVOIR

enterprise. One such conflict arose over "competition" for visitors to Dworshak Reservoir. In the late 1970's, the owners of the Dent Campground repeatedly criticized the Corps for unfair competition after the District opened its Dent Acres recreational area. In a letter to Senator Frank Church in 1978, they complained that "We can not understand the justification of the [Corps] being in the recreation business and competing unfairly with private enterprise. They have a monopoly on all the lakeshore property and also unlimited tax funds.... Furthermore, they control the rate setting, which is utterly ridiculous."[16]

The primary complaint was that the fee charged at Dent Acres was too low. Even with 100-percent occupancy, the money collected would not pay the salaries of the maintenance crew, which meant that the "users of Dent Acres are being subsidized at taxpayers' expense." At a time of growing opposition to big government, there is little wonder that the question of private versus public development of recreational facilities is debated. It is obvious, however, that without Federal assistance, most recreational facilities would go undeveloped. Further, as Acting District Engineer Major Richard Chapman, Jr., responded to Senator Church, the collection of fees at Corps sites "...is intended as a fair and equitable method of charging for certain recreational benefits received, i.e., use of the campsite, not as a method intended to recover development and operation costs of the whole park."[17]

A similar private versus public conflict occurred in 1978 when the District requested that the Idaho National Guard construct a gravel road into the Three Meadows Group Camp at Dworshak. A private construction contractor protested the action. "I most seriously protest the U.S. Government allowing the state-level military groups to enter into direct competition with private enterprise," he wrote to Senator Church. "The Environmental Protection Agency requirements which restrict the ordinary contractor, and OSHA requirements which swamp offices with petty investigations, and the Corps'...specifications which are usually attached to a road contract will surely be bypassed...when the National Guard proceeds with construction."[18] District Engineer Colonel Christopher Allaire responded that over 99 percent of the District's construction activities were done under a competitive bidding process. The National Guard had to conduct summer training exercises in the area anyway, and completion of the road project using the National Guard would require no additional cost to taxpayers. Therefore, "...it is not considered unreasonable to participate with the Idaho National Guard on this project."[19]

While the Corps receives criticism from those who believe government has become too big, it is ironic that the most pressing problem facing the agency in its efforts to meet recreational obligations stems from recent growth limitations imposed upon all levels of government. At a time when there are more public demands for recreational facilities, governmental agencies confronted with rising costs and diminishing tax revenues find they have fewer funds to maintain new parks. This has had a tremendous impact upon the Corps which constructs such facilities but usually does not operate them. In 1976, the North Pacific Division adopted a policy that further recreation development would be undertaken only if non-Federal public bodies agreed beforehand to assume 100 percent of the maintenance costs of the completed projects. As Walla Walla Deputy District Engineer Lieutenant Colonel Edward George stated, "We do not have the staff to operate and maintain all these parks." When the non-Federal agencies which had agreed to maintain three separate parks within the District suddenly turned the leases back to the Corps, Colonel Allaire speculated that "maybe we've got too many parks."[20]

BOYER PARK

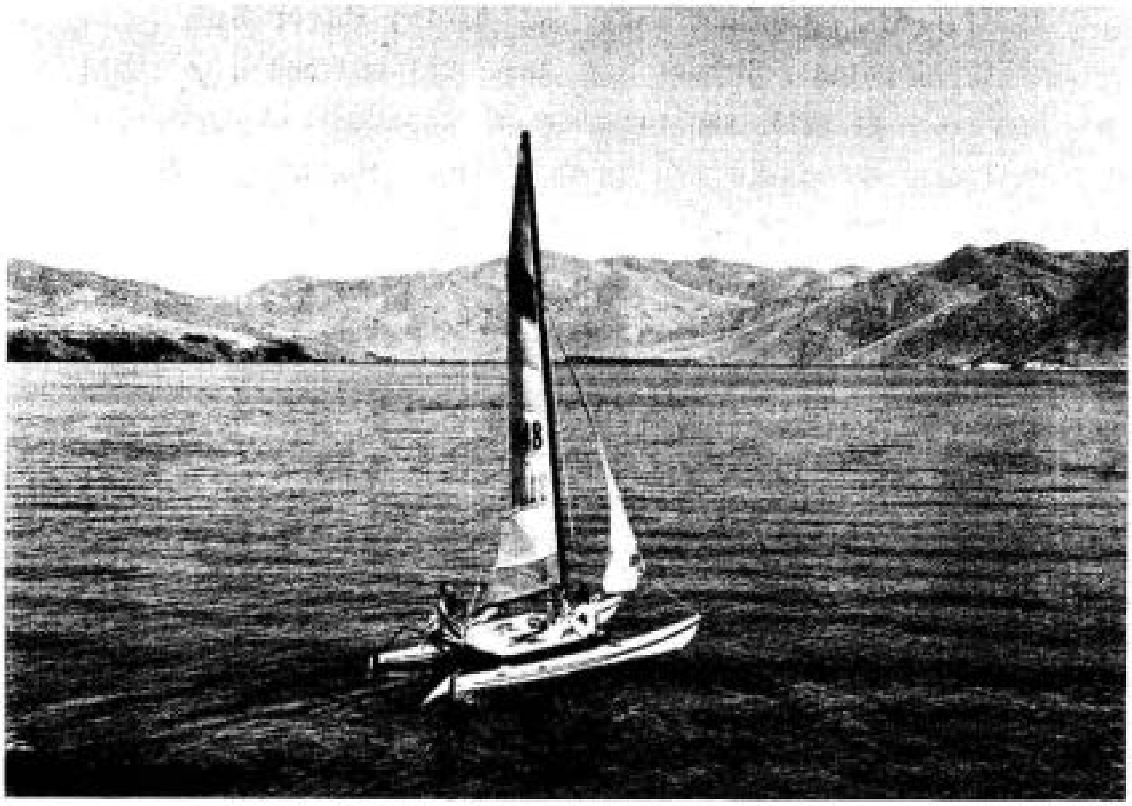
It is difficult to envision a time when there will be too many parks, given the growing use they are receiving. Nonetheless, resolving the dilemma between an increasing public demand for recreational facilities with an equal insistence upon lower taxes, is one of the most difficult tasks facing the Corps. In the future, the Corps may adopt a more active maintenance and operational role as its dam building activities decrease. "I think most of the dams...in the United States have been built," stated Colonel Allaire, an idea the Lewiston Morning Tribune expanded upon in an editorial. "There are few if any rivers left to dam, and that has been the major activity of the Corps. But the Corps isn't going to fold up its slide rules and go out of business because of that .... Perhaps the answer is to venture into new fields, such as waterways beautification and both the development and operation of parks."[21]

THE END OF A "RUN FOR FUN" AT
HELLS GATE STATE PARK

Complex problems had to be confronted at Lucky Peak, Freeman Creek, Swallows Nest, and Chief Timothy Parks. Lucky Peak Lake near Boise, the second most popular recreational area within the District, contains several separate recreational facilities maintained by the Idaho Department of Parks and Recreation. Some of the facilities such as Sandy

Point, Barclay Bay, Overlook Park, and Spring Shores have consistently high visitation rates. Others are more isolated and have considerably fewer visitors. In 1974, the Idaho State Department of Parks and Recreation terminated its lease for Chimney Rock, one of the least visited sites at Lucky Peak. In 1975, the Department requested that its leases for Robie Creek, Mores Creek, Turner Gulch, and Barclay Bay, with a combined attendance of over 400,000 visitors that year, likewise be terminated. These sites suffered a high vandalism rate according to Steven Bly, Director of the Department, but the main reason for wanting to abandon them was economic. "Our current Lucky Peak budget for personnel and operations is $93,625," he explained. "Much of our personnel time is used in travel from site to site. The Corps already has many small sites located over the reservoir and also has the boats and equipment to handle the care of isolated sites in a more economical manner than we do. We can make better use of limited funds and manpower in concentrating on an upgraded job at Spring Shores, Sandy Point, and Discovery."[22]

LUCKY PEAK DAM
SANDY POINT RECREATION AREA



BARCLAY BAY AND TURNER GULCH BOAT RAMP

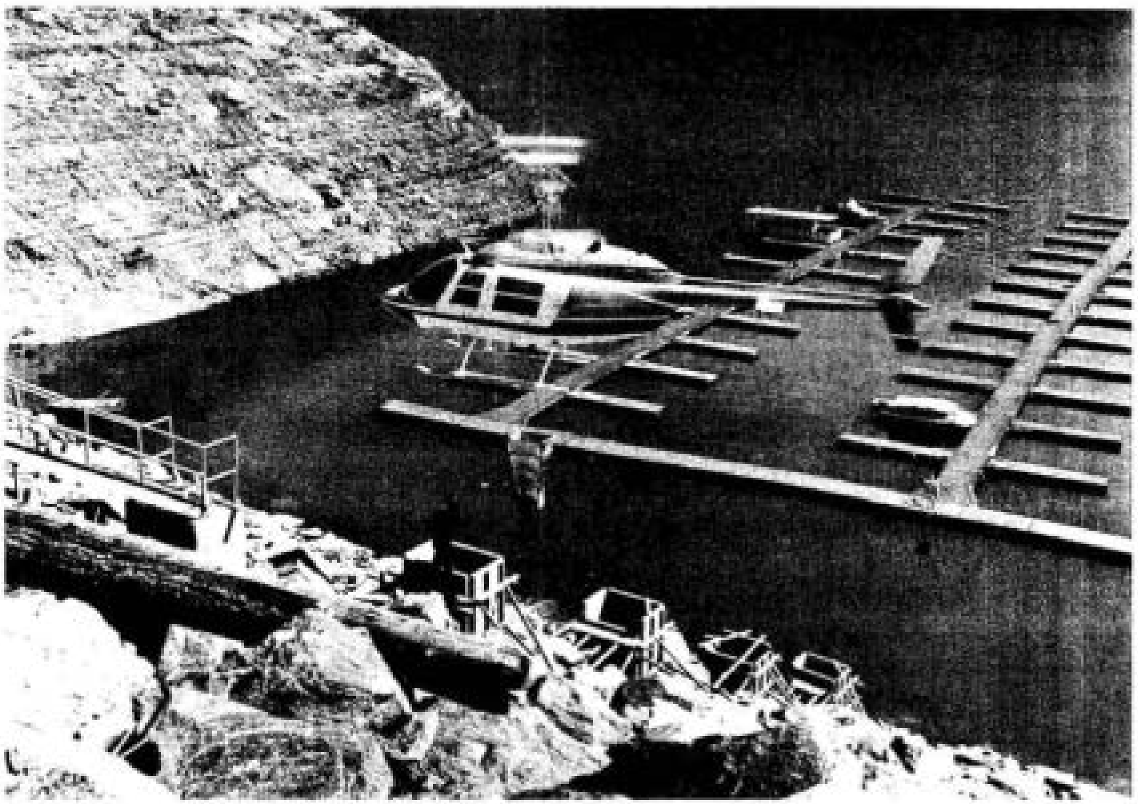
"On the basis of discussion with your agency in past years," District Engineer Colonel Nelson Conover responded to Bly, "we had anticipated full cooperation from the Idaho State Department of Parks and Recreation.... Your present position...raises serious questions concerning the capabilities and long-range responsibility of your department as a participant in recreation at Corps of Engineers projects."[23] Conover expressed his concern to Idaho Governor Cecil Andrus that terminating the lease would provide the residents of Idaho less than desired recreation facilities at Lucky Peak.[24]

Bly responded to Conover in January 1976: "We both realize the Corps is having difficulty with the frequent return of properties or the local reluctance to even take over a Corps project. Some of this is because the projects aren't primarily designed for recreation and there are inherent limitations in the sites.... Other reasons being that the

Federal Government cannot continue to develop facilities and then expect the states with limited fiscal resources to absorb their operation and a portion of their development."[25] Facing the reality that the state could not continue to maintain all of its sites at Lucky Peak, the District modified the lease so that the State of Idaho had maintenance responsibilities only at Sandy Point and Spring Shores.[26]

ROBIE CREEK STATE PARK

Similar difficulties between the District and the Idaho State Parks Department emerged at the Freeman Creek recreation site on Dworshak Reservoir. The Parks Department reiterated its concern regarding Corps' design of recreational facilities. "We would expect that if and when a state park is developed on Dworshak Reservoir, that we would have a great deal more input into the design of the park and facilities than we have had to date on the Dworshak project," Bly wrote to Conover in 1975. "We are no longer willing to accept parks unless they are of statewide significance and they are of a design that is beneficial and manageable for state park use."[27] The Corps also acknowledged the difficulties involved in suitable park design. In an interdepartmental memorandum in 1979, W. E. Sivley, Chief of the Engineering Division, wrote to the Chief of the Operations Division, "We do not feel that it is necessary to provide a swimming beach at every recreation site in the district...One of the recent criticisms the Corps received was that every recreation site was the same, that we try to provide everything for everyone."[28] In the specific case of Freeman Creek, however, Bly's comments appear unwarranted because the design of the site, as proposed in the Dworshak Master Plan, had actually been completed by the Idaho Department of Parks and Recreation, although the design was done prior to Bly's appointment as director.[29]



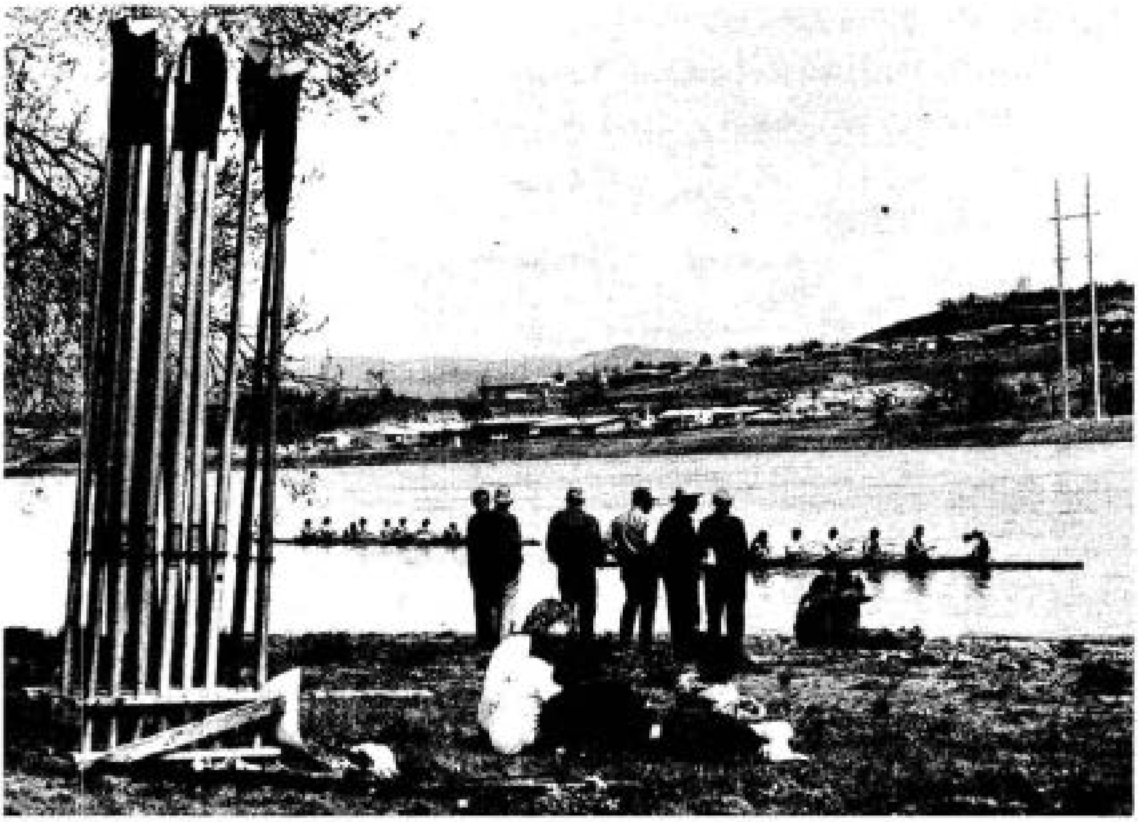
HELICOPTER CARRYING CONCRETE FOR STAIRWAY STEP EXPANSION AT
BIG EDDY BOAT MOORAGE AREA
DWORSHAK RESERVOIR, 1978

Design problems proved troublesome but were not as serious as economic difficulties. Colonel Conover ably summarized the situation at Dworshak in a memorandum to the Division Engineer in 1977: "Even though the Freeman Creek site has the largest area, best terrain, and the greatest potential of any site at Dworshak.... I do concur that the project should be reevaluated because of its present status. The State of Idaho Department of Parks and Recreation has failed to meet their commitment to operate and maintain the recreation area.... District personnel ceilings will not allow staff increases to provide for operation and maintenace of another recreation area." The problem of developing Freeman Creek was complicated because many other local residents had commented at public meetings that few benefits other than recreational ones would accrue to them as a result of the Dworshak project. Clearly, the Corps had an obligation to develop facilities on the reservoir. Passage of the 1978 property tax limitation initiative in Idaho virtually precluded the state from acquiring new recreational facilities.[30]

The District's problems at Freeman Creek were compounded when economic difficulties made maintenance of the access road to the proposed site a controversial issue as well. The Clearwater County road to the Freeman Creek recreation site traverses rolling terrain for about 8 miles from Cavendish to the top of Freeman Creek Canyon, then descends for 2.6 miles to the site. The District was authorized to improve the lower 2.6 miles of the road. Prior to the construction of the recreation site, the county commissioners had not encountered any problems with the county road. With the anticipated increase in traffic on the road after completion of the recreation site, the commissioners began seeking ways to improve the road.

The District Engineer for the Idaho Transportation Department informed the commissioners that increased traffic would present very serious maintenance problems because of the road's age, lack of drainage, and minimum base. The commissioners appealed to Senator Church for assistance, citing the above problems and the inability of the county to absorb improvement costs, maintenance charges, or the increased costs of law enforcement necessary because of heavier traffic. Senator Church wrote to Colonel Richard Polo, OCE Assistant Director of Civil Works, to determine if there was any way the Corps could be authorized to improve the access road. Colonel Polo replied that there was no such authority to complete the entire project, but that the Corps could do the work under a cost-sharing arrangement whereby the Federal share would be 70 percent and the local share 30 percent. When informed that the entire improvement would cost about $3 million and that their share would therefore be nearly $1 million, the county commissioners balked, explaining that such an undertaking was impossible for them. Subsequently, the commissioners requested that Senator Church work on the necessary legislation to provide authorization for the Corps to complete the entire road improvement project.[31] Despite all of the obstacles, the District felt a responsibility to provide a park at Freeman Creek and, accordingly, began construction in the spring of 1979. The park will open in 1981 with the Corps maintaining the facility and providing a ranger.[32]

At Swallows Nest Park south of Clarkston, the District again confronted a county commission with funding problems. Nonetheless, when the Walla Walla District constructed Swallows Nest Park as part of the Lower Granite project in 1975, the county commissioners signed a lease to maintain the park. When the county learned that the park would cost between $60,000 and $75,000 a year to maintain, the commissioners returned the park to the Corps. In the fall of 1976, the District announced that it could no longer maintain the park after December 31. When questioned why the Corps could operate parks at other locations but not at Swallows Nest, Colonel Allaire stated, "Our rules haven't changed; our Congressional authorizations have." He reiterated that now non-Federal governmental agencies were required to operate Corps-built recreational sites.[33]

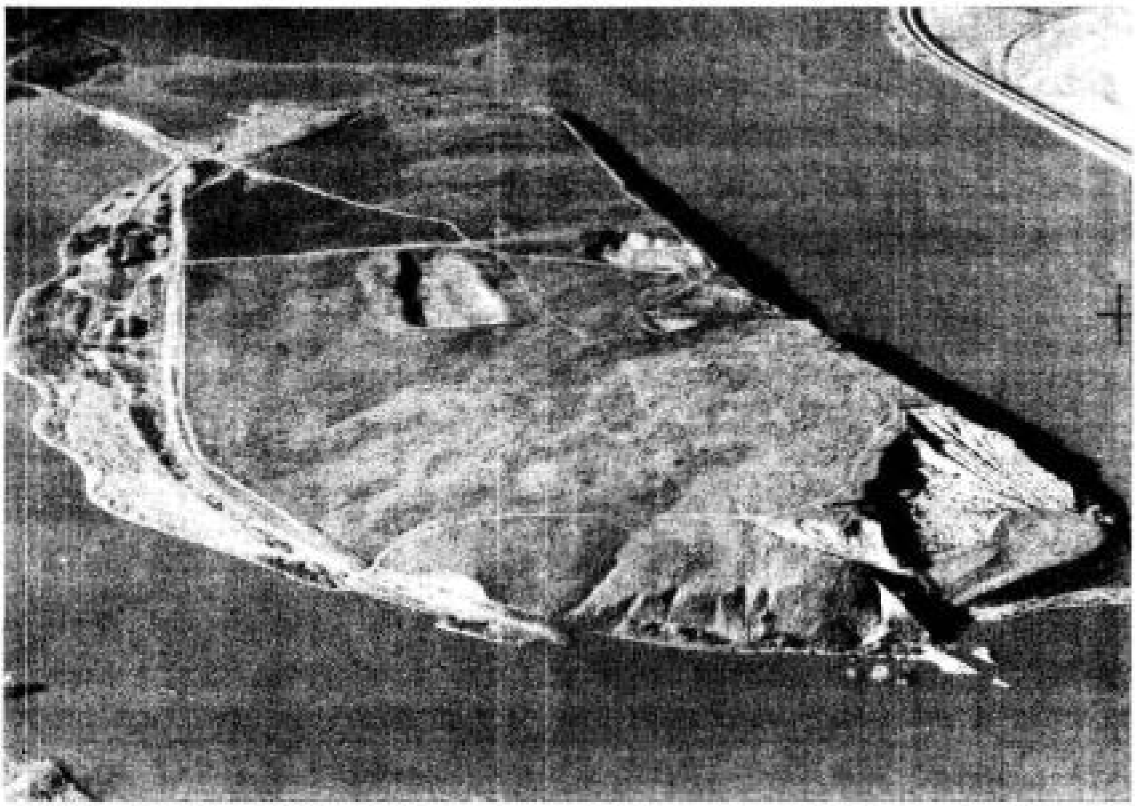


CREW RACES AT SWALLOWS NEST PARK

In early December 1976, Asotin County and the Corps agreed to share responsibility for keeping the park open. The county would provide staffing, while the Corps would furnish some of the necessary equipment for upkeep. Donald Zirbel, chairman of the county's Parks and Recreation Commission, expressed his relief that the park would not be closed. "I feel the corps is responding to public opinion," he stated. "It shows the people are interested in keeping the park open, and the corps has been most cooperative."[34]

The 1976 agreement was not a long-term solution. The District attempted to persuade the county to sign a 25-year lease to the property, but the commissioners declined because of their continuing apprehension about inadequate funding to support the park. The county and the Corps did agree to share in the operation until January 1979, then both signed a 25-year lease agreement, later extended to 50 years in December 1979, which included certain cost-sharing provisions. The Corps agreed to act as a "good neighbor," and to assist the county with lighting, irrigation, and any construction costs.

While a compromise was eventually reached enabling the residents of Asotin County to have the park they wanted, the long Swallows Nest negotiations well exemplify the difficulties many non-Federal governmental agencies have in maintaining increasing numbers of recreational facilities, even though the need for the facilities exists.[35]



CHIEF TIMOTHY STATE PARK

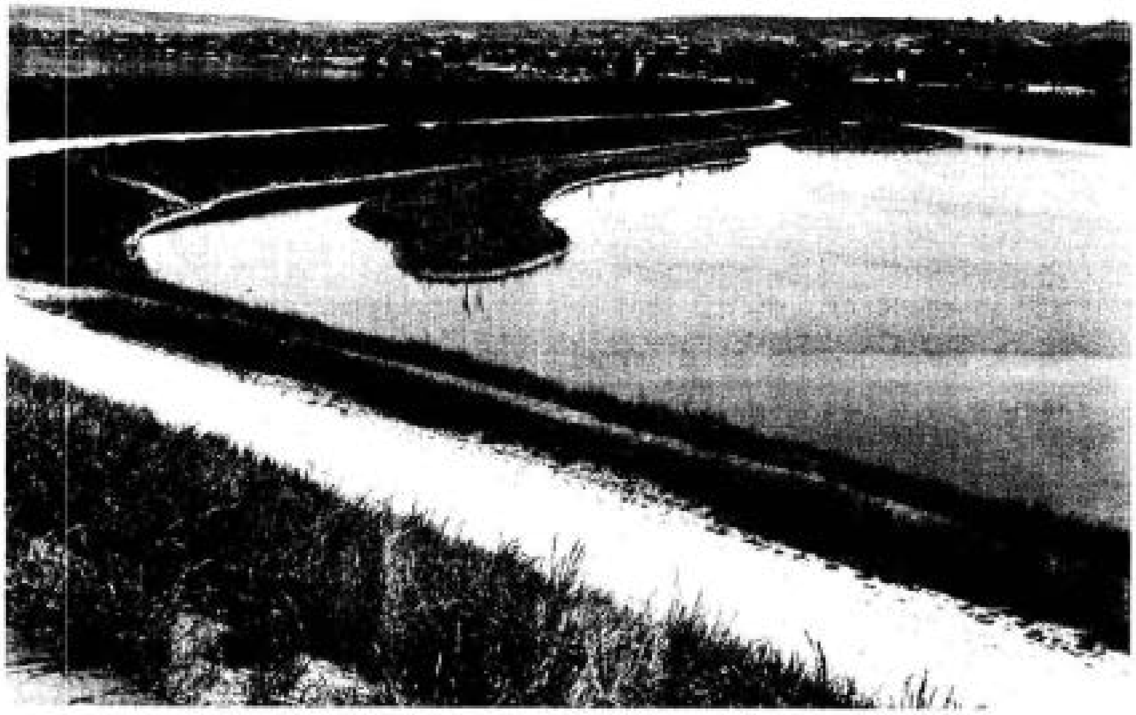
While the Swallows Nest Park lease was being negotiated, some residents of the Lewiston-Clarkston Valley accused the District of "blackmail" because it refused to begin construction of Chief Timothy State Park, 7 miles west of Clarkston, until the Swallows Nest question was settled. "It is our belief that without a sponsor for one park, we

CHIEF TIMOTHY STATE PARK
LOOKING DOWNSTREAM FROM SILCOTT ISLAND BRIDGE

couldn't go ahead and develop a second," explained Colonel Allaire in 1976.[36] Eventually Chief Timothy was constructed, but not without again confronting the economic difficulties of non-Federal sponsorship of Corps' facilities. "The places where you and your parents used to play are disappearing," Charles Odegaard, Director of the Washington Department of Parks and Recreation, told an audience in Clarkston in 1978. Therefore, the Department attempted to convince the state legislature of the need to provide funding for maintenance of Chief Timothy and other new parks in the state. "With proposed 100-percent state funding of public schools, new demands for health and welfare funding and all the other increased pressures, funding of parks--particularly new parks--faces serious problems," Odegaard said. The dilemma of matching increased demands for recreation with diminishing funds could not have been put more succinctly.[37] Nonetheless, the legislature, after seriously considering not financing the new park, granted the funds to maintain the facility. In the summer of 1978 the Corps began constructing the park on Silcott Island and it was opened to the public in the spring of 1980.[38]

Recreational development at Lucky Peak, Freeman Creek, Swallows Nest, and Chief Timothy created some economic problems the District had to face in the late 1970's, but they were not the only ones. On Lake Wallula, Walla Walla County returned a park lease because Tri-Cities residents used the park more than the residents of Walla Walla County. In Benton County, Washington, county commissioners initially balked at signing a multiyear maintenance lease for parks behind McNary Dam, citing possible future financial problems, but eventually they signed the lease. At Hells Gate State Park, developments were delayed until the State of Idaho found a private operator for Hells Gate Marina. "Across the country, a lot of parks were built by the Army Corps of Engineers, supposedly because there was a need for them. A lot of those parks have been turned back," reported Lieutenant Colonel Edward George in 1976.[39] Just one year after Lieutenant Colonel George's statement, the chairman of the Waterways Committee of the Greater Lewiston Chamber of Commerce expressed an opinion that even more would have to be done to keep up with water recreational demands in the Lewiston-Clarkston area.[40] The Corps and other agencies must find ways to insure the development of recreational facilities and to provide the funding necessary to adequately maintain them.

The Corps' image as great dam builders, well earned in the 1930's through the 1960's, is gradually undergoing a transformation. Although more dams will be constructed, great multipurpose projects will be limited as many of the best damsites have already been used. In recent years, part of the changing image of the Corps has come from its growing involvement in recreation. While there are still some within and outside the agency who do not see the relevance of being involved in recreation, a public mandate exists for providing these facilities to



WEST LEWISTON LEVEE

growing numbers of people. While the private sector will continue to perform a vital function in meeting the recreational needs of the nation, there are many facilities that can only be built at government expense. The Corps generally, and the Walla Walla District specifically, has impressive records in providing recreational facilities for the people of this country. But this recreational program has had to overcome many obstacles. The great challenge facing Congress and the Corps is to develop ways of continuing to fund the construction of needed outdoor sites, and to provide ways to assist non-Federal agencies in maintaining the parks once they are completed.

NOTES

1. Water Policies for the Future: Final Report to the President and to the Congress of the United States by the National Water Commission (Port Washington, N.Y.: Water Information Center, Inc., 1973), p. 188.
2. North Pacific Division Recreation Program Overview (Portland, Oreg.: U.S. Army Corps of Engineers, North Pacific Division, 1978), p. 1. The Water Information Center disputed the visitation figures of federal agencies, saying that errors came from compounding estimates from a large number of divergent sources. Nonetheless, the Corps' leading role in recreation is firmly established. See Water Policies for the Future, pp. 198-194.
3. See North Pacific Division Recreation Program Overview, pp. 3-4; and Water Policies for the Future, pp. 192-194.
4. NPD Recreation Program Overview, p. 3. Also see pp. 2, 27-31.
5. Walla Walla District News Release, 17 February 1977. For a breakdown on all of the recreational sites in the District and facilities available at each, see Walla Walla District Recreation Facilities Guide (Walla Walla: U.S. Army Corps of Engineers, Walla Walla District, 1980).
6. Walla Walla District News Release, 79-29.
7. Lewiston Morning Tribune, 28 January 1980.
8. Palouse Republic, 14 February 1980; Pullman Herald, 19 April 1980.
9. Walla Walla District Historical Summary of Activities, Calendar Year 1978, pp. 17-18.
10. "Visitor Center Status Report," in Engineering Division Files, "Recreation, Land Use, etc.," 1517-01 (Engineering Division Files hereafter cited as EDF).
11. Sunset Magazine, September 1978, p. 42; Lewiston Morning Tribune, 19 March 1976, 30 January 1976.
12. The President's Council on Recreation and Natural Beauty, From Sea to Shining Sea: A Report on the American Environment--Our Natural Heritage (Washington, D.C.: Government Printing Office, 1968), p. 196.

13. Reservoirs and dams are certainly not without their critics. In 1976, Michael Parfit wrote: "Across the dry-grass country of eastern Washington, a barrel-bellied fish truck runs a 270-mile route along what used to be the Columbia River, hauling the last young chinook salmon to the sea. Here is the remnant of what was once the grandest drama of nature, the annual return of 40-pound sea monsters to the mountain creeks where they were born. Their ancestors, seen in Idaho's Lemhi River, 800 miles from the coast, once encouraged a pair of weary travelers, Meriweather Lewis and William Clark, to continue west. But a century and a half later, the linear efficiency of Lewis and Clark's own branch, the Corps of Engineers, has so changed the basic nature of the Columbia and Snake Rivers that young salmon longing for salt water and finding nitrogen poisoning instead, have to be bused downstream." Parfit, "The Army Corps of Engineers: Flooding America in Order to Save It," New Times, 12 November 1976, p. 25.

14. See McNary: Final Environmental Impact Statement (Walla Walla: U.S. Army Corps of Engineers, Walla Walla District, 1976), pp. 4-33 and 4-39.

15. See "Recreation Days of Annual Visitation, Walla Walla District Projects," in EDF, "Recreation, Land Use, etc.," 1517-01, for visitation statistics.

16. Mr. and Mrs. Alton Lillard to Senator Church, 15 August 1978, EDF, "Dworshak--Recreation, Land Use, etc.," 1518-01. Also see Lillards to Walla Walla District, 10 July 1976, EDF, "Dworshak--Recreation, Land Use, etc.," 1518-01.

17. Major Chapman to Senator Church, 13 September 1978, EDF, "Dworshak--Recreation, Land Use, etc.," 1518-01.

18. D. Sid and Doris Coy to Senator Church, 14 December 1978, EDF, "Dworshak--Fish and Wildlife," 1517-01.

19. Colonel Allaire to Senator Church, 2 January 1979, EDF, "Dworshak--Fish and Wildlife," 1517-01.

20. Lewiston Morning Tribune, 20 May 1976; Walla Walla Union Bulletin, 18 January 1977. See also NPD Recreation Program Overview, p. 29.

21. Lewiston Morning Tribune, 21 May 1976. See Walla Walla Union Bulletin, 18 January 1977, for Colonel Allaire's comment.

22. Bly to Colonel Nelson Conover, 13 November 1975, EDF, "Dworshak--Recreation, Land Use, etc.," 1518-01.

23. Colonel Conover to Bly, 24 December 1975, EDF, "Dworshak--Recreation, Land Use, etc.," 1518-01.

24. Colonel Conover to Governor Andrus, 20 January 1976, EDF, "Dworshak--Recreation, Land Use, etc.," 1518-01.

25. Bly to Colonel Conover, 7 January 1976, EDF, "Dworshak--Recreation, Land Use, etc.," 1518-01.

26. See Colonel Conover to Bly, 27 January 1976, EDF, "Dworshak--Recreation, Land Use, etc.," 1518-01. For visitation statistics at Lucky Peak and other District sites, see "Recreation Days, Walla Walla Projects," which gives statistics for 1956 through 1977.

27. Bly to Colonel Conover, 14 November 1975, EDF, "Dworshak--Recreation, Land Use, etc.," 1518-01.

28. Sivley, Memorandum to Chief, Operations Division, 10 May 1979, EDF, "Dworshak--Recreation, Land Use, etc.," 1518-01.

29. See Colonel Conover to Bly, 27 January 1976, EDF, "Dworshak--Recreation, Land Use, etc.," 1518-01.

30. Colonel Conover to North Pacific Division Engineer, 11 January 1977, EDF, "Dworshak--Recreation, Land Use, etc.," 1518-01.

31. See Colonel H. J. Thayer to Senator Church, 4 December 1979; Clearwater County Board of Commissioners to Senator Church, 8 October 1979; and R. E. Patton, Dworshak Coordinator, Memorandum to Engineering Division Files, "Dworshak Project, Meeting on Freeman Creek Access Road," 20 March 1980, EDF, "Dworshak Dam--General," 1518-01. Also see Senator Church to Colonel Polo, 10 December 1979; Colonel Polo to Senator Church , 29 January 1980; and James H. Clayton, District Engineer, Idaho Transportation Department, to Clearwater County Commissioners, 26 March 1980, EDF, "Dworshak--Recreation, Land Use, etc.," 1518-01. Finally, see Orofino Clearwater Tribune, 5 May 1977.

32. Lewiston Morning Tribune, 25 April 1979, 13 May 1979; interview with Rodger Colgan, Dworshak Project Engineer, Orofino, 12 November 1980.

33. Lewiston <u>Morning Tribune</u>, 2 December 1976.

34. <u>Ibid</u>.

35. For the Swallows Nest Park negotiations, see the following issues of the Lewiston <u>Morning Tribune</u>: 30 January 1976, 9 November 1976, 24 November 1976, 2 December 1976, 23 December 1976, 15 October 1977, 18 December 1979, and 2 May 1980.

36. Lewiston <u>Morning Tribune</u>, 24 November 1976.

37. Lewiston <u>Morning Tribune</u>, 6 December 1978.

38. Lewiston <u>Morning Tribune</u>, 16 April 1976, 20 May 1976, 11 December 1976, 13 May 1979.

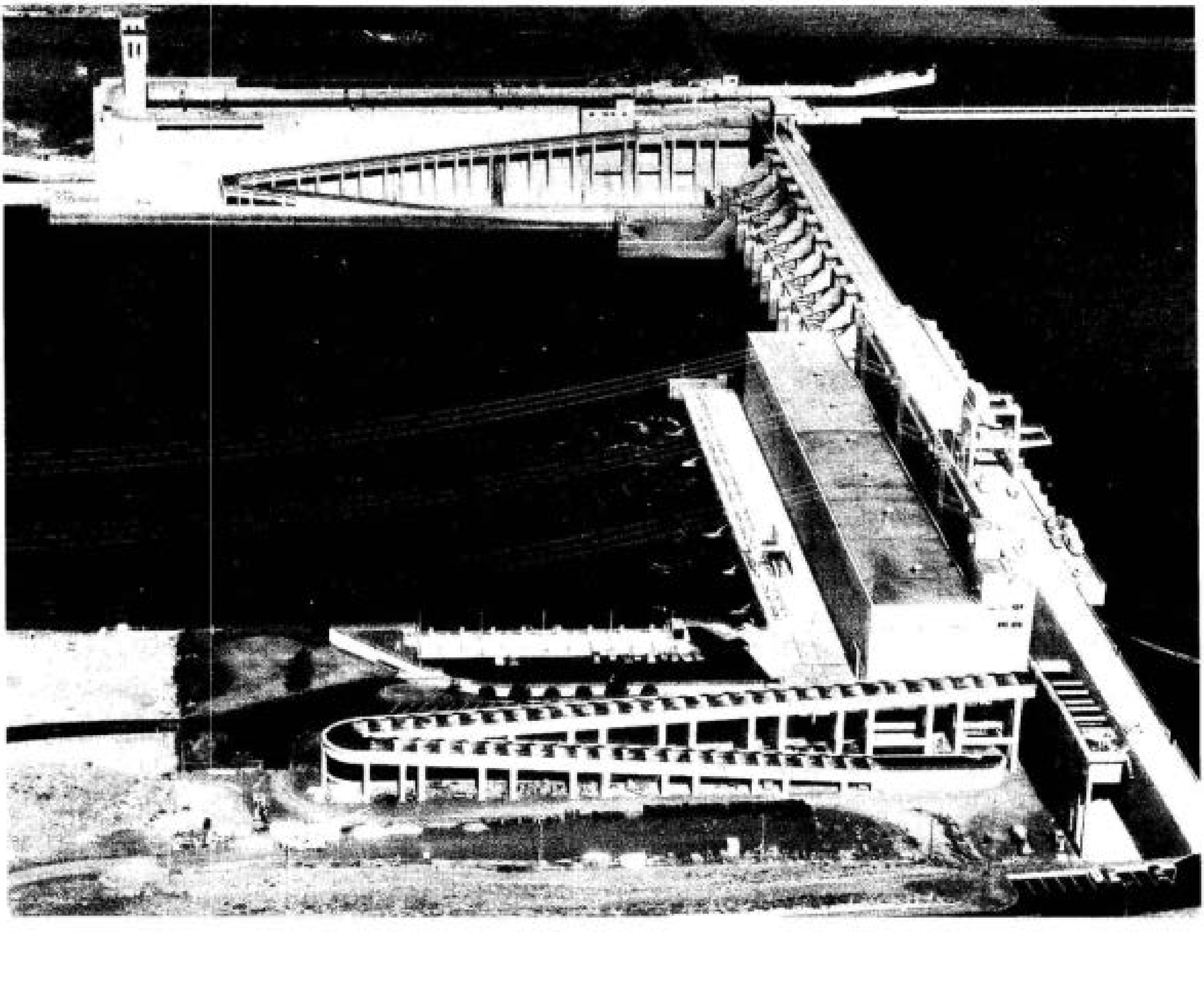
39. Lewiston <u>Morning Tribune</u>, 20 May 1976, 11 December 1976; <u>Tri-City Herald</u>, 30 March 1978.

40. Lewiston <u>Morning Tribune</u>, 7 July 1977.

THIS PAGE LEFT INTENTIONALLY BLANK

CHAPTER 6

DAM SAFETY



THIS PAGE LEFT INTENTIONALLY BLANK

CHAPTER 6

DAM SAFETY

Two tragic dam failures, Teton in Idaho in 1976 and Toccoa in Georgia in 1977, provoked public outcry for improving dam safety standards. As a result of these events, the Federal Government launched a comprehensive dam safety inspection program. The Corps of Engineers, with its acknowledged expertise in dam construction, was designated by Congress as the Federal agency responsible for administering the inspection of all non-Federal dams in the United States. In the Northwest, the Walla Walla District was assigned the specific task of assisting and supervising the examination of the non-Federal dams in Idaho.

The national dam inspection program originated in 1972 when two dams failed in West Virginia and South Dakota, killing 320 people and causing $165 million in property damages. These catastrophies precipitated a demand for thorough inspection of all dams. Congress responded with the 1972 Dam Safety Act and delegated the responsibility for inspecting the dams to the Corps of Engineers. The Corps, having received congressional authority but having insufficient funds for a comprehensive program, began by preparing an inventory. This inventory utilized a classification system that identified hazardous dams according to potential loss of life and property. However, it did not evaluate the safety or stability of any dams. The Corps estimated that a complete inventory and inspection of the 50,000 non-Federal dams in the country would cost $7.4 million, and just an inventory about $3.4 million. Congress approved funds for the inventory phase.[1]

In the Northwest, the Walla Walla District explained to the public why the complete inventory had not been done. Frank King, the

District Public Affairs Officer, stated that the Corps had forwarded a 1975 report to the Office of Management and Budget (OMB) with a recommendation that legislation be introduced to fully implement the 1972 Dam Safety Act. King then pointed out that the Corps was not allowed to exceed the intent of the legislation. "I am sure you understand that we can only do those things that are within the authority delegated to us by Congress. We cannot go out and unilaterally inspect and make recommendations unless we are told to do so by Congress and the President." King then noted that the Corps had accomplished its mission under provisions of the Dam Safety Act of 1972 and was presently waiting for a decision from OMB and the Congress.[2]

In 1977, President Carter announced that he had selected the Corps to undertake a national dam inspection program of the 50,000 non-Federal dams. The North Pacific Division informed its District Engineers on June 28, 1977, that a task force would be convened to evaluate site selection, design, construction, inspection, maintenance, project operation, and repair of dams within the Division boundaries. The districts were immediately to nominate candidates for the task force and transmit a report of the first meeting to the Office of the Chief of Engineers (OCE) by August 1, 1977.[2] Each District was to decide which dams to inspect first, solve any problems concerning rights-of-entry to non-Federal dams, and develop sound working relations with the states.[4]

Shaken by the Toccoa, Georgia, dam tragedy in which 39 people were killed in November 1977, President Carter demanded the immediate implementation of the safety inspection program for all non-Federal dams, beginning with the more than 9,000 dams which, like the Toccoa Dam, were classified as having a high potential for destruction of life and property. The program, to be administered by the Corps, would last approximately 4 years and cost around $70 million. The inspection program identified three priorities: (1) all dams in the high hazard potential category as classified by location, not structural soundness; (2) dams of intermediate hazard built on Federal lands; and, (3) a limited number of dams posing an immediate threat to public safety, such dams to be selected after consultation with state officials. The Executive Office stressed that state and Federal governments should cooperate in the program by requiring the governor of each state to participate in selecting the dams to be inspected. The governors would be notified of any hazardous conditions found during an inspection, and efforts would concentrate initially on these dams. Dams already inspected through a state program would be excluded from the inspection effort.[5]

In Idaho, 57 of the total number of 450 dams had been listed as requiring priority attention. After consultations in Boise on December 12, Walla Walla District and Idaho officials selected Magic Dam and Reservoir at Twin Falls as the first project to be inspected. The program opened on a solid base of cooperation as the District and the Idaho Department of Water Resources had successfully worked together 2 years earlier in the national inventory. At that time, the two agencies had developed an agenda for inspecting the 57 non-Federal dams that the 1975 inventory had listed as hazardous; inspecting dams on Federal lands classified as an intermediate hazard; and inspecting other non-Federal dams that the state and Corps thought presented an immediate threat to public safety.[6]

Idaho's interest in controlling the inspection process of its own dams prompted a January 1978 meeting with Idaho Senator McClure, his two aides, and Idaho state officials. The participants discussed legislation for strengthening the dam safety program and Federal aid and involvement. Stephen Allred, Director of the Idaho State Water Resources Department, acknowledged that Federal aid was needed to improve the inspection program, but he also stressed Idaho's interests in controlling the program "with minimal Federal influence." Senator McClure, after noting that a Federal agency must have the responsibility for expenditure of Federal funds, expressed his support of the Corps as the "best agency to accomplish this mission." Allred then proposed that additional Federal funds be made available on a cost-sharing basis, an arrangement which would augment the Department's staff and provide training. He then requested that the Federal Government consider legislation to establish liability insurance. Recognizing the important relationship between the Federal and state governments in dam construction and safety, Allred proposed that the state have the authority to approve all Federal dam designs and recommended a Federal research and development program to obtain instruments for monitoring dam safety.[7]

Other western states shared Idaho's fears that the Federal Government might foist its own standards or inspection teams upon them. Steve Allred, speaking for the 11 members of the Western States Water Council, asserted "we do not need nor will we accept federal requirements that we adopt a common approach or observe nationwide standards."[8] Fortunately, these misgivings and distrust of Federal intervention in states' affairs did not materialize in Idaho. The dam inspection program proceeded smoothly in Idaho with the Corps performing a technical consulting role to augment the state staff and occasionally supplying personnel. During the initial phase, Idaho sent its employees to government and university classes, carefully screened permit applications, and used modern technology such as data interpolated from satellite imagery. Of the 12 dams inspected by the summer of 1978, one, Barber Dam, was declared unsafe but it did not pose an immediate threat to life or property. Two dams had impoundment restrictions placed on their operations pending further analysis. W. E. Sivley, Chief of the District's Engineering Division, reported to the Division Engineer of the North Pacific Division that Idaho had a good basic program of dam inspection which would improve as more funding became available. Although Idaho did enforce existing dam safety legislation and had sound laws and regulations, these were not as strict as Federal guidelines in some cases. One problem that both the state and the Federal Government faced was how to ensure that maintenance work would be completed, especially on the smaller dams whose owners did not have the funds or credit sources for a loan to repair them.[9]

The Idaho Statesman agreed with Sivley's assessment of the difficulty of enforcing repairs. Not only did the owner who could not afford the repairs challenge the findings of the inspection report, but the lack of laws limiting the liability of designers and inspection engineers had brought about very conservative assessments of the condition. These underestimates ultimately meant costlier repairs.[10]

During 1978, the dam inspection program progressed well nationally and in Idaho. On a national level, Federal and state agencies updated and verified data on almost 32,000 dams. Of the 4,380 dams inspected, 27 percent were found unsafe, emergency actions were recommended for 64 of these, and remedial work was completed on 53. The Executive Office authorized a total of $36 million for repairs on 13 dams, $1 million of which was allocated in fiscal year 1979. In Idaho, state personnel completed 28 inspections of the 201 dams inventoried by the end of fiscal year 1978. Six dams, or about 2 percent of those inspected, were evaluated as unsafe but not in an emergency condition. Causes of the deficiencies were listed as structural instability, seepage, inadequate spillway, and structural failure or distress. Remedial work was accomplished on Barber Dam near Boise in March 1978,[11] which became the first dam in the District to be repaired under the National Dam Inspection Program.[12]

Barber Dam, located 6 miles from the rapidly expanding population center of Boise, had been built by the Barber Lumber Company in 1906 to impound water for a millpond and supply power for the sawmill. The Idaho Power Company acquired the lumber company in 1916 and dismantled the mill in 1934. The dam slowly deteriorated as water flowing over the rock-filled wooden cribs removed almost two-thirds of the material by the 1970's. An inspection by the Idaho Department of Water Resources in October 1974 warned of the rapid increases in deterioration which could lead to failure with the next high flow period.[13]

Although state inspectors classified the dam as nonemergency under the national inspection program, they evaluated it as unsafe with potential "excessive damage to agriculture downstream possible."[14] Inspectors had proposed several alternatives for the dam, including repairing the existing structure, removing it and allowing the sediments to be discharged by the waterflow, or excavating a new channel. Each alternative would have several varying effects on agriculture, fish breeding, and wildlife. Further, there was some interest in extending Boise's greenbelt around the dam and even in preserving the dam as a historical site. A prolonged dispute over ownership was unexpectedly settled when ownership reverted to Ada County which was reluctant, if not unwilling, to finance the dam's reconstruction or upkeep. The contested ownership, with each party denying its legal responsibility, involved Federal, state, county, and local governments as well as a conservationist group which had bought the dam at an auction as a means of providing an interim period for environmentalists to have some input into the dam's fate. The Walla Walla District had been brought into the affair as early as October 1973, when the Boise Valley Regional Water Management Study requested that the District inspect the dam and compile a report on alternatives. In its subsequent report of August 1974, the District presented the results of the inspection and an economic appraisal of the costs of repairing or destroying the dam, and also evaluated the value of resources and agricultural land protected through each alternative.[15] The involvement of the Corps in a consultant, technical role affirmed that agency's prominent role in providing technical information and analysis that could materially assist in mediating complicated disputes. The selection of an alternative was reached after private and public discussions that weighed all possibilities, especially the $4 million estimated cost of constructing a new dam. It was decided to refill the timber cribs with rock ballast and cover the surfaces with a reinforced shell. This was finally accomplished on March 22, 1978, but only after the state legislature refused to appropriate the Governor's request for emergency funding of $125,000, half the cost of the repairs. The rescuer in this case was the locally based Boise

Cascade Corporation which donated $250,000 to the project in exchange for some property adjustments.[16]

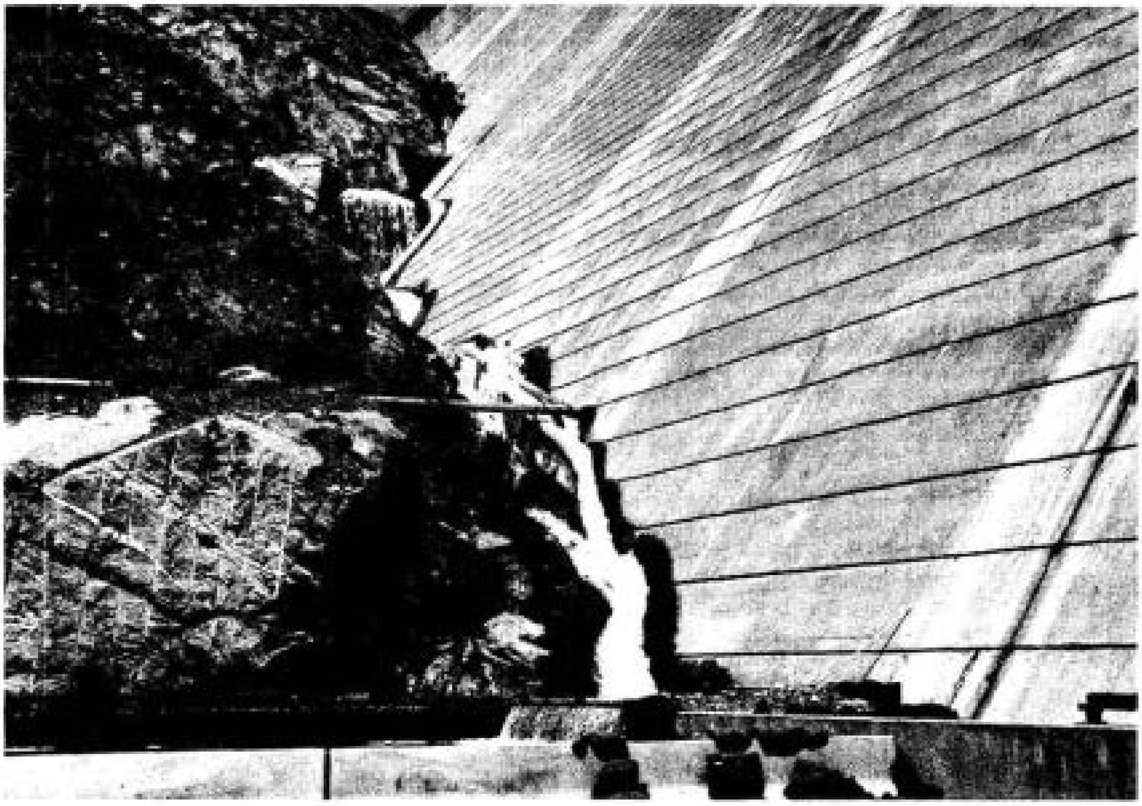
Governor Evans demonstrated his support of the dam safety and inspection program by requesting that the legislature appropriate $252,000 and authorize six additional staff members to the program in early 1980. The governor justified the request by its provisions for routine inspection by professionally trained inspectors, an increase in the quality of the review, and detailed evaluation of existing structures. In recognizing the need for additional data and systematic evaluation of smaller structures, Evans emphasized the need to concentrate efforts on small dams like Barber Dam. Evans explained that these structures were usually built with less initial planning, design, and construction review than larger structures. According to Evans, "While the consequences of failure are not as dramatic in many cases, the loss of life and property can still occur and such failures are apt to be more common than for larger structures." In summary, Evans expressed his intent to use augmented state funding to include such structures in a program of detailed evaluation.[17]

On a national level, an ad hoc interagency committee on dam safety advanced the program with the publication of its findings titled <u>Federal Guidelines for Dam Safety</u>. The guidelines were prepared in response to the Presidential Memorandum of April 1977, authorizing a review of dams under Federal control. Appearing 3 years after the Teton Dam failure, the guidelines were intended to establish criteria for management procedures for all Federal agencies. The report covered the four major areas of organization and management, site investigation and design, construction, operation and maintenance. The report recognized that no dam could ever be completely "fail safe" in view of natural elements and the possibility of sabotage, and that dam safety must be viewed as a "continuous dynamic process in which guidelines, practices and procedures are examined periodically and updated." In summarizing the vast experience and knowledge of its contributors, the report noted that dam engineering is more of an art than a science, that it relies not only on mathematical and physical principles but on "experienced judgment," especially in the application of engineering principles. Accordingly, even during the construction phase the final design should be modified, if necessary, to insure compatibility with the existing site conditions. Constant vigilance in assuring the quality of construction materials and practices, constant testing, monitoring, and immediate reaction to danger signals can prevent other dam-related tragedies.[18]

Although a national dam inspection program substantially aids in insuring the stability and safety of dams, it does not provide a frequent and regular means of monitoring dam movement and leaks. This need is met by various instruments placed inside the dams which continuously transmit readings to monitoring equipment in the project offices. These instruments include stress and strain meters, uplift meters, seismographs, and temperature gauges. Dam personnel use a frequent monitoring network when a dam is new; after a few years the measurements are not as extensive. Visual inspection procedures follow the same pattern, with less frequent inspections needed after the first 3 years.[19] Computer technology reinforces or supplements the data recording and interpretation process, reducing the response time between discovery of a problem and corrective steps. Instruments at each Corps dam within the Walla Walla District are routinely read once a month, and the data is then forwarded to the District Office where it is processed and recorded. Structural instrumentation groups, geologists, and soil engineers review the data records, with a specialist group assigned to analyze any change in conditions. Joe Kinney, the Instrumentation Section Chief at the District Office, explained that it had taken 2 years to "debug" the system. However, Kinney remarked, "Instrumentation and computer technology cannot predict the failure of a structure, only the potential trouble areas."[20] As Rodger Colgan, Project Engineer at Dworshak Dam explained, human expertise is also an important ingredient in dam safety and maintenance. Personnel familiar with the turbines, generators, and other equipment often detect problems before they appear on the monitoring equipment. This human sensitivity to the sounds and conditions within the interior spaces of the dam contribute significantly to the total safety and smooth operation of the projects.[21]

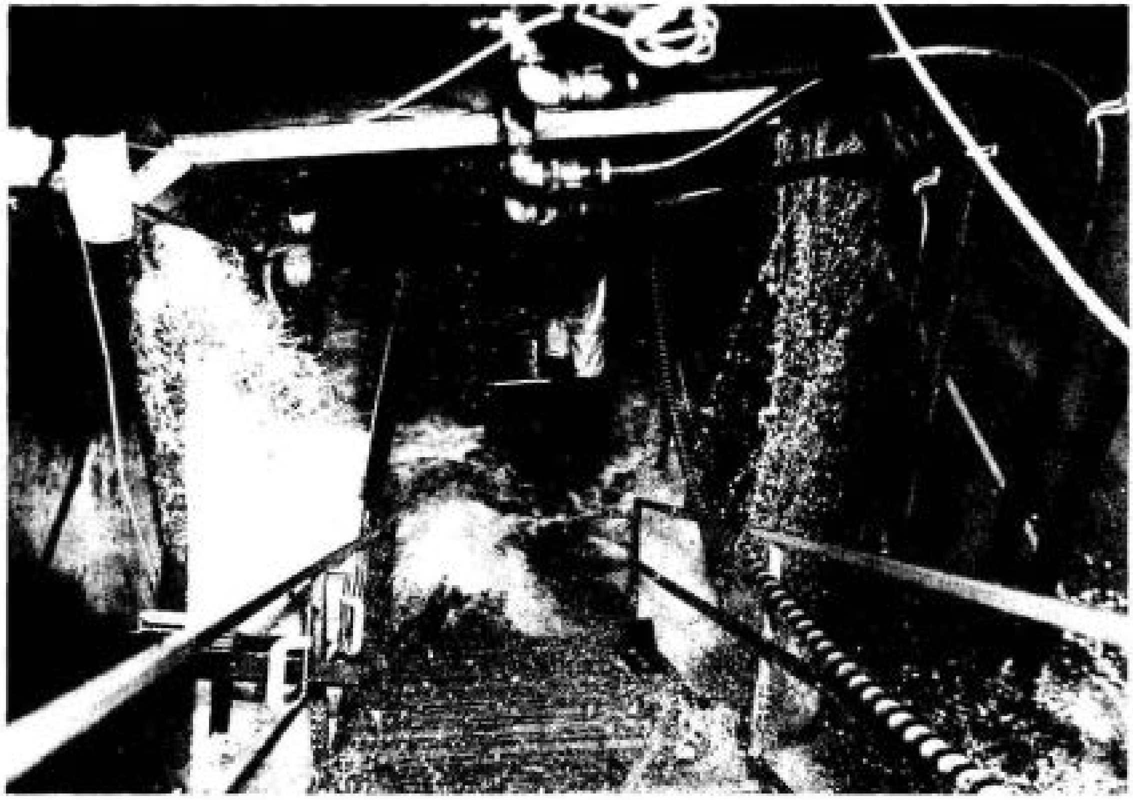
Although most attention paid to dam safety in the late 1970's focused on dangers arising from inadequate design or construction weaknesses, the threat of deliberate acts to sabotage dams also surfaced. The Pendleton East Oregonian reported in late November 1978 that unsuccessful acts of sabotage at Grand Coulee and Chief Joseph Dams were spreading to other dams in the Northwest. Early that month, generators at both dams had been tampered with, crippling the power installations. Federal officials expressed their opinion that guards and electronic surveillance equipment would not deter a "determined, knowledgeable saboteur." In addition, such a program would cost millions and close the hydroelectric projects to visitors.[22] Corps officials are sensitive to the potential danger of sabotage and have implemented effective surveillance techniques and procedures at the projects. Fortunately, further incidents have not occurred in the Northwest and the District's involvement in dam security has been limited to sporadic vandalism of its visitor facilities and recreation areas.

An important legacy of the latter 1970's was increased public concern and scrutiny of dams. Although engineers and dam personnel had always viewed seepage from dams as normal and expected, in this period a leak at a dam was no longer an engineering or repair problem to be confidently placed under the purview of experts. No public official could ignore a report of a dam leak, as personnel at Dworshak Dam learned. Cracks at this dam had been previously reported without causing any particular alarm. Even after the Teton Dam collapse, the Lewiston Morning Tribune expressed its faith in this high structure by stressing its lack of concern in an article entitled, "Ho-hum, the Dam Has Another Crack." The acting plant supervisor for the dam remarked to the newspaper that the dam had several small cracks, which were common to all massive concrete dams, and stated that they had all been relieved as they occurred. Frank King, the District Public Affairs Officer, explained in more detail that relief cracks appear almost annually as the reservoir is filled and emptied each season. "Holes are drilled, water piped away, and the area is grouted." King then stressed that the structural integrity of Dworshak was still sound.[23]



THE CRACK AT DWORSHAK DAM

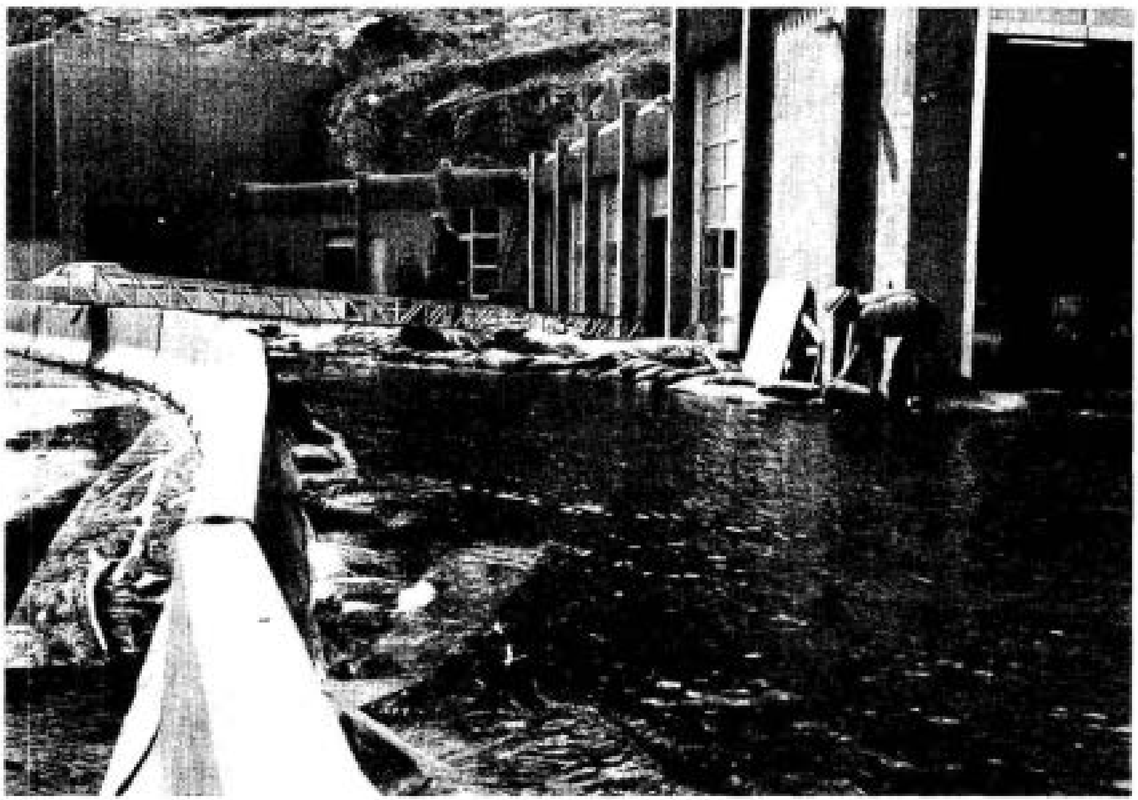
The issue of persistent leaks at Dworshak lay dormant until May 1980. The Corps briefed Governor Evans that a leak of 4,000 to 6,000 gallons of water per minute occurred on Friday, May 30. The leak, originating from a hairline crack in a concrete block, continued to grow over the following days. The Corps, attempting to reassure the public, announced that the crack had first appeared in 1972 and that holes had been drilled the preceding summer to relieve the pressure. The District stressed that there was no danger of damage to the dam nor a problem of dam safety.[24]



DRILL EQUIPMENT AT THE DWORSHAK CRACK

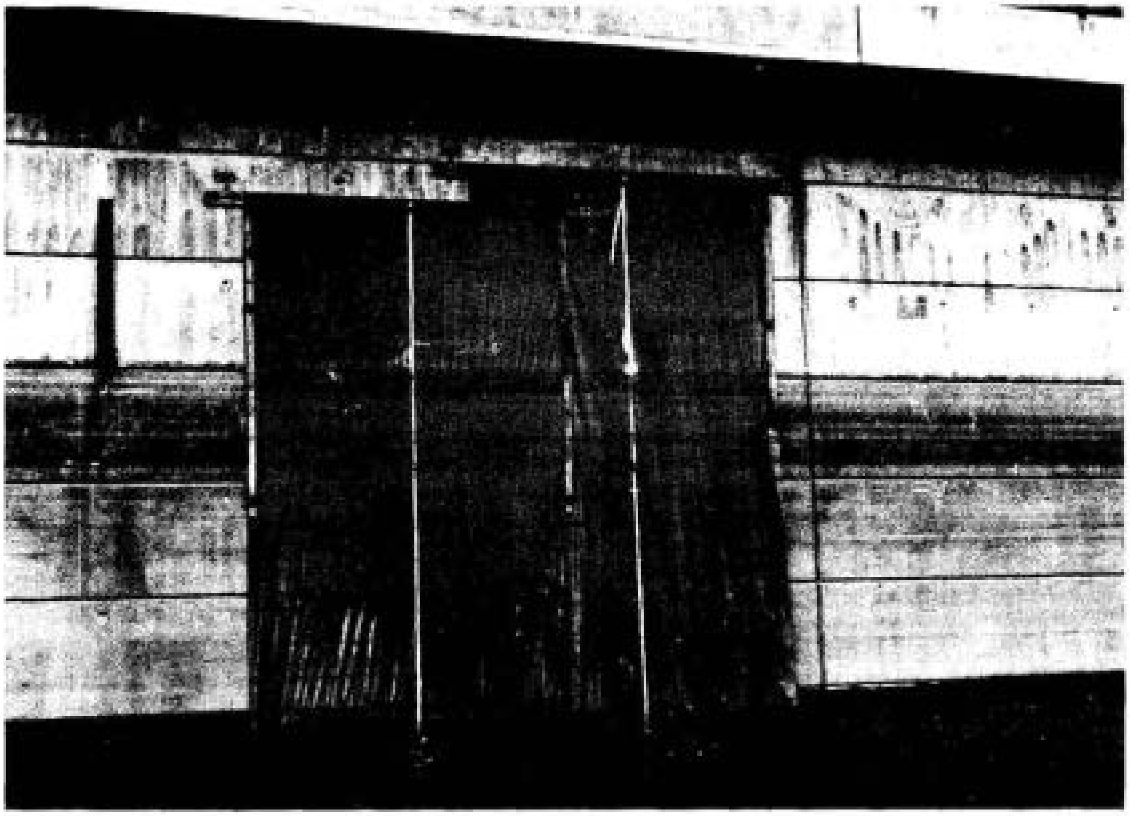
A personal visit to Dworshak Dam by Governor Evans at the invitation of the District Engineer focused attention on the situation and increased the District's apprehension that the visit would magnify public fears. In an attempt to place the problem in perspective, the District explained in the Lewiston Morning Tribune that 8,000 gallons a minute was leaking through various seams in the dam and that 2,000 gallons a minute was the normal seepage. W. E. Sivley emphasized that the District had complete confidence in the dam's safety. Sivley also asserted that the concrete gravity dam had been selected as the safest and most economical type of dam. The design would resist several times the amount of stress placed behind it, and the concrete would not erode.[25]

Immediately after the Governor's visit, Stephen Allred requested that Lyman D. Wilbur, a consulting engineer, investigate and prepare a report on the safety of Dworshak Dam. The investigation included telephone conferences in Boise with personnel from the Idaho Department of Water Resources stationed at the dam and Corps personnel at Walla Walla, and visits to the dam and Walla Walla on June 9 and 10. The investigation led to the reassuring conclusion that the dam was stable. Wilbur summarized his findings by stating that if no further cracking occurred, the dam was safe.[26]



SANDBAGGING FOR TEMPORARY DIVERSION CANAL
AT DWORSHAK

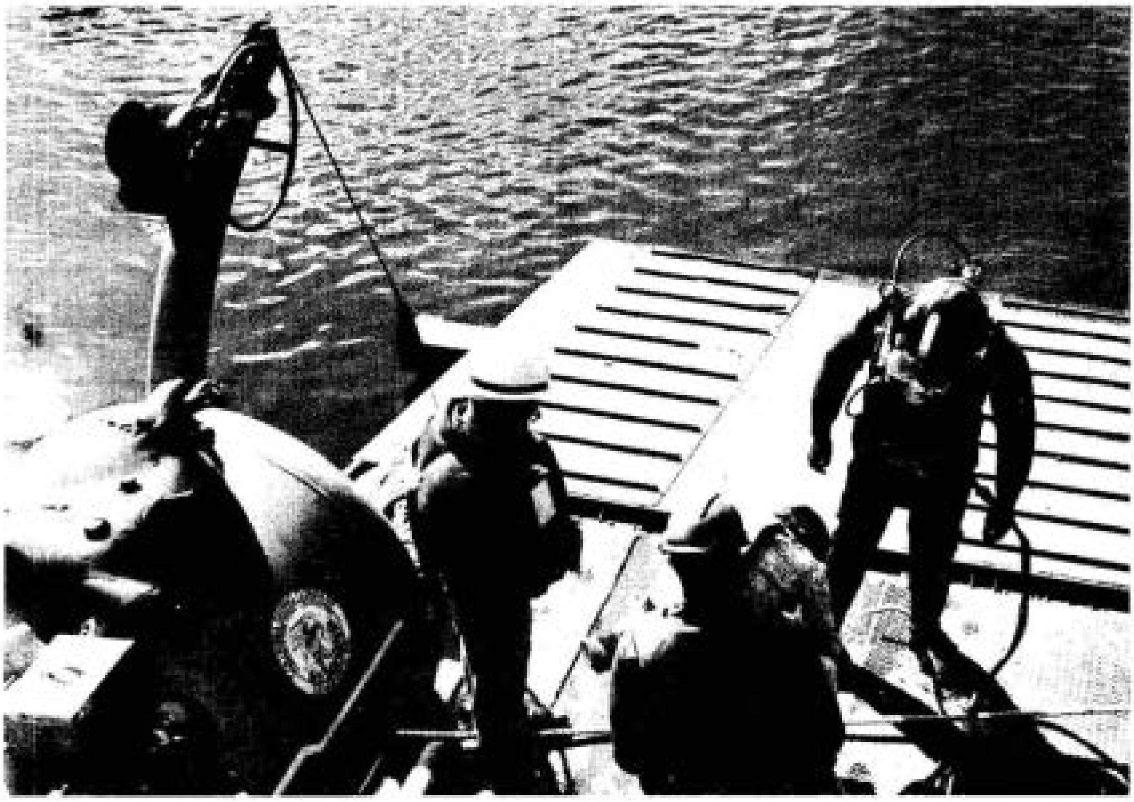
At Dworshak, the major concern was that the water could damage the powerplant. Crews installed temporary bulkheads to prevent water from the galleries entering the generating areas. Numerous relief holes were drilled and temporary monitoring devices were placed in the vicinity of the leak. These measures effectively prevented any damage or curtailment of power production.[27]



VINYL CURTAINS USED FOR CRACK REPAIRS

The next stage was to install three thin, vinyl-coated nylon curtains, 15 feet by 160 feet, which would seal the 236-foot-long crack.[28] The permanent solution will be the natural healing action of the concrete through calcination in conjunction with the injection, under pressure, of a slurry mix into the upstream face of the crack.[29]

Successful handling of the leak at Dworshak and completion of the dam inspection program highlighted the District's involvement in dam safety and inspection during this period. The last 5 years aptly illustrated the extensive responsibilities the Corps assumes for protecting the lives and property of those living below dams. These responsibilities also encompass the continued operation and soundness of those projects which contribute to the nation's economy and well-being through hydroelectric energy, irrigation, flood control, navigation, and recreation.



DIVER PREPARES TO ATTACH VINYL CURTAIN TO DAM FACE
JULY 2, 1980

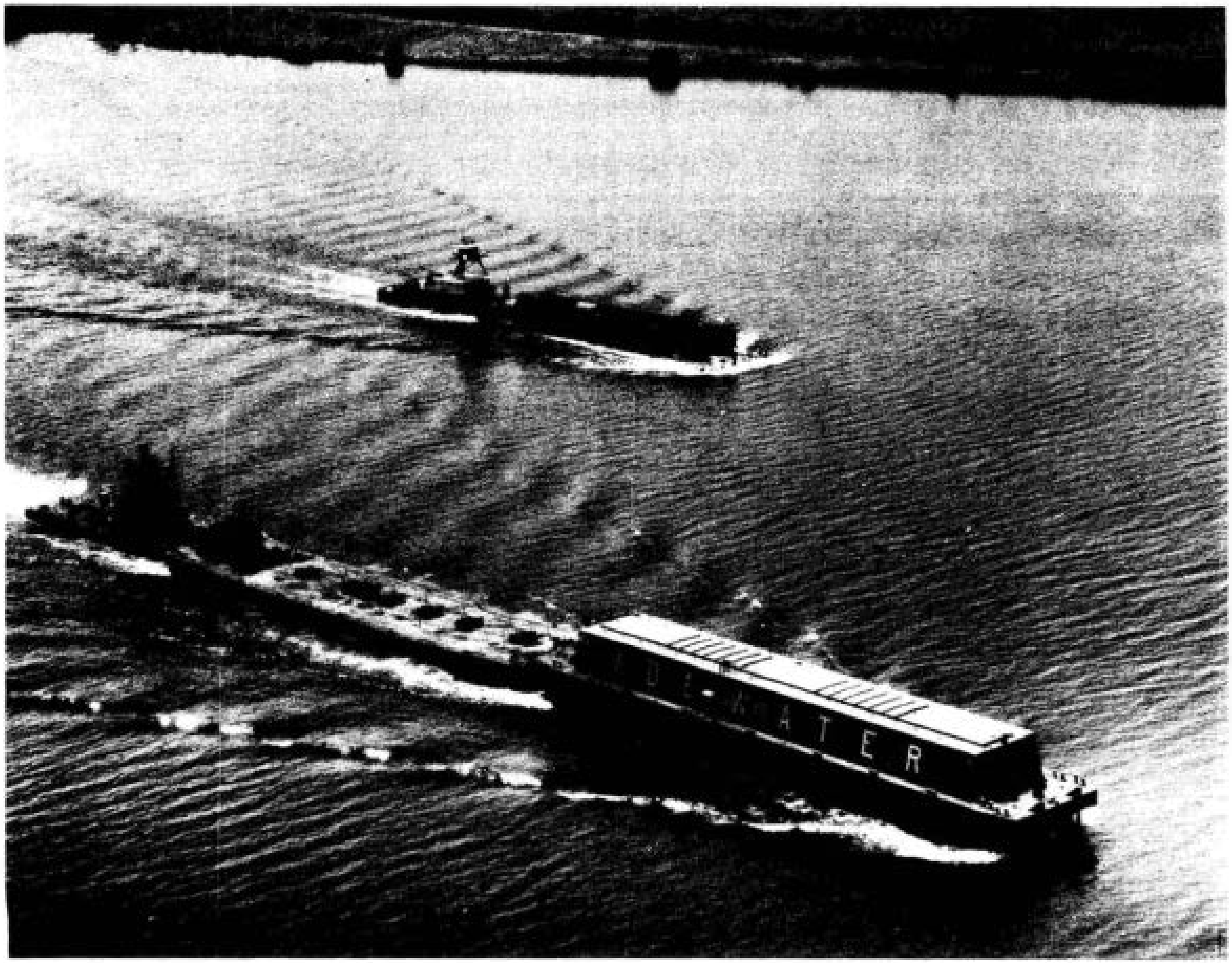
NOTES

1. Lewiston Morning Tribune, 16 March 1977.
2. Letter from Frank King in "Open Forum," Pendleton East Oregonian, 31 August 1976.
3. Colonel Edwin S. Townsley, Deputy Division Engineer, North Pacific Division, to District Engineers, 28 June 1977, in Engineering Division Files, "National Program for Inspection of Dams," 1514-02 (Engineering Divison Files hereafter cited as EDF).
4. Ed Pritchett, OCE, to Bob Krahn, Walla Walla District, Report of Telephone Conversation, date illegible, EDF, "National Program for Inspection of Dams," 1514-02.
5. Statement by the President, date illegible, EDF, "National Program for Inspection of Dams," 1514-02.
6. Walla Walla District Intercom, 77-25, 21 December 1977.
7. Discussed by Colonel C. J. Allaire, District Engineer, to OCE, 30 January 1978, EDF, "National Program for Inspection of Dams," 1514-02.
8. Caldwell News-Tribune, 4 February 1978.
9. W. E. Sivley to Division Engineer, "End of 1978 Progress Report," 28 September 1978, EDF, "National Program for Inspection of Dams," 1514-02.
10. Boise Idaho Statesman, 3 April 1979.
11. Boise Idaho Statesman, 4 November 1978; OCE, "Summary for Fiscal Years 1978-79, Progress Report," 15 April 1980, EDF, "National Program for Inspection of Dams," 1514-02.
12. Walla Walla District Intercom, 78-1, 18 January 1978.
13. Barber Dam Advance Report: A Report of the Present Status of the Barber Dam Problem and Possible Solutions, Regional Water Management Study, Boise Valley, Idaho (Walla Walla: U.S. Army Corps of Engineers, Walla Walla District, 1975). The report was prepared with the cooperation of the Ada Council of Governments and the Canyon Development Council.
14. Tabular summaries of dam inventory and inspection reports, fiscal years 1978 and 1979, EDF, "National Program for Inspection of Dams," 1514-02.

15. Public Information Brochure on the Barber Dam Problem on the Boise River Near Boise, Idaho, second workshop meeting, 7 August 1974, (Boise: Ada Council of Governments, Canyon Development Council, and U.S. Army Corps of Engineeers, Walla Walla District, 1974).
16. Public Information Brochure on the Barber Dam Problem: Barber Dam Advance Report; Walla Walla District Intercom, 78-1, 18 January 1978; Boise Idaho Statesman, 17 January 1978, 21 January 1978.
17. Governor John Evans to Brigadier General Richard M. Wells, Division Engineer, North Pacific Division, 4 February 1980, EDF, "National Program for Inspection of Dams," 1514-02.
18. Federal Guidelines for Dam Safety, prepared by Ad Hoc Committee on Dam Safety of the Federal Coordinating Council for Science, Engineering and Technology, 25 June 1979, EDF, "National Program for Inspection of Dams," 1514-02.
19. Interview with Rodger Colgan, Dworshak Project Engineer, Orofino, 12 November 1980.
20. Tri-City Herald, 27 May 1979.
21. Colgan interview, 12 November 1980.
22. Pendleton East Oregonian, 5 December 1978.
23. Lewiston Morning Tribune, 7 August 1976.
24. Walla Walla District News Release, 80-24.
25. Lewiston Morning Tribune, 4 June 1980.
26. Lyman D. Wilbur, report on block 35, Dworshak Dam, 10 June 1980, Public Affairs Office File, "Dworshak Leak," 401-07.
27. Colgan interview, 12 November 1980.
28. Lewiston Morning Tribune, 3 July 1980.
29. Colgan interview, 12 November 1980.

CHAPTER 7

NAVIGATION



THIS PAGE LEFT INTENTIONALLY BLANK

CHAPTER 7

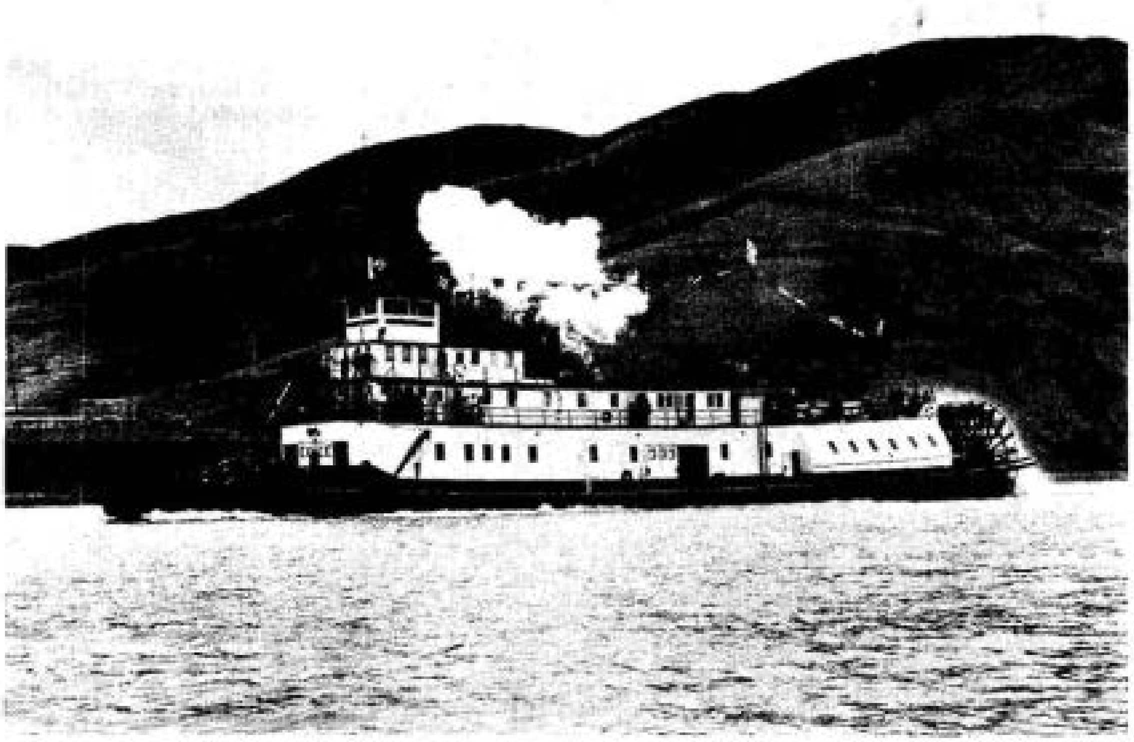
NAVIGATION

"It's an emotional thing. Corpsmen are proud. Businessmen are happy. Ecologists are angry, fish are confused, and musicians haven't noticed anything unusual." Geoff Towns contributed these lines in a poetic scrutiny of the coming of slack water to Lewiston, Idaho. Senator Frank Church of Idaho added his comments, "It is an achievement so exceptional that envious communities will forgive us as we all go aboard this month's pleasure cruise on the waters of self-congratulation.... A community that started from the deck of a wooden riverboat now welcomes home its descendants, the steel tugboats."[1] Idaho Governor Cecil Andrus, addressing a crowd at ceremonies at Lower Granite Dam in February 1975, added a somber note, briefly dampening the more exuberant progressive tone. "Before I accept this structure, I want to point out that the cost of this system has been horrendous, both in dollars and in cost to our natural resources."[2] However, the general mood of optimism prevailed as residents of Lewiston and surrounding communities anticipated the benefits from the completion of the last link in the Inland Passage, Lower Granite Dam.

The Corps' involvement in the project dates to 1902 when Congress approved a proposal to improve the Lower Snake River. Subsequent authorizations included widening and deepening the river channel and constructing dams and locks. At public hearings in Washington, D.C., and in local communities in 1945, public consensus favored the development of the Columbia and Snake Rivers from The Dalles to Lewiston. At that time, fishing interests requested that these projects not be undertaken until the effects of Bonneville and Grand Coulee Dams on anadromous fish runs were known.[3] Construction on the Lower Snake River Project began in 1956 on Ice Harbor Dam and the last dam, Lower Granite, was completed in 1975. The project consists of four multipurpose dams in southeastern Washington. The total cost of the project was over $900 million. The Corps provided most of the design work and all contract administration for the dams, locks, powerhouses, fish ladders, and relocation of roads, railroads, and utility lines.[4]

IDAHO GOVERNOR CECIL ANDRUS SPEAKS AT CEREMONIES FOR THE OPENING OF THE NORTHWEST PASSAGE

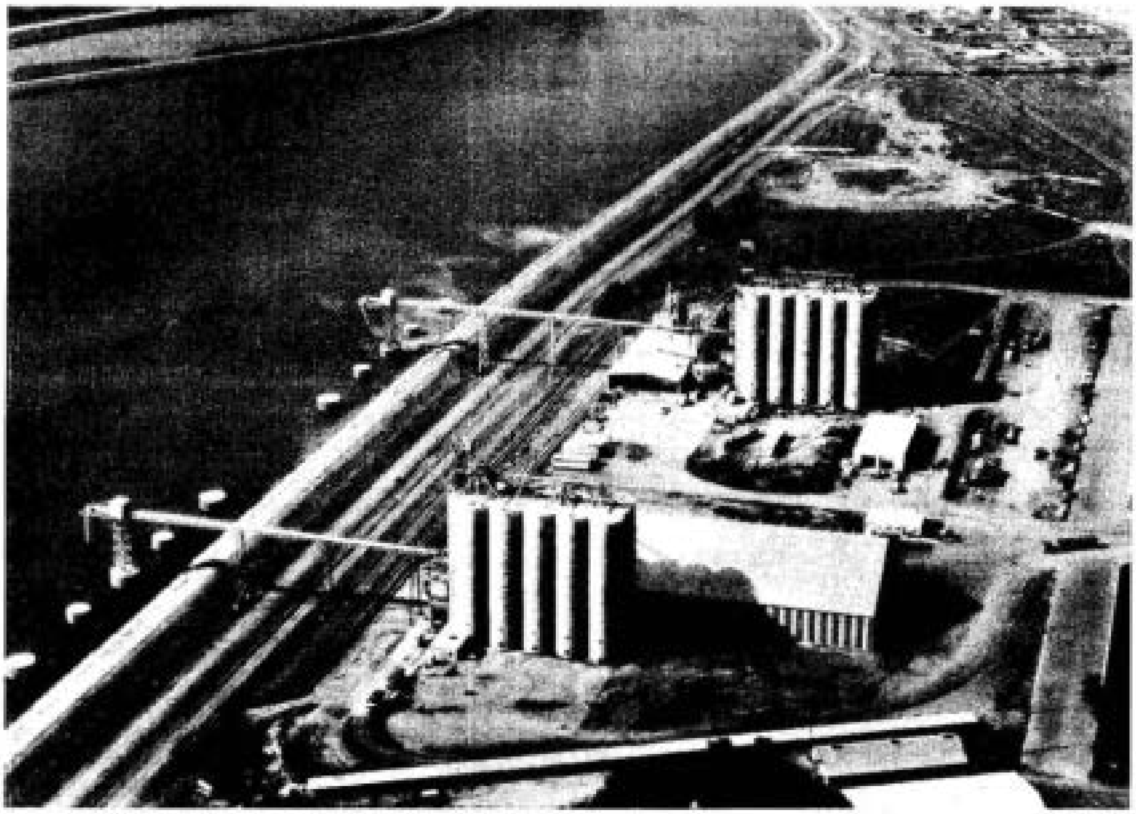
In recognition of the profound impact the advent of slack water would have on Lewiston with completion of Lower Granite Dam, the Lewiston Morning Tribune devoted an entire issue to the project. Numerous advertisements in that issue of June 1975, testified to the commercial expectations for the newly created seaport. Progress, growth, industrial development, and unbounded recreational opportunities were enthusiastically described by various businesses, one of which welcomed the anticipated crowds to the "Seaport Cities." Another congratulated Lewiston's merger with the Pacific Ocean, and the Port of Lewiston described itself as the upstream anchor of today's Northwest Passage. Nostalgia about pioneer days in Lewiston blended into expectations that parts of Lewiston, once crowded with saloons and truck gardens, would soon be enriched with new businesses, paved streets, storm drains, and other modern amenities.[5]



STERNWHEELER "PORTLAND" AT OPENING CEREMONIES
FOR THE NORTHWEST PASSAGE

Lewiston-Clarkston were not the only ones basking in the glow of anticipated commercial wealth. Whitman County in Washington, a rich agricultural producer of wheat, had authorized a port in 1958. In the early 1970's, the county began developing the port sites of Almota and Central Ferry, and the Wilma port in late 1974. The slack water promised increased economic vitality to Whitman County as symbolized by grain elevators along the desert stretches of the Snake River and by Boyer Park Marina, a green oasis at the bottom of the steep bare walls of the riverbed.[6] In 1978, the Washington Farmer-Stockman applauded the increasing commerce in the Ports of Lewiston, Clarkston, and Whitman

County, particularly the truckloads of wheat arriving from Montana over the newly constructed Lewiston Bridge Highway.[7]



LEWISTON PORT FACILITIES

Five years after the project's completion, the Lewiston Morning Tribune again assessed the impact of the slack water on local residents and businesses in a series of articles published in August 1980. The first article found that expectations of an industrial boom and local prosperity had not materialized although there had been a slow, steady growth. This growth, in addition to freeing the valley from its dependence on agriculture and forest products, increased the per capita income to four times greater than that found in 1960. However, the development of barge traffic had reduced rail traffic, and the increased truck traffic on Highway 12 from Missoula, Montana, to Lewiston created a significant hazard to motorists. In addition, steelhead fishing was curtailed, moorage sites and swimming beaches had disappeared, and the slower-moving water deposited some silt in that reach of the river. Carl C. Moore, who assumed management of the Port of Lewiston in 1965, explained that everyone had first been delighted to see the project come and by the time attitudes had changed, the dam was a "foregone conclusion." Responding to a suit brought by steelheaders in 1970 to stop the construction of Lower Granite Dam, Colonel Robert Giesen of the District commented that the officials elected by the people had said "Go," and the Corps had gone ahead.[8]

When the area's residents realized that a boom economy would not materialize, many criticized the District and the media for overselling the project. A. K. Barker, one of the strongest opponents of the Lower Snake River Project, remarked to the Lewiston Morning Tribune that there had been a lot of hope that the project would put Lewiston on the map. "Now, it seems to me the place looks much the same as it did 13 years ago." Other critics complained that Lower Granite had been constructed to provide power for the Bonneville Power Administration to sell to California. In actuality, the power sales represented excess runoff which could not be used in the Northwest.[9]

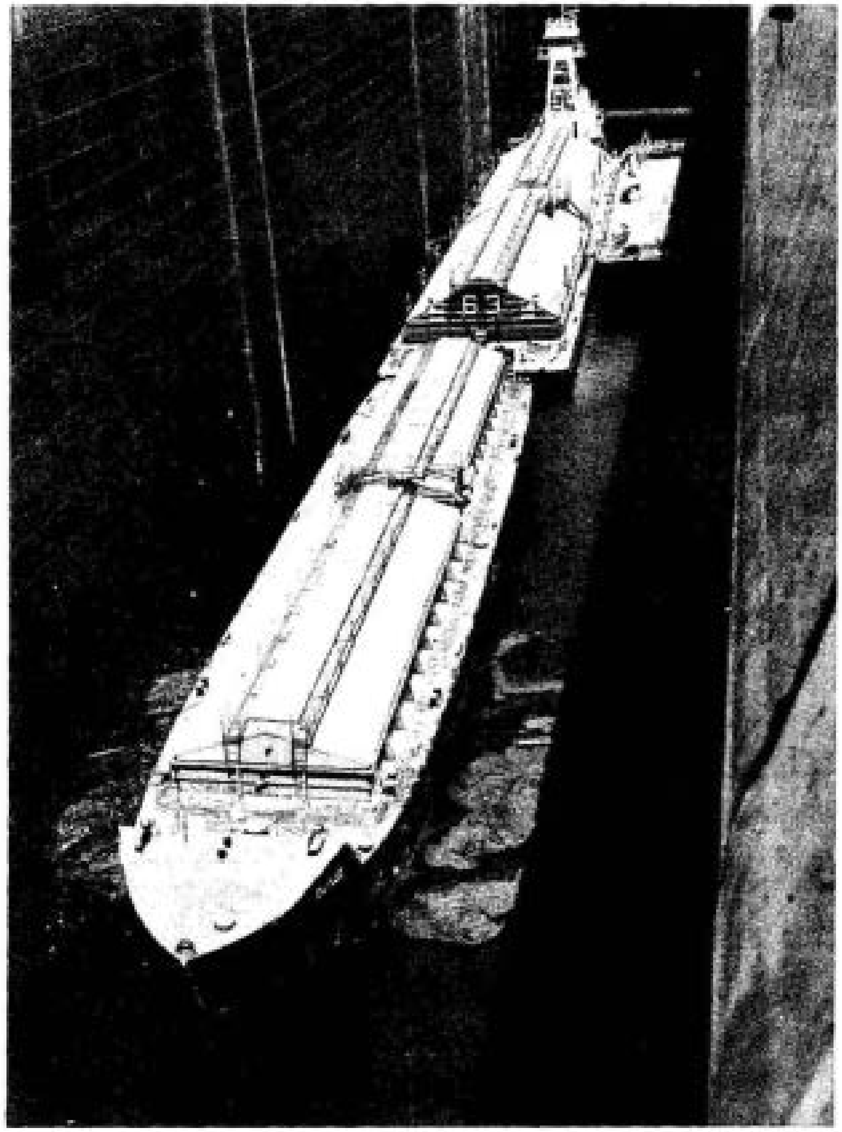
Other areas of contention investigated by the Tribune were frustrations of tourist and convention promoters who were unable to lease land from the Corps, and recreational boaters who lost moorage facilities with the creation of slack water. The decision to locate all moorages above the interstate bridge and the refusal of the Washington Department of Highways to interrupt traffic flow and raise that bridge span to accommodate large boats further discouraged boaters. Consequently, cruise boats and tall-masted sailboats could not use that stretch of river in the Lewiston-Clarkston area. Many blamed the District for the prohibition on moorages below the drawbridge, a charge a cruise ship owner described as misplaced. "It's time for everyone to stop badmouthing the Corps." In 1980, a sailing club was negotiating with the Corps for moorage on Silcott Island, downstream from Clarkston.[10]

Although the final verdict on the advantages and disadvantages of slack water can only be reached with time, the considerable benefits

PROTESTERS AT THE DEDICATION CEREMONIES FORETOLD LATER CRITICISMS OF SLACK WATER IN THE LEWISTON-CLARKSTON AREA

to navigation are unquestioned. In the 3-year period from 1976 to 1978, total barge traffic increased through Lower Granite from 559,000 to 1,422,000 tons. At Little Goose, the increase was from 1,465,000 in 1976 to 2,589,000 tons in 1978. Ice Harbor experienced a growth in barge traffic from 1,931,000 to 3,060,000 tons, and McNary, 4,763,000 to 5,721,000 tons.[11] The tonnage far exceeded projections made in 1964. Port-related jobs also increased but at a smaller pace than anticipated, and the area remained relatively dependent on the forest products industry.[12] Grain shipments on the Columbia-Snake River waterway comprised the largest commodity, and the Snake River portions of the waterway showed the highest gains, over 80 percent, compared to a total gain of 31 percent for the Columbia River portion.[13] Carl Moore, Manager of the Port of Lewiston, estimated that the seaport had saved

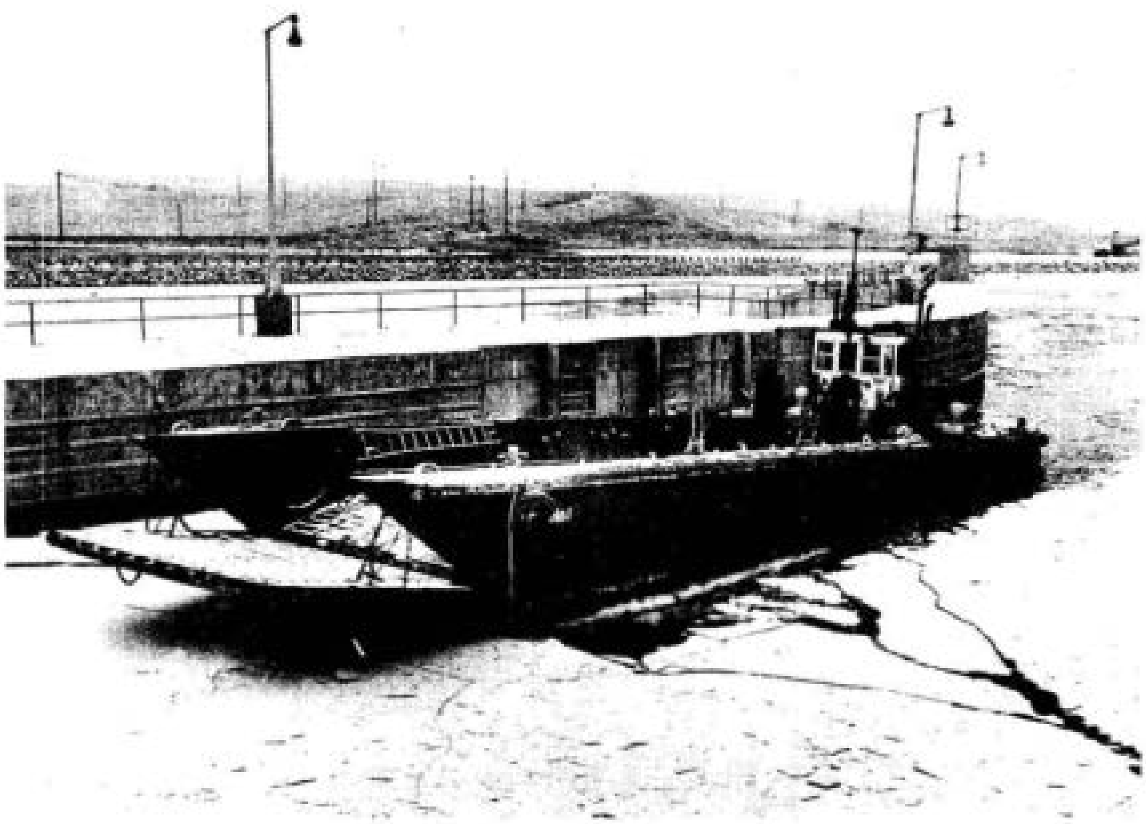
Washington, Idaho, and Montana wheat farmers around $500,000 the first year of operation.[14] In 1978, grain from Montana and the Dakotas was over 50 percent of the total barge shipments from the Lewiston-Clarkston ports and tonnage from the two ports almost doubled in the one year, 1977-78.[15]



BARGES MOVING DOWNSTREAM
LOWER MONUMENTAL LOCK

The opening of the inland passage to Lewiston has altered shipping patterns to the advantage of some and the detriment of others. Montana shippers have found the system to be an economical and a dependable way of moving grain west. On the other hand, rail centers in the area may decline. However, the unexpected increase in commerce meant construction of new grain elevators and expansion of the facilities of the ports, especially the newer ports in Whitman County. A new bridge, the Red Wolf Crossing, connected Clarkston to the Whitman County side of the Snake River, and the county has also contemplated an access road from Steptoe Canyon through Colton to the Wilma port.[16]

The importance of the inland passage extends beyond the region to international commerce in the east. Expanding grain markets beyond the Pacific Ocean herald an unprecedented prosperity for inland farmers. The rising costs of energy make fuel-efficient barge traffic a more acceptable alternative to truck transportation. The Walla Walla District, while cognizant of the adverse effects of slack water, can take considerable pride in the fruition of over a century of planning and construction.



BREAKING ICE AT ICE HARBOR DAM
JANUARY 1979

As in other engineering projects, the District's responsibility for the waterway system did not end with the final construction of Lower Granite Dam and Lock. The ongoing routine of operating and repairing the locks, keeping the river channel open, and maintaining the levee system are less glamorous than the dedication of a new dam. But the operation and maintenance work is essential to the efficient operation of the network of dams, locks, and river channels. Even this maintenance work can become of interest and concern to some groups. In 1977, the Corps proposed to remove boulders from a part of the Snake River using low-level dynamite charges. Although this stretch of the Snake River is designated a wild and scenic river, the Corps has the responsibility of facilitating navigation on this stretch from Johnson Bar downstream to Lewiston. The Hells Canyon Preservation Council and recreational and commercial boaters objected as much to the idea of disturbing the natural environment as they did to the plan to temporarily lower the streamflow during the dynamite operation. The Corps had dynamited rocks in the past to improve navigation, but public opinion indicated a preference for the navigation hazards over the channel improvement. Acceding to public sentiment, the Corps abandoned the project.[17]

Not all channel improvement projects have been controversial. One project undertaken in December 1976 exemplified good planning and cooperation among various agencies in removing about 9,000 yards of rock and debris from the downstream approach to the lock at Lower Monumental Dam. The Corps timed the blasting to coincide with a seasonal lull in the salmon migration. John McKern, a District fish and wildlife biologist, consulted with the National Marine Fisheries Service at Portland, the Washington State Department of Fisheries, and the U.S. Fish and Wildlife Service. With the concurrence of these agencies, the Corps successfully completed the operation.[18]

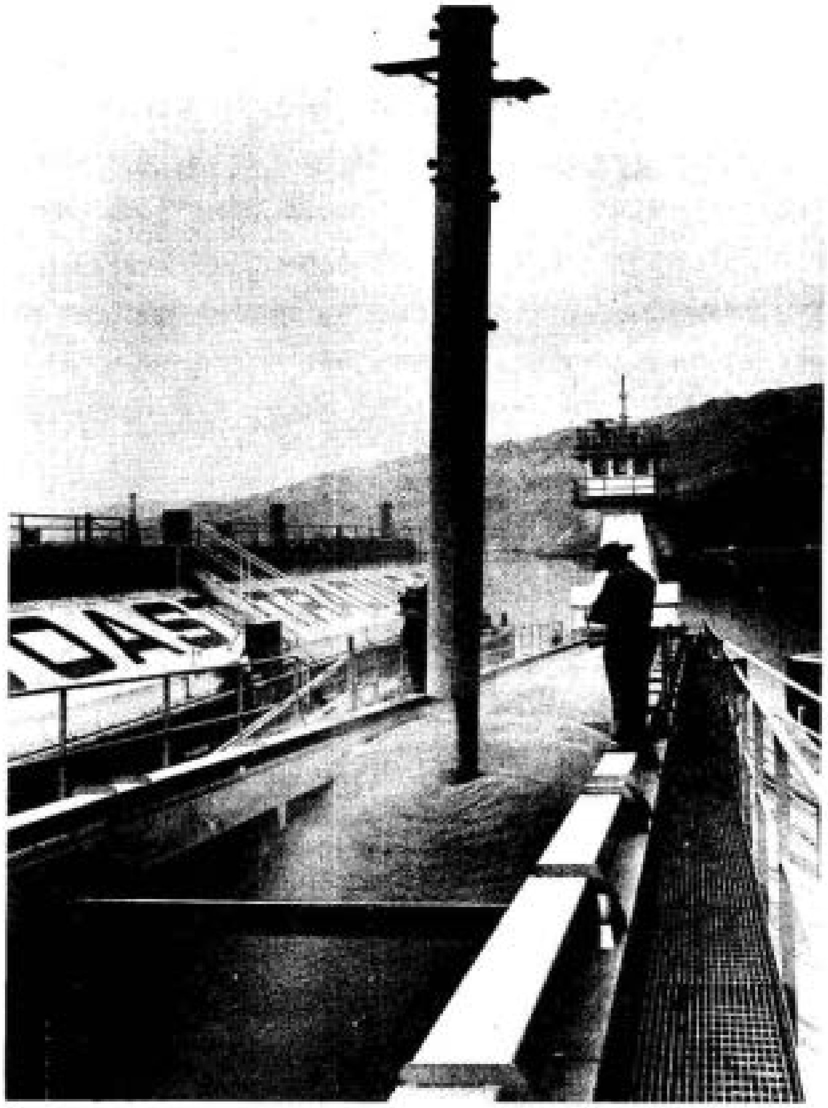
Dredging operations can also benefit wildlife. The Corps used the dredged material from the 1976 operation to build islands for goose habitat and nesting. Dredged material from other projects has been used to create goose nesting islands at the mouth of the Snake near the McNary game management area and above Lower Granite Dam.[19]

The Walla Walla District completed several lock repairs in the late 1970's and in one case used a novel approach in repairing navigation locks at Lower Monumental Dam.[20] In order to replace leaking water stops, new stops were constructed by drilling a vertical 6-inch hole along the monolith joints, and then filling the hole with a chemical grout. The grout was formulated to remain elastic throughout its service life. Other activities included repairing the drawbridge at Lower Granite Dam and performing additional repairs to the Lower Monumental Dam lock using a spray of fiberglass reinforced shotcrete.[21]

LOGS HEADING DOWNSTREAM
ICE HARBOR LOCK

The system of locks, which the Corps constructed and now maintains, accommodates all types of craft. Small boats, as well as large grain barges, generally move freely through the locks. The Corps imposed restrictions on number of lockages for recreational boats during the summer drought of 1977, and attempts were made to group smaller craft or include them with larger commercial boats in a lockage. Concern over limited water resources initiated serious questioning of the wisdom of spilling water to facilitate recreational excursions at the expense of power production. To many, the needs of tourist and recreational interests conflict with the more serious uses of water resources. For those who prefer traveling by boat, the advent of the dam and lock system promised the enjoyment of a vast stretch of changing scenery from the Columbia Gorge to the entrance of Hells Canyon. Boaters acknowledged their appreciation for the free lockages open to them at each dam and did not seriously object to restrictions placed on the lockages during the 1977 drought. The rationality of establishing a schedule of lockages for pleasure boats instead of operating lockages on demand and the public's apparent willingness to accept this change persuaded the District to propose a schedule on a permanent basis.

Two researchers from Washington State University (WSU) advanced the argument of limiting lockages of pleasure boats through the Snake River system in 1980. Their study estimated that costs for locking a 13-foot boat through Lower Granite was $450. Locking a boat from Lewiston to Portland would cause a loss of 77,000 kilowatt hours valued at $3,000. The study calculated that from 1975 to 1977, the total cost of lost hours of energy through these lockages was between $2.5 and $4.5 million. The researchers questioned whether the public was willing to continue subsidizing cruises and asked, "Is it time to relate the direct losses of this kind of activity to the size of Northwest energy bills?"[22] O. C. Dugger, the District's Public Affairs Officer, responded to the publication of the report by pointing out that the dams and lockages were designed for multiple use and that the study had oversimplified the issue. The Bonneville Power Administration agreed that the figures



FILLING BARGE WITH WHEAT
LOWER GRANITE LOCK

from the study were too high.[23] Despite these reservations with the WSU report, the District announced in January 1980 a proposal for year-round scheduling of pleasure craft through the locks. Flotillas organized for special events would be given separate passage. Furthermore, pleasure boats could pass through the locks with commercial traffic at the discretion of the lockmaster.[24] In explaining the plan, Colonel H. J. Thayer, District Engineer, indicated that the proposal would conserve water for hydroelectric production and that approximately 43 million gallons were used in each lockage. This amount could produce enough electricity for 6 month's use in an average household. The District accordingly scheduled hearings at Lewiston and Richland, February 20 and 21.[25] Preliminary response indicated approval of a plan to limit the number of lockages, but concern was expressed that the proposed schedules were too rigid and would not allow longer cruises.[26]

The District had faced opposition and stormy public meetings before, but it was surprised at the adverse public reaction to the lockages plan. Colonel Thayer noted that the District did not think that scheduling the locks would create any problem because "it was for motherhood and against sin. Save water, save energy, and still provide the opportunity for the recreation public to use the lock." However, when Major Don Holzwarth, the Deputy District Engineer, arrived at the Richland meeting, "they met him with a double-barrel shotgun and both barrels loaded."[27] Major Holzwarth explained to the emotional crowd that the plan would save 33 billion gallons of water each year, an amount which could generate 9 million kilowatt hours of electricity. The meeting participants vented their opposition to limited lockages and the encroachment on their right to lockages on demand. One opponent of the plan, after referring to the Corps' earlier "promises" that the dams would provide cheap electricity, hatcheries to insure good fishing, and locks for boaters, complained that "now they've doubled my electric rates, the Russians have caught all the fish, and you want to take my boating away." Another complaint frequently voiced was that boat owners were being asked to give up their recreation so some in Southern California could air condition a home or heat a swimming pool. Others agreed with the need for a scheduling plan, but they requested that more lockages be offered, especially on weekends. Holzwarth promised that he would transmit the "loud and clear message" to the District for its consideration.[28]

The audience at the Lewiston hearing responded in a similar manner, requesting that the number of lockages be increased, particularly during periods of higher traffic on weekends and holidays. One participant alleged that the restricted lockages could create a safety hazard by forcing novice boaters to return to Lewiston and Clarkston in the dark. Others contended that a reduction in the number of lockages could have an adverse effect on boat-related industries.[29] By the end of 1980, the issue was still unresolved, but water shortages may make the proposal for restricted lockages an unavoidable alternative.

The public's reaction to the proposed lockage schedule illustrates the profound impact the Lower Snake River Project had on the region. In addition to navigation, other benefits included the Lewiston levee system, recreational and wildlife areas, and the construction of a new interstate bridge from Lewiston to Clarkston. In preparing the Environmental Impact Statement for the Lower Granite project, the District foresaw the need for a new bridge to augment the existing drawbridge. In the Environmental Impact Statement, the District described the old bridge as inadequate to accommodate the expected volume of large boat traffic because filling the Lower Granite pool would lower the vertical clearance. Consequently, the drawbridge span would have to be raised frequently, disrupting vehicular traffic. These disruptions would create congestion on both sides of the river and adversely affect intercity services between Lewiston and Clarkston.[30]

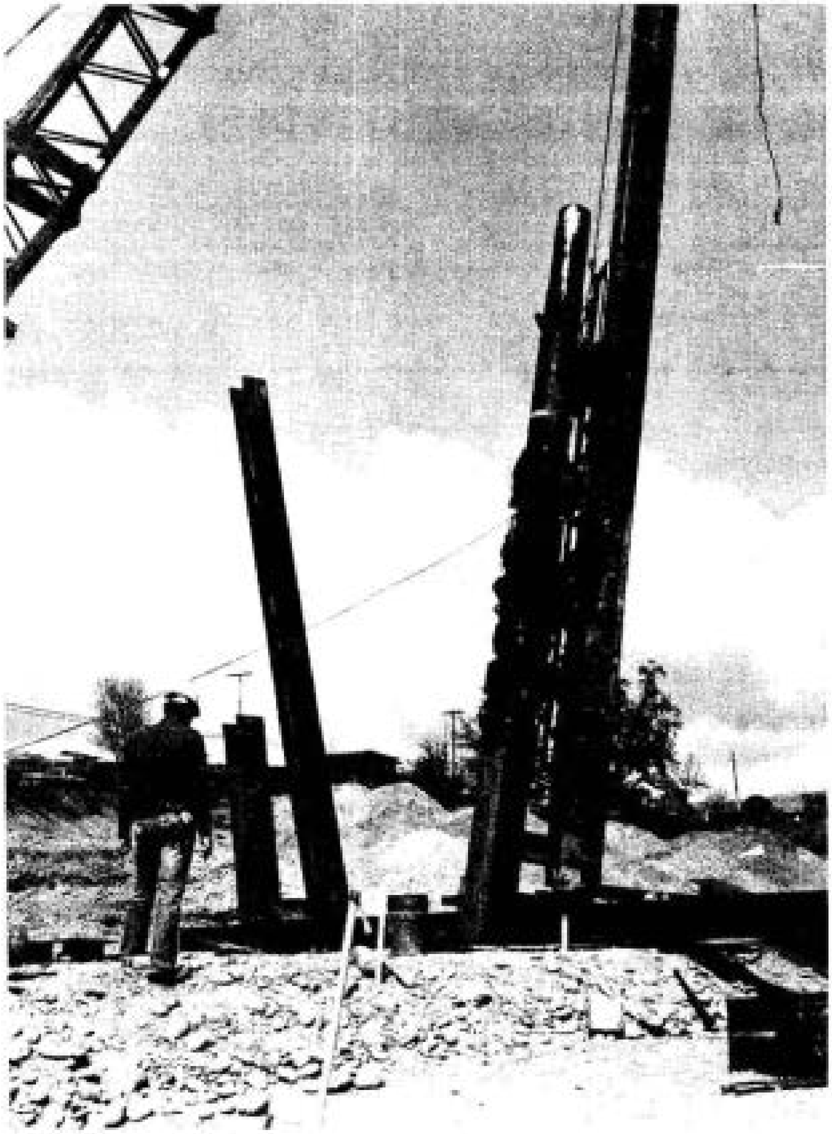
The new bridge project proved to be popular and was jointly sponsored by Senators Warren Magnuson and Frank Church. Some opposition was voiced in Washington, D.C., which reflected the stringent fiscal policies of the Office of Management and Budget and President Ford.[31]

In the fall of 1976, Congress approved construction of the bridge, placing a $21 million ceiling on the project. Although this action signified that the project could be constructed, authorization to release the funds was deferred.[32] Nonetheless, the states of Washington and Idaho began the complicated process of selecting a site acceptable to both parties. Four committees representing the two towns of Lewiston and Clarkston, and the two counties, Nez Perce and Asotin, reviewed alternative sites, attempting to find a satisfactory location as soon as possible because of rising costs due to inflation.[33]

The four committees edged closer to an agreement in July 1977; then a complication emerged in August when the Lewiston-Clarkston Transportation Steering Committee revealed that a separate Environmental Impact Statement was needed for the bridge in order to protect the project against possible lawsuits from owners of condemned property.[34]

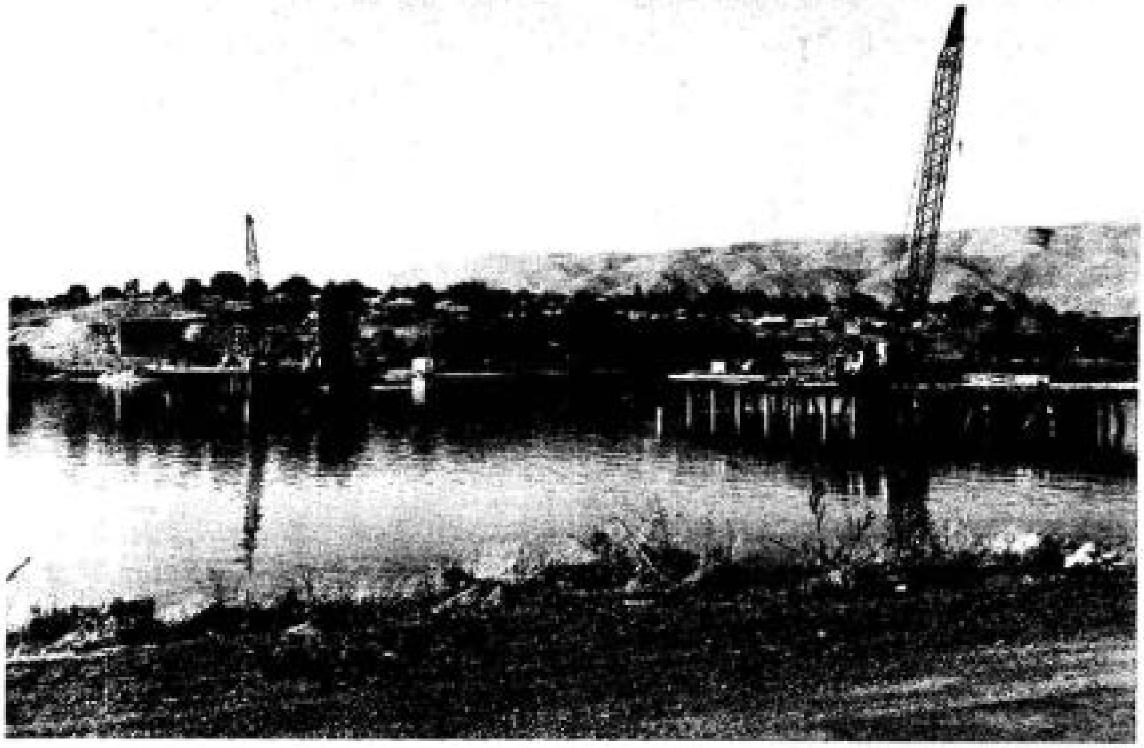
The unanimity on selecting a site attained in the summer of 1977 began evaporating as Asotin County Commissioners raised complaints about the high costs of obtaining rights-of-way on the Washington side.[35] The District, which had planned to issue drilling contracts in November, announced that all work would be halted until the parties agreed where to build the bridge and who would own and maintain it. Tom Jackson, of the Greater Lewiston Chamber of Commerce, succinctly summarized the situation, "We can spend the $21 million playing games and shooting the bull, or we can spend the money building a bridge." Ferd Swenson, the District Project Coordinator for Lower Granite, urged the Chambers of Commerce of each city to establish a legal local entity which would have authority to levy taxes, purchase rights-of-way, assume bridge ownership, and maintain the structure. The Lewiston-Clarkston Urban Transportation Study Committee, Swenson explained, could perform important preliminary work, but it did not constitute a legal entity.[36]

Reaction was immediate. Lewiston and Clarkston agreed to jointly assume ownership, and the District announced that it would proceed with the bridge design studies. However, no agreement on the specific site was reached. Swenson advised the cities not to delay matters, but to inform the District as soon as possible with a letter of intent on joint ownership.[37] Controversy over the site continued until January 1978, when the two cities finally agreed upon the Bryden-Gamet location. Minutes after he was informed of the decision, Colonel Allaire renewed the call for bids for the exploratory drilling.[38]



LEWISTON-CLARKSTON INTERSTATE BRIDGE UNDER CONSTRUCTION
1980

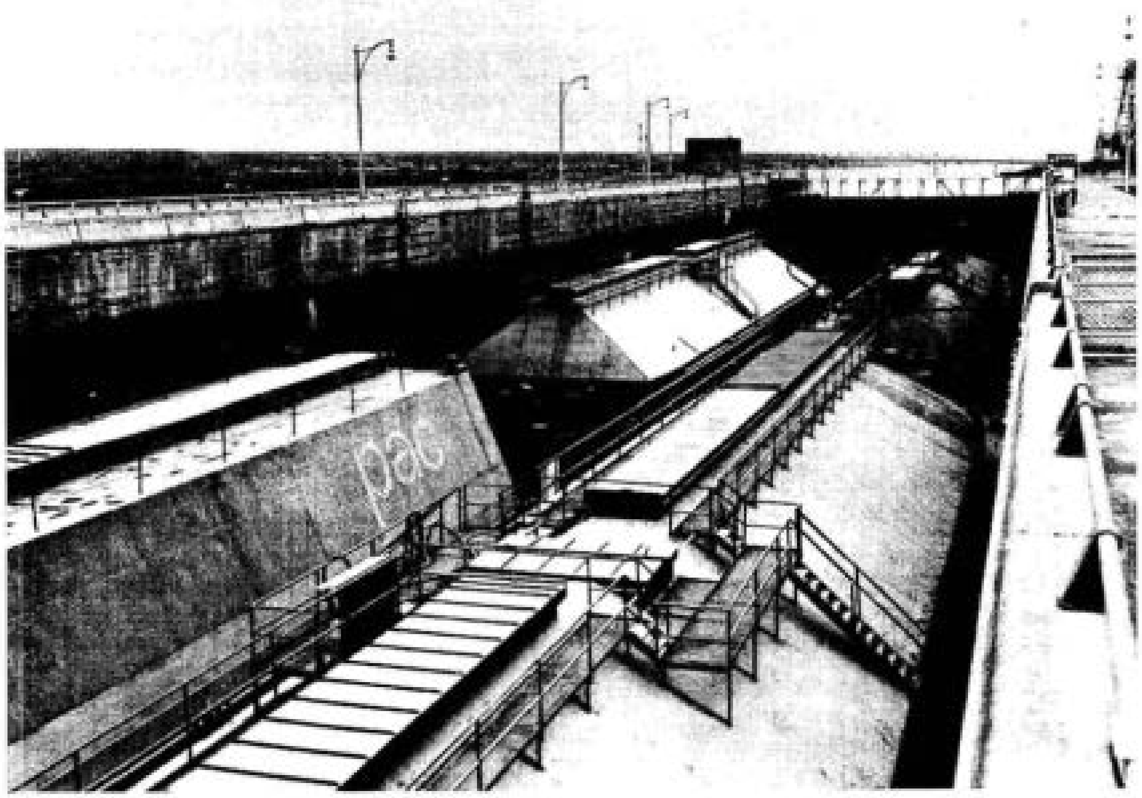
The District held public meetings in Lewiston in July to present the artist's renderings of the bridge and approaches to community residents. At a subsequent meeting in August, Washington State requested an overpass and ramps, and Idaho asked for another ramp. Swenson pointed out that constructing the overpass might exceed the $21 million ceiling, but the overpass and ramp might be possible if the appropriation could be stretched far enough and if the Corps would agree that additional features were part of the original authority for the



LEWISTON-CLARKSTON INTERSTATE BRIDGE UNDER CONSTRUCTION
1980

bridge.[39] At a September meeting, Colonel Allaire pleaded with all parties to quickly come to an agreement and emphasized that although the District was attempting to accommodate whatever reasonable requests were made, time was critical. "It's essential to get going so escalation won't eat up the possibilities. I'm pleading with you. Have an agreement signed by mid-October."[40]

Plans for the bridge progressed with the OCE approval of the design memorandum on January 10, 1979, and the filing of the supplemental Environmental Impact Statement with the Environmental Protection Agency on May 11, 1979. In June 1979, the House Appropriations Subcommittee approved $8.5 million to begin construction. The construction plans and specifications and the formal sponsorship agreement between Lewiston and Clarkston were completed in August. The next month, the Coast Guard granted a construction permit, and in October the sponsors obtained the rights-of-way for the Federal Government, and the District advertised bids. In January 1980, Senator Church proposed legislation to increase the initial $21 million appropriation by $1.4 million to cover the costs of constructing a ramp on the Idaho side.[41]



GRAIN-FILLED BARGES ON THE WAY DOWNSTREAM
McNARY LOCK

The way cleared of all major obstacles, the contract signing ceremony was held at Lewiston City Hall in February after a mildly serious squabble about where the event should be held--in Washington, Idaho, or in the middle of the Snake River--had been judiciously settled by a flip of a coin.[42] As the dignitaries attended the ceremonies, the San Francisco engineering firm of Guy F. Atkinson began preliminary work on the site. Among the questions still remaining to be resolved were additional funds for the Idaho ramps and an appropriate name for the bridge. At the February gathering, the names of Foresight, Friendship, and Good Neighbor were suggested, indicating a successful period of cooperation between the two states and a new era of easier communications between the two cities and the two states, which the inland passage had more intimately tied together.[43]

The Walla Walla District, through its involvement in navigation projects, has made a significant impact on the movement of goods and people along the region's waterways. As the Northwest continues to search for energy efficient methods of transporting products, and as cities seek expertise from the Corps in activities related to navigation, the partnership between the Army Engineers and the residents of the region will continue to grow.

NOTES

1. Lewiston Morning Tribune, 16 June 1975.
2. Quoted in Lewiston Morning Tribune, 10 August 1980.
3. Final Environmental Impact Statement: Lower Granite (Walla Walla: U.S. Army Corps of Engineers, Walla Walla District, 1975). For a background summary on navigation on the Columbia and Snake Rivers and projections made in 1965 to extend the waterway system on both rivers see paper by Howard A. Preston, Chief of Planning Branch, Walla Walla District, given at the Fifth Biennial Hydraulic Conference, 9 November 1965, Washington State University, Pullman, in Public Affairs Office Information Reference Paper Files, "Navigation - History," 401-07. (Hereafter Public Affairs Office Information Reference Paper Files cited as PAO files.)
4. Walla Walla District, "Summary of Accumulated Historical Material," 31 March 1977, p. 11.
5. Lewiston Morning Tribune, 16 June 1975.
6. Pullman Herald, 18 March 1976.
7. Washington Farmer-Stockman, 19 January 1978.
8. Lewiston Morning Tribune, 10 August 1980.
9. Lewiston Morning Tribune, 11 August 1980.
10. Lewiston Morning Tribune, 13 August 1980.
11. U.S. Army Corps of Engineers, "Report of Commerce for Willamette, Columbia, and Snake Rivers, Calendar Year 1976" (Portland, Oreg.: U.S. Army Corps of Engineers, North Pacific Division).
12. Lewiston Morning Tribune, 8 April 1979.
13. Walla Walla District Intercom, 77-4, 2 February 1977.
14. Boise Idaho Statesman, 2 October 1976.
15. Lewiston Morning Tribune, 21 January 1979.
16. Pullman Herald, 18 March 1976.
17. Lewiston Morning Tribune, 15 January 1978.
18. Lewiston Morning Tribune, 25 December 1976.
19. Tri-City Herald, 4 October 1977; interview with Jim Wolcott, Clarkston Lower Snake Resources Management Office, Clarkston, 14 November 1980.

20. Lewiston Morning Tribune, 6 July 1977.

21. Lewiston Morning Tribune, 6 March 1980; Spokane Spokesman-Review, 16 March 1978.

22. Walla Walla Union Bulletin, 9 August 1979.

23. Pendleton East Oregonian, 13 August 1979. C. B. Millham, one of the authors of the WSU study, defended the computations in a letter to the Lewiston Morning Tribune, 4 September 1979.

24. Pomeroy East Washingtonian, 14 February 1980.

25. Interview with Colonel H. J. Thayer, District Engineer, Walla Walla, 18 November 1980. Also see his letter to the Pendleton East Oregonian, 13 February 1980, in which he further explains the rationality for curtailing the number of lockages.

26. Lewiston Morning Tribune, 13 February 1980; Pomeroy East Washingtonian, 14 February 1980.

27. Thayer interview, 18 November 1980.

28. Tri-City Herald, 21 February 1980.

29. Lewiston Morning Tribune, 22 February 1980.

30. Final Environmental Impact Statement: Lower Granite, 1975, pp. 4-41 through 4-42.

31. Lewiston Morning Tribune, 22 March 1976.

32. Lewiston Morning Tribune, 2 October 1976.

33. Lewiston Morning Tribune, 4 June 1977.

34. Lewiston Morning Tribune, 20 August 1977. The environmental impact statement for the bridge was published in January 1979. See Lower Granite Project Final Environmental Impact Statement Concerning the Snake River Interstate Bridge, Lewiston, Idaho-Clarkston, Washington: A Draft Supplement Statement (Walla Walla: U.S. Army Corps of Engineers, Walla Walla District, 1979).

35. Lewiston Morning Tribune, 5 November 1977.

36. Lewiston Morning Tribune, 16 November 1977.

37. Lewiston Morning Tribune, 30 November 1977.

38. Walla Walla District Intercom, 78-1, 18 January 1978.

39. Walla Walla District, "Summary of Accumulated Historical Material," 31 March 1979, pp. 4-5; Lewiston Morning Tribune, 31 August 1978.

40. Lewiston Morning Tribune, 28 September 1978.

41. "Summary of Accumulated Historical Material," 31 March 1980, p. 5; Lewiston Morning Tribune, 1 January 1980.

42. Lewiston Morning Tribune, 18 January 1980.

43. Lewiston Morning Tribune, 6 February 1980. The estimated date of completion is September 1982. See "Summary of Accumulated Historical Material," 31 March 1980, p. 5.

CHAPTER 8

CULTURAL RESOURCES

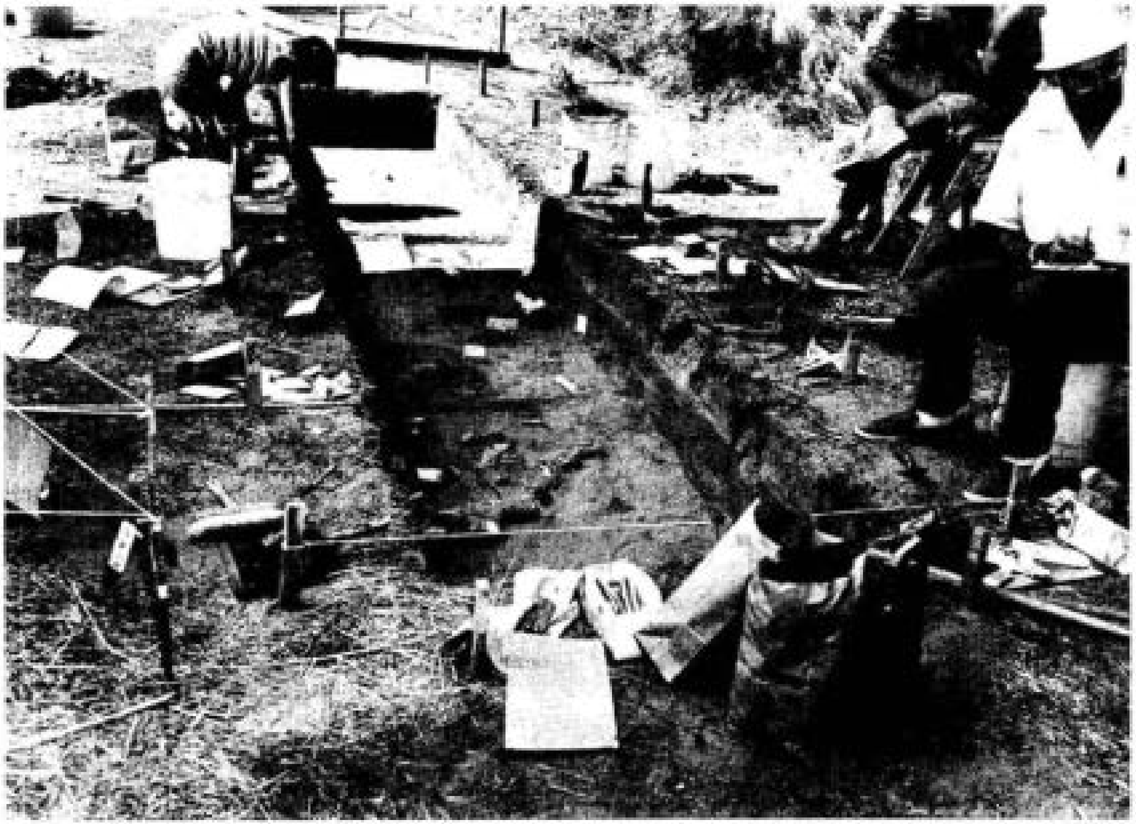
THIS PAGE LEFT INTENTIONALLY BLANK

CHAPTER 8

CULTURAL RESOURCES

"Man was created...on the 23rd of October, 4004 B.C. at nine o'clock in the morning," asserted Dr. John Lightfoot, a 17th-century Vice Chancellor of Cambridge.[1]

With the discovery of the 10,000-year-old Marmes Man in the United States and evidence of civilizations many thousands of years older in other parts of the world, Lightfoot's declaration is today recognized as an absurdity. But it was a serious observation in its day, and it has only been through the systematic study of the past that we have gradually learned of the history of our predecessors. Even as late as the 1930's, little was being done in this country to scientifically examine our prehistory. Most Americans thought of archaeology as something that was done in Egypt, or perhaps New Mexico. Residents of Idaho, Iowa, and Indiana did not think the remains of earlier settlements upon which their homes were built were significant. Builders of highways and developers of cities systematically destroyed archaeological sites, believing them to be of little value. Archaeologists were not guiltless either. There were few trained archaeologists in the country, and most of those who were trained believed their time was more wisely spent exploring pueblos in the Southwest than uncovering the remains of villages close to their own homes. Today archaeologists are well aware of the knowledge to be gained by studying sites throughout the entire country. Salvage archaeology is now an important part of almost all major dam, highway, powerline, or development projects.[2]



WALLA WALLA DISTRICT-SPONSORED EXCAVATION AT STRAWBERRY ISLAND
JULY 1978

The Corps of Engineers' duties in power production, navigation, irrigation, flood control, recreation, and fish and wildlife mitigation are well known. Its responsibility for surveying and protecting the cultural environment, while as important as the conservation of the natural environment, is less understood. Congress and the President delegated to the Corps specific responsibilities for the identification, evaluation, protection, preservation, and mitigation of losses of historical and archaeological resources associated with Federal water resource developments. One of the most important of these, Public Law 93-291, passed in 1974, required each district to staff a position of coordinator of archaeological programs either by hiring an archaeologist or assigning an engineer, landscape architect, or other staff member to that task. By law, the Corps can spend up to one percent of a project's total cost on cultural resource investigations.[3]

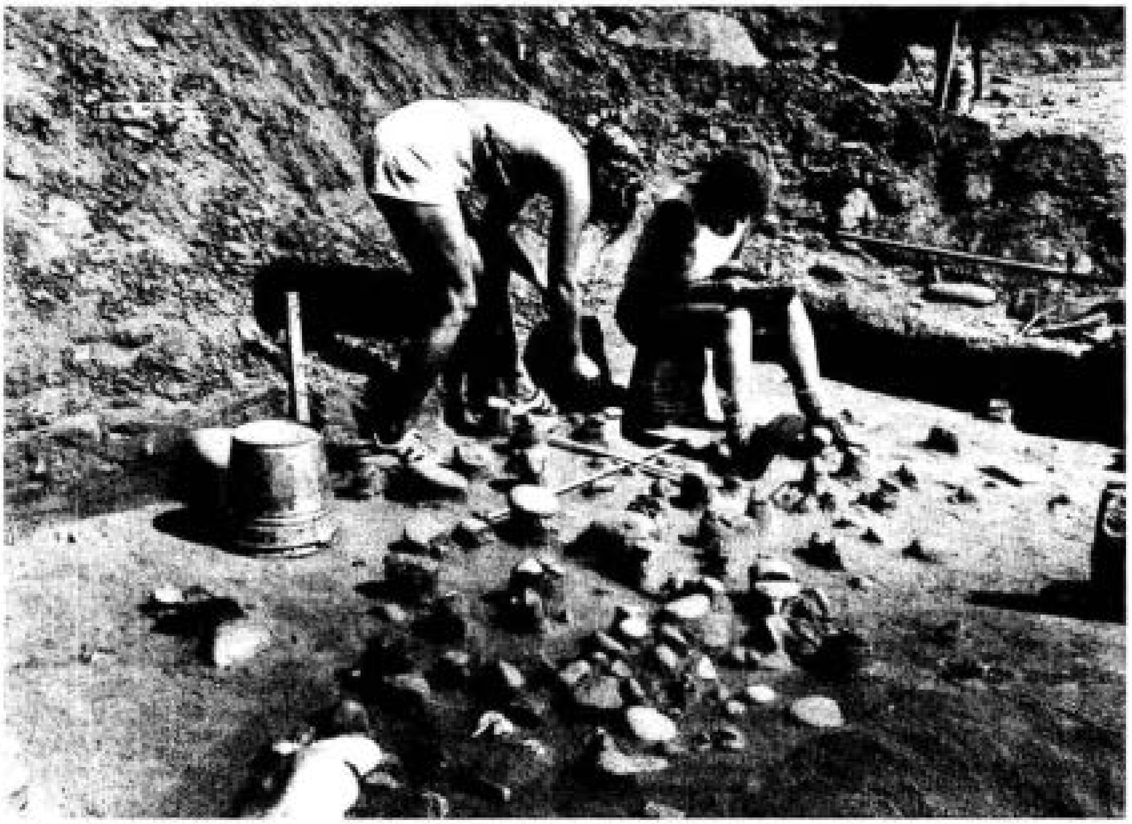
ARCHAEOLOGICAL WORK UNDERWAY AT HATWAY CREEK, 1978

The Walla Walla District was one of the first in the Corps to develop an archaeological program. Even in the early 1960's, the District relocated the graves of settlers in the path of construction. With the discovery of the Marmes site in 1964 and its evidence of human life over 10,000 years old, the District also became aware of the need to relocate Indian graves and simultaneously conduct archaeological studies of artifacts and remains. LeRoy Allen coordinated all settler and Indian burials for the District in this period, and served as a consultant for the other districts within the North Pacific Division. Allen was officially named the archaeological coordinator for Walla Walla when Public Law 93-291 passed, and other districts assigned their own coordinators. Walla Walla's efforts to survey and preserve cultural resources have been widely praised. "The Walla Walla District has been the leader among Federal agencies in the Pacific Northwest in executing its responsibilities toward cultural resources," wrote Harvey Rice of the Washington Archaeological Research Center in 1978, and others have echoed his sentiments.[4]

Cultural resource professionals have occasionally, though not frequently, been critical of the District for not doing enough. Most disapproval has been leveled at the lack of coordination between the District's permit staff and the archaeological coordinator, and a consequent lack of consistency within the District in responding to certain legal requirements.[5] Furthermore, the lack of uniformity within the districts of the North Pacific Division concerning their cultural resource responsibilities has also been scrutinized. At a meeting held in September 1978, Jeanne Welch, Deputy State Historic Preservation Officer for Washington, expressed concern about the need for central coordination within the Division. Welch requested that the Corps adhere to a succinct definition of a research design approach, emphasized that the Corps must ensure that contractors meet professional qualifications, and maintained that proper procedures were not always followed regarding National Register of Historic Places nominations. Corps officials at the meeting sympathized with many of these concerns but stressed the point that the Corps "was fairly new to the field of cultural resources in terms of having more direct responsibilities." Colonel Robert Crosby, Deputy Division Engineer, explained that although he appreciated the difficulties encountered in having to deal with separate districts, it was the Corps' policy to provide District Engineers with as much flexibility as possible in determining ways to comply with Federal laws.[6] Two weeks after the meeting, Crosby called a work session of representatives from each district to develop guidelines that would provide for more consistency in cultural resource investigations and reporting requirements throughout the Division. This action was indicative of the Corps' willingness to change its policies to meet its growing obligations.[7]

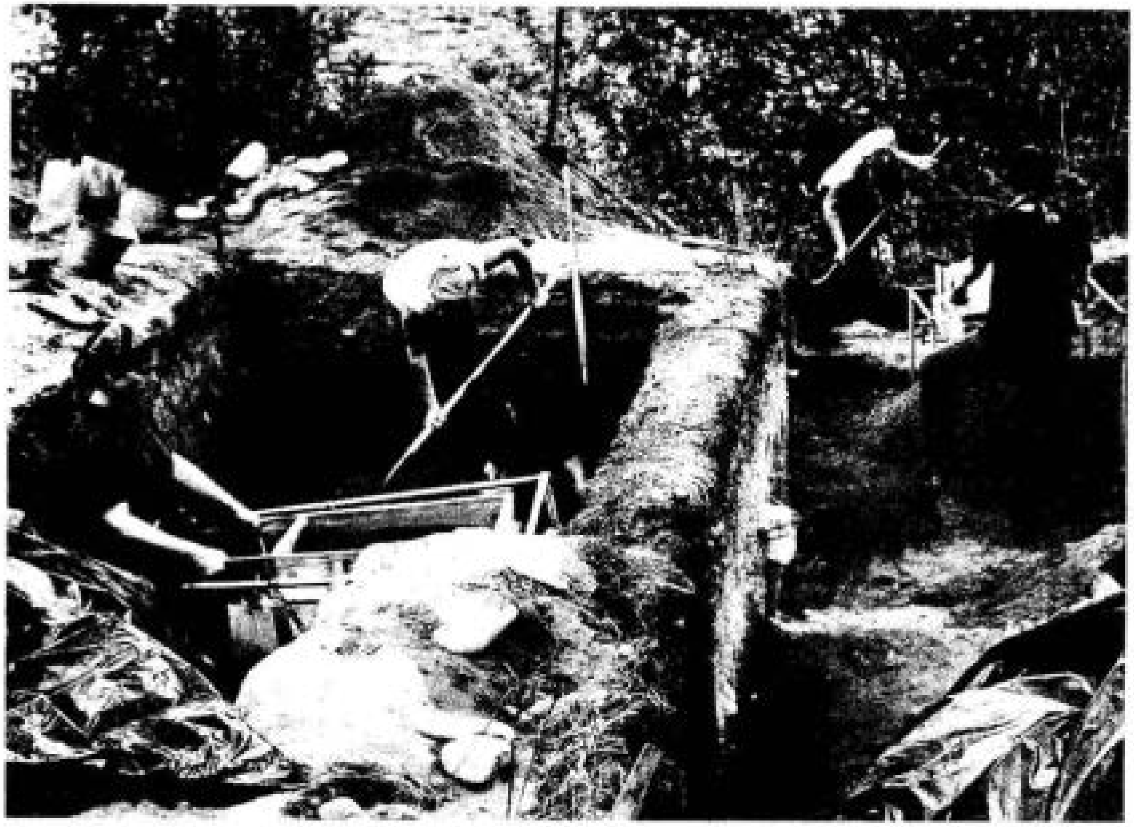
As more accountability was placed upon the Corps for cultural resource investigations during the 1970's, the agency listened to criticisms, adopted new policies, and adapted old ones to ensure the protection of resources within its jurisdiction. For example, in an effort to adequately store objects uncovered, an agreement was made with the

Washington State Office of Archaeology and Historic Preservation for the storage and curation of materials recovered at Corps' sites within the state.[8]



HATWAY CREEK, 1977

The proper management of cultural resources will require continued attention in coming years. Already, much has been lost. "The law was too late for good archaeology and for good historical recording," observed LeRoy Allen. "Many things were destroyed." Each district will have to find innovative solutions to the problems caused by cultural resource management. As Allen stated, a cultural resource "is just a different type resource. If we hit...a vein of gold you can bet we'd do everything in the world to excavate that vein of gold... So the vein of gold becomes the cultural resource to some people." Future generations will be thankful that we were not interested only in gold. The preservation of the nation's heritage depends upon sound cultural resource management today.[9]



EXCAVATIONS AT DWORSHAK PROJECT

The Walla Walla District has developed a solid foundation in this area. "We're trying to re-create man through our archaeological work and re-create the Indian culture because there's no written history," explained Allen in 1978.[10] Archaeological surveys were conducted in virtually every part of the District in the late 1970's. University of Idaho archaeologists were awarded a contract to study artifacts removed from the Dworshak project area; a contract was granted to fund archaeological work at a 3,000-year-old site near Lucky Peak Dam; studies were done at the damsite on Willow Creek, Oregon, at the McCall, Hagerman, and Lyons Ferry Fish Hatcheries, and Hells Gate State Recreation area in Idaho, as well as at numerous other locations in the District.[11]

CATALOGING ARTIFACTS FROM STRAWBERRY ISLAND
AT LABORATORY TRAILER AT HOOD PARK

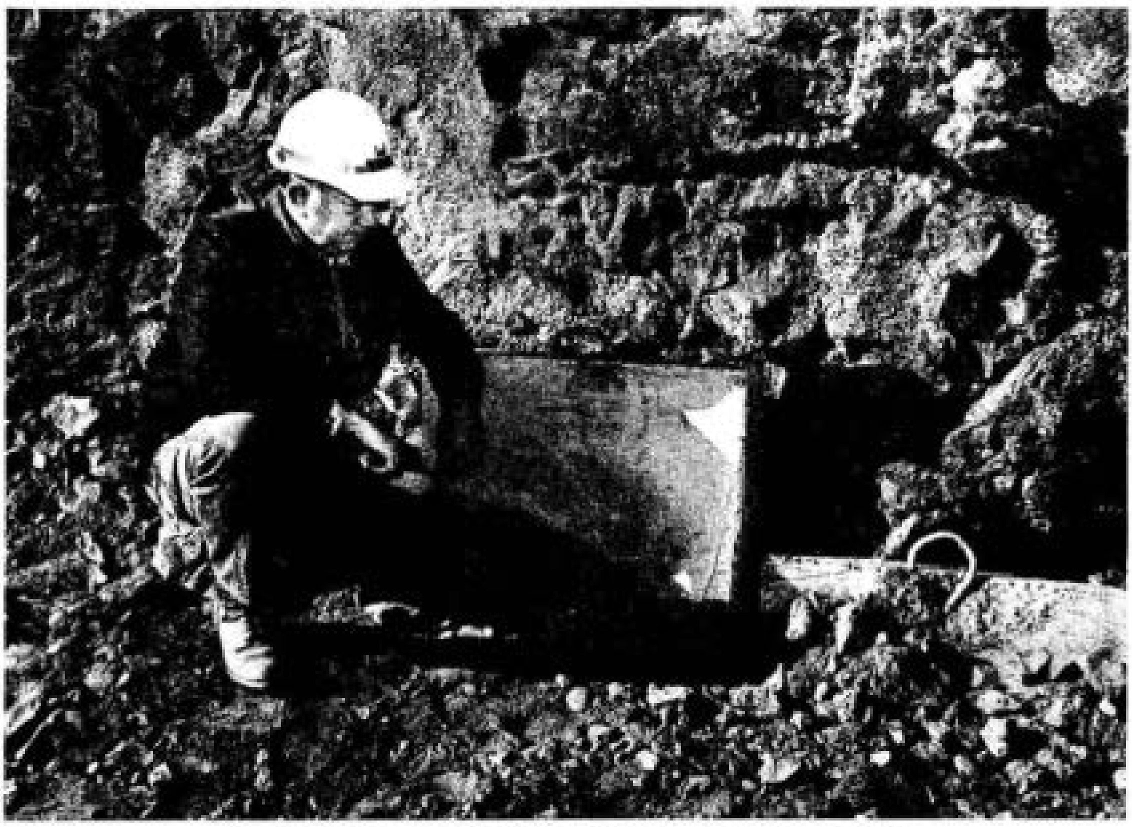
Erosion of Strawberry Island by fluctuating reservoir levels and wave action created by barge traffic, as well as problems caused by vandalism, prompted the Corps to initiate archaeological research. During the first two seasons at Strawberry, archaeologists under the supervision of the Washington Archaeological Research Center, excavated four pit-houses in most immediate danger of destruction. The site quickly became important as one of the largest areas suitable for study of the Columbia Plateau. "The white man's coming, agricultural development, dams, and vandalism have destroyed many sites," explained project director Gregg Cleveland. Excavations eventually found more than 130 pit-house homesites comprising a classic winter village over 500 years old.[12]

OPEN TRENCH EXCAVATION WORK AREA AT STRAWBERRY ISLAND
PROTECTED FROM SUN BY PARACHUTE

The Strawberry Island site is not old by eastern Washington standards, where time is often measured against the Marmes example. But the island is important because it fills a gap in a poorly understood period of prehistory. Although archaeologists discovered bison and antelope bones, the residents of the island apparently depended on fish and plants for their livelihood. These were gathered in summer and stored for winter use. Randall Schalk, who became project director after Cleveland, described the importance of the find: "It is not unreasonable to think that the changing man/land relationships on the lower Snake River over the past centuries will not only provide valuable insights into some of the same processes occurring in the modern world, but also enrich our knowledge of local history. Many of the most crucial problems facing our own society today are not new. These people apparently faced population growth accompanied by dwindling resources.

We'd like to know how they organized their community--such things as division of labor, technology, and social levels--and how these may have changed to comply with a changing environment."[13]

Two other islands in the District have the potential to become as significant as Strawberry, but funds have not been allocated to them for activities other than inventory testing. Bateman Island, at the confluence of the Yakima River, has numerous house-pits and burial remains covered by years of flood siltation. Steps are being taken to block the causeway leading to the island to prevent vehicles from destroying the sites. Martindale Island, above Strawberry, also has house-pits and possibly burial sites.



LeROY ALLEN AT THE SEALING OF BURR CAVE
OCTOBER, 1978

One important achaeological activity in the District in the late 1970's occurred with the sealing of Burr Cave. At an estimated cost of approximately $5,000, large concrete slabs 8 feet long, 2-1/2 feet wide, and 6 inches thick were set into the cave entrance and back-filled to preserve the area from vandals. Prior to the closure, evidence had been found to indicate that humans had been inhabiting the cave well over 9,000 years ago, and it is possible the site will prove to be as old and as significant as Marmes. Until the time comes when archaeologists are able to carefully examine the location, the Corps has insured its protection.[14]

Our ability to learn from the past is the primary reason for the investment of time and money at places such as Strawberry, Bateman, and Martindale Islands, and Burr Cave. But often, archaeologists are frustrated in their attempts to record and preserve the past because of the damage done by pothunters, grave robbers, and vandals. "I can go down any weekend and show you the fresh marks of the pothunter," lamented Allen in 1980. Vandals destroy historical sites in their search for bottles, ceramics, and glassware. At prehistoric sites, their amateurish uncovering of Indian artifacts often eliminates the possibility of scientific study.[15] But by far the most serious vandal problem is at burial sites. In the mid-1970's, antique Indian skulls were reportedly bringing $25 in the underground market at Lewiston and were then resold for higher prices in California. Consequently, grave robbers disturbed many Nez Perce burial grounds seeking ways to cash in on this and other artifact markets. "They don't let our Indians rest in peace whether they are dead or alive," protested tribal chairman Richard Halfmoon. "Many [graves] have been dug up by curio seekers along the Snake and Clearwater Rivers. We know who has Chief Joseph's skull and uses it for an ashtray."[16] The Corps feels a moral obligation to act quickly when graves are vandalized. According to some Indian beliefs, the spirit of the disturbed body wanders until the body is buried again. The District makes every effort to have a trained archaeologist visit a disrupted grave as soon as a call comes in to ensure the proper reinterment of the body and evaluation of the historical or prehistorical value of the site.[17]

A vandalism problem arose near Umatilla, Oregon, on property also under the jurisdiction of the Corps in the late 1970's. An archaeological team was dispatched to determine how much damage vandals had done. Pothunters had been active in the area for years, even tunneling under the foundations of buildings in their search for artifacts. The Corps razed the buildings and posted the area, but pothunting persisted. In the late 1970's, fresh screening piles indicated that vandals were working at night to evade Corps' patrols. As a result, the Corps installed a woven-wire fence around an 800-acre site to protect it from further destruction.[18]

LeROY ALLEN EXAMINES AN ILLEGAL
POTHUNTER'S EXCAVATION ON STRAWBERRY ISLAND

Even flooded areas are not immune from artifact seekers, as Allen recognized. "Lower Granite, Dworshak, and Lucky Peak are projects in...Idaho at which lands were obtained by fee acquisition. The inundation of portions of these lands does not eliminate the responsibility by the Corps...to the submerged antiquities. Incidents of pothunters employing underwater techniques in search of artifacts are a matter of record in the field of archaeology and Corps personnel will be alerted to this type of activity." While the District watches for underwater pothunters it has not, to date, experienced the difficulties in this area that some districts have.[19]

"If one person keeps this stuff to himself, then when he dies it will be lost forever," observed a naturalist who stumbled across an Indian campground in Oregon and reported it to authorities. "I'd be satisfied with a picture of it, knowing it was safe in a museum somewhere."[20] Unfortunately, not all people are as selfless and as long as some insist on seeking "treasures" at the expense of the larger public interest, the responsibility of the Corps and other Federal agencies for the adequate protection of sites from pothunters will continue to grow.

Corps employees are instructed in spotting the identification of evidence of pothunting activities and preventative training programs are undertaken at the projects. The best prevention, however, is to see that important archaeological sites are dug by trained scientists before pothunters can reach them. Because of the District's aggresssive archaeological program, this has often been done and the result has been a reduction in the amount of vandalism in recent years.[21]

Another protective task of the Corps is the relocation of graves of both Indians and whites that will be inundated by water projects. As has been seen, it was actually this relocation responsibility which led to the District's more comprehensive archaeological program. The largest grave reinterment undertaken by the Walla Walla District in the late 1970's occurred when 300 Nez Perce graves were removed upon the completion of the Lower Granite project. "There is much sadness in moving our ancestors," stated Nez Perce spokesman, Wilfred Scott, in 1979 as the last 100 graves were reinterred in the Nez Perce National Historical Park. But as Corps contract archaeologist, Roderick Sprague, explained, "We've tried to do what was right and to learn what we could from this project."[22] Reinterment ceremonies have been seriously undertaken by the District in an effort to demonstrate to whites and Indians alike that the agency is sympathetic to their uneasiness about seeing their ancestors' remains removed. The District was often praised for the dignified way in which it handled burials.[23]

NEZ PERCE BURIAL AT SPALDING

The District conducts no in-house archaeology. All work is contracted to area universities. Because of the nature of the District and its settlement pattern, almost all impacted cultural sites have archaeological rather than historical significance. Therefore, the District does not contract directly with historians, but many historians have served as subcontractors and have provided additional insights into the cultural legacy of the lands under the jurisdiction of the Corps.[24]

EXCAVATION AT HATWAY CREEK
AUGUST 1977

The District's concern for the culture of the region does not end with surveys and studies. In 1976, the Corps dredged a basin at Hells Gate State Park Marina in Lewiston and developed a permanent moorage for the Steamboat "Jean" which the Idaho State Historical

Society plans to operate as a maritime museum in the future.[25] The Corps' construction of interpretive centers, including the development of archaeological displays contracted to the University of Idaho at Dworshak, is another example of the District's involvement with preserving the cultural environment.

Under the guidance of a concerned coordinator and with the full support of the District, Walla Walla has made steady progress in complying with its cultural resource responsibilities. As Allen explained, "Hopefully, it won't be too long before we'll have it pretty well corralled. The archaeology in the Walla Walla District should be pretty well done."[26]

The District's cultural responsibilities will continue as new projects are started and as it protects those sites within its boundaries that have already been discovered. But Walla Walla is in an admirable position of having already fulfilled many of its archaeological requirements.

NOTES

1. Quoted in Charles Berlitz, Mysteries From Forgotten Worlds (Garden City, N.Y.: Doubleday & Co., 1972), p. 7.
2. For an introduction to the history of salvage archaeology, see Robert Silverberg, Men Against Time: Salvage Archaeology in the United States (New York: Macmillan Co., 1967).
3. Interview with LeRoy Allen, Walla Walla, 18 November 1980.
4. Rice to Allen, 22 November 1978, Walla Walla District Engineering Division Files, "Archaeology," 1501-07 (Engineering Division Files hereafter cited as EDF). Also see Roderick Sprague, University Of Idaho, to Colonel C. J. Allaire, 25 June 1979, and Colonel Robert Crosby, Acting Division Engineer, to Colonel Allaire, 21 June 1978, EDF, "Archaeology," 1501-07. Background on the District's involvement in burials and archaeology comes from the Allen interview.
5. See Ruthann Knudson, University of Idaho, to Allen, 16 November 1978, and Sprague to Colonel Allaire, 27 December 1978, EDF, "Archaeology," 1501-07.
6. See Owen Mason, Environmental Resources Branch, "Memorandum for Record," 25 September 1978, EDF, "Archaeology," 1501-07, for minutes of the 5 September meeting between representatives of the Corps and the Washington State Office of Archaeology and Historic Preservation.
7. Colonel Crosby to District Engineers, 18 September 1978, EDF, "Archaeology," 1501-07.
8. Ibid. Also see Colonel Crosby to Portland, Seattle, and Walla Walla District Engineers, 8 January 1980, EDF, "Archaeology," Book 2, 1501-07. Further information comes from the Allen interview, 18 November 1980.
9. Allen interview, 18 November 1980.
10. "Archaeologists are Searching for a Lost Culture in the Northwest," Engineer Update, September 1978, p. 4.
11. Moscow Daily Idahonian, 18 December 1979; Boise Idaho Statesman, 18 July 1977; Walla Walla District News Release, 18 October 1979; District Historical Summaries, 1977, 1978, 1979, 1980.

12. Tri-City Herald, 11 July 1977.

13. Walla Walla District Intercom, 2 August 1978, p. 2. For more on the Strawberry Island dig, see Walla Walla Union Bulletin, 30 July 1978; Tri-City Herald, 11 July 1976; Burbank News, 28 September 1977; Senator Henry Jackson to Wells, 30 November 1978, and NPD to Senator Jackson, 11 December 1978, EDF, "Archaeology," 1501-07.

14. Allen interview, 18 November 1980.

15. Ibid.

16. Frank King, "Final Resting Place of the Nez Perce," Spokane Spokesman-Review Sunday Magazine, 5 January 1975, p. 6.

17. Allen interview, 18 November 1980.

18. Pendleton East Oregonian, 21 May 1979.

19. Allen to Sprague, 27 January 1975, EDF, "Dworshak Archaeology," 1501-07; Allen interview, 18 November 1980.

20. Walla Walla Union Bulletin, 18 March 1977.

21. Allen interview, 18 November 1980; King, "Final Resting Place of the Nez Perce," Spokane Spokesman-Review Sunday Magazine, 5 January 1975, p. 6.

22. Lewiston Morning Tribune, 13 May 1979.

23. On 19 April 1977, W. E. Sivley, Acting District Engineer, wrote to the Division Engineer about a reinterment: "Because of the favorable impression Division interest would bring to the ceremony, you and members of your staff are encouraged to attend. If convenient for you, it would be appropriate for you to give a short address," EDF, "Archaeology," 1501-07. See Sprague to Chairman Wilfred Scott, Nez Perce Tribal Executive Committee, 27 December 1978, where Sprague mentions that "as in the past it is to the credit of the Walla Walla District, U.S. Army Corps of Engineers and their archaeological coordinator, Mr. LeRoy Allen, that this recovery has been accomplished with the dignity and respect that your ancestors deserve," EDF, "Archaeology," 1501-07.

24. Allen interview, 18 November 1980.

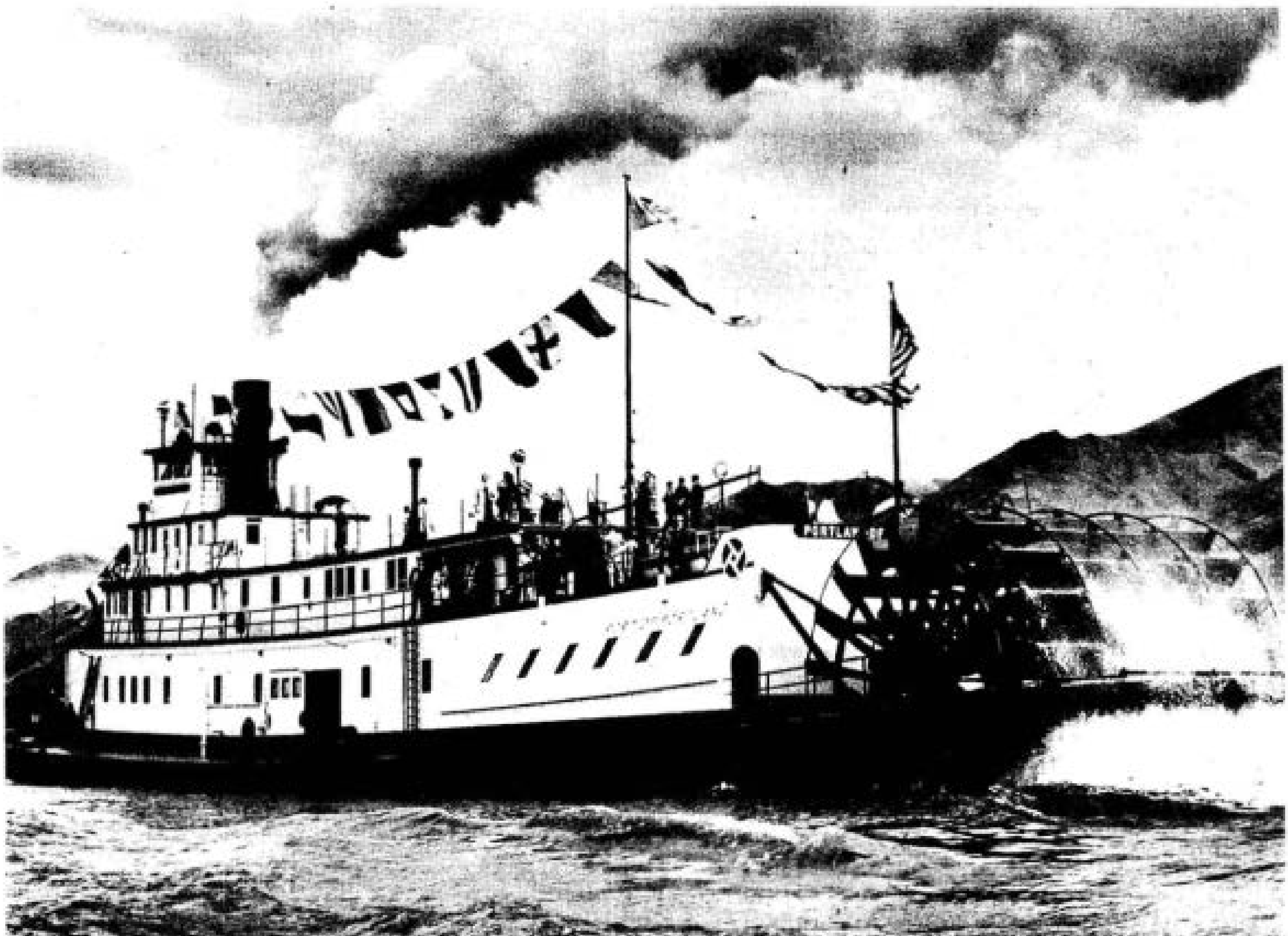
25. Lewiston Morning Tribune, 24 June 1976; 17 October 1976.

26. Allen interview, 18 November 1980.

THIS PAGE LEFT INTENTIONALLY BLANK

APPENDIX A

AWARDS



OPENING THE NORTHWEST PASSAGE

THIS PAGE LEFT INTENTIONALLY BLANK

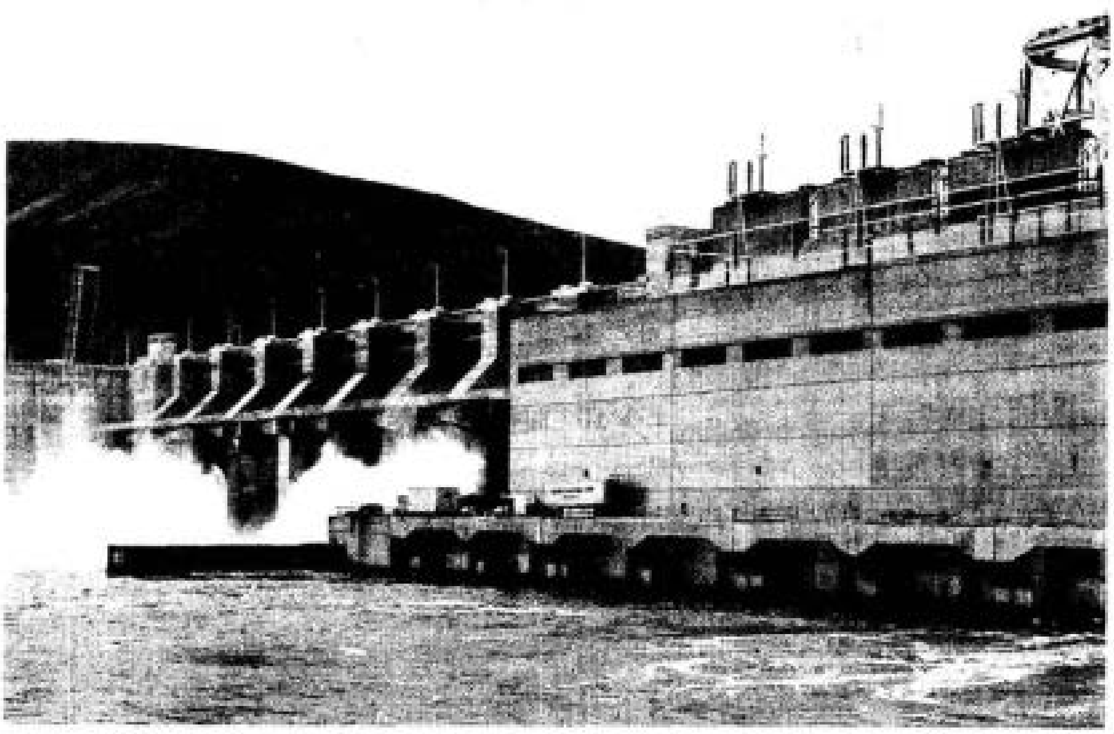
APPENDIX A

AWARDS

PROJECTS

Lower Snake River Project

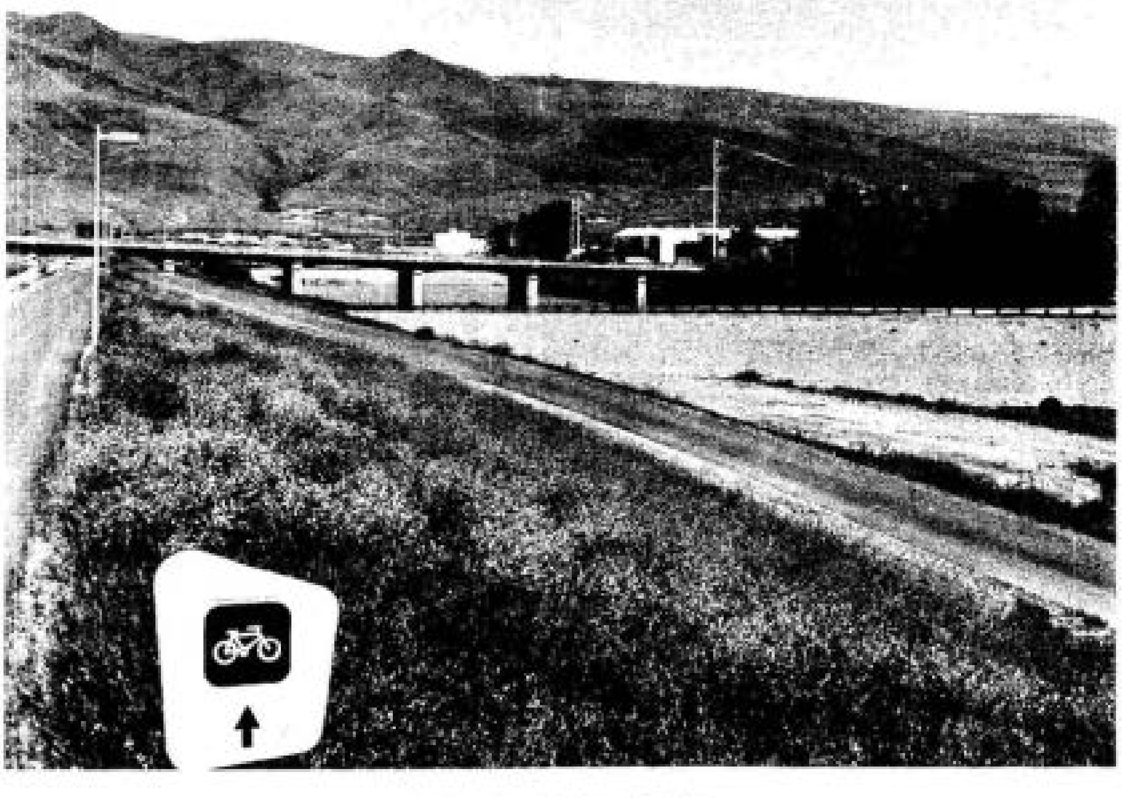
The Lower Snake River Project was named as one of the 10 outstanding engineering achievements in the United States in 1975 by the National Society of Professional Engineers. That same year, the project was named as the Outstanding Civil Engineering Achievement in the Pacific Northwest by the Pacific Northwest Council of the American Society of Civil Engineers (ASCE). The ASCE named the project as the outstanding Water Resources Achievement in the nation in 1976.



LOWER GRANITE DAM
THE LAST OF FOUR DAMS CONSTRUCTED AS PART OF THE
LOWER SNAKE RIVER PROJECT

Lewiston Levees

Eight miles of levees protect the City of Lewiston from floodwaters and were constructed as part of the Lower Snake River Project. When the latter project won the American Society of Civil Engineers' Outstanding Water Resources Achievement Award for 1976, the Lewiston levees were specifically cited as greatly enhancing the project. As initially envisioned, the levees were strictly functional and not aesthetic. The Walla Walla District contracted with Theodore Osmundson and Associates of San Francisco to design a functional yet pleasing levee system. The result was an 11-mile beautification project that consists of hiking, biking, and jogging trails, parks, picnic, and swimming areas, and interpretive centers. The Lewiston Levee Beautification Project won an Award of Merit in the Landscape Architecture Category in the Chief of Engineers' Design and Environmental Awards Program in 1979.



WEST LEWISTON LEVEE

Operation Fish Run

Recognizing that the development of multipurpose dams severely impacted anadromous fish resources on the Columbia and Snake Rivers, the Walla Walla District together with the National Marine Fisheries Service developed a system of juvenile salmonoid transportation called Operation Fish Run. In 1979 the project received an Award of Merit in the Environmental Category of the Chief of Engineers' Design and Environmental Awards Program.

AN OPERATION FISH RUN BARGE

Ririe Dam and Lake

Ririe Dam, located near Idaho Falls on Willow Creek, was completed by the Walla Walla District in 1978 and turned over to the Bureau of Reclamation for operation for flood control, irrigation, and recreation. The design of the dam involved consideration for complex geologic and site considerations. In 1977, the project received an Honorable Mention in the Engineering Category of the Chief of Engineers' Distinguished Design Awards Program.

RIRIE RESERVOIR
LOOKING UPSTREAM FROM THE VISITORS' CENTER

Lyons Ferry Recreation Area

The Laclo Construction Company of Pasco received an Honorable Mention in the Civil Works Category of the Chief of Engineers' 1977 Environmental Awards Program for construction of a pedestrian trail and overlook structure at the Lyons Ferry recreation area. The company was cited for "completing construction with only a minimum of disruption to the environment. The materials and techniques used were unobtrusive... and minimized disturbances of the many birds of prey and other creatures that inhabit the canyon area."

VISITORS' OVERLOOK AT LYONS FERRY STATE PARK

INDIVIDUALS

Distinguished Employee Awards

The Distinguished Employee Award is given in recognition of outstanding retired or deceased employees of the Walla Walla District who have developed and improved methods and procedures which produced extraordinary benefits, have contributed substantially to the reputation and honor of the Corps of Engineers and have performed loyally and faithfully throughout their career.

Chester W. Hansen was posthumously named the District's sixth Distinguished Employee in 1977. Hansen was one of the "founders" of the District and rendered invaluable assistance when the Walla Walla District was formed in 1948. He was the head of the Office of Administrative

Services until his death and was recognized for his knowledge and understanding of mission responsibilities as well as his outstanding contributions toward the training and supervision of personnel.

In 1978, Howard A. Preston was also posthumously honored. Preston worked for the Federal Government from 1930 to 1970. He came to the Walla Walla District on November 1, 1948, the official opening date of the District, and retired in 1970 as Chief of the Planning Branch. During his career with the Corps, Preston received the Department of the Army's Meritorious Civilian Service Award. Following his retirement, he wrote The Walla Walla District History, 1948-1970 and The Walla Walla District History Part II, 1970-1975, the latter being completed while he was terminally ill. Preston died in 1976.

Harry L. Drake became the eighth Distinguished Employee in 1979. Drake joined the Corps in 1935 and began work at Walla Walla in 1948. He retired in 1973 as Chief of the Engineering Division, one of the most senior civilian employee positions in the District. He had held that position since 1967. Dworshak, Lucky Peak, Ririe, John Day, Ice Harbor, Lower Monumental, Little Goose, and Lower Granite were all under his engineering supervision at one time or another. During his career at Walla Walla, he saw over $1.5 billion of work engineered in civil construction projects in the Northwest.

Orville F. Murray was named the ninth member of the Gallery of Distinguished Employees in 1980. Murray began his career as a messboy on a dredge in the Portland District in 1935. He worked his way up to the position of Executive Assistant at the Walla Walla District before retirement in 1975. Murray began working on the McNary Dam project in 1948 and was one of the first employees of the District. He received the Army's Meritorious Civilian Service Award in recognition of his distinctive service before he retired.

Department of the Army Meritorious Service Awards

The Department of the Army's Meritorious Civilian Service Awards are the second highest civilian employee award the Army can bestow. Tom Mendiola, Chief of the Construction Division, received this award in 1975 for his exemplary performance in the construction field for many years. He was a moving force throughout the construction periods, and his activities ranged from military work in missile programs to completion of the latest hydroelectric and flood control projects in the District.

Duane M. Downing, Chief of the Operations Division, won the award in 1976 for his "exceptional abilities as an organizer, planner, and leader." The award covered Downing's performance as Operations Division Chief from January 1, 1972 to December 31, 1975. During that time, he supervised a staff of over 200 people who operated and maintained projects such as McNary, Ice Harbor, Lower Monumental, Little Goose, Lower Granite, Dworshak, and Lucky Peak. During the period of the award, two major projects--Dworshak and Lower Granite--went into operation.

McNary Lock and Dam Project Engineer Gordon D. Richardson won the award in 1977 for his performance from January 1973 to March 1977. Richardson was cited for his exceptional abilities as a manager and his leadership in developing and implementing improved maintenance control procedures, remote and computer control systems for generators and spillway gates, use of closed circuit television for fish counting, and reducing environmental impact by developing a wildlife refuge.

Raymond E. Cuckler, retiring Chief of the Design Branch, was honored in 1979 for his "outstanding ability to effectively manage a highly technical design force within the Engineering Division." Cuckler joined the Walla Walla District in 1956 and worked in the Hydraulic Design Section, the Structural Design Section, and the Design Branch of the Engineering Division. He became the Chief of the Structural Design Section in 1976 and was at that time deeply involved in the design of Dworshak Dam. He was selected as Chief of the Design Branch in 1971.

Upon his retirement in December 1980, W. E. Sivley was presented with the Meritorious Service Award by District Engineer Colonel H. J. Thayer. Sivley's retirement ended a 31-year career with the District. He served from 1973 through 1980 as the Chief of the Engineering Division. During his tenure with the Corps, one of the largest civil works programs of the organization was carried out in the Walla Walla District. Sivley contributed in a variety of capacities to the many projects designed and constructed in the program.

Two military members of the District won Department of the Army Meritorious Service Medals in the late 1970's. Lieutenant Colonel Edward H. George III was presented the medal for his service in the Teton Dam disaster recovery from June to November 1976. Lieutenant Colonel George was honored for his direction of all Corps of Engineers recovery efforts after the dam collapsed. He organized resources to fight floods along the Teton River. He also marshalled efforts to remove debris from public streets and property, formed teams to make damage survey reports, and established procedures for demolition and disposal of damaged buildings.

District Engineer Colonel Christopher J. Allaire left the District for Fort Lewis, Washington, in August 1979, after 3 years of service in Walla Walla. Upon leaving the District, he was awarded the Meritorious Service Medal for his significant contributions and leadership of the District in its work with anadromous fish research, the juvenile transportation program, and other Corps work in improving the survivability of anadromous fish in the Pacific Northwest.

Miscellaneous Individual Awards

Major Benjamin W. Graham received a Department of the Army Commendation Medal for his performance in 1976 in supervising debris removal after the Teton Dam failure. He organized staff and equipment to conduct debris removal operations in three Idaho communities hit by the flood.

A second Army Commendation Medal was awarded to Captain Wallace C. Mook, Assistant to the Chief of the Design Branch, in February 1980. Captain Mook was cited for his redesign of the sewage disposal system for a Corps recreation development at Dworshak Dam. The redesign saved the government $1.5 million in capital outlay and an additional $17,000 in future operation and maintenance costs.

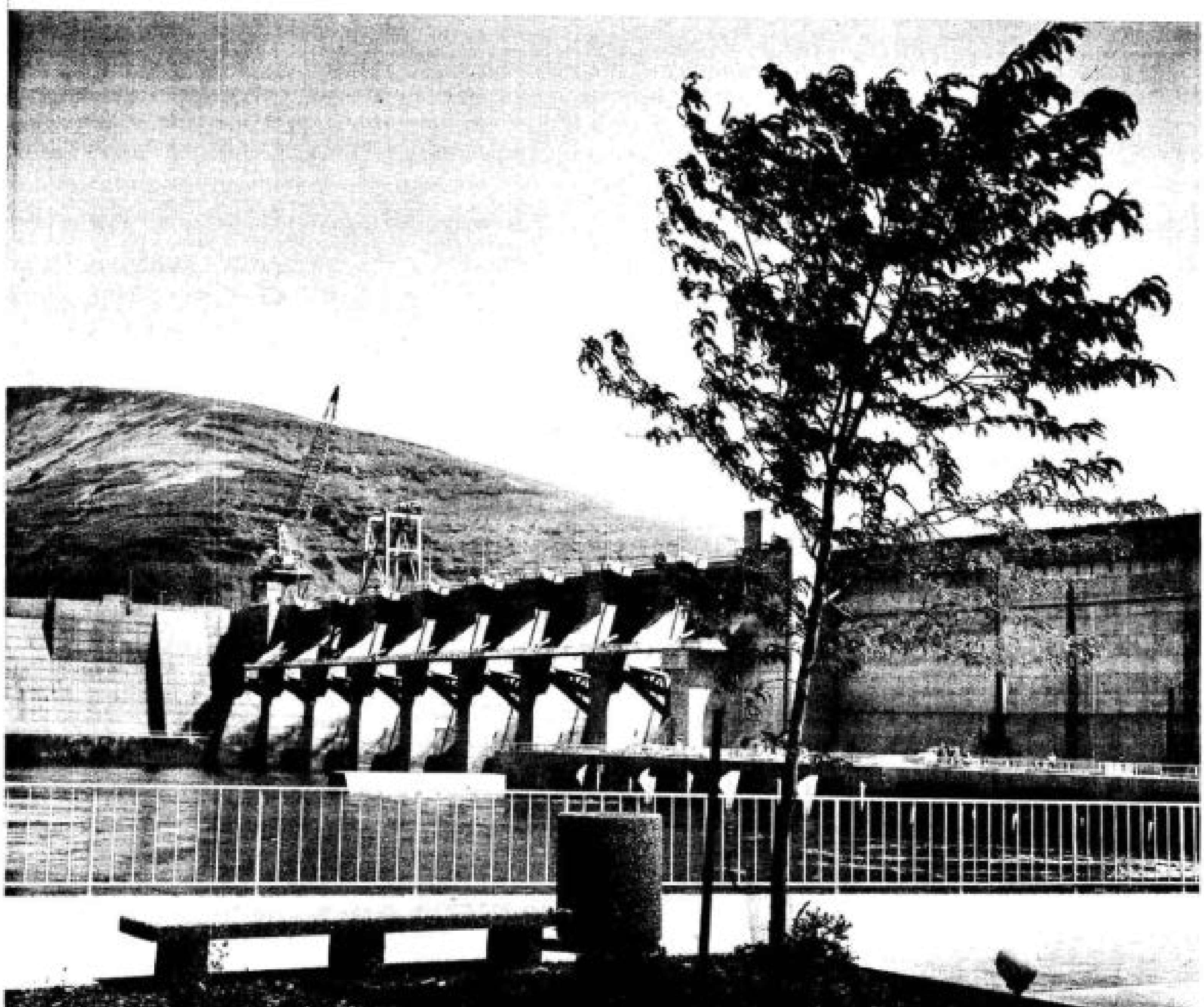
In 1980, Paul H. Good was selected the Handicapped Employee of the Year for the Corps of Engineers after having previously been named the Handicapped Employee of the Year for the Walla Walla District and the North Pacific Division. Good received extensive training at the District and works as an engineering aid in the Hydrology Section maintaining daily logs of streamflow and reservoir project operation, as well as other tasks.

Richard A. Kaden and Ernest K. Schrader were awarded the Department of the Army 1976 Research and Development Achievement Award. Competition is held each year for this award and winners are chosen by a committee of scientists and professional personnel from the Office of the Army Chief of Staff for Research, Development, and Acquisition. Schrader and Kaden were cited for their pioneering work in applying new polymer impregnated concrete technology to the repair of the stilling basin at Dworshak Dam. In 1979, Schrader also received the Ralph A. Tudor Medal, a prestigious award presented annually by the Society of American Military Engineers. Schrader was honored for his work in the development of a repair process used on the lock wall face at Lower Monumental Dam which resulted in substantial time savings and monetary savings of over $2 million. In addition he was cited for his preparatory work and technical arguments in favor of the roller-compacted concrete which resulted in the decision to employ that technique as a substitute for conventional rockfill at the proposed Willow Creek Dam in Heppner, Oregon.

THIS PAGE LEFT INTENTIONALLY BLANK

APPENDIX B

THE PROJECTS



LOWER GRANITE DAM

THIS PAGE LEFT INTENTIONALLY BLANK

APPENDIX B

THE PROJECTS

FLOOD CONTROL PROJECTS

Blackfoot Reservoir, Idaho

Location: On the Blackfoot River in Caribou County, Idaho, about 40 miles southeast of the City of Blackfoot.

The Project in 1975: Blackfoot Reservoir is owned and operated by Fort Hall Agency of the Bureau of Indian Affairs, Department of the Interior. Water stored in the reservoir is used to irrigate lands in the Fort Hall Indian Reservation in the vicinity of Blackfoot and to the south.

Activity, 1975-1980: On September 9, 1976, the District submitted to the North Pacific Division, Supplement 2 of the General Design Memorandum (GDM) which recommended a maximum operating pool of 6120.5 instead of 6126 and elimination of 38,000 acre-feet of exclusive flood control storage. This recommendation was made because of the opposition voiced to the Idaho congressional delegation by owners of summer homes adjacent to the reservoir which would have been impacted had the original GDM been approved. The supplement was returned to the District on August 8, 1977, for revision of economic viability using the then current interest rates.

On March 29, 1978, a public meeting was held in Blackfoot to present the revised plan defined in the GDM Supplement to the local people. Support for the revised recommendations was unanimous. The revised supplement to the GDM recommending a change in the scope of the project was submitted to OCE on December 21, 1978. The supplement was returned to the District on April 7, 1979, and was disapproved because the modification as proposed was essentially a correction for dam safety rather than flood control, as authorized. OCE recommended the project be deauthorized.

Catherine Creek Lake, Oregon

Location: On Catherine Creek about 8 miles above Union, Oregon.

The Project in 1975: The dam will be an earth embankment with an impervious core protected by sand and gravel filters.

Activity, 1975-1980: Additional foundation explorations for the dam and highway relocations were accomplished in Fiscal Year (FY) 1975. The Final Environmental Impact Statement was filed with the Council on Environmental Quality on January 15, 1977. The feature General Design Memorandum for all relocations was completed in FY 1976. An economic review of the project undertaken by the General Accounting Office during FY 1976 questioned the validity of various benefit assumptions. An agreement was made to review the project's economic justification following a favorable decision in a suit to halt construction filed by the Confederated Tribes of the Umatilla Indian Reservation.

In FY 1975, a local committee called "The Committee for Catherine Creek" had been formed to oppose construction. Even before the committee was organized, however, opposition to the project had been voiced by the Umatilla Indians. On December 19, 1974, they filed suit against the Corps in U.S. District Court in Portland alleging that construction of the project would violate their 1855 treaty rights to fish in Catherine Creek as one of their usual and accustomed fishing places. The case was tried in October 1977, and on November 10, 1977, Federal Judge Robert Belloni rendered a court decision in favor of the Confederated Tribes. Judge Belloni did not issue the requested injunction against construction but did determine that the proposed project would flood traditional Indian fishing grounds and stations and thus would violate treaty rights of the Indians. The Corps decided against appealing the decision. Before the Catherine Creek project could have continued, Congress would have had to authorize the taking of the affected Indian treaty rights. The project, therefore, came to a halt.

Columbia River Basin, Local Flood Protection Projects

Location: Improvements included in this project are along the Columbia River and its tributaries.

The Project in 1975: The Flood Control Act of 1950 approved a general comprehensive plan for the Columbia River Basin for flood control and other purposes and authorized $75 million to be appropriated for partial accomplishment of certain projects.

Activity, 1975-1980: In accordance with the provisions of Section 12, Public Law 93-251, the Mill Creek (Washington), Touchet River (Washington), and Payette River (Idaho) projects were recommended for deauthorization in FY 1976.

Jackson Hole, Snake River, Wyoming

Location: The levee is on both banks of the Snake River near Wilson, Wyoming.

The Project in 1975: The levee, with full riprap protection on the right bank, extends from the J. Y. Ranch which is 10 miles upstream from the Jackson-Wilson Highway Bridge to 3.5 miles below the same bridge, for a total length of 13.5 miles. The project also provides a levee with full riprap protection along the left bank extending from the north line of Lucas Ranch which is 10 miles upstream from the Jackson-Wilson Highway Bridge to 5 miles downstream and extends 1.5 miles immediately upstream from the Jackson-Wilson Highway Bridge to 3.5 miles below the bridge, for a total length of 10 miles.

Activity, 1975-1980: Maintenance problems have been continuing and substantial Federal funds have been expended through emergency programs. The existing levee system is being analyzed to determine what modifications may be warranted or necessary to maintain the integrity of the system, reduce operation and maintenance costs, and reduce future emergency repairs.

Lucky Peak Lake, Idaho

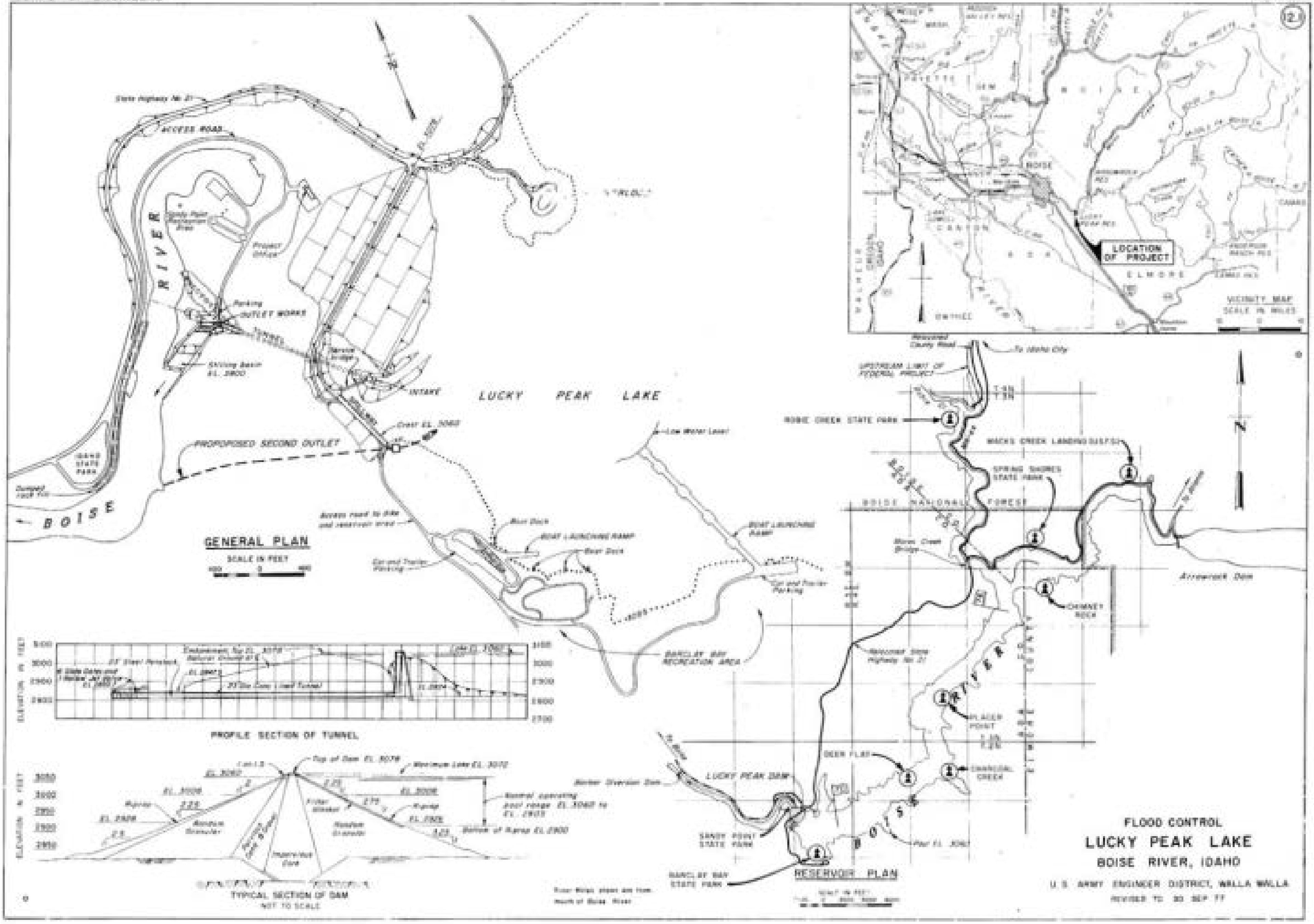
Location: On the Boise River in southwestern Idaho about 10 miles southeast of the City of Boise and about 12 miles downstream from Arrowrock Reservoir.

The Project in 1975: Construction of the existing project was initiated in November 1949 and completed in June 1961.

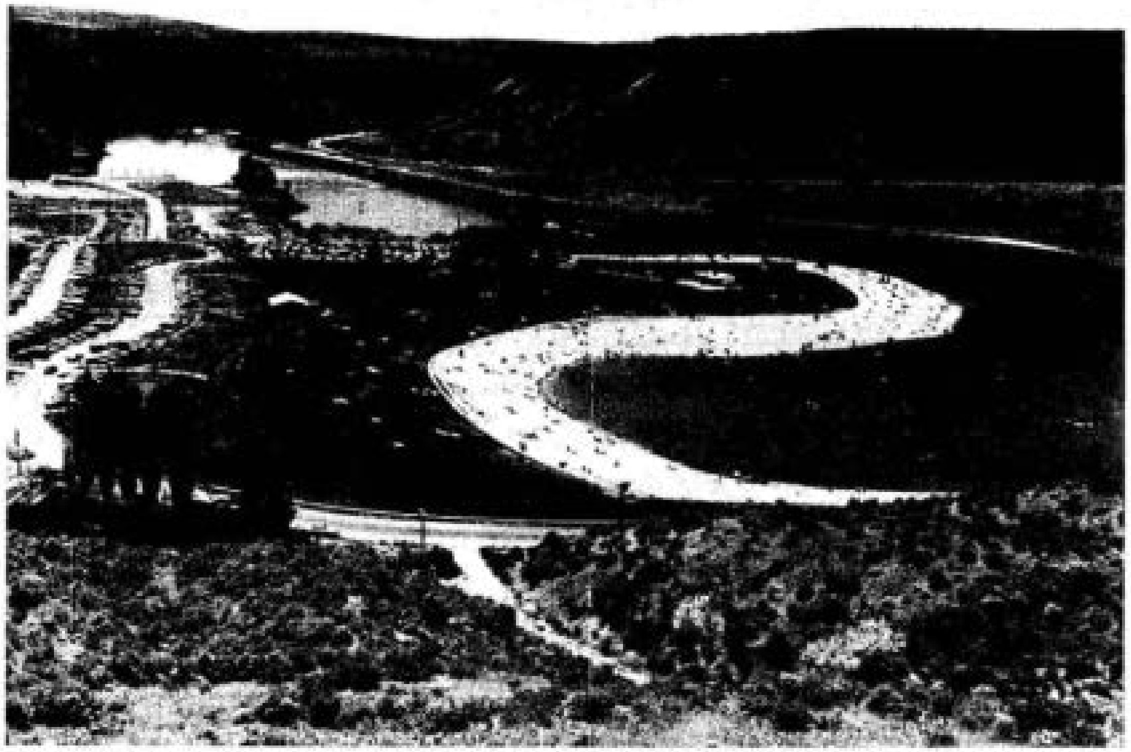
Activity, 1975-1980: The Final Environmental Impact Statement on the initial project was filed with the Council on Environmental Quality on November 29, 1976. During FY 1977, contracts were awarded to complete maintenance paving of project roads and to continue boundary surveying.

A study of Lucky Peak Dam began in October 1974 concerning stream maintenance during closure of outlet works, better flood control, and possible installation of a 75-megawatt hydroelectric powerplant. Construction of a second outlet to solve stream maintenance problems was authorized by Public Law 94-587 on October 22, 1976, as a modification to the dam. The draft Environmental Impact Statement for the modification was filed with the Council on Environmental Quality on January 7, 1977, and a revised draft was filed on September 18, 1978. The final public meeting on the modification was held in January 1977. During FY 1978, a feasible method of achieving better flood control through diversion into New York Canal, through Lake Lowell, and into the Snake River was developed but was rejected by local interests due to the infrequent use of this diversion method.

CORPS OF ENGINEERS U.S ARMY



THIS PAGE LEFT INTENTIONALLY BLANK



SANDY POINT BEACH ON LUCKY PEAK LAKE

The idea of the hydroelectric powerplant remained alive, however. A feasibility report recommending construction of the powerplant was reviewed and approved by the Board of Engineers for Rivers and Harbors in June 1978. The powerplant is to be operated with flows normally released for irrigation. The Boise Board of Control completed a planning report and in January 1979 applied to the Federal Energy Regulatory Commission for a license to construct and operate power facilities at the project.

Mill Creek Lake, Washington

Location: In and upstream from Walla Walla, Washington, on Mill Creek, a tributary of the Walla Walla River.

The Project in 1975: This is an off-stream storage dam about 145 feet high and 3,200 feet long at the crest with outlet works, diversion works, division structure, and a channel through the City of Walla Walla.

Activity, 1975-1980: Routine maintenance by government forces continued throughout the period, which included regulation of the water control structures and care of the recreation area. The Final Environmental Impact Statement was filed with the Council on Environmental Quality on December 12, 1975. Contracts were awarded for a well and materials for rehabilitation of the evacuation channel during FY 1976. In FY 1977 contracts were awarded for a pump, pumphouse, sprinkler irrigation system, and an underground electrical system. A contract was also awarded to complete rehabilitation of the reservoir evacuation channel and to raise and extend the diversion dam levee.

Following the October 4, 1977 periodic inspection of the project, the OCE inspection team requested that a plan of study be prepared to investigate the overall adequacy of all features of the project. The study was initiated in FY 1978 and was approved by NPD and OCE in the spring of that year. Design Memorandum No. 5 for rehabilitation of the project was completed in August 1979.

The rehabilitation plan, to be completed in the early 1980's, will correct the seepage and internal erosion which have occurred during each subsequent filling of the reservoir, requiring limited flood control use of the project. The rehabilitation plan includes a concrete cutoff wall (contract awarded December 1980) at the upstream toe of the dam, a clay facing on the embankment, revision of the valve system for the outlet works, a trash boom with a trash removal system, new trash racks, riprap at the downstream end of the diversion structure, and replacement of five cracked slabs in the intake canal.

Palouse River, Pullman, Washington

Location: On the south fork Palouse River and Missouri Flat Creek at Pullman in eastern Washington.

The Project in 1975: It provides for flood control at Pullman, Washington, by channel rectification and intermittent levee construction along 1.36 miles of south fork Palouse River and 0.42 mile of Missouri Flat Creek. In addition to usual requirements, local interests were to make street, railroad, and bridge modifications for construction of the project. Local interests stated their inability to meet those requirements and the project was classified inactive in 1964 and reclassified to deferred category in June 1969. A restudy is underway to determine if an economically justified plan of improvement can be developed that is generally acceptable to the local people and within the authorized project scope. The Pullman Flood Protection Commmittee, formed in 1969, has become the formal contact group for city planning.

Activity, 1975-1980: In FY 1975, a report was submitted to OCE recommending a reclassification of the project to active status. In a related study that same year, the Corps of Engineers Institute for Water Resources used the Pullman area to test methods for flood plain management and published its findings.

The restudy was reviewed in FY 1976 and further study was recommended in the form of either a Phase I General Design Memorandum or a survey report for reauthorization. Funds were requested for the restudy. The City of Pullman also requested a restudy to determine if a solution could be found which would be both economically justified and acceptable to the local people.

The requested restudy was initiated in FY 1978. In November 1979, the report was completed and forwarded to the Division Office for review. The report found that a plan of channel excavation and slope protection through the central business district was economically feasible and recommended that the project be reclassified to active status.

Ririe Lake, Idaho

Location: On Willow Creek, a tributary of the Snake River, in Bonneville County, Idaho. The damsite is about 5 miles below the confluence of Willow Creek and Meadow Creek, and about 15 miles northeast of the City of Idaho Falls, Idaho.

RIRIE DAM, 1976

The Project in 1975: Authorization provides for a rockfill dam about 840 feet long at the crest and about 184 feet high above streambed and downstream channel construction.

Construction began in June 1967. The Final Environmental Impact Statement was filed with the Council on Environmental Quality on February 13, 1973.

Activity, 1975-1980: A master plan was prepared by the Bureau of Reclamation in FY 1975 and was approved. In the same year, a \$5,147,814 contract was awarded for construction of a floodwater diversion channel. On August 4, 1977, construction began on two contracts for \$1,697,989 to build visitors and maintenance buildings and to develop Juniper Park. Also in FY 1978, contracts worth \$650,331 for construction of Blacktail and Benchland recreation areas were completed. The channel, visitors' facilities, and Juniper Park contracts were completed in FY 1979.

A project Transfer Agreement with the Bureau of Reclamation was signed October 14, 1976. The project Fish and Wildlife Mitigation Agreement was completed by concerned agencies on August 18, 1976.

Pool raising began on May 4, 1978, and was completed on July 15. The Corps project office was closed on September 30, 1978.

Stuart Gulch Dam, Idaho

Location: On Stuart Gulch north of Boise, Idaho.

The Project in 1975: The dam will be earth embankment with a central filter zone and a downstream drainage blanket. The project will provide flood control for the City of Boise, Idaho. Storage space behind the dam will be drained completely when not needed.

Activity, 1975-1980: Local interests were required to provide the lands, easements, rights-of-way, and relocations required for the project; to hold the United States free of damages incidental to construction; and maintain and operate the project upon completion. However, local sponsorship was lacking and the project was placed in the inactive category.

Willow Creek Lake, Heppner, Oregon

Location: On Willow Creek just upstream from Heppner and downstream from the junction of Balm Fork and Willow Creek.

The Project in 1975: The project will provide flood protection to the City of Heppner and the area downstream by controlling runoff from a drainage area of 96 square miles.

The outlet works will be uncontrolled except for provisions to release lake inflows during periods of low flow. Limited recreational facilities will be provided. Gross storage capacity of the project will be 11,500 acre-feet, consisting of 9,500 acre-feet for exclusive flood control and 2,000 acre-feet for fish, wildlife, recreation, sediment accumulation, and aesthetics.

Activity, 1975-1980:

Project reauthorization was needed in FY 1975 because the project scope had changed since authorization. Irrigation was deferred to a future date, municipal and industrial water supply and water quality control was dropped, and recreation was reduced in scope. A reauthorization bill sponsored by the Oregon delegation was passed by congress but the bill was vetoed by the President on December 18, 1974, because of economic reasons.

A reevaluation of the economic feasibility of the project was made in FY 1976. Results of this evaluation were presented in a report dated April 1976, entitled Special Report for Willow Creek Lake, Oregon. The report showed a benefit-to-cost ratio of less than 1-to-1, but indicated justification for project construction based on high potential for loss of life in the project area. However, at a public meeting held in Heppner on March 19, 1976, local people indicated they would no longer support the project. Because of the lack of local support and the low benefit-to-cost ratio, the project was placed on deferred status.

On March 6, 1978, local residents sponsored a public meeting in Heppner to obtain local support for the project. While not unanimous, local support of the project was forthcoming and the project was removed from the deferred status. Funds amounting to $500,000 were appropriated for construction of the project in 1978.

In FY 1979, the project economics were updated. The final Value Engineering Study report was completed in February 1979. Design Memorandum No. 2, Phase II General Design Memorandum, the Supplemental Real Estate Design Memorandum No. 3A, and the Final Environmental Impact Statement, all dated June 1979, were submitted to higher authority in August 1979.

As a result of the OCE's review comments on the Phase II General Design Memorandum, the size of the reservoir was increased from 11,500 acre-feet to 13,250 acre-feet and the dam was changed from a rockfill to a roller-compacted concrete structure.

Zintel Canyon Dam, Washington

Location: In Zintel Canyon, 2.1 miles southwest of Kennewick, Washington.

The Project in 1975: The main dam, 119 feet high above streambed and 555 feet long at the crest, will be primarily of rockfill with an impervious core protected both upstream and downstream by a sandy gravel filter zone. The downstream channel will consist of 12,000 feet of unimproved natural channel between the damsite and a conduit intake structure, 4,195 feet of buried conduit, and an improved open channel 1,205 feet long. The project will provide flood control for the City of Kennewick, Washington. Storage space behind the dam will be drained completely when not needed.

Activity, 1975-1980: The Final Environmental Impact Statement was filed with the Council on Environmental Quality on January 8, 1975. The project was delayed in FY 1976 because the City of Kennewick was unable to meet its sponsorship requirements. The project will not be undertaken until the city can meet its financial responsibilities.

The Walla Walla District considered the Zintel Canyon site as one of the most applicable locations to build a prototype optimum gravity dam utilizing roller-compacted concrete. A revised Design Memorandum was submitted in the fall of 1980.

Flood Control Works Under Special Authorization

FY 1975

Emergency flood control activities:

$ 20,565 for advance preparations

18,485 for emergency repairs

304,904 for repair and restoration

Snagging and clearing navigable streams in the interest of flood control:

$ 58,998 for snagging and clearing

FY 1976

Emergency flood control activities:

$ 30,757 for advance preparations

1,027,514 for emergency operations

200,199 for repair and restoration

Snagging and clearing navigable streams in the interest of flood control:

$ 10,687 for snagging and clearing

21,754 for emergency streambank protection

3,396 for small flood control projects

FY 1977

Emergency flood control activities:

$ 49,882 for advance preparations
273,257 for emergency operations
275,561 for repair and restoration

Snagging and clearing navigable streams in the interest of flood control:

$ 63,475 for snagging and clearing
97,807 for emergency streambank protection
3,784 for small flood control projects

FY 1978

Emergency flood control activities:

$ 35,880 for advance preparations
304,763 for emergency operations
24,524 for repair and restoration

Snagging and clearing navigable streams in the interest of flood control:

$ 2,860 for snagging and clearing
66,217 for small flood control projects

FY 1979

Emergency flood control activities:

$ 51,584 for advance preparations
20,477 for emergency operations
167,920 for repair and restoration

Snagging and clearing navigable streams in the interest of flood control:

$ 54,063 for snagging and clearing
32,153 for emergency streambank protection
38,993 for small flood control projects

FY 1980

Emergency flood control activities:

$ 66,309 for advance preparations

190,017 for emergency operations

11,076 for repair and restoration

Snagging and clearing navigable streams in the interest of flood control:

$ 52,024 for small flood control projects

Total Emergency Flood Control Activities, FY 1975-FY 1980: $3,073,674

Total Snagging and Clearing Navigable Streams in the Interest of Flood Control, FY 1975-FY 1980: $ 506,211

MULTIPURPOSE PROJECTS

Dworshak Dam and Reservoir, Idaho

Location: The dam is on the north fork Clearwater River 1.9 miles above its junction with the Clearwater River near Orofino, Idaho, and about 35 miles east of Lewiston, Idaho.

The Project in 1975: This is a straight concrete gravity dam about 717 feet in maximum structural height above foundation and 3,287 feet long at the crest, Elevation 1613. The reservoir has a gross storage capacity of 3,468,000 acre-feet of which 2,016,000 acre-feet are effective for both local and regional flood control and for on-site and downstream power generation. The powerhouse includes two 90,000 and one 220,000 kilowatt units for an ultimate installed capacity of 1,060,000 kilowatts.

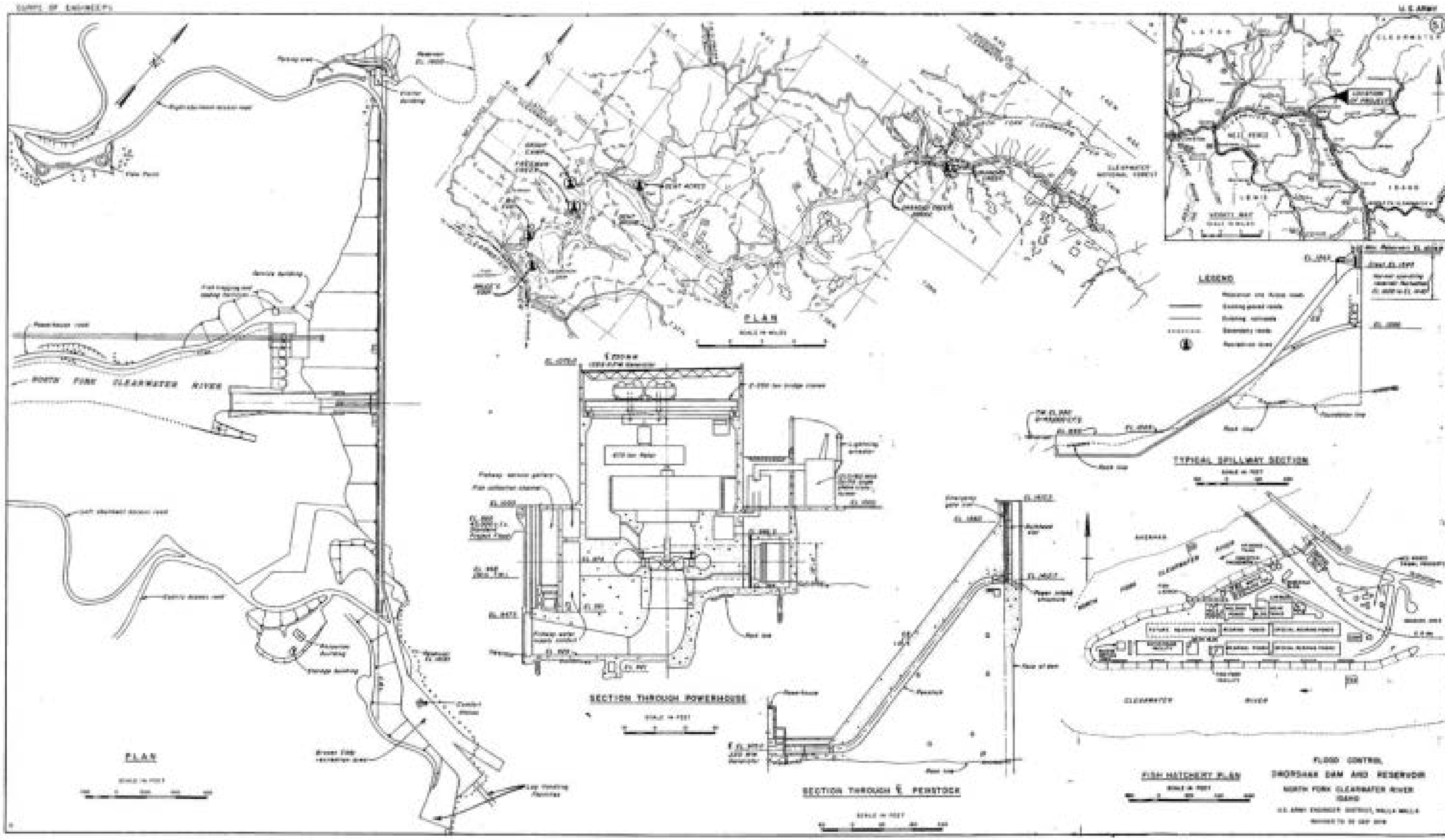
Project plans include acquisition of land outside reservoir limits to mitigate losses of big game winter browse areas inundated by the reservoir.

DWORSHAK DAM, 1979

Activity, 1975-1980: The Final Environmental Impact Statement was filed with the Council on Environmental Quality on December 9, 1975. Normal operations and maintenance continued throughout the period including work at the Dworshak National Fish Hatchery, development of recreational facilities, and fish and wildlife mitigation.

In May 1979, log handling facilities at the dam were completed. In April 1978, a preliminary study was completed to determine the economic feasibility of a fourth unit. The study showed economic feasibility and that further study was warranted. Approval was received from OCE for reclassification of one additional unit at Dworshak from the "deferred" to the "active" category. In FY 1979, plans for establishing the criteria of the fluctuation studies were completed. Some testing was accomplished in the fall of 1980. Further fluctuation studies will determine the impacts of greater fluctuation downstream of the dam by the addition of a 222,000-kilowatt fourth unit.

THIS PAGE LEFT INTENTIONALLY BLANK

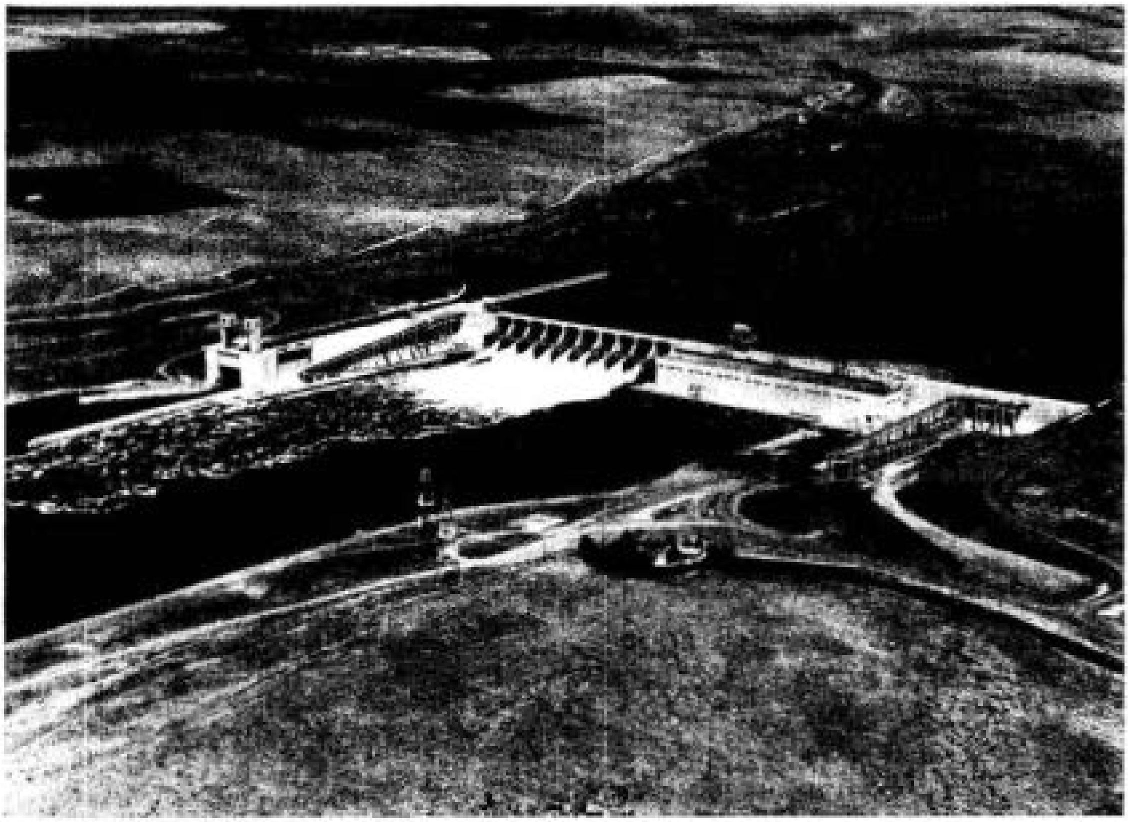


CORPS OF ENGINEERS
U.S. ARMY
NORTH FORK CLEARWATER RIVER
PLAN
SECTION THROUGH POWERHOUSE
SECTION THROUGH ℄ PENSTOCK
TYPICAL SPILLWAY SECTION
LEGEND
LOCATION OF PROJECT
CLEARWATER
RIVER
FISH HATCHERY PLAN
FLOOD CONTROL
DWORSHAK DAM AND RESERVOIR
NORTH FORK CLEARWATER RIVER
IDAHO

THIS PAGE LEFT INTENTIONALLY BLANK

Ice Harbor Lock and Dam, Lake Sacajawea, Washington

Location: On the Snake River, 9.7 miles above the river mouth at the head of Lake Wallula and 12 miles east of Pasco, Washington.



ICE HARBOR DAM, 1979

The Project in 1975: It consists of a dam, powerplant, navigation lock, fish ladders, and appurtenant facilities. The project provided for navigation, hydroelectric power generation, and incidental irrigation. The dam has a normal operating range between Elevations 440 and 437 msl. The lake extends upstream about 31.9 miles, providing slack water to Lower Monumental Lock and Dam. The structure is about 2,700 feet long and approximately 130 feet high above streambed. Fish passing facilities, including two ladders, are provided. The powerplant now has three 90,000 kilowatt units, and three 111,000 kilowatt units are being installed. The spillway dam is 610 feet long, and an overflow crest at Elevation 391 msl is surmounted by 10 radial gates 50 feet wide by 51 feet high, which provide capacity to pass a design flood of 850,000 cfs. The deck is at Elevation 453 msl and provides a service road and track for a gantry crane. The navigation lock is a single-lift type with clear plan dimensions of 86 feet by 665 feet and 15 feet minimum depth over the sills. A navigation channel 250 feet wide and 15 feet deep is provided from the mouth of the Snake River to the dam.

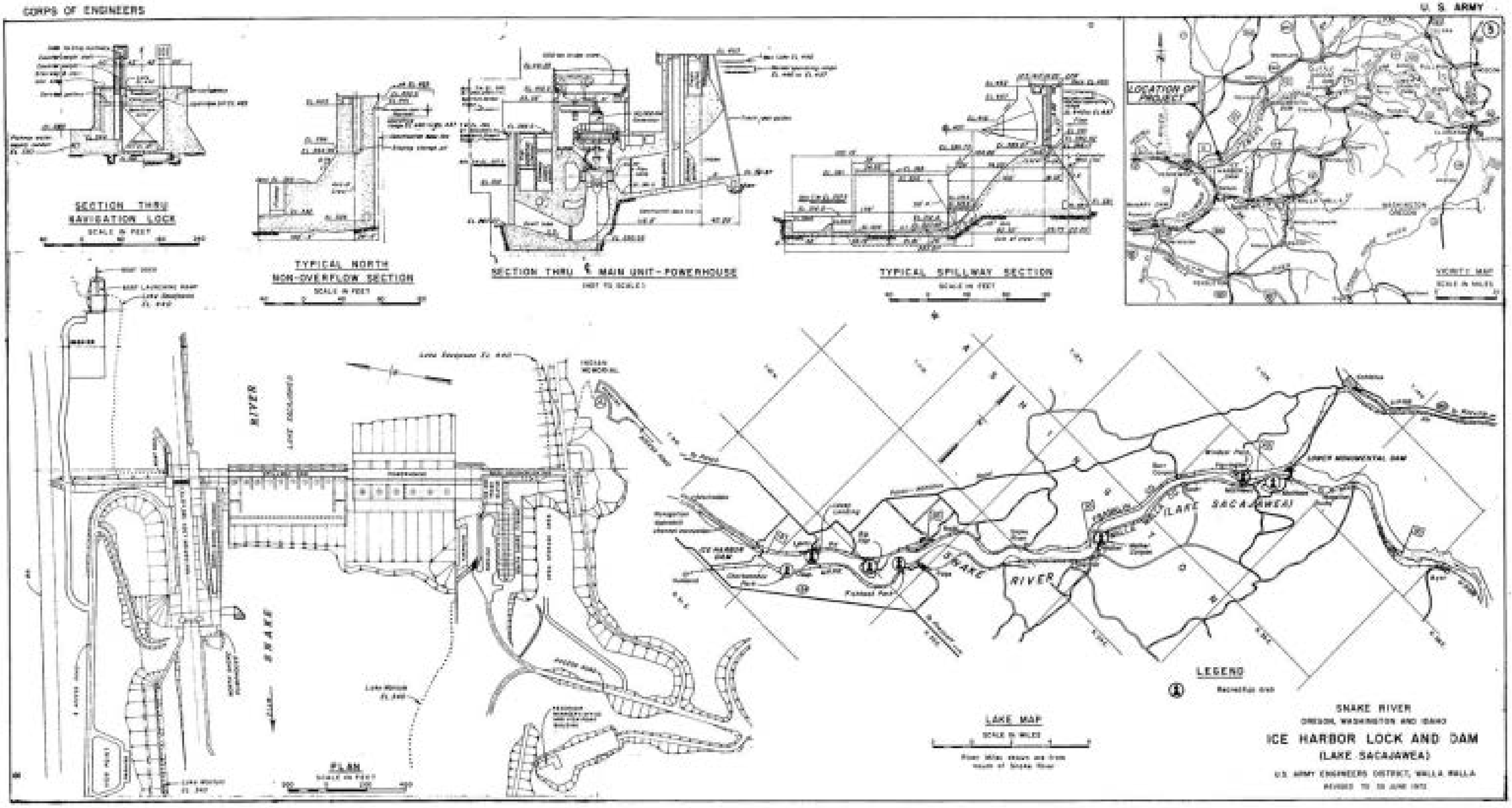
Activity, 1975-1980: Ice Harbor was the first lower Snake River project to receive additional hydroelectric power units to strengthen the peaking capabilities of the Columbia Basin hydrosystem. The new units, Nos. 4 and 5, had power on-line in November 1975 and Unit 6 in January 1976 for a combined capacity for all six units of 603,000 kilowatts for peak loads.

In FY 1977, eight underwater viewing windows were installed for public use in the south shore fish ladder. In FY 1979, a contract was awarded to modify the fish ladders to permit passage of shad over the dam if the fishery agencies decide this should be allowed. Designs for exhibits for the visitors' center were completed in FY 1979.

In FY 1975, an improved irrigation system, a group shelter, and modified protection for the swimming area were added to Charbonneau Park and an additional 30 campsites and a new well were added at Fishhook Park. Contracts were awarded for paving camp loops at Charbonneau Park, for replacing navigation lock monolith water stops, for painting powerhouse inside walls, and for riprap repair below the dam.

In FY 1978, contracts were awarded for painting the upstream navigation lock gate, navigation monolith joint and crack repair, a well and pumphouse at Charbonneau Park, and maintenance of recreation areas. Contracts were awarded and completed in FY 1979 for crack repairs in the navigation lock downstream lift gate, rebuilding the Unit 5 generator thrust bearing, automatic generation control, repairs to navigation lock downstream lift gate slot, and maintenance of recreation areas.

CORPS OF ENGINEERS U. S. ARMY



THIS PAGE LEFT INTENTIONALLY BLANK

Lewiston-Clarkston Bridge, Idaho and Washington

Location: On the Snake River, 1.7 miles upstream of the existing interstate bridge connecting the towns of Lewiston, Idaho, and Clarkston, Washington.

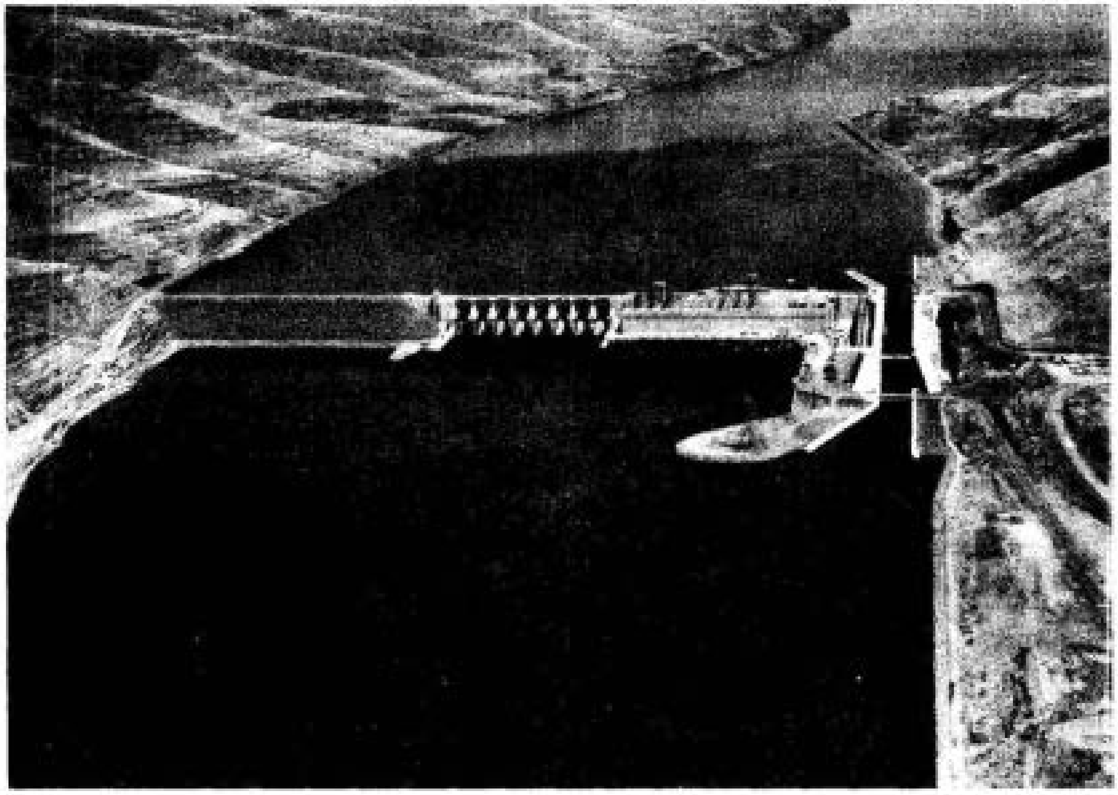
The Project in 1975: The project, authorized on October 22, 1976, will consist of a new four-lane highway bridge across the Snake River to be constructed at a cost not to exceed $21,000,000.

Activity, 1975-1980: A drilling contract for initial foundation explorations was issued on March 8, 1978, to the Pacific Testing Laboratories of Seattle. T. Y. Lin International was selected as the consulting engineering firm to make initial bridge type studies, to prepare a design memorandum, and to prepare a supplement to the Lower Granite Environmental Impact Statement. The Final Environmental Impact Statement was filed with the Council on Environmental Quality on July 16, 1979. OCE approved the design memorandum in January 1979, and in September of that year the United States Coast Guard granted a permit to construct the bridge.

Contracts for plans and specifications were awarded and completed in FY 1979. On January 9, 1979, officials from the Walla Walla District and from local agencies met to compare preliminary bridge layouts and estimates. The second foundation exploration contract was completed in June 1979. On October 16, 1979, advertising for bids began and construction started in 1980. The bridge is scheduled for completion in September 1982.

Little Goose Lock and Dam - Lake Bryan, Washington

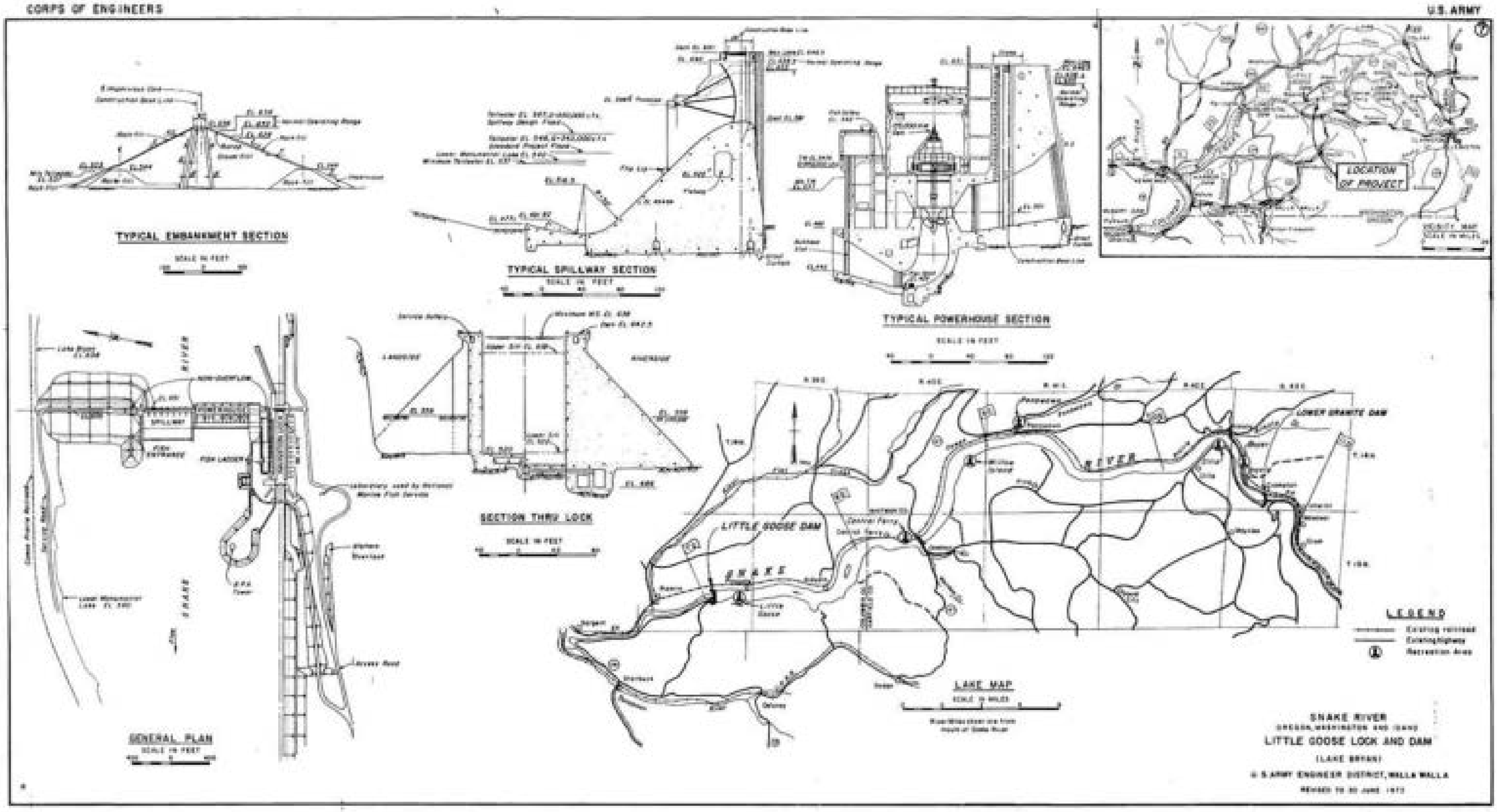
Location: The dam is 70.3 miles above the mouth of the Snake River at the head of Lower Monumental Lake, about 40 airline miles north of Walla Walla, Washington, and 50 miles west of Lewiston, Idaho.



LITTLE GOOSE DAM, 1979

The Project in 1975: The project consists of a dam, powerplant, navigation lock, fish ladder, and appurtenant facilities. Improvements provide navigation, hydroelectric power generation, recreation, and incidental irrigation. The dam has a normal operating range between Elevations 638 and 633 msl. Lake Bryan extends upstream about 37.2 miles and provides slack water to Lower Granite Lock and Dam site. The dam structure is 2,600 feet long and about 140 feet high above streambed and consists of a powerhouse, spillway dam, navigation lock, and necessary nonoverflow sections. Fish passing facilities include one ladder with entrances on both shores with a fish channel through a spillway which connects to a powerhouse fish collection system and the south shore ladder. The powerhouse now has three 135,000 kilowatt units with provisions for three additional 135,000 kilowatt units for an ultimate capacity of 810,000 kilowatts. The spillway dam can pass a design flood of 850,000 cfs. The navigation lock is a single-lift type with clear plan dimensions of 86 by 668 feet and a minimum depth of 15 feet over the sills.

CORPS OF ENGINEERS U.S. ARMY



THIS PAGE LEFT INTENTIONALLY BLANK

Activity, 1975-1980: The Final Environmental Impact Statement was filed with the Council on Environmental Quality on January 8, 1975. In 1976, flip lips were constructed in six of the eight spillway bays to help alleviate nitrogen supersaturation problems. A contract was awarded in 1978 to modify and improve the fingerling bypass and collection system. A channel was mined in the upstream wall of the powerhouse to replace the embedded fingerling collection and transportation pipe.

In FY 1978, a contract was awarded and completed for navigation lock foundation grouting and monolith repair. In FY 1979, contracts were awarded and completed for navigation channel dredging at Schultz Bar, automatic generation control, spare navigation lock lower gate pintle bearings, reservoir floating debris removal, core drilling in generator bays 4 and 5, and concrete repair work in the navigation lock culvert.

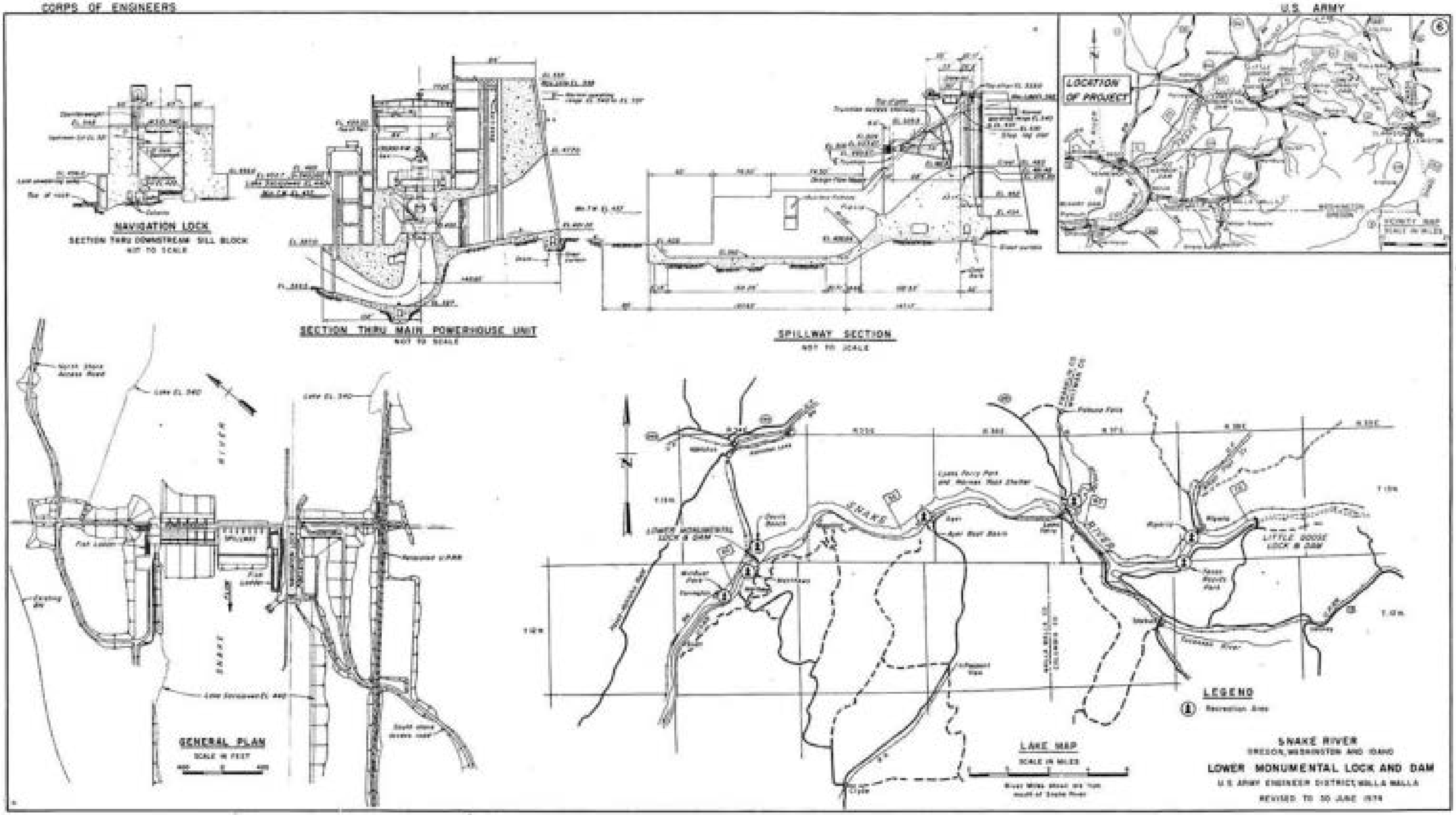
Work began on the installation of three new 135,000-kilowatt generator units in July 1975, and in 1978 the work was completed with Unit No. 6 coming on-line in July of that year.

Lower Granite Lock and Dam, Washington

Location: At River Mile 107.5 on the Snake River at the head of Lake Bryan and about 33 miles downstream from Lewiston, Idaho.

The Project in 1975: It provides for a dam, powerplant, navigation lock, fish ladder and appurtenant facilities, and requires about 7.5 miles of backwater levees along the Snake and Clearwater Rivers at Lewiston, Idaho. Benefits afforded by the project will include slack water navigation, power generation, recreation, and incidental irrigation. Water surface at the dam will vary between Elevations 738 and 724 to maintain a normal operating range between Elevations 738 and 733 in the Lewiston, Idaho-Clarkston, Washington, area. The dam structure will be approximately 3,200 feet long and 135 feet high above the streambed.

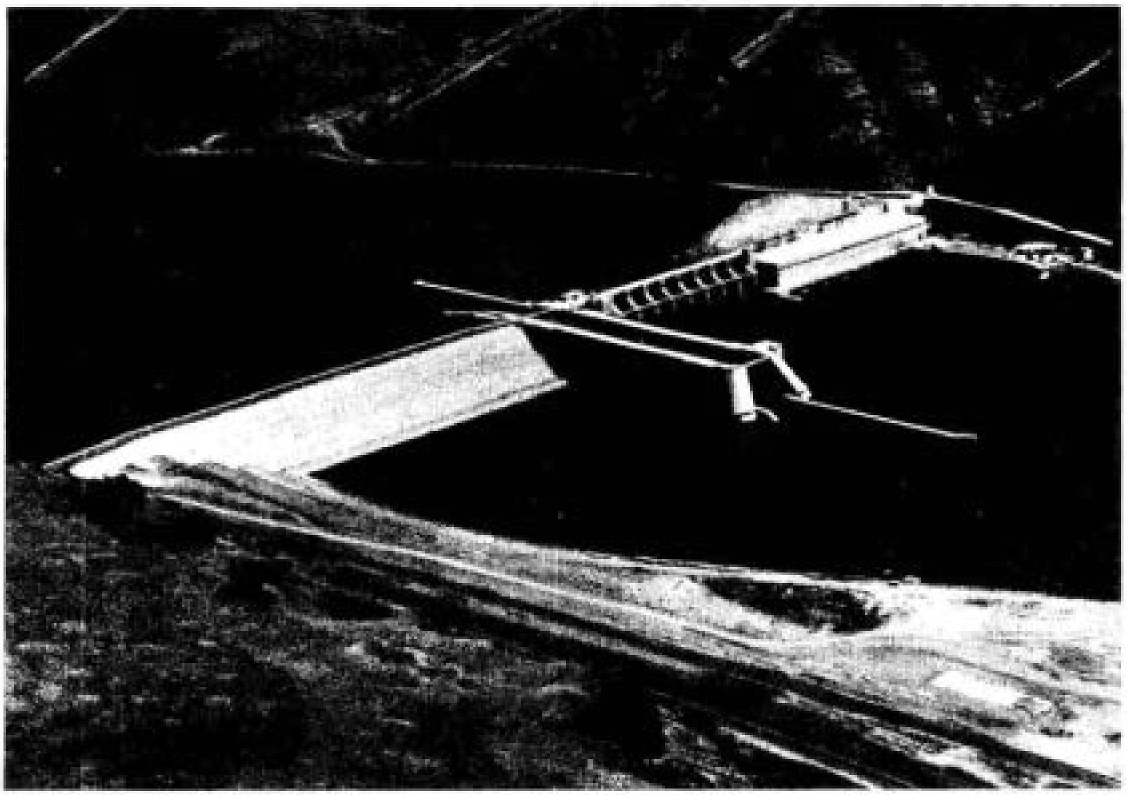
THIS PAGE LEFT INTENTIONALLY BLANK



LOCATION OF PROJECT
NAVIGATION LOCK
SECTION THRU DOWNSTREAM SILL BLOCK
NOT TO SCALE
SECTION THRU MAIN POWERHOUSE UNIT
NOT TO SCALE
SPILLWAY SECTION
NOT TO SCALE
GENERAL PLAN
SCALE IN FEET
SNAKE RIVER
LOWER MONUMENTAL LOCK & DAM
LITTLE GOOSE LOCK & DAM
LEGEND
Recreation Area
LAKE MAP
SCALE IN MILES
SNAKE RIVER
OREGON, WASHINGTON AND IDAHO
LOWER MONUMENTAL LOCK AND DAM
U.S. ARMY ENGINEER DISTRICT, WALLA WALLA
REVISED TO 30 JUNE 1974

THIS PAGE LEFT INTENTIONALLY BLANK

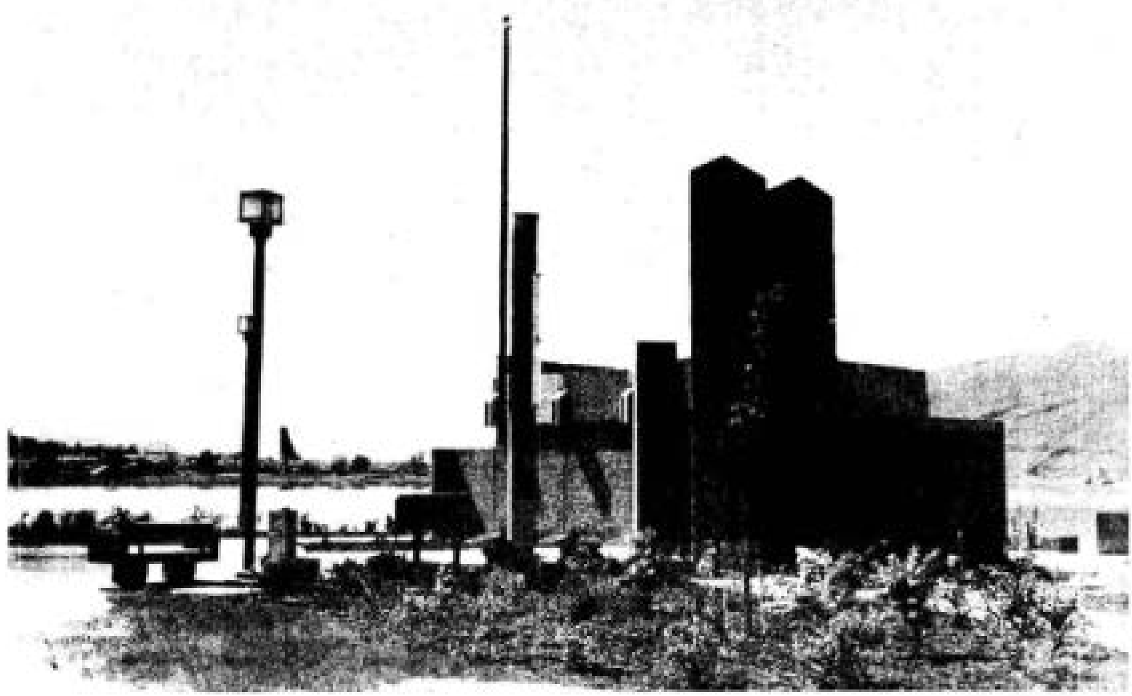
The powerplant is being constructed with three 135,000-kilowatt units initially with provisions for three additional similar units. The spillway will have a capacity for a design flood of 850,000 cfs. The navigation lock will be a single-lift type with clear plan dimensions of 86 feet by 674 feet and a minimum depth of 15 feet over the sills.



LOWER GRANITE DAM, 1979

Activity, 1975-1980: The reservoir was filled on February 15, 1975, and the first power generating unit went on-line on April 15 of that year. A revised Environmental Impact Statement to include three additional 135,000-kilowatt generating units was filed with the Council on Environmental Quality on July 23. Installation of the three extra units was completed in 1978, with Unit No. 6 coming on-line in May.

The design for Lewiston levee beautification was completed in 1976. In an effort to have the levees complement rather than scar the city, the Walla Walla District which designed the $20-million levees engaged Theodore Osmondson, a San Francisco landscape architect, to plan beautification. The original plan called for levees with fairly steep slopes. Osmondson recommended gently sloping the landward side of the levees to accommodate 55 acres of parkway with bicycle and hiking trails, comfort stations, and interpretive centers. The plan developed into a pilot project for the Corps. Bids were advertised on the beautification project on December 19, 1975. The bid was awarded on April 1, 1976, to Lew Hammer, Inc., Denver, Colorado, for $2,513,850.



WEST LEWISTON LEVEE

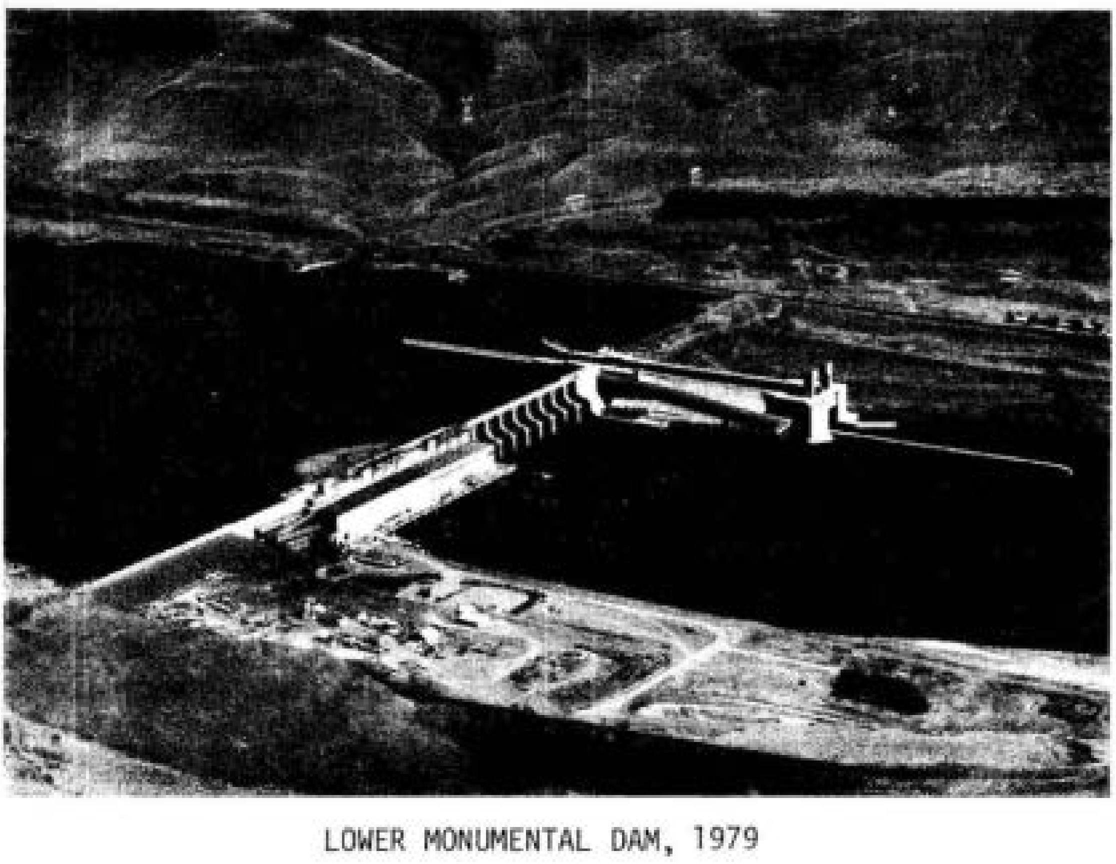
Swallows Nest Park construction was completed in November 1975. A contract was awarded on July 10, 1978 to Coast Marine Construction Company for $1,992,628 to construct Chief Timothy State Park. On June 1 of the same year, a $516,647 contract was awarded to Norwood-Harrison to complete Wawawai Bay County Park. All major recreation contracts were completed in FY 1979.

In 1976 three traveling fish screens were constructed and installed in one unit of the powerhouse intake, making a total of seven screens in use. A contract was awarded in August 1976 for the modification and improvement of the fish counting station, the adult fish trap, and fingerling holding capacity.

In FY 1978 contracts were awarded for repair of the navigation lock bascule bridge, and generator Unit No. 1 rotor repair. Construction of fish handling facilities was completed in FY 1979.

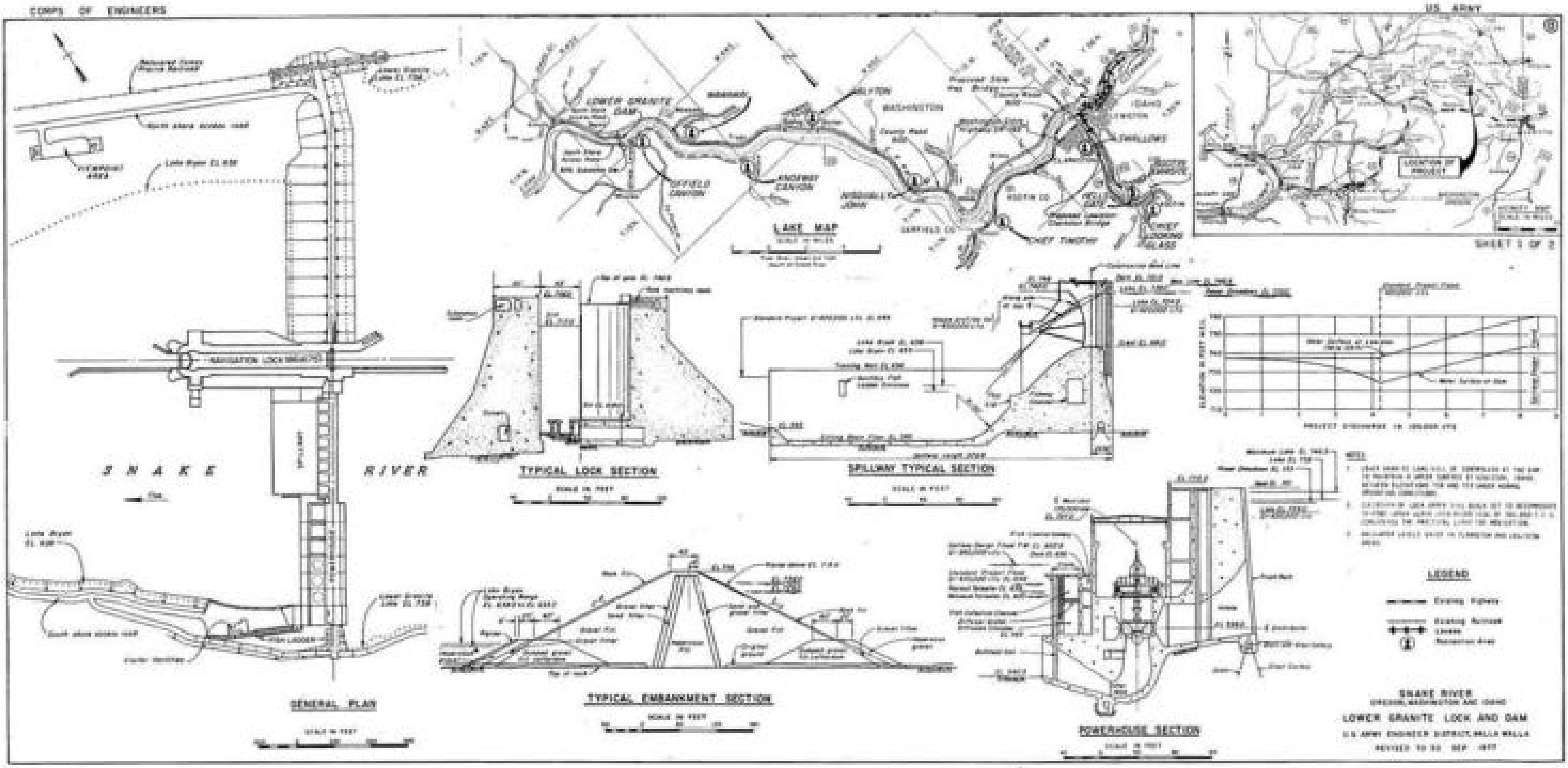
Lower Monumental Lock and Dam, Washington

Location: On the Snake River at the head of Lake Sacajawea, about 45 miles northeast of Pasco, Washington, and 41.6 miles above the river mouth.



LOWER MONUMENTAL DAM, 1979

THIS PAGE LEFT INTENTIONALLY BLANK


CORPS OF ENGINEERS
US ARMY
LOWER GRANITE DAM
WASHINGTON
IDAHO
LEWISTON
SWALLOWS
CHIEF TIMOTHY
CHIEF LOOKING GLASS
GARFIELD CO.
ASOTIN CO.
LAKE MAP
SCALE IN MILES
LOCATION OF PROJECT
SHEET 1 OF 2
NAVIGATION LOCK
SPILLWAY
S N A K E
R I V E R
TYPICAL LOCK SECTION
SCALE IN FEET
SPILLWAY TYPICAL SECTION
SCALE IN FEET
PROJECT DISCHARGE IN 100,000 CFS
NOTES
TYPICAL EMBANKMENT SECTION
SCALE IN FEET
GENERAL PLAN
SCALE IN FEET
POWERHOUSE SECTION
SCALE IN FEET
LEGEND
Existing Highway
Existing Railroad
Levee
Recreation Area
SNAKE RIVER
OREGON, WASHINGTON AND IDAHO
LOWER GRANITE LOCK AND DAM
U.S. ARMY ENGINEER DISTRICT, WALLA WALLA
REVISED TO 30 SEP 1977

THIS PAGE LEFT INTENTIONALLY BLANK

The Project in 1975: The project consists of a dam, powerplant, fish ladders, navigation lock, and appurtenant facilities. The dam has a normal operating range between Elevations 540 and 537. The lake extends about 29 miles upstream to Little Goose Lock and Dam. The concrete gravity dam, with earthfill and rockfill abutments, is 3,800 feet long including abutments, spillway, navigation lock, and powerhouse, and about 130 feet high above streambed. There are two fish ladders, one at each end of the dam. The powerhouse has three 135,000 kilowatt units and a substructure for three additional units of the same size for an ultimate total capacity of 810,000 kilowatts. The spillway is 508 feet long, and the overflow crest at Elevation 483 feet above msl is surmounted by eight radial gates, each 50 feet wide and 59 feet high. The deck is at Elevation 553 and provides a service road and track for a gantry crane. The navigation lock is a single-lift type, with lock chamber 86 feet by 666 feet and minimum depth of 15 feet over the sills.

Activity, 1975-1980: The Final Environmental Impact Statement was filed with the Council on Environmental Quality on May 21, 1976. Work on installing three additional 135,000-kilowatt generating units began in December 1975 and was completed in 1979, with Unit No. 6 coming on-line in April.

In FY 1975 flip lips were completed in bays 2 through 7. Modifications to the domestic water supply system were completed in FY 1976.

Reinforced concrete struts were added in 1976 to the lower end of the south shore fish ladder to provide added stability to the ladder during high spillway discharges. Modifications to the fish ladders to allow shad passage were conducted in 1978. In FY 1979 contracts were awarded and completed for automatic generation control and spare generator stator coils.

Considerable maintenance was done on navigation locks. In FY 1978 contracts were awarded and completed for navigation lock culvert repair and monolith joint repairs. In FY 1979 contracts were awarded and completed for exploratory drilling for navigation lock monoliths 5 and 6 crack repairs and for navigation lock culvert concrete repairs.

Lower Snake River, Washington, Fish and Wildlife Compensation

Location: At various locations within the Columbia-Snake River drainage in the states of Idaho, Washington, and Oregon.

The Project in 1975: The project was authorized on October 22, 1976. It will consist of a series of fish hatcheries and wildlife development areas which will compensate for the loss of wildlife habitat and anadromous and resident fishery inundated as a result of the construction of four multiple-purpose dams and reservoirs on the lower Snake River (Ice Harbor, Lower Monumental, Little Goose, Lower Granite).

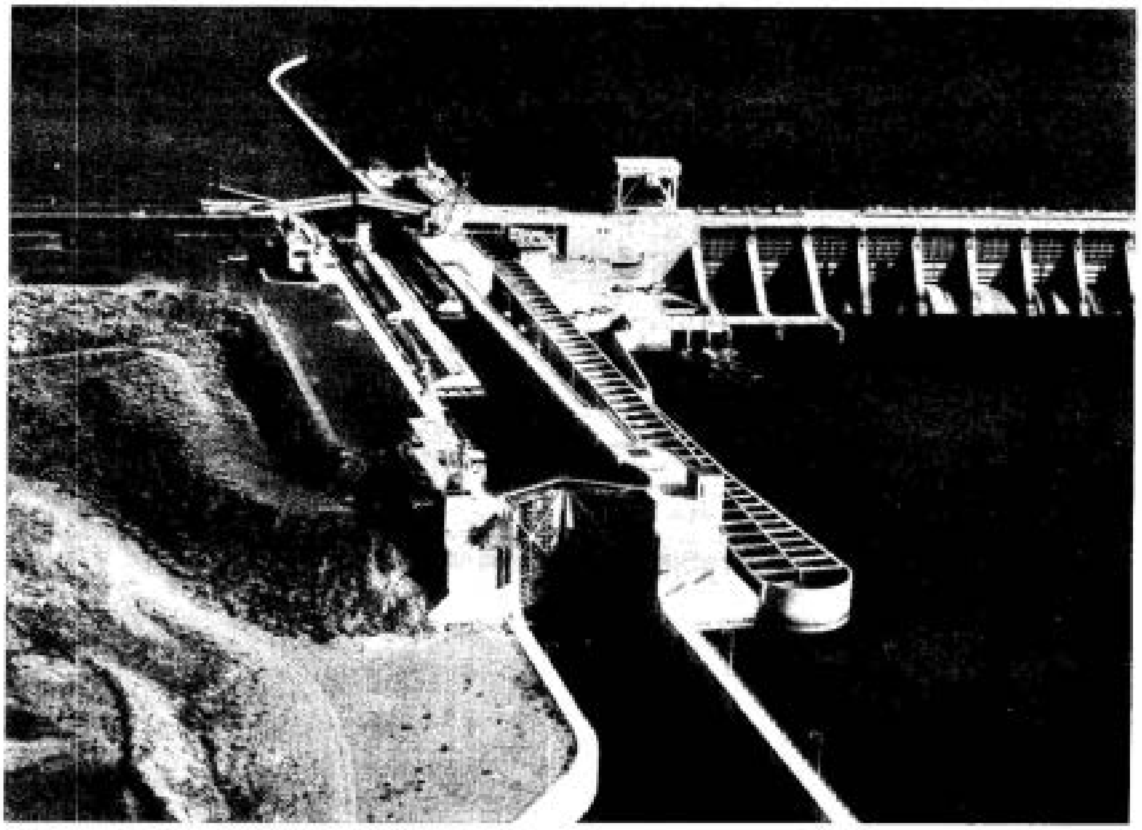
Activity, 1975-1980: The Final Environmental Impact Statement was filed with the Council on Environmental Quality on November 2, 1977. First funding came through in FY 1978 when $1.5 million was made available for advanced engineering and design. Contracts were awarded in that year for site selection, water supply investigations, and design of the McCall Hatchery. The real estate design memorandum, feature design memorandum, and site selection report on the McCall Hatchery were approved.

On November 9, 1978 a construction contract was awarded to Venture Construction Company of Auburn, Washington, for construction of a summer Chinook hatchery at McCall. The McCall Hatchery was substantially completed in FY 1979, and construction began on an adult trapping facility (McCall Satellite Hatchery) that will provide the fish egg supply for the McCall Hatchery. Preliminary design was completed on a steelhead rearing facility for Idaho by expanding the Hagerman National Fish Hatchery. Selection and management criteria were also developed for possible areas where off-project wildlife lands might be located in

Washington, and public meetings were held to discuss the wildlife land purchase program.

McNary Lock and Dam, Lake Wallula, Oregon-Washington

Location: On the Columbia River, 292 miles above its mouth, near Umatilla, Oregon, and 3 miles above the mouth of the Umatilla River.



McNARY DAM, 1977

The Project in 1975: The project includes a dam 7,365 feet long overall and about 180 feet high above streambed, powerplant with 14 power generating units, navigation lock, fishways, levees and pumping plants, incidental irrigation, and modification of railroad bridges over the Columbia and Snake Rivers in order to eliminate hazards to navigation. Construction started May 1947 and is complete except for modification of fish facilities for nitrogen control. The project was placed on a permanent operating basis and the lake was raised to Elevation 340 in November 1953. Except for maintenance interruptions, all 14 power units have been in commercial operation since February 1957.

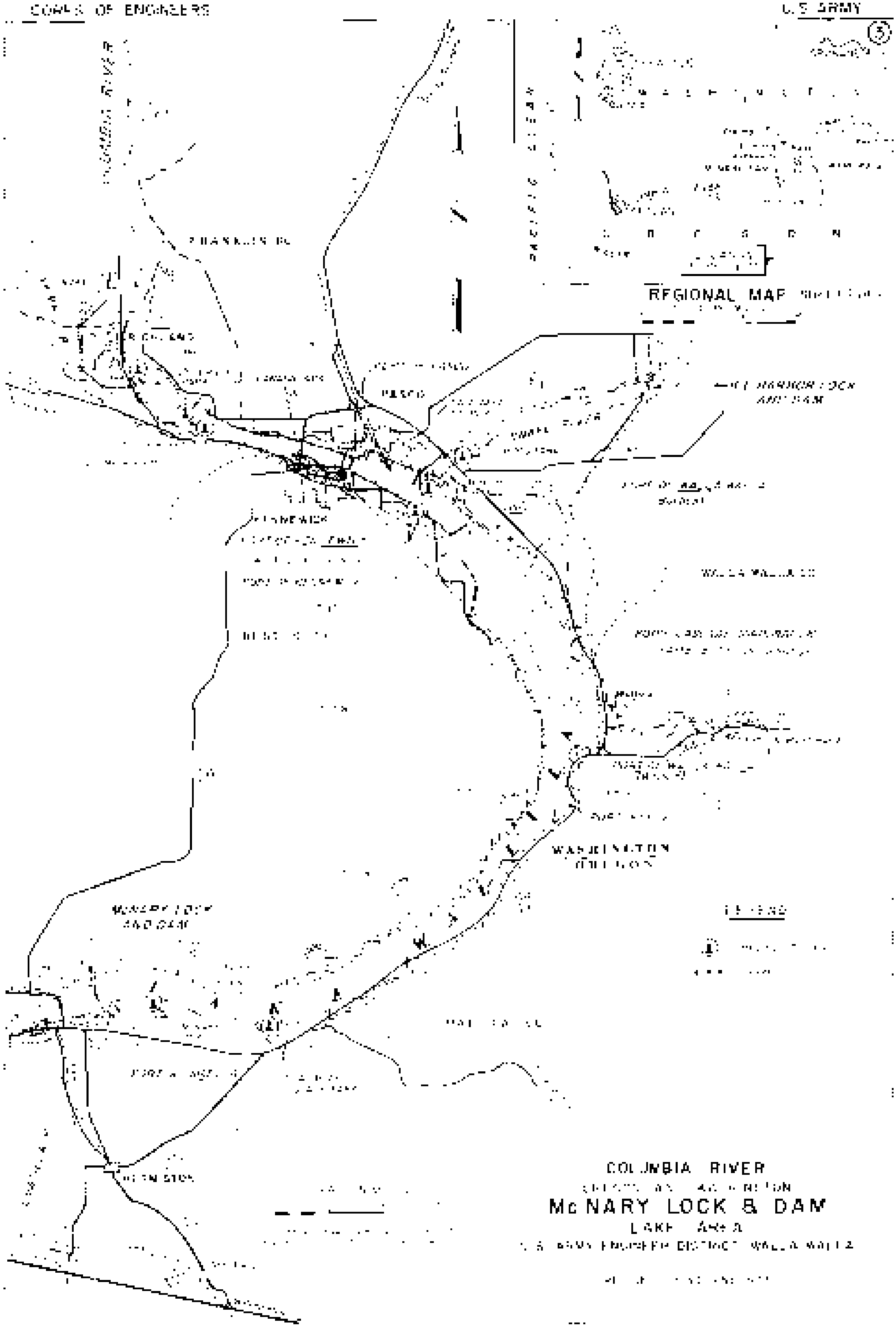
Activity, 1975-1980: The Final Environmental Impact Statement was filed with the Council on Environmental Quality in June 1976. In 1977 timber gratings on the fishway diffusion chambers were replaced with steel gratings. A contract was awarded to modify the fingerling bypass system and to construct a fingerling collection, marking, and holding facility in the powerhouse north nonoverflow area. A contract was also awarded for construction and installation of three traveling screens. Fish barrier screens were installed in 1978 in the powerhouse intake gate slots as part of the fingerling bypass facilities. In 1979 a contract to correct deficiencies at the fingerling facility operated by National Marine Fisheries was completed. Phase I of the navigation channel dredging contract was awarded and completed in FY 1978, and in FY 1979 Phase II of the channel dredging contract was awarded.

In FY 1979 a lakeshore management plan was completed while contracts were awarded and completed for removal of navigation lock stairway building automatic generation control, cultural resources investigations, and recreation area maintenance.

On June 29, 1976 a feasibility report for a second powerhouse at McNary was approved. Public Law 94-587, passed in FY 1977, authorized the addition of 6 to 10 power generator units for the second powerhouse. A Final Environmental Impact Statement was filed with the Council on Environmental Quality on February 25, 1977. The second powerhouse project will consist of additional generator units, as well as levee access and beautification in the Pasco-Kennewick-Richland area, relocation and improvement of visitor facilities located near the powerplant, protection of existing recreation facilities and fish and wildlife habitat, and a fish hatchery for steelhead and fall Chinook to compensate for losses due to operation of the powerhouse.

In FY 1978 a contract was awarded for foundation explorations and a hydraulic model study was initiated. In FY 1979 contracts for explorations, fish and wildlife studies, and cultural resources were completed. The Phase I General Design Memorandum was finished in October 1979.

THIS PAGE LEFT INTENTIONALLY BLANK


CORPS OF ENGINEERS
U.S. ARMY
REGIONAL MAP
FRANKLIN CO.
RICHLAND
PASCO
KENNEWICK
ICE HARBOR LOCK AND DAM
WALLA WALLA CO.
WALLULA
WASHINGTON
OREGON
McNARY LOCK AND DAM
LEGEND
HERMISTON
COLUMBIA RIVER
McNARY LOCK & DAM
LAKE AREA
U.S. ARMY ENGINEER DISTRICT, WALLA WALLA

THIS PAGE LEFT INTENTIONALLY BLANK

APPENDIX C

DISTRICT ENGINEERS

APPENDIX C

DISTRICT ENGINEERS

COL Nelson P. Conover
July 1973-June 1976

COLONEL NELSON P. CONOVER

Colonel Conover, a native of Mobile, Alabama, received his B.S. degree in civil engineering from Auburn University and entered the service in 1953. He was assigned to the ROTC unit at the University of Dayton, Dayton, Ohio, in 1956 and subsequently entered Massachusetts Institute of Technology in 1958 for an advanced degree (M.S.) in nuclear engineering which he received in 1960. He was then assigned to Fort Belvoir, Virginia, and with the Nuclear Power Division, OCE. Colonel Conover served two tours in Vietnam in 1966 and 1970, first with the 1st Brigade, 101st Airborne Division, and later with the 588th Engineer Battalion (combat). He also had a tour of duty in Korea with the 1343d Engineer Battalion, as well as with the 8th Infantry Division in Germany. He was a graduate of the Command and General Staff College in 1968 and came to the Walla Walla District in July 1973 after graduating from the Army War College at Carlisle Barracks, Pennsylvania.

THIS PAGE LEFT INTENTIONALLY BLANK

COL Christopher J. Allaire
June 1976-August 1979

COLONEL CHRISTOPHER J. ALLAIRE

Before reporting for duty in Walla Walla in June 1976, Colonel Allaire was Chief of the Construction Division, Office of the Engineer, U.S. Army Forces Command, Fort McPherson, Georgia. He held command and staff assignments both in the United States and overseas with the 11th Airborne and 24th Infantry Divisions in Europe and 101st Airborne Division in Vietnam. He served with the Omaha Engineer District as Assistant Area Engineer in North Dakota. Colonel Allaire also commanded the 82nd Engineer Battalion in Germany and was with the 32nd Army Air Defense Command.

A 1956 graduate of the U.S. Military Academy, West Point, Colonel Allaire received a Master of Science degree in civil engineering from Texas A&M. He is a graduate of the Army Command and General Staff College and the Army War College. Colonel Allaire has been awarded the Legion of Merit, Bronze Star Medal with oak leaf cluster, Meritorious Service Medal, Air Medal with three oak leaf clusters, and the Army Commendation Medal with oak leaf cluster. A native of Wareham, Massachusetts, Colonel Allaire was born April 4, 1934.

THIS PAGE LEFT INTENTIONALLY BLANK

COLONEL HENRY J. THAYER

COL Henry J. Thayer
August 1979 -

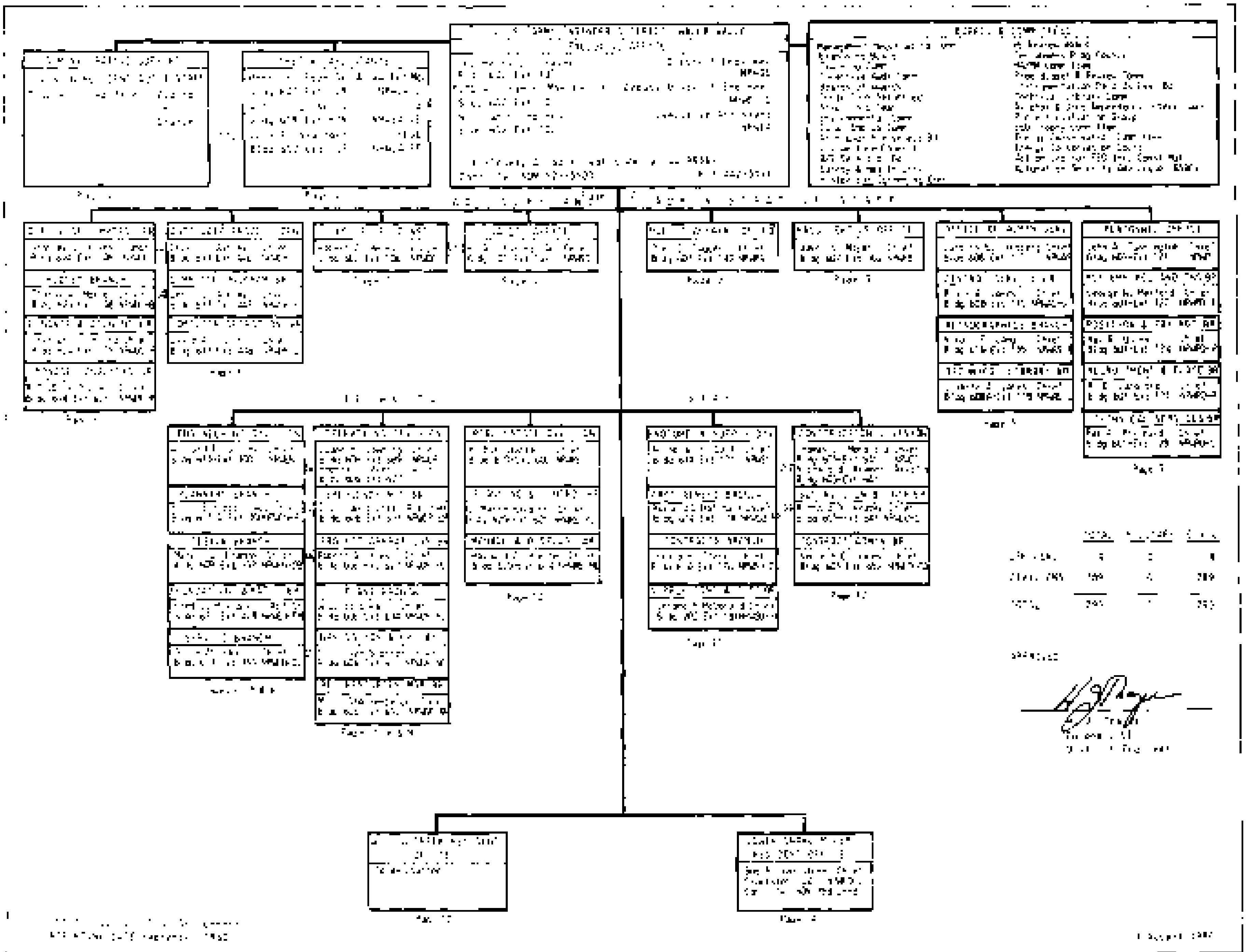
Before reporting for duty in Walla Walla in August 1979, Colonel Thayer was Chief of Facilities Engineering Division at Headquarters, U.S. Army Training and Doctrine Command, Fort Monroe, Virginia. In that position, he was responsible for facility engineering operations at 22 army posts throughout the United States. In 1973 Colonel Thayer was named Chief of Engineering for the Field Command of the Defense Nuclear Agency, Kirtland Air Force Base, New Mexico, where he was responsible for designing underground nuclear test beds and electronic test result monitoring systems. From 1963 to 1965, as Resident Engineer for the Corps Ballistic Missile Construction Office in North Dakota, he was responsible for the construction of 100 Minuteman missile sites and 10 control centers.

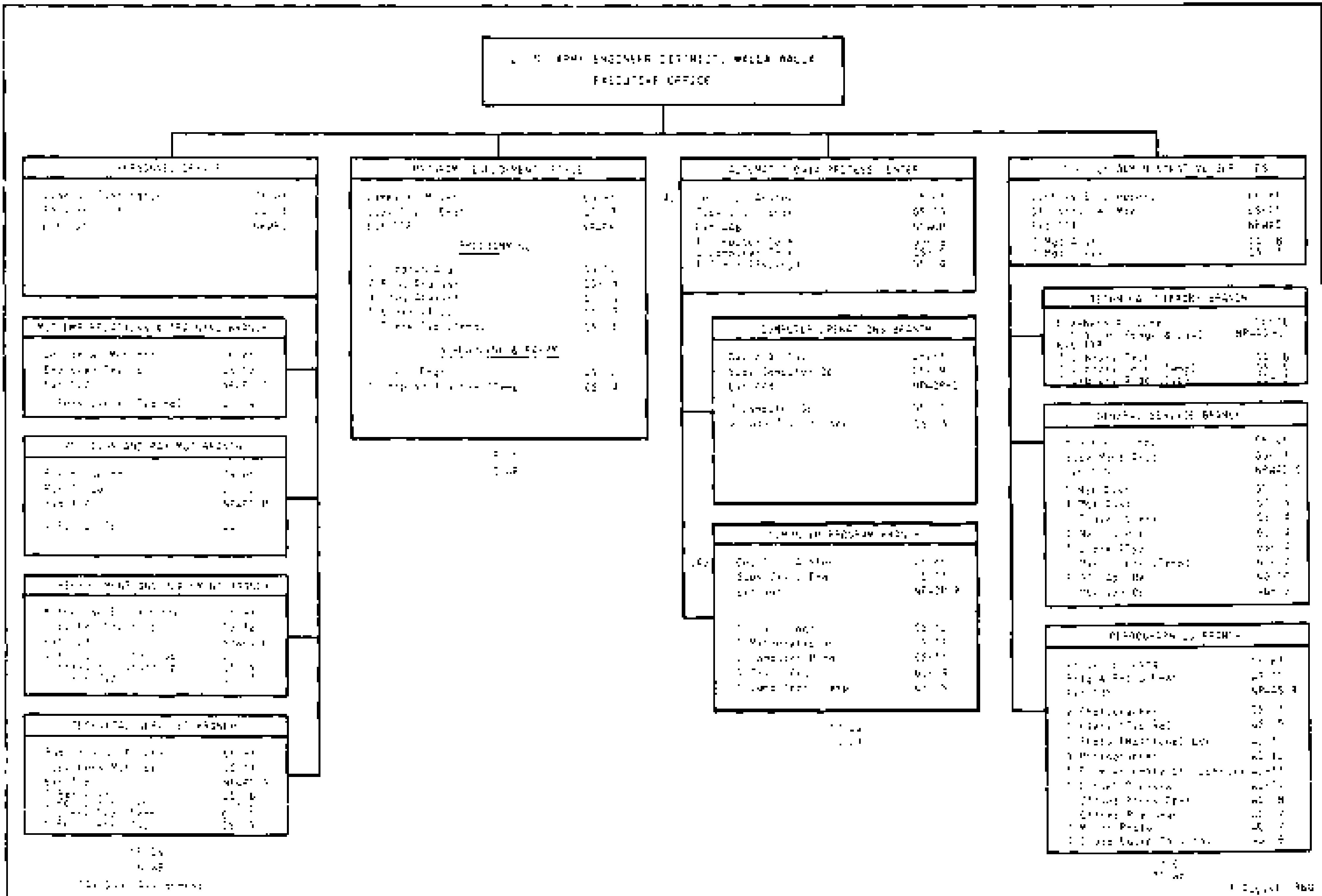
His overseas assignments include Chief, Troop Construction Division, Army Engineer Command, West Germany; Battalion Commander, 79th and 94th Engineer Battalions (construction), West Germany; Battalion Executive Officer and Installation Engineer, 4th Infantry Division and 25th Infantry Division, Vietnam; and Chief of Engineering, Military Assistance and Advisory Group, Vietnam. Colonel Thayer was graduated from The Citadel, Charleston, South Carolina, in 1954 with a bachelor's degree in civil engineering. He holds a master's degree in nuclear engineering from the University of Michigan. He also is a graduate of the Army Command and General Staff College and the Army War College. Among his military awards are two Bronze Star Medals, two Meritorious Service Medals, Air Medal, four Army Commendation Medals, and an Air Force Commendation Medal. Colonel Thayer is a native of New Castle, Pennsylvania.

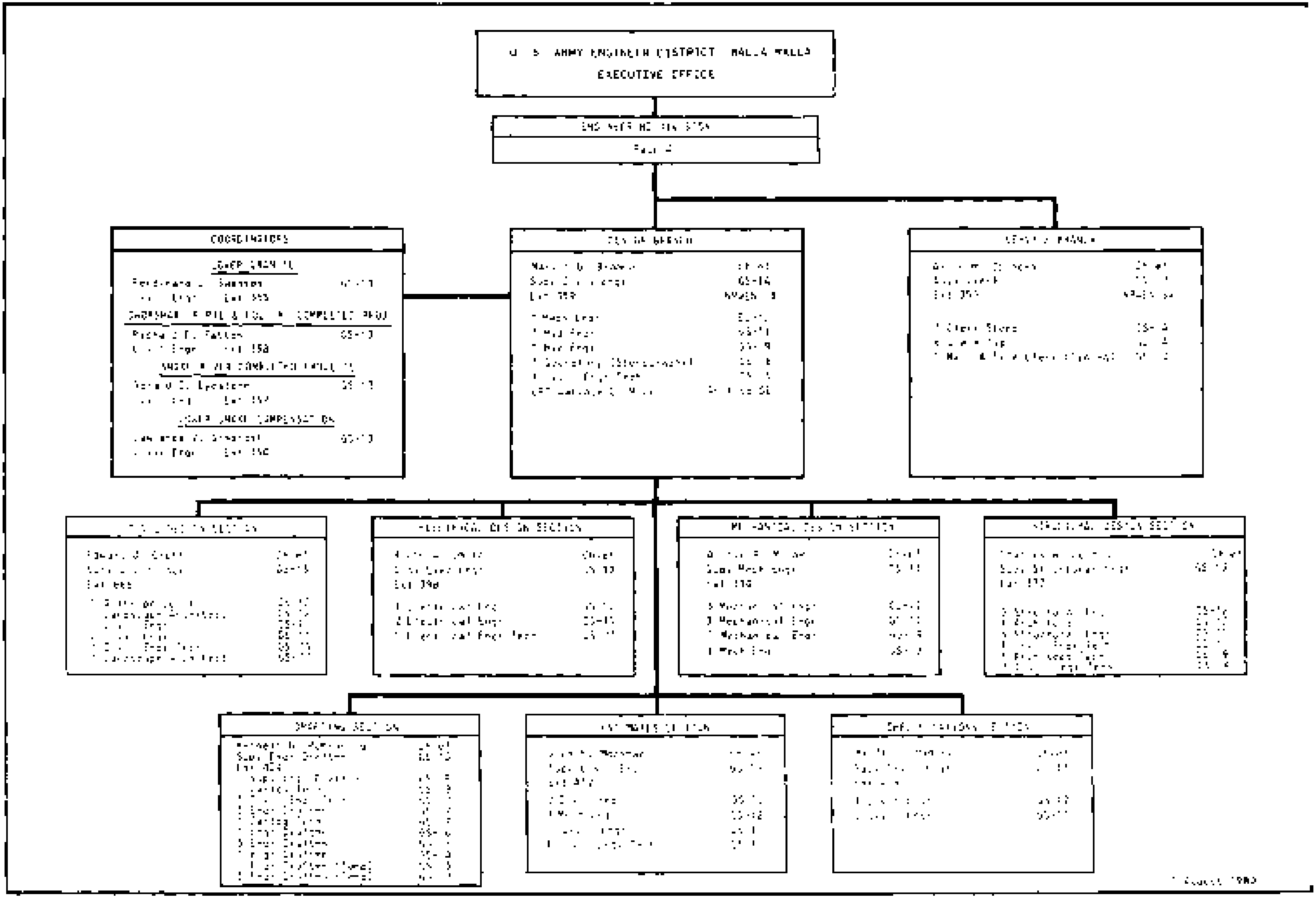
THIS PAGE LEFT INTENTIONALLY BLANK

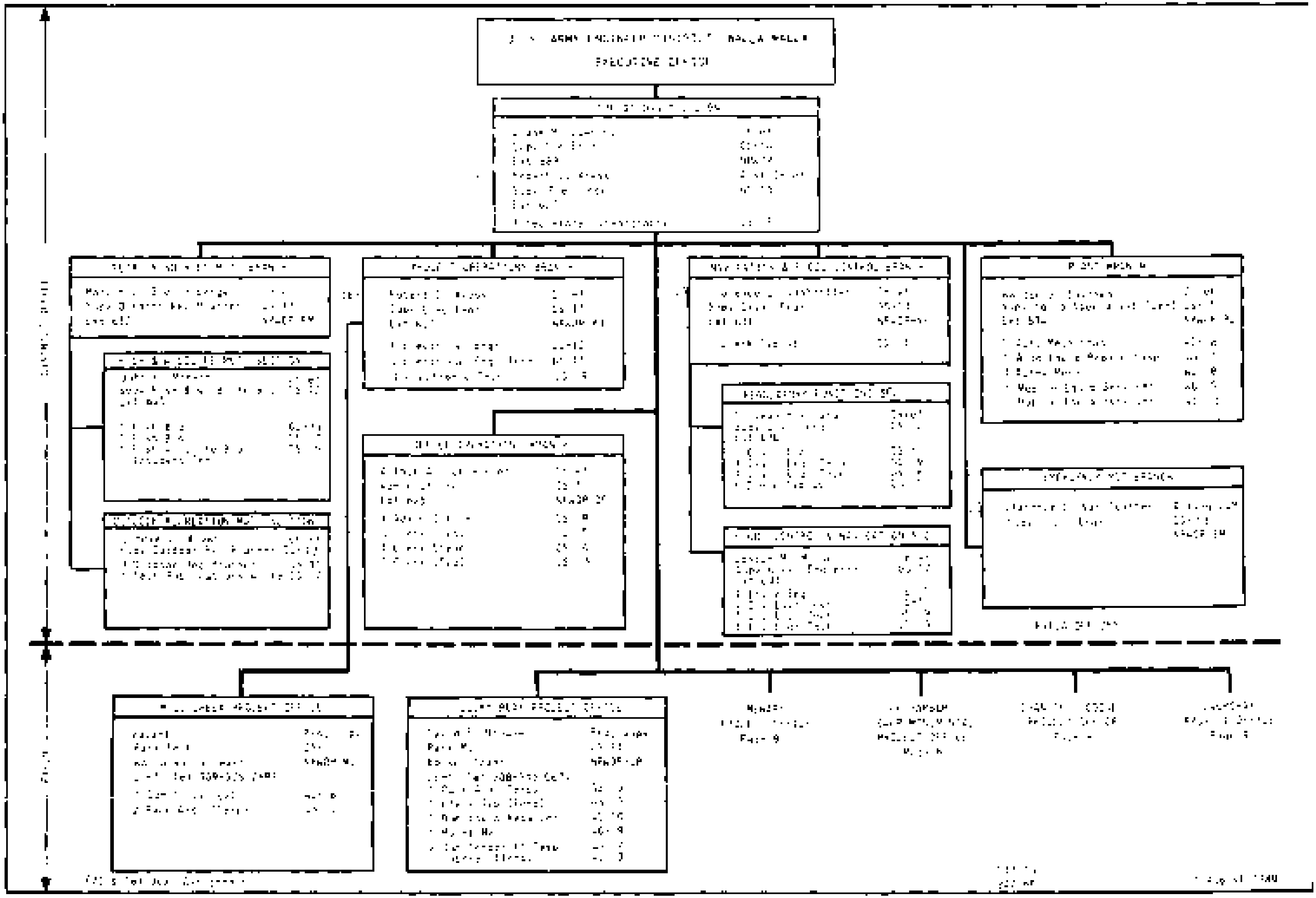
APPENDIX D

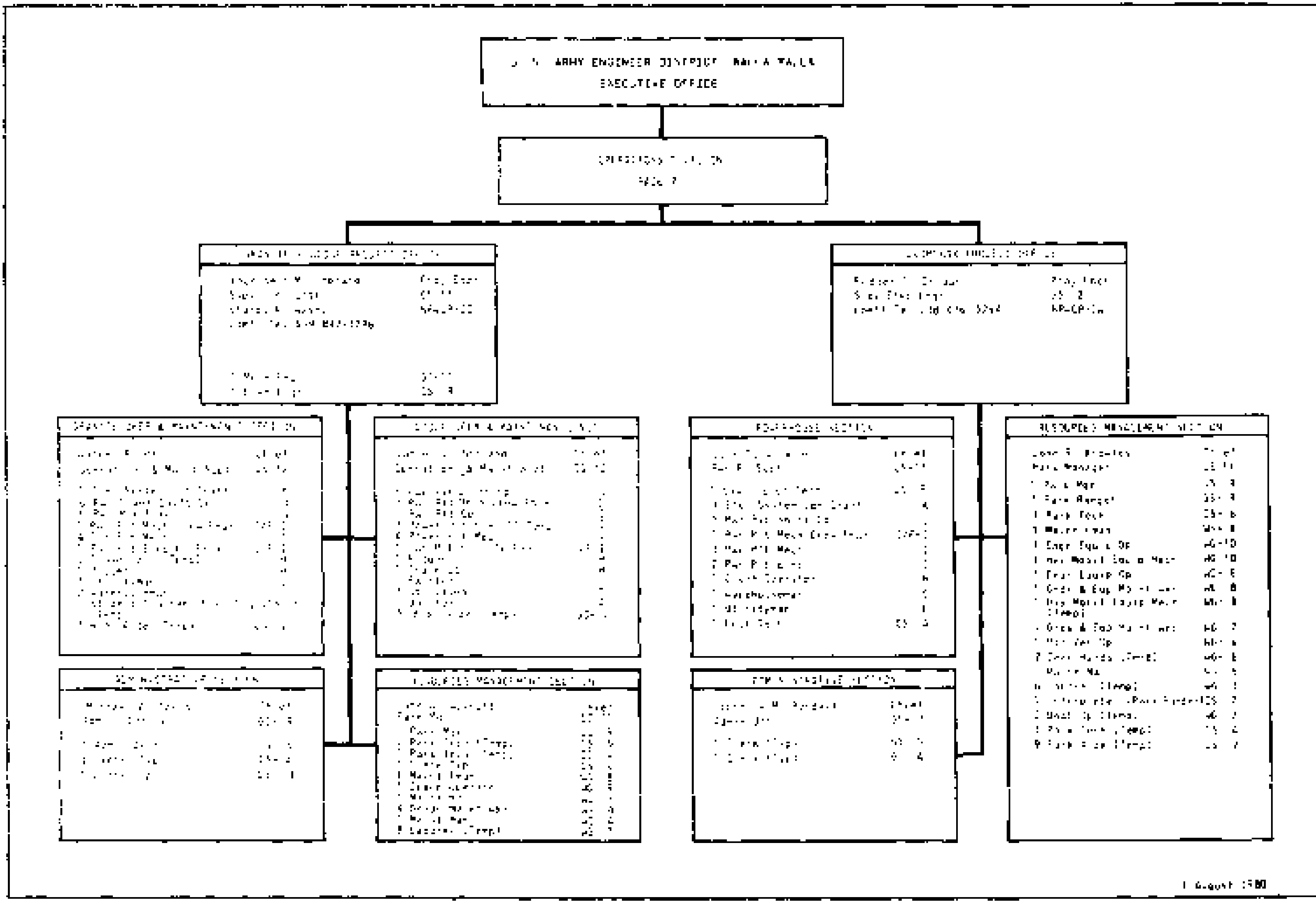
DISTRICT ORGANIZATIONAL CHART

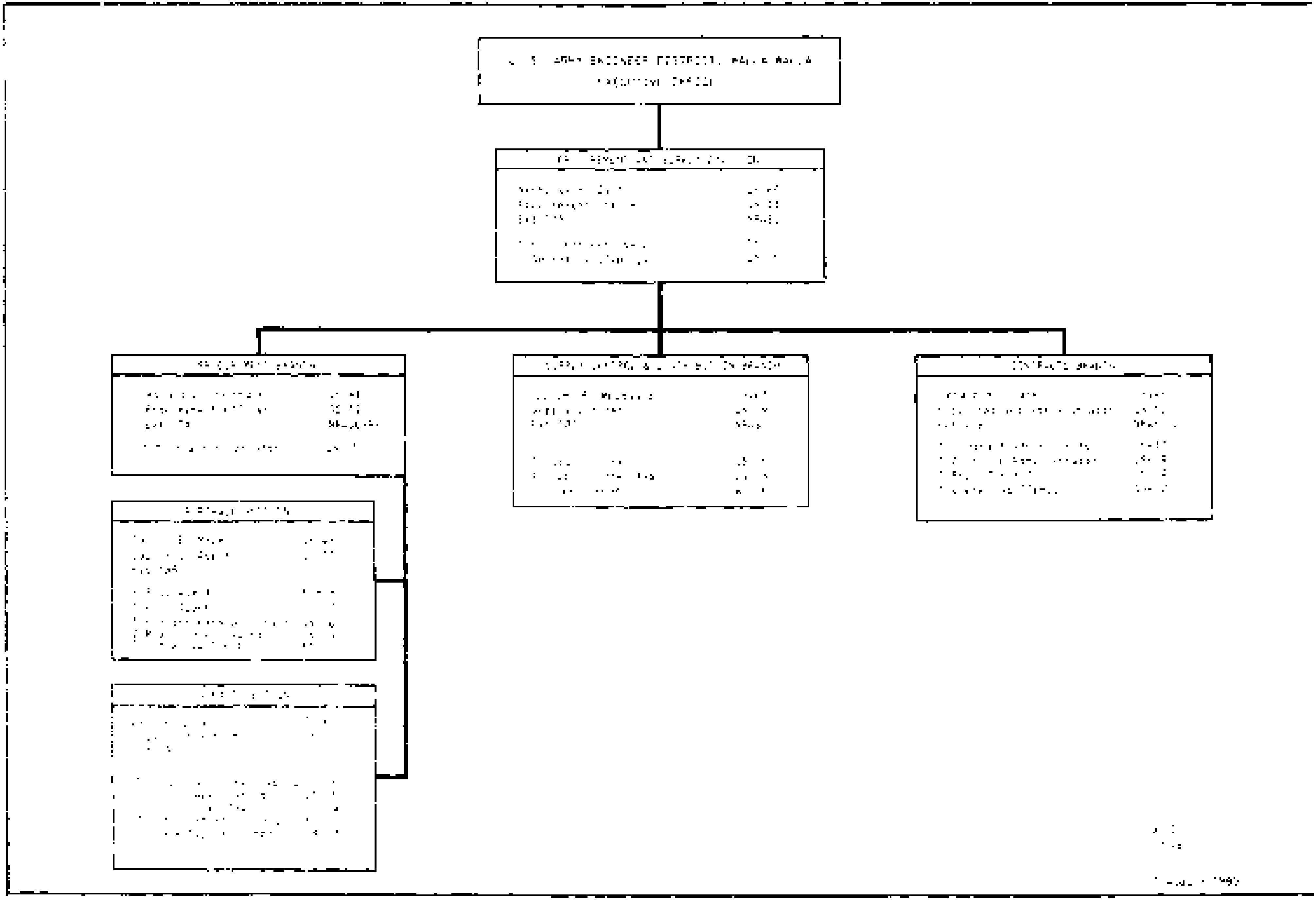


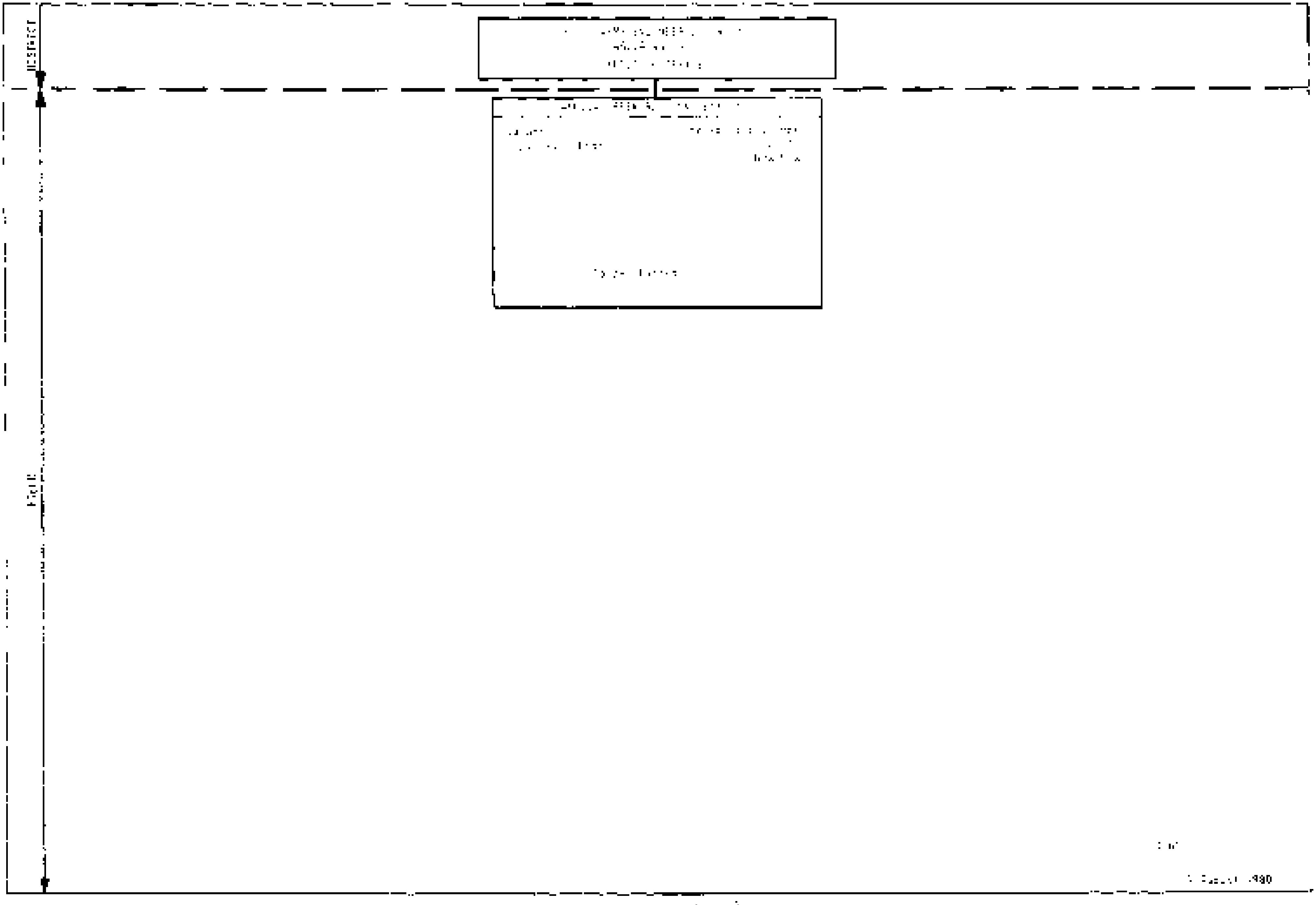

U. S. ARMY ENGINEER DISTRICT, WALLA WALLA
EXECUTIVE OFFICE

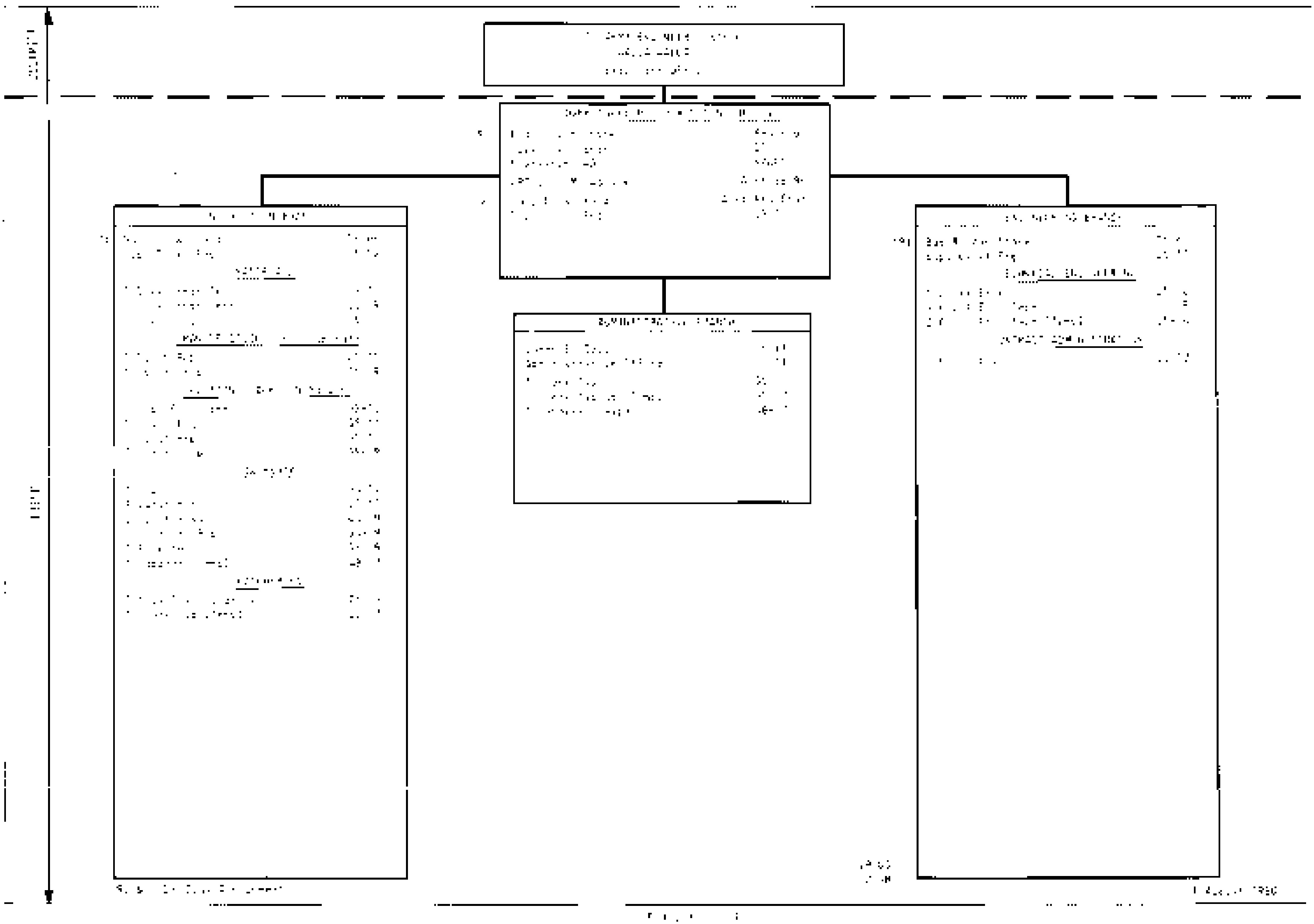

EXECUTIVE OFFICE
COORDINATORS
GS-14

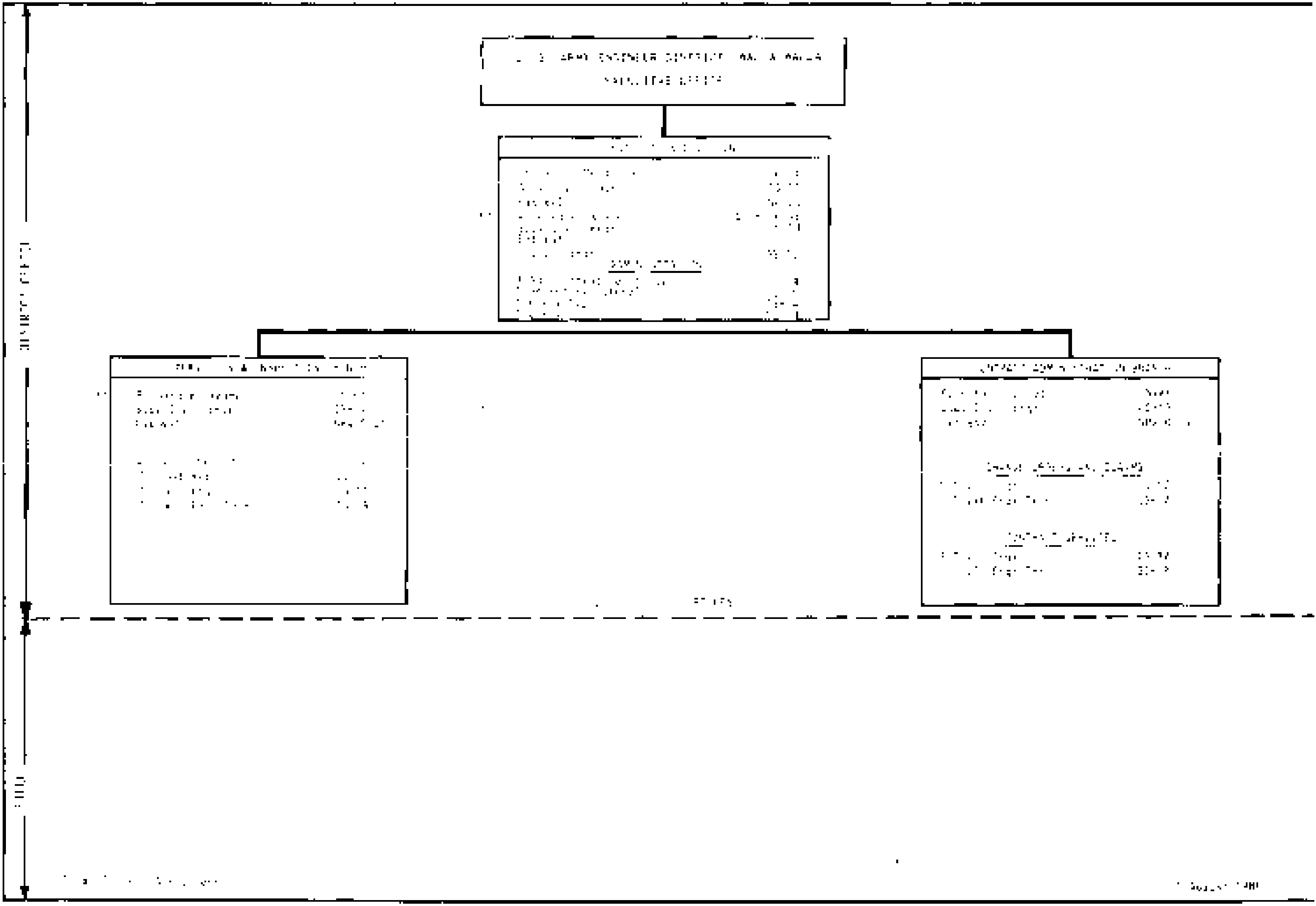


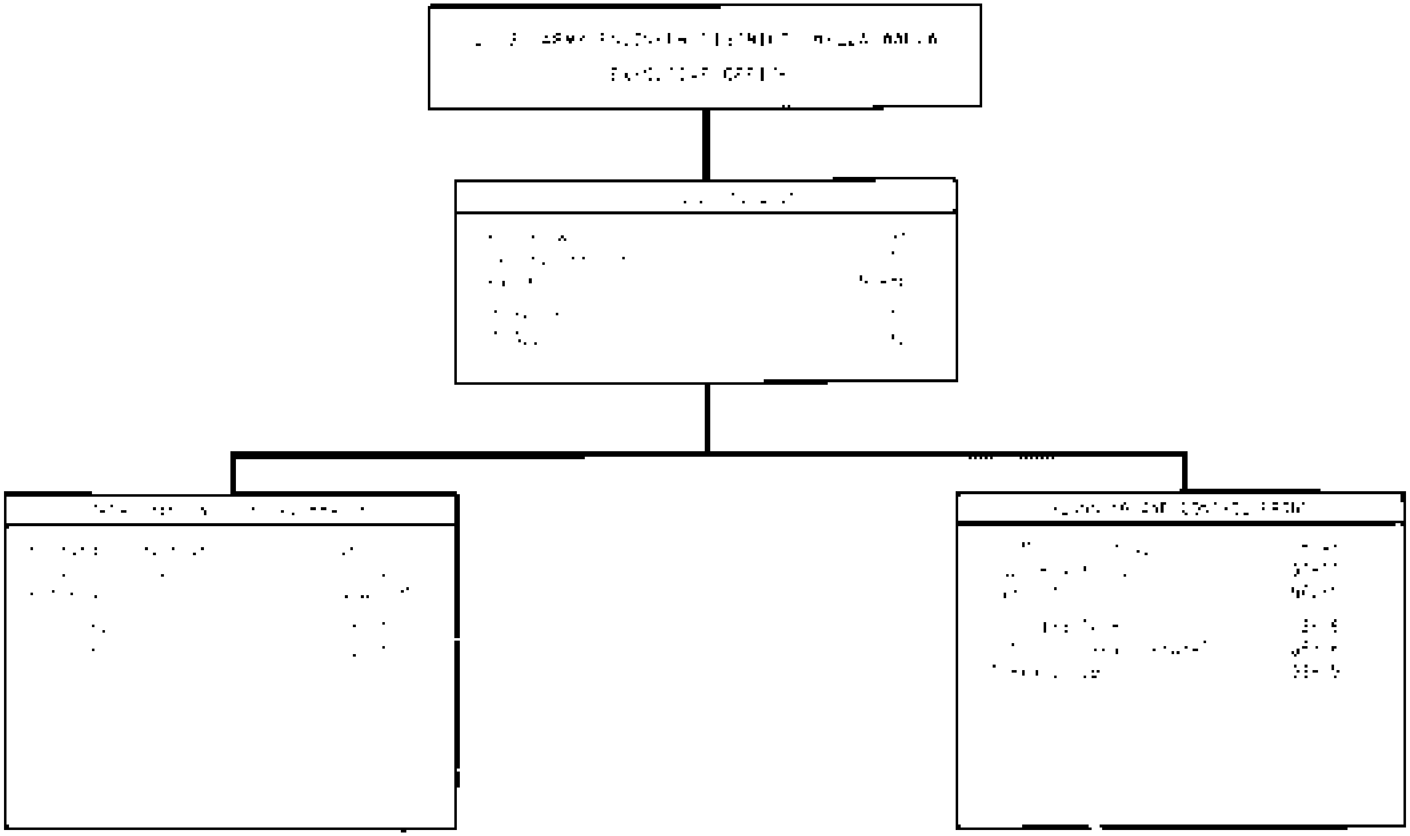

ARMY ENGINEER DISTRICT
EXECUTIVE OFFICE
1 August 1980

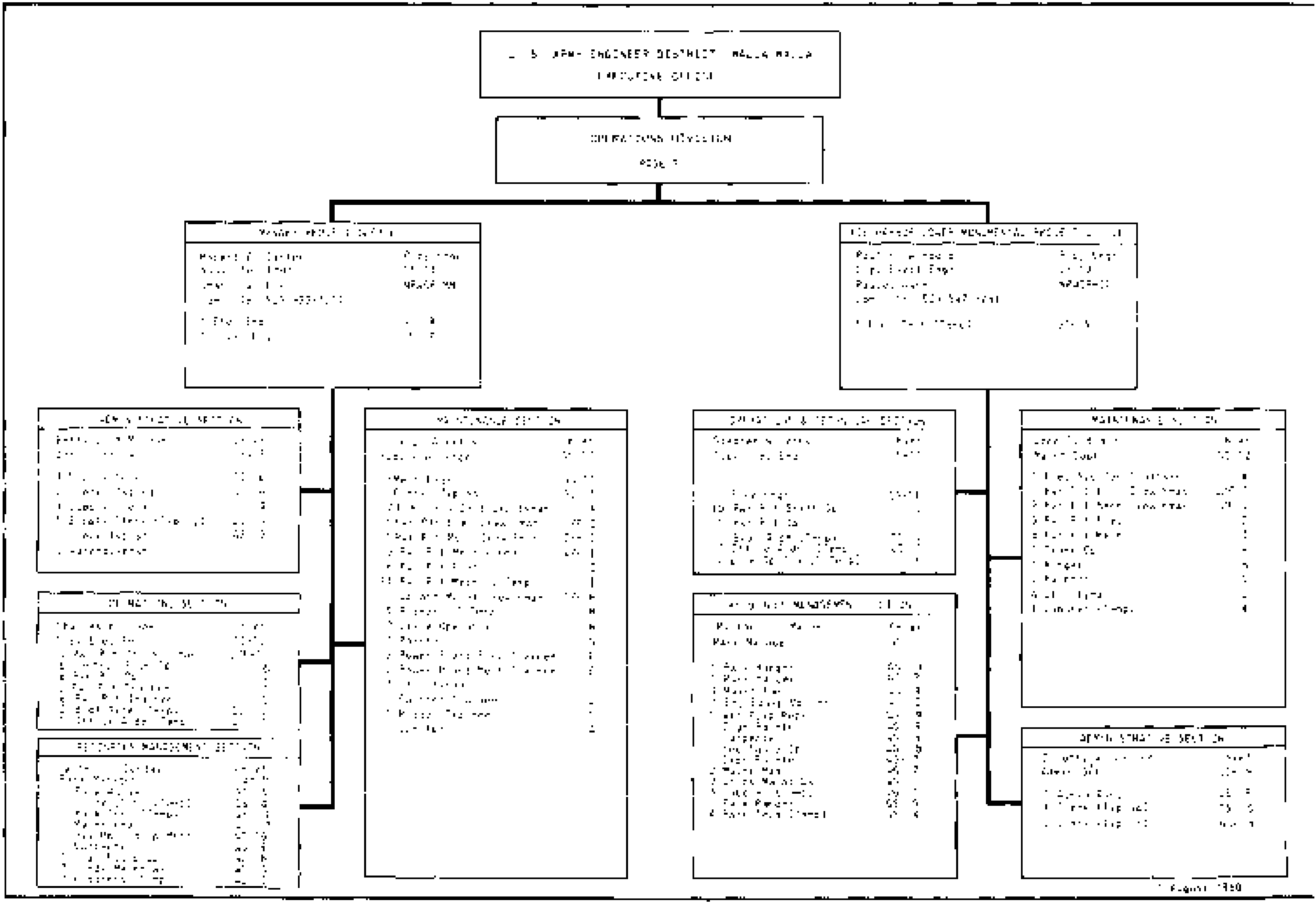

U. S. ARMY ENGINEER DISTRICT, WALLA WALLA
EXECUTIVE OFFICE
CONTRACTS BRANCH

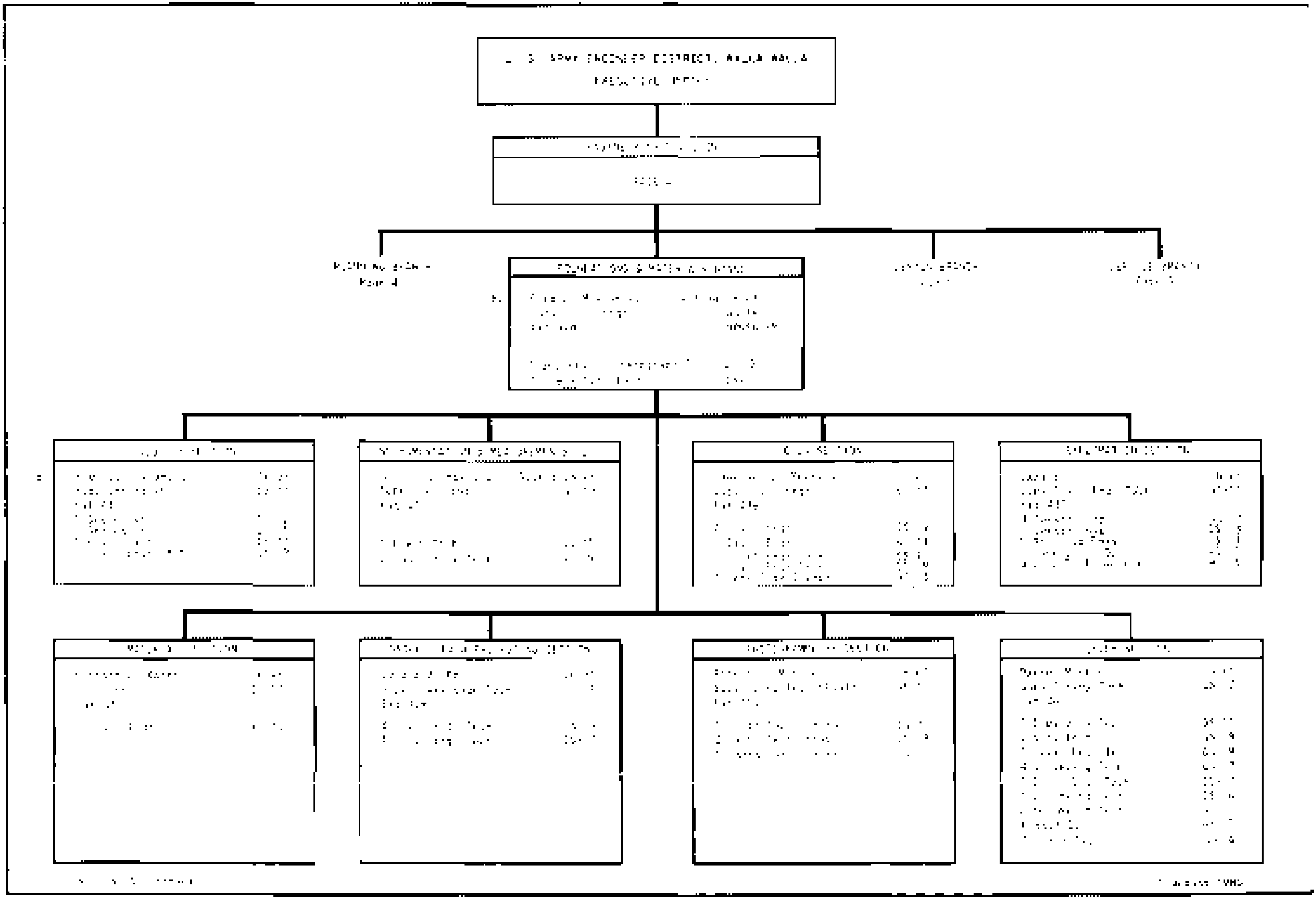


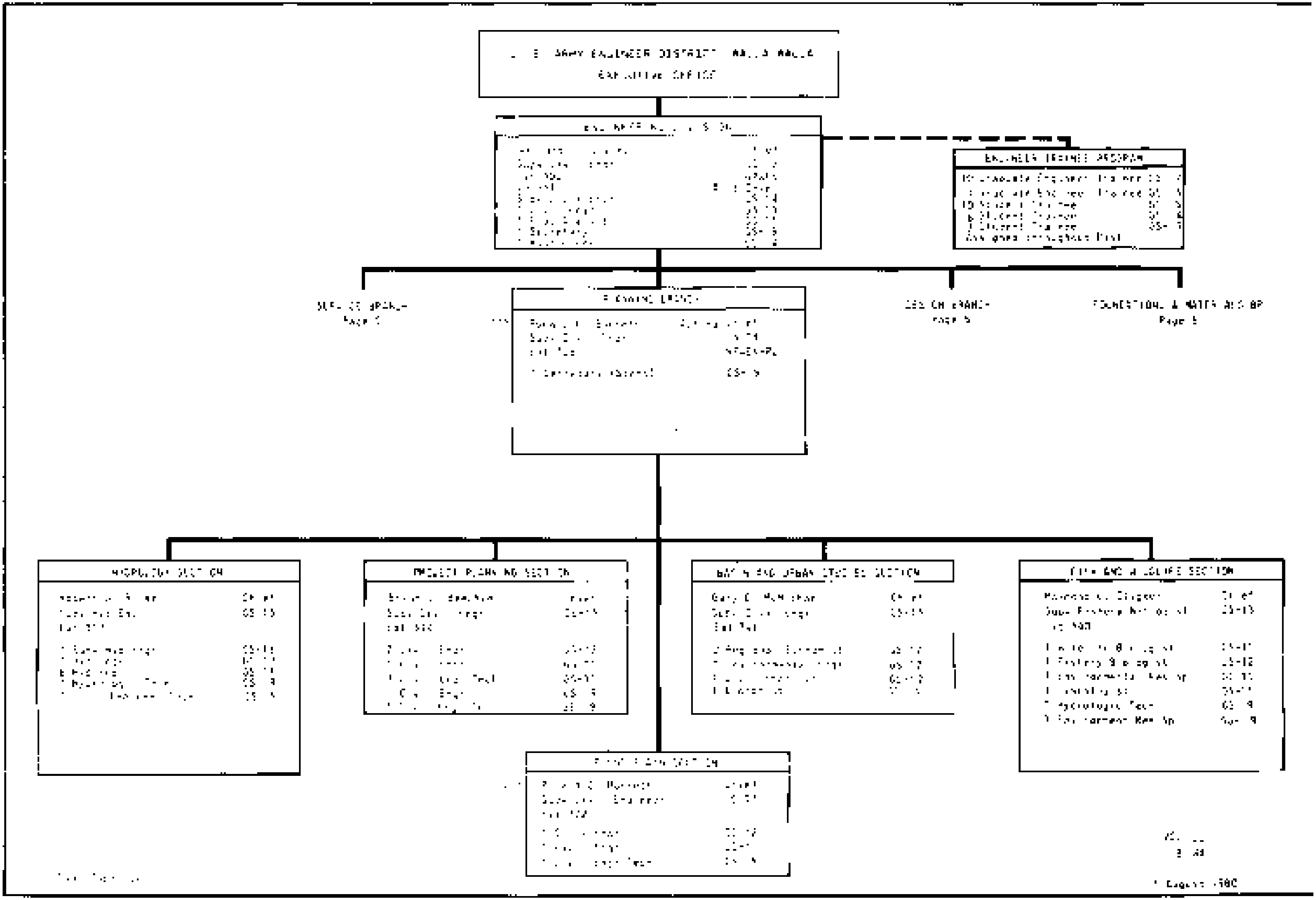


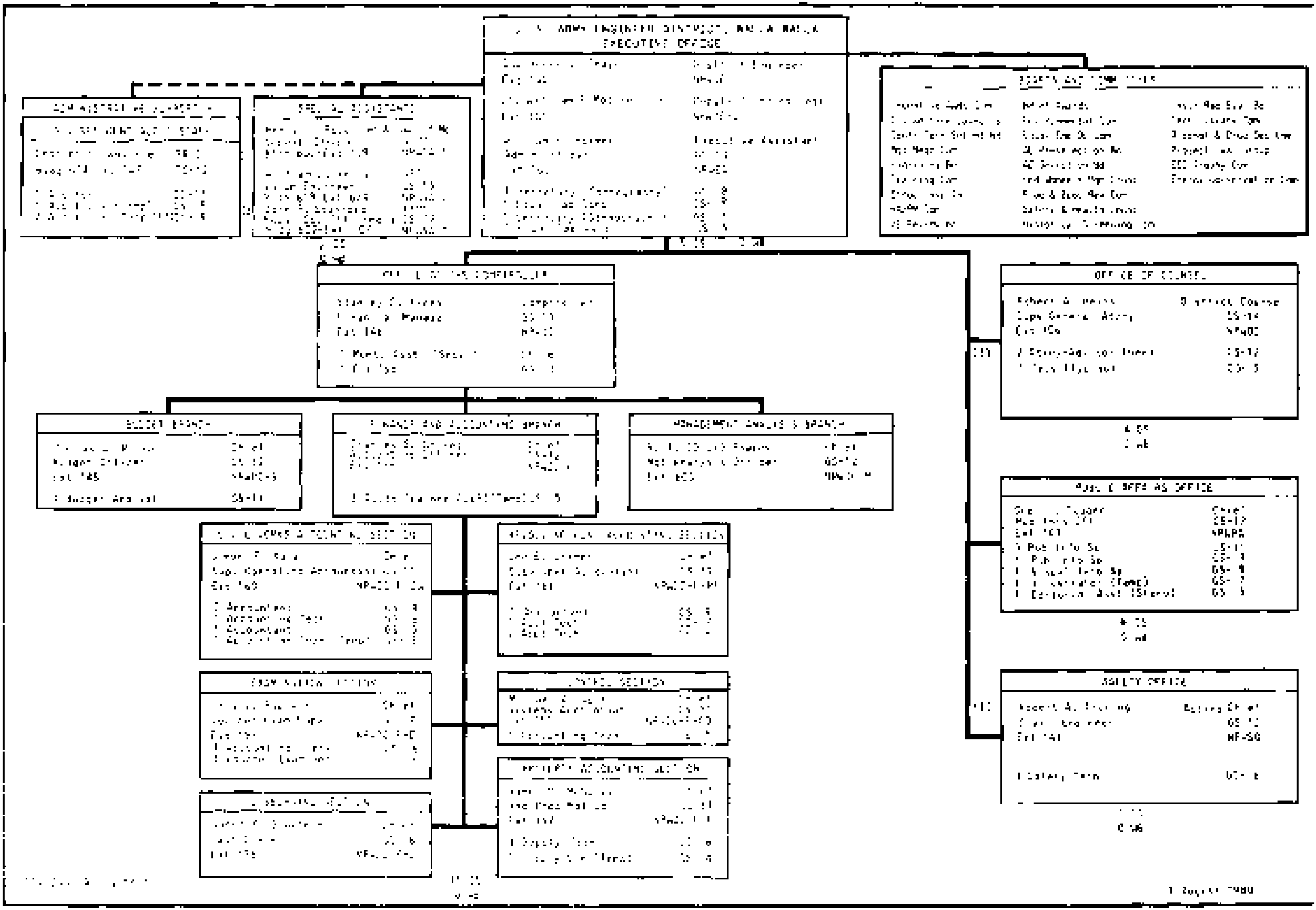

U. S. ARMY ENGINEER DISTRICT, WALLA WALLA
NAVIGATION OFFICE




U. S. ARMY ENGINEER DISTRICT, WALLA WALLA
EXECUTIVE OFFICE
OPERATIONS DIVISION
MAINTENANCE SECTION
ADMINISTRATIVE SECTION


U. S. ARMY ENGINEER DISTRICT, WALLA WALLA


ARMY ENGINEER DISTRICT WALLA WALLA
ENGINEER TRAINEE PROGRAM
Assigned throughout Dist
PLANNING BRANCH
DESIGN BRANCH
FOUNDATIONS & MATERIALS BR
HYDROLOGY SECTION
PROJECT PLANNING SECTION
BASIN AND URBAN STUDIES SECTION
FISH AND WILDLIFE SECTION
Chief
Supv Fishery Biologist
Hydrologic Tech
Environmental Res Sp


EXECUTIVE OFFICE
OFFICE OF COUNSEL
1 August 1980