



DOE/ES-0202

UMATILLA BASIN PROJECT

OREGON

PLANNING REPORT -

FINAL ENVIRONMENTAL STATEMENT



U.S. DEPARTMENT OF THE INTERIOR
Donald P. Hodel, Secretary



BUREAU OF RECLAMATION
C. Dale Duvall, Commissioner



P R E F A C E

In July 1986, the Bureau of Reclamation completed a Planning Report/Draft Environmental Statement for the proposed Umatilla Basin Project. That document was provided to the public and agencies for review, and in September 1986 a public hearing was held in Pendleton, Oregon.

Comments received during the 90-day review period and at the public hearing have been helpful in refining the recommended plan of development. Now, the Planning Report/Final Environmental Statement (PR/FES) has been completed to incorporate plan refinements and other information necessary to complete the planning investigation phase of the project.

The PR/FES is in a condensed format. This is because some parts of the earlier draft document did not require revision and need not be reproduced. You may want to refer to the July 1986 document for topics that required no change. If you do not have a copy of the draft document, one can be obtained from:

Regional Director (Attention: PN 150)
Bureau of Reclamation
Box 043, 550 West Fort Street
Boise, Idaho 83724

A word about how the PR/FES is organized.

The first section is a background and summary of the Recommended Plan. The second section of the PR/FES presents a more detailed discussion of the Recommended Plan, incorporating changes, modifications, and new information since the 1986 draft report document. The remainder of the PR/FES consists of sections discussing (1) public hearing highlights; (2) a listing of those who received, reviewed, and commented on the draft document; (3) comments received on the draft document and Bureau of Reclamation responses to those comments; (4) supporting material related to some plan modifications; and (5) an environmental commitments checklist.

For comparative purposes, a reprint of the Background and Summary from the July 1986 draft report is provided in Attachment A. The reprint describes key features of the Recommended Plan and the Alternative Plan as they were at the time of public review in 1986.

During public review, there was general support for the Recommended Plan, and no comments were received recommending adoption of the Alternative Plan. Accordingly, refinement of the Alternative Plan was not warranted, and the PR/FES addresses the Recommended Plan only.

You may comment on the PR/FES as indicated on the following page.



PLANNING REPORT / FINAL
ENVIRONMENTAL STATEMENT

UMATILLA BASIN PROJECT, OREGON

Prepared by:
Pacific Northwest Region
Bureau of Reclamation
Department of the Interior

In cooperation with:
Umatilla National Forest
Forest Service
U.S. Department of Agriculture

This is the Planning Report/Final Environmental Statement (PR/FES) on a Bureau of Reclamation proposal to assist in restoration of the Umatilla River anadromous fishery.

The plan recommended for development includes a large pumping complex on the Columbia River, smaller pumping facilities near the mouth of the Umatilla River, and fish passage and screen improvements at several irrigation diversions, all located in Umatilla County, Oregon. The pumping plants would supply irrigators within the existing Umatilla Project with some of their water so that flows now diverted from the Umatilla River for irrigation could remain in the river to enhance flow conditions for salmon and steelhead migration, spawning, and rearing. Irrigators would receive a water supply equivalent to their present supply. The flow and fishway improvements would improve fish runs, and sport, commercial, and Indian fisheries would benefit. In December 1985, the State of Oregon adopted minimum streamflows for the Umatilla River; these are consistent with the flow recommendations in the proposed project.

The Planning Report/Draft Environmental Statement (PR/DES) on the recommended development was made available to the public on July 21, 1986 (DES 86-32). The PR/DES was also used to obtain public review and comment on wetlands protection (Executive Order 11990) and flood plain management (Executive Order 11988). The document also summarizes Endangered Species Act, section 7 consultation. A public hearing on the PR/DES was held on September 17, 1986, in Pendleton, Oregon, to receive comments.

This PR/FES presents the results of agency and public review of the PR/DES. Based on the review, it has been concluded that (1) no basic changes are required in Recommended Plan facilities; (2) the proposed plan involves no unresolved conflicts with other water and land uses, nor are there unresolved environmental conflicts; and (3) requirements relating to the formulation, evaluation, and review of the proposed Federal project have been met. The PR/FES should be used in conjunction with the July 1986 PR/DES.

A Federal decision on the proposed project will not be made until at least 30 days after the Environmental Protection Agency Final Environmental Impact Statement "Notice of Availability" has appeared in the Federal Register. During that 30-day period, written comments on the content of the PR/FES will be accepted at the address noted below. These comments will be considered in the Federal decision process.

For further information on the processing or content of this document, please contact Douglas James, Office of Environment (PN 150), Bureau of Reclamation, Box 043, 550 West Fort Street, Boise, Idaho 83724 or call (208) 334-1207.

Statement Number: **FES 88 - 4**

Filing Date: **FEBRUARY 12, 1988**





UMATILLA BASIN PROJECT, OREGON
LOCATION MAP
August 1982 Rev. 1/86 1022-100-19

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BACKGROUND AND PLAN SUMMARY

This Planning Report/Final Environmental Statement (PR/FES) discusses the Recommended Plan for the proposed Umatilla Basin Project in northeastern Oregon. Implementation of the Recommended Plan would help satisfy objectives of the Confederated Tribes of the Umatilla Indian Reservation (tribes) to restore salmon and steelhead runs in the Umatilla River to desirable levels. Inadequate streamflows and insufficient fish passage and protective screens at irrigation diversions have contributed to depletion of a once viable fishery, and the proposed project would help correct these deficiencies. Restoration of the fishery would be of major cultural and economic importance to the tribes, and other Indian and non-Indian fisheries would benefit.

For decades, anadromous fish runs in inland drainage basins of the Pacific Northwest have been decimated as a result of water and land resource activities including construction and operation of storage and diversion dams, hydroelectric generating facilities, timber harvest, grazing, mining, and other actions. As runs of some species were nearing extinction, Pacific Northwest states, Indian tribes, the Federal Government, and resource groups took action to save and restore the runs in key river basins.

The proposed Umatilla Basin Project is a part of a comprehensive fishery restoration program in the Umatilla River basin. The State of Oregon, tribes, and regional hydroelectric ratepayers are helping to plan and finance a multifaceted restoration program. These groups look to the Federal Government, through the Bureau of Reclamation, to participate in this restoration because of the major impacts on the basin fishery resulting from construction and operation of the Federal Umatilla reclamation project. The Federal project's storage and diversion dams and water diversions have been the major cause of streamflow depletions which severely limit or preclude fish migration, spawning, and rearing. Further, the tribes believe that Federal participation in the restoration effort will help fulfill fishing rights reserved to them in an 1855 treaty with the United States which established the Umatilla Indian Reservation.

At the request of the tribes, Oregon Department of Fish and Wildlife, and others, Congress directed the Bureau of Reclamation to plan a project that would help resolve the potential conflict between fishery and irrigation water needs in the Umatilla River basin. Planning efforts to identify a solution to the fishery problems were initiated in 1981 under authority of Public Law 89-561. During the course of the study, Reclamation was assisted by the tribes, Federal and State fish and wildlife agencies, irrigation districts, and a citizens' steering committee.

During the study, alternative plans were formulated in light of the needs, resources available, and identified institutional and physical constraints. The primary goal of the planning effort throughout the study was to resolve the need for Umatilla River fishery restoration without impairing the existing irrigation based agricultural economy. In July 1986, a Umatilla Basin Project Planning Report/Draft Environmental Statement (PR/DES) was distributed that discussed a Recommended Plan of development and presented an alternative plan for consideration. A public hearing was held on the PR/DES, and a 90-day comment period was provided to encourage public review of

the study findings and selection of a plan. The public review period ended in October 1986. All commenters supported the Recommended Plan, although some suggested areas where the plan could be clarified or improved.

BACKGROUND

The Umatilla River basin is an important agricultural area with about 50,000 irrigated acres. Most of this acreage is within the Federal Umatilla reclamation project. The project, with McKay and Cold Springs Reservoirs and many water diversion and conveyance facilities, serves the Hermiston, West Extension, Stanfield, and Westland Irrigation Districts. The project's several hundred farm units produce crops having a gross annual value of about \$8 million. The United States is under contract with the irrigation districts to supply irrigation water.

Irrigation development placed a heavy demand on the Umatilla River, and low streamflows during summer and fall combined with insufficient passage facilities and protective screens at some diversion points have reduced the river's capability to support salmon and steelhead runs. These conditions and the adverse effects of main stem Columbia River dams on fish runs have reduced Umatilla River fish runs to a fraction of what they once were.

The fishery restoration objective of the Recommended Plan is treaty related. Traditionally, the tribes had a viable hunting and fishing lifestyle based on seasonal migration over vast areas to take advantage of salmon and steelhead runs, wildlife migrations, and other food sources. When the tribes entered into a treaty with the United States in 1855, they ceded vast land areas upon which their livelihood depended and settled on a reservation. In recognition, the treaty included provisions to protect fishing and hunting within the reservation and at "usual and accustomed" places outside the reservation and to assist in development of a viable reservation economy.

Resource development in the basin, including construction of the Federal Umatilla reclamation project, has adversely affected habitat once available to salmon and steelhead. These developments, and dam construction on the Columbia River, have reduced Umatilla River fish runs to a mere fraction of what they once were, and many of the "usual and accustomed" Indian fisheries throughout the Columbia River basin have been depleted.

Several tribes have sought restitution in the courts for lost lands and fisheries. Treaty reserved rights have been acknowledged by the U.S. Supreme Court (United States versus Winans 198 U.S. 371, 1905) when it held that a treaty is not a grant of rights to the Indians but a grant of rights from them--a reservation of those not granted. Further, Federal courts have held that the tribes generally have an implied right by virtue of their treaties to an amount of water sufficient to fulfill the purposes for which their reservations were created (Winters versus United States 207 U.S. 564, 1908 and subsequent reaffirmations). As perceived by the tribes, these purposes are to provide a resource base upon which to build in perpetuity a socially, economically, and culturally rewarding life for tribal members and the reservation community as a whole.

The Federal court has confirmed the intent of treaty reserved rights. In 1980, the court held that a treaty right to fish is meaningless if most of the fish are destroyed by a hostile environment such as a dewatered stream channel. The court emphasized that the States, Federal Government, and others have the obligation to refrain from degrading habitat to the extent that tribes would be deprived of moderate living needs. The court further held that environmental conditions essential to anadromous fish runs include access and an adequate supply of good quality water (United States versus Washington, Phase II, 506 F Supp. 187, W.D. Wash. 1980). In the neighboring Yakima River basin, home of the Yakima Indian Nation and location of the Federal Yakima reclamation project, the Federal court directed Reclamation to provide water needed for fish flows and egg survival from the project reservoirs.

In regard to their treaty reserved rights, the tribes want a permanent and sufficient source of water provided to help restore and maintain Umatilla River salmon and steelhead runs at optimally productive levels. Secondly, additional sources of water will be needed as Indian agricultural, domestic, municipal, and industrial water demands emerge and are quantified. These water supplies will help to fulfill the fundamental treaty purpose of making the reservation a viable homeland for the tribes.

Today, there is insufficient water in the Umatilla River to meet present fishery and irrigation needs. Streamflows are heavily appropriated and the ground-water resource is declining. Without a water development project, the tribes have no opportunity to meet their streamflow improvement goal except by challenging non-Indian water uses and may feel compelled to pursue litigation to secure needed water. However, at present, all parties have adopted a cooperative attitude in pursuing a solution to the basin's water problems. The Recommended Plan would supplement basin water supplies and help perpetuate an atmosphere of social and economic well-being among Indian and non-Indian residents of the area.

THE RECOMMENDED PLAN

The Recommended Plan emerged from the planning and review process as the most promising of the alternative plans considered, based upon level of accomplishment, efficiency, construction and operation costs, and environmental impacts. The basic premise of the Recommended Plan is a series of "water exchanges." The plan would allow some irrigation water that is currently diverted from the Umatilla River to be exchanged for water from a new source--the Columbia River. Water retained in the Umatilla River from the exchange would provide streamflows for fish. In addition, the Recommended Plan would resolve other fish passage problems associated with irrigation diversion dams.

An annual average of about 39,000 acre-feet of irrigation water would be pumped from the Columbia River with the Recommended Plan. An equivalent amount of water would be permitted to remain in the Umatilla River to improve flow conditions for fish. Federal commitments to supply irrigation water would continue to be met.

Structural features of the plan include a major pumping plant on the Columbia River near Cold Springs Reservoir, relift pumping stations, canals, pipelines, and other facilities to convey water to irrigation delivery points. Facilities needed to exchange water with the West Extension Irrigation District at Three Mile Falls Diversion Dam would be constructed, and a small pumping plant would be installed on the Umatilla River near Cottonwood Bend to further improve flows in that reach of the river. Improvements would be made to fish passage works at Maxwell, Feed Canal, Westland, and Stanfield Diversion Dams and to fish screens at several irrigation diversions. A seasonal fish barrier would be installed at the mouth of McKay Creek and a fish trap placed at the Westland diversion. A postconstruction monitoring and management program would provide data to help "fine tune" project operations to maximize benefits.

The water supply needed for fishery restoration is expressed in cubic feet per second (ft^3/s) of streamflow at critical periods of the year and in critical stream reaches. Recommended minimum flows for fishery restoration in the 50 miles of the lower Umatilla River to be affected by the project are $300 \text{ ft}^3/\text{s}$ from October 1 through November 15 and $250 \text{ ft}^3/\text{s}$ from November 16 through June 30 and September 16 to 30. Flow recommendations for these time periods are the same as the minimum flow program established for the Umatilla River by the Oregon Water Resources Department in 1985. The project would be operated to meet these flows to the extent possible by using some Umatilla River natural flows and McKay Reservoir storage now used for irrigation and replacing equal amounts of water to irrigators from the Columbia River.

Fishery agencies report that the level of flow accomplishment and passage and screen improvements provided by the Recommended Plan would greatly aid in restoration of salmon and steelhead runs. In addition, the hatchery based fishery that is being instituted by the tribes would benefit. Estimates are that natural spawning runs of 11,200 fall chinook, 1,200 spring chinook, and 3,400 steelhead would occur with the project. Hatchery based returns to the Umatilla River of 9,800 fall chinook, 9,200 spring chinook, 5,000 steelhead, and 6,600 coho would be realized.

Project implementation would meet much of the tribes' fishery restoration goal for the Umatilla River. In addition to the economic and cultural benefits to the Umatilla tribes, the salmon and steelhead produced by the project would benefit Indians affected by fishery conditions in the Columbia River between Bonneville and McNary Dams. Presently, the Yakima, Nez Perce, and Warm Springs Indians, along with the Umatilla tribes, compete for a limited supply of fish in the Columbia River. With the project, more fish would be available for harvest. The non-Indian commercial and sport fisheries in the Columbia and the non-Indian sport fishery in the Umatilla River and Pacific Ocean would also benefit. All together, 112,000 fish would be added to Columbia River, ocean, and Umatilla River fisheries.

Coordinated operation of new and existing project facilities would be required. The general operational concept would be to modify present Umatilla River diversion patterns of the Hermiston, Stanfield, Westland, and West Extension Irrigation Districts when necessary to meet instream flow requirements and replace these diversions by pumping from the Columbia River.

Some operation changes would occur at existing McKay and Cold Springs Reservoirs, but these would be planned to not adversely affect national wildlife refuge values at the reservoirs.

Prior to initiation of construction of a Federal reclamation project, it is Reclamation's policy to file application for and receive from the appropriate State water resource regulatory agency permits for the utilization of water to be provided by the project. Further, any necessary contracts and agreements pertaining to the use of, payment for, and operation of project water supplies and facilities must be consummated prior to construction.

Reclamation will coordinate with the Oregon Water Resources Department, irrigation districts, and others to obtain the necessary water use permits and exchange agreements for the project. These agreements would specify the quantity of water, limitations, scheduling, and other pertinent aspects of the water exchanges. Onsite water regulation and enforcement would be provided through the State's watermaster division office in Pendleton.

A postconstruction fishery monitoring program is included as a feature of the project to permit project operators and fishery experts to technically evaluate project accomplishments toward meeting fishery restoration objectives and to fine tune operations within real operating constraints to maximize accomplishments. This program would be administered by Reclamation in consultation with the tribal fishery experts, Oregon Department of Fish and Wildlife, Federal fishery agencies, and others as appropriate. This program is expected to extend over a 12-year period.

Reclamation's Yakima Project Office would be responsible for administration of the Umatilla Basin Project. Reclamation would provide for operation and maintenance of the Columbia River pumping complex and other water exchange facilities and would assure proper operation and maintenance of Recommended Plan fish facilities in cooperation with other agencies. The Yakima office would monitor overall project operations. If appropriate, data receivers could be placed in the Umatilla watermaster's office, local offices of the irrigation districts, tribal headquarters, and the Oregon Department of Fish and Wildlife office.

A Umatilla Basin Project oversight committee would be organized to provide a forum of communication among the project's varied water interests. The committee, made up of representatives from the affected irrigation districts, the Oregon Department of Fish and Wildlife, Confederated Tribes of the Umatilla Indian Reservation, the Oregon Water Resources Department watermaster's office, and Reclamation will meet as necessary to disseminate information and coordinate activities concerning operations. The Oregon Department of Fish and Wildlife and the Confederated Tribes of the Umatilla Indian Reservation would develop annual fish passage and flow objectives within project guidelines. These and other responsibilities and funding arrangements would be specified in project operation and maintenance agreements.

Recommended Plan construction costs are estimated at \$43.8 million. Annual operation, maintenance, replacement, and power wheeling costs are estimated at \$403,000. In addition, the annual cost of pumping power for the project and power loss at McNary Dam is estimated at \$673,000. The annual equivalent project cost is estimated at \$4.9 million.

The Recommended Plan has a benefit to cost ratio of 1.65 to 1.0. It would produce substantial national economic development benefits with an annual net benefit of about \$3.2 million per year. Total annual monetary benefits that would be produced by the project are estimated at about \$8,155,000. However, the project's overriding value is its potential to address fishery restoration objectives and to maintain the integrity of the Federal reclamation project.

There is opportunity to phase develop the project. Implementation of the West Extension Irrigation District water exchange would be an effective first-phase development and would substantially benefit fishery restoration in the lower reach of the Umatilla River below Three Mile Falls Diversion Dam.

The Recommended Plan is part of a comprehensive program to restore the Umatilla River basin anadromous fishery. Funding commitments of up to \$21 million are being made to this comprehensive basin restoration program under the Pacific Northwest Electric Power Planning and Conservation Act of 1980 and programs of the State of Oregon and other entities. The Northwest Power Planning Council's Fish and Wildlife Program specifies that electric power to operate project pumping facilities be provided as an element of the council's Fish and Wildlife Program. The Recommended Plan fish passage and screen improvements at irrigation diversions also are included under the council's Fish and Wildlife Program. As a result, about 26 percent of the total annual costs will be repaid by users of power from Bonneville Power Administration.

Other costs associated with fishery aspects of the project are proposed to be nonreimbursable Federal costs. Irrigation districts involved in the exchange of water for fishery enhancement would not have an additional repayment obligation. They would continue to fulfill their existing contracts for repayment of construction and annual operating costs associated with McKay and Cold Springs storage and maintain their existing distribution systems. If it becomes possible through congressional authorization for the irrigation districts to use project pumping capacity during periods when it is not required for fishery purposes, they would pay associated pumping power and wheeling costs and a share of other operation and maintenance costs.

Even though the Recommended Plan of development would be effective in meeting fishery restoration goals, there are other basin water needs that have to be addressed. Among these are the basin's declining ground-water resource (which could seriously affect domestic, municipal, industrial, and agricultural water supplies) and the need to meet multipurpose water needs on the Umatilla Indian Reservation and elsewhere in the basin. These needs are expected to become critical in time. The Recommended Plan would not preclude future water resource options in the basin to address these needs.

The Recommended Plan would provide highly significant overall environmental enhancement in the Umatilla basin. Most of this improvement would come from a significant increase in natural and hatchery production returns of salmon and steelhead. The project would also increase the migration and distribution range of hatchery and natural anadromous fish stocks in the main stem Umatilla River. The total environmental quality effect would be highly beneficial. Beneficial effects would occur to natural and hatchery production of fall chinook, spring chinook, and steelhead; distribution of anadromous fish species in main stem Umatilla River reaches; and hatchery production of coho. A minor adverse effect would result from the loss of approximately 130 acres of irrigated cropland due to project construction.

The impacts to regional economic development from the Recommended Plan include beneficial effects to the Confederated Tribes of the Umatilla Indian Reservation, other Indians in the Columbia River basin, and the rest of the region. Restoration of anadromous fish runs together with establishment of fishery enterprises would increase gross Confederated tribal income by approximately \$691,400 annually. In addition, the unemployment situation on the reservation should slightly improve due to jobs provided by tribal and individual fishery enterprises and income from commercial fishing. A long-term commitment of power from the Federal Columbia River Power System would be made to operate the project's water exchange pumping facilities.

Social impacts would be beneficial to Indians and non-Indians. With the project, the tribes would be assured of getting large, regular runs of chinook salmon in the Umatilla River. This would lead to numerous effects upon the Indian quality of life, tribal organization, and relations with the larger community, all of which are intimately interrelated. Traditional family roles would be reinforced. The tribes would also be provided with additional authority and jurisdiction over fishing on the reservation and at traditional sites. These effects would strengthen the traditional lifestyle of the tribes and, in turn, tribal authority. Non-Indian social well-being would also improve by removing the threat of litigation and solidifying water supplies for many Umatilla basin irrigators. A considerable economic threat to the county's employment and income would be removed. Without the project, 49,600 acres of presently irrigated cropland risk the loss of a water supply.

Formulation of the proposed Umatilla Basin Project has been an exemplary cooperative effort among the tribes, irrigation districts, a citizens steering committee, Oregon State and Federal fisheries agencies, and the Bureau of Reclamation. Regional hydroelectric ratepayers, the State, and tribes have committed about \$21 million to implement features of the overall basin comprehensive fishery restoration program. In addition, the Northwest Power Planning Council has committed through its Fish and Wildlife Program to provide pumping power for Reclamation's proposed Umatilla Basin Project and to implement fish ladder and screen improvements that are part of the project. Federal construction of the remaining elements of the Umatilla Basin Project plan would represent the Federal commitment to the basin's comprehensive fishery restoration program.

The Recommended Plan is supported by the Confederated Tribes of the Umatilla Indian Reservation, Columbia River Inter-Tribal Fish Commission, Columbia Basin Fish and Wildlife Council, National Marine Fisheries Service, U.S. Fish and Wildlife Service, Oregon Department of Fish and Wildlife, and Umatilla Basin Project citizens steering committee.

In summary, Recommended Plan implementation would assist the tribes and non-Indian water users to resolve their water related conflicts. Future basin water resource development options would not be precluded. The plan is a cost-effective approach to addressing the tribes' reserved treaty rights to fish and insuring the integrity of the Federal Umatilla reclamation project. It has major cultural, social, and environmental values and national economic development benefits in excess of costs. It would make a major contribution to local and regional tribal and nontribal economies. Plan implementation is a critical and integral part of the basin's fishery restoration program and is the single element addressing streamflow enhancement.

PLAN SUMMARY DISPLAY

The following summaries provide information on the features and accomplishments and economic, environmental, and social effects of the Recommended Plan.

Recommended Plan Features

Columbia River pumping plant	
Discharge capacity	220 ft ³ /s
Total lift	333 feet
Horsepower	12,000
Average annual pumping	29,820 acre-feet
Cold Springs Reservoir pumping plant	
Discharge capacity	150 ft ³ /s
Total lift	72 feet
Horsepower	1,750
Average annual pumping	18,370 acre-feet
Stanfield Relift pumping plant	
Discharge capacity	46 ft ³ /s
Total lift	40 feet
Horsepower	300
Average annual pumping	5,700 acre-feet
Discharge lines, canals, and pipelines	12 miles
West Extension Irrigation District (WEID) pumping plant	
Discharge capacity	140 ft ³ /s
Total lift	150 feet
Horsepower	3,400
Average annual pumping	9,680 acre-feet
Cottonwood Bend pumping plant	
Discharge capacity	30 ft ³ /s
Total lift	58
Horsepower	275
Average annual pumping	2,660 acre-feet
Fish passage improvements	Structural modifications at Maxwell, Feed Canal, Westland, and Stanfield Diversion Dams; replacing fish screens at several diversion canals; fish trap at Westland diversion and fish barrier at mouth of McKay Creek

Project Pumping Power Needs (average)

<u>Year</u>	<u>Power Use Kilowatt-hours</u>	<u>Project Features</u>
1987-88	1,260,000	Existing West Extension Irrigation District pump for estimated 60 days in June, September, and October
1989-90	1,700,000	Existing West Extension Irrigation District pump for estimated 30 days in June and new West Extension Irrigation District pump for estimated 30 days in September and October
1991-92	2,110,000	New West Extension Irrigation District pump facilities meeting fish flow exchange
1993	18,980,000	New West Extension Irrigation District pump facilities plus Columbia River pump facilities

Costs

Construction	
Columbia River pumping plant	\$14,200,000
Cold Springs pumping plant	6,500,000
Stanfield relift pumping plant	2,050,000
West Extension pumping plant	5,000,000
Columbia-Cold Springs canal	5,500,000
Stanfield canal	1,650,000
Stanfield relift canal	2,070,000
Cottonwood Bend pumping plant	950,000
Fish passage and protective facilities	4,200,000
Postconstruction evaluation program	523,000
Permanent operating facilities	73,000
General investigations	672,000
Historical and archeological costs	412,000
Total	\$43,800,000
Annual cost of construction	\$ 3,861,300
Annual operation	
Operation, maintenance, replacement, and power wheeling	\$ 402,700
Power (economic value--includes \$421,000 for actual pumping power)	\$ 673,400
Total annual cost	\$ 4,937,400

Benefits (annual equivalent)

Anadromous fish	\$ 7,759,100
Resident fish	79,500
Unemployed labor	316,500
Total	\$ 8,155,100

Cost-benefit Comparison

Annual equivalent project cost	= \$4,937,400
Annual equivalent project benefit	= 8,155,100
Net project benefit	\$3,217,700
Benefit to cost ratio	= 1.65 to 1.00

The cost of most fish passage and protective works facilities (estimated at \$3.8 million) will be funded under the Northwest Power Planning Council's Columbia River Basin Fish and Wildlife Program. That program also stipulates that pumping power or the cost thereof will be provided as a plan element.

Repayment

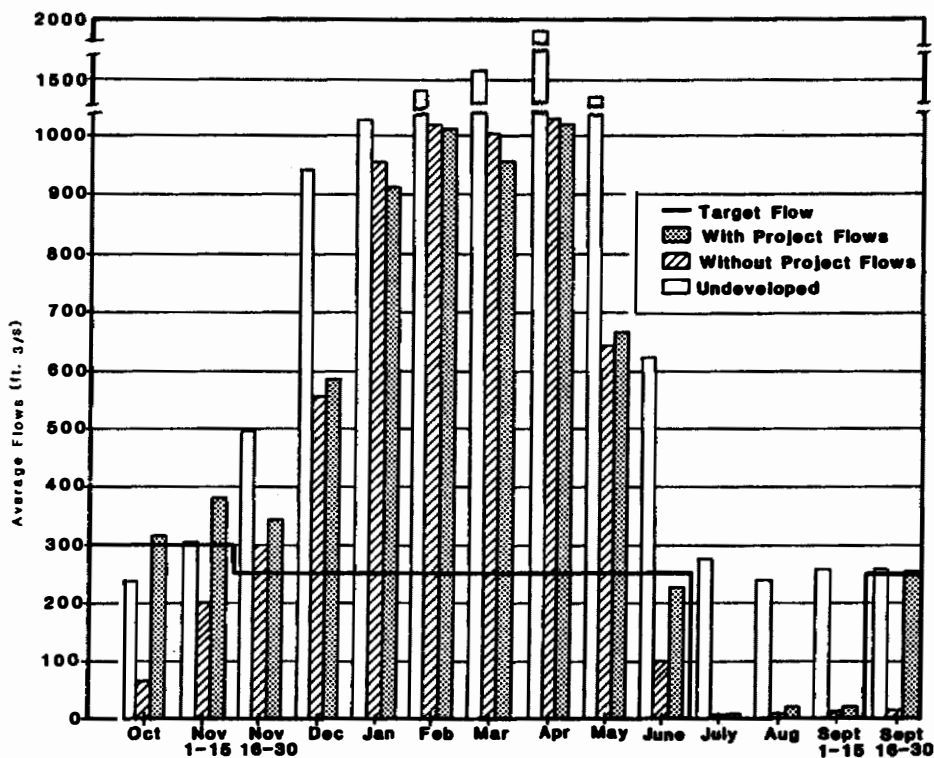
The remaining project fishery function costs are recommended to be nonreimbursable Federal costs because the purpose of the project is to provide Federal assistance to help restore the salmon and steelhead fisheries that are reserved to the Umatilla tribes in an 1855 treaty with the United States.

Irrigation districts involved in the exchange of water for fishery enhancement would continue to receive their water supply as in the past and would not have an additional repayment obligation. They would continue to fulfill their existing contracts for repayment of construction and annual operating costs associated with McKay and Cold Springs storage and maintain their existing distribution systems. If it becomes possible through congressional authorization for the irrigation districts to use project pumping capacity during periods when it is not required for fishery purposes, they would pay associated pumping power and wheeling costs and a share of other operation and maintenance costs.

Accomplishments

Streamflows

Improved streamflow is the basic fishery restoration accomplishment, and recommended flow levels have been expressed in cubic feet per second of flow in the Umatilla River. The following graph compares project target flows to "with project flows," "without project flows," and flows before irrigation diversions for the Umatilla River near Umatilla. Flows represent average flow conditions for the period 1947-84 with the present level of irrigation diversions superimposed.



FLOWS AT UMATILLA

Anadromous Fishery

The contribution of the Recommended Plan in (1) meeting a significant part of the target flows for the Umatilla River and (2) providing improved passage facilities and protective screens assists greatly in restoration of salmon and steelhead runs. In addition to natural runs, the hatchery based fishery that is being instituted by the tribes would benefit from project related streamflow enhancement and passage improvements. Estimates of adult salmon and steelhead runs to the Umatilla River and anticipated fish catch are shown in the following tables.

Adult Returns to the Umatilla River

Species	Future Without Project	Future With Project
Fall chinook		
Natural production	2,602	11,217
Hatchery production	2,247	9,810
Spring chinook		
Natural production	301	1,162
Hatchery production	2,398	9,235
Steelhead		
Natural production	1,482	3,404
Hatchery production	2,189	5,027
Coho		
Hatchery production	4,950	6,600

Increased Fish Catch	
Fall chinook	71,294
Spring chinook	21,653
Summer steelhead	10,835
Coho	8,250
Total	112,032

Effects

National Economic Development

Item	Capital Costs	Annual Equivalent Value ^{1/}
Adverse effects		
Total project costs	\$43,800,000	
Interest during construction	2,448,000	
Less preauthorization costs	-2,338,000	
Less historical and archeological salvage	<u>-412,000</u>	
Net Federal investment	\$43,498,000	\$3,861,300
Operation, maintenance, replacement, and power wheeling		\$402,700
Power costs		
Pumping (18.98 X 10 ⁶ kilowatt-hours at 22.2 mills)		421,400
Power foregone (1.29 X 10 ⁶ kilowatt- hours at 22.9 mills)		28,600
Increment to economic value		
Pumping (18.98 X 10 ⁶ at 33.22 mills less \$421,400)		209,100
Power foregone (1.29 X 10 ⁶ kilowatt- hours at 33.22 mills less \$28,600)		<u>14,300</u>
Subtotal		\$1,076,100
Total		\$4,937,400
Beneficial effects		
Anadromous fish		\$7,759,100
Resident fish		79,500
Confederated Tribes of the Umatilla Indian Reservation		NA
Unemployed labor		<u>316,500</u>
Total		\$8,155,100
Net benefits		\$3,217,700

^{1/} Based on 100-year period of analysis and 8-7/8 percent Federal interest rate

Regional Economic Development

The regional economic development account shown in table a summarizes national economic development and regional economic development benefits. It also shows who are the recipients of project benefits and who pays project costs.

Regional economic development benefits differ from national economic development benefits in that they are "local" as opposed to national in scope. They are benefits which accrue to the region at the expense of another region. Consequently, regional economic development benefits do not result in an increase in benefits to the Nation.

The regional economic development portion of the table consists of three items: (1) implementation, (2) transfer, and (3) indirect and induced payments and benefits. All are shown as annual equivalent values.

Implementation benefits which accrue to the region are construction wages and salaries paid to onsite workers from the region. Transfer payments are losses to the region from unemployment benefits not paid because of an increase in construction jobs. Indirect and induced benefits result from secondary economic activity stemming from the project. In this case, they are a result of: purchases of consumer goods and services in the region from construction wages; purchases within the region of goods and materials used to construct project facilities; wages paid to personnel to operate and maintain project facilities; and purchases of regional consumer goods and services from wages and expenditures of commercial and recreational fishermen.

Table a.--Regional Economic Development Account--Recommended Plan

Item	Region 1 ^{1/}			Region 2 ^{2/}	Region 3 ^{3/}	Rest of Nation	Total
	Confederated Tribes	Other Indians	Rest of Region				
Benefits							
NED							
Anadromous fish	\$1,325,900	\$1,255,600	\$494,800 ^{4/}	\$4,935,500			\$8,011,800 ^{7/}
Resident fish			79,500				79,500
Unemployed labor	316,500						316,500
Subtotal	\$1,642,400	\$1,255,600	\$574,300	\$4,935,500	0	0	\$8,407,800
RED							
Implementation	\$ 316,000		\$ 406,000			\$ -722,000	
Transfer ^{5/}	-6,500					-6,500	
Indirect and induced	732,000	\$361,000	2,041,000			-3,134,000	
Subtotal	\$1,041,500	\$361,000	\$2,447,000	0	0	\$-3,849,500	0
Total							\$8,407,800
Costs							
Construction					\$ 333,400	\$3,310,600	\$3,644,000
Interest during construction					5,900	211,400	217,300
Operation, maintenance, replacement, and power					946,900	129,200	1,076,100
Total	0	0	0	0	\$1,286,200 ^{6/}	\$3,651,200	\$4,937,400

1/ Region 1 is defined as BEA 156, Guideline 5

2/ Region 2 is the area outside of the Columbia River Zone 6 and Umatilla basin in which salmon and steelhead from the project are caught. It includes the area from northern California to Alaska having fishing fleets and charter boats which fish the ocean area through which these fish migrate during their life cycle. It also includes the Columbia River from its mouth to Bonneville Dam.

3/ Region 3 is the area served by Bonneville Power Administration and utilities which buy power from Bonneville Power Administration.

4/ Steelhead caught in Umatilla River by non-Indians (\$555,900 discounted by benefit buildup factor).

5/ PR/DES unemployment benefits not paid (\$6,000) adjusted for change in Consumer Price Index from 1983 to 1986 $323.4 / 297.4 = 1.087$ to conform to change in project construction cost level.

6/ Provided as an element of the Northwest Power Planning Council's Columbia River Basin Fish and Wildlife Program. Bonneville Power Administration will receive credit toward meeting their obligation for fish mitigation and enhancement under the Pacific Northwest Electric Power Planning and Conservation Act.

7/ Includes \$252,700 of benefits to the coho fishery not included as a national economic development benefit.

Table b is a summary of the increased anadromous fish catch which results from implementation of the project. Increased commercial and noncommercial fish catch by the two Indian groups and non-Indians for each species of fish is shown.

Table b.--Summary of Increased Anadromous Fish Catch

Item	Beneficiary			Total
	Confederated Tribes	Other Treaty Tribes	Non-Indian	
Commercial				
Steelhead	116	1,049	0	1,165
Fall chinook	8,423	4,793	44,763	57,979
Spring chinook	7,728	2,798	3,012	13,538
Coho	<u>1,650</u>	<u>0</u>	<u>3,234</u>	<u>4,884</u>
Subtotal	17,917	8,640	51,009	77,566
Noncommercial				
Steelhead	2,352	1,538	5,780	9,670
Fall chinook	133	1,198	11,984	13,315
Spring chinook	78	699	7,338	8,115
Coho	<u>0</u>	<u>0</u>	<u>3,366</u>	<u>3,366</u>
Subtotal	2,563	3,435	28,468	34,466
Total	20,480	12,075	79,477	112,032

The increase in regional employment resulting from the project is shown in table c. The number of onsite and indirect and induced employees related to construction activities is summarized by construction year. In addition, the place of origin or geographic location of the work force is shown for construction related employment. Direct employment associated with project related fishing and operation and maintenance activities is also shown.

Table c.--Summary of Increased Regional Employment

Time Period	Construction Related Employment					Geographic Occurrence		
	Contractor	Federal	Onsite Work Force	Indirect and Induced	Total	Basin Indians	Rest of Region	Rest of Nation
Construction year								
1	27	9	36	102	138	14	120	4
2	42	15	57	163	220	24	191	5
3	75	26	101	290	391	41	341	9
4	12	5	17	48	65	8	55	2
	Direct Employment							
	Anadromous Fish	Resident Fish	Operation and Maintenance	Indirect and Induced				
Project life	11	0	9	62	82	20	62	0

Social Well-being

Indian Social Impacts

Factor	Normalized Weight	Present			Future Without			Recommended Plan		
		Impact Quantity	SWB ^{1/} Level	Weighted SWB Score	Impact Quantity	SWB Level	Weighted SWB Score	Impact Quantity	SWB Level	Weighted SWB Score
Culture	.19	<u>2/</u>	5	.95	<u>2/</u>	3	.57	<u>2/</u>	6	1.14
Community	.15	<u>2/</u>	4	.60	<u>2/</u>	5	.75	<u>2/</u>	6	(.57)
Self-esteem	.09	<u>2/</u>	3	.27	<u>2/</u>	5	.45	<u>2/</u>	6	.90
Economics	.14	<u>2/</u>	2	.28	<u>2/</u>	3	.42	<u>2/</u>	5	(.15)
Environment	.14	<u>2/</u>	4	.56	<u>2/</u>	5	.70	<u>2/</u>	5	.54
Salmon	.11	<u>2/</u>	0	0	<u>2/</u>	3	.33	<u>2/</u>	7	(.09)
Steelhead trout (catch)	.04	672	2	.08	1,045	3	.12	3,225	6	.70
Conflict	.13	<u>2/</u>	4	.52	<u>2/</u>	1	.13	<u>2/</u>	6	(.28)
										(0)
										.77
										(.44)
										.24
										(.12)
										.78
										(.65)
Total				3.26			3.47			5.77
										(2.30)

1/ Social well-being

2/ Subjective scale

Non-Indian Social Impacts

Factor ^{1/}	Normalized Weight	Present			Future Without			Recommended Plan		
		Impact Quantity	SWB ^{2/} Level	Weighted SWB Score	Impact Quantity	SWB Level	Weighted SWB Score	Impact Quantity	SWB Level	Weighted SWB Score
Local sport fishery (fish caught)	.21	300	1	.21	1,045	2	.42	3,225	4	.84
Irrigated acres	.25	112,700	9	2.25	63,100 ^{3/}	0	0	112,700	9	(.42)
Small tracts lifestyle (degree of risk)	.15	<u>4/</u>	6	.90	<u>4/</u>	1	.15	<u>4/</u>	10	2.25
Financial security	.25	<u>4/</u>	5	1.25	<u>4/</u>	1	.25	<u>4/</u>	9	(2.25)
Local economics (potential employment level)	.09	26,200	10	.90	24,100 ^{3/}	1	.09	26,200	10	1.50
Conflict/competition	.05	<u>4/</u>	6	.30	<u>4/</u>	2	.10	<u>4/</u>	5	(1.35)
										2.25
										(2.00)
										.90
										(.81)
										.25
										(.15)
Total				5.81			2.06			7.99
										(5.93)

1/ Recreation and esthetic factors have normalized weights less than .01

2/ Social well-being

3/ As many as 49,600 acres of presently irrigated cropland could go out of production in the event of Indian water right litigation causing the loss of about 1,200 jobs, and over 11 million dollars in regional income.

4/ Subjective scale

Environmental Quality

Environmental Factors	Present Quantity	Future Without Quantity	Recommended Plan	
			Quantity ^{1/}	Significance ^{2/}
Fall chinook returns				
Natural production	3	2,602	11,217 (+8,615)	+++
Hatchery production	3	2,247	9,810 (+7,563)	+++
Spring chinook returns				
Natural production	41	301	1,162 (+861)	++
Hatchery production	565	2,398	9,235 (+6,837)	+++
Steelhead returns				
Natural production	682	1,482	3,404 (+1,926)	++
Hatchery production	2,080	2,189	5,027 (+2,838)	++
Coho returns				
Hatchery production	0	4,950	6,600 (+1,650)	+
Anadromous fish distribution (subjective estimate on utilization of main stem Umatilla River reaches) ^{3/}	3	5	9 (+4)	++
Irrigated cropland losses (acres)	0	0 ^{4/}	130 (-130)	-
Total environmental quality effect ^{5/}				+++

^{1/} Net changes compared to future without project condition shown in parentheses

^{2/} - = minor adverse, -- = moderate adverse, --- = highly adverse, + = minor beneficial, ++ = moderate beneficial, +++ = highly beneficial, and 0 = no difference

^{3/} Range 0 (no distribution), 10 (distribution covers entire basin)

^{4/} Does not include 49,600 acres of presently irrigated cropland with a water supply at risk without the project

^{5/} Compared to future without project conditions



I N T R O D U C T I O N

No changes from Planning Report/Draft Environmental Statement



RECOMMENDED PLAN CHANGES, MODIFICATIONS, AND UPDATING

This chapter documents modifications that have been made in the Recommended Plan as a result of new information and comments received on the Planning Report/Draft Environmental Statement (PR/DES). The chapter is presented in the same format as in the PR/DES so that the reader can refer back to that document. Table numbers are the same as used in the PR/DES. Where no changes are made, information contained in the PR/DES remains valid and continues to represent the findings of the Bureau of Reclamation. Principal modifications involve (1) addition of some features, (2) modification of other features, (3) a revised project operation summary, (4) an updated economic analysis, and (5) an evaluation of the environmental effects of the plan modifications. Features and facilities of the Recommended Plan are shown on the following map.

OVERVIEW

No change from PR/DES

DESCRIPTION

Water exchange and fish passage facilities comprise the basic features of the Recommended Plan. Umatilla River water now diverted or stored for irrigation would be retained in the Umatilla River to improve flow conditions in the lower basin for fish, and improvements would be made to fish passage facilities and protective screens would be installed at some existing irrigation diversions.

Columbia River waters would be diverted for use in the Umatilla basin in exchange for allowing Umatilla River flows to remain in the river. A major pumping station on the Columbia River (Lake Wallula) would pump water for distribution to irrigators as described in the PR/DES Recommended Plan, but the point of diversion on the Columbia River and diversion facilities at Cold Springs Reservoir have been modified from those described in the PR/DES. Other water exchange features include relift pumping facilities and canals, a new West Extension Irrigation District (WEID) pumping facility that has been enlarged from that described in the PR/DES, and an additional water exchange pumping facility on the Umatilla River at Cottonwood Bend.

Additions to fish passage facilities include a fish barrier to be placed at the mouth of McKay Creek to prevent salmon and steelhead migration and spawning in that stream, adult fish passage improvements at Stanfield Diversion Dam, and an upgraded juvenile fish trap to be constructed at the Westland Diversion Dam. A postconstruction monitoring program would "fine tune" flow improvements and other measures to maximize their effectiveness.

ACCOMPLISHMENTS

Anadromous Fishery

Streamflow Improvement

Improved streamflow is the basic fishery restoration need, and recommended minimum flow levels have been expressed in cubic feet per second (ft³/s) of flow in the Umatilla River. Figures 2-1 and 2-2 compare target flows (recommended minimum) to "with project flows," "without project flows," and "undeveloped flows" (prior to basin irrigation development) near Umatilla and Echo, based on updated project operations.

Fishery Enhancement

The contribution of the Recommended Plan in (1) meeting a significant part of the target flows for the Umatilla River and (2) providing improved passage facilities and protective screens assists greatly in restoration of salmon and steelhead runs. In addition to natural runs, the hatchery based fishery that is being instituted by the tribes would benefit from project related streamflow enhancement and passage improvements. Estimates of adult salmon and steelhead runs to the Umatilla River and anticipated fish catch are shown in tables 2-a and 2-b.

Table 2-a.--Adult Returns to the Umatilla River

Species	Future Without Project	Future With Project
Fall chinook		
Natural production	2,602	11,217
Hatchery production	2,247	9,810
Spring chinook		
Natural production	301	1,162
Hatchery production	2,398	9,235
Steelhead		
Natural production	1,482	3,404
Hatchery production	2,189	5,027
Coho		
Hatchery production	4,950	6,600

FIGURE 2-1

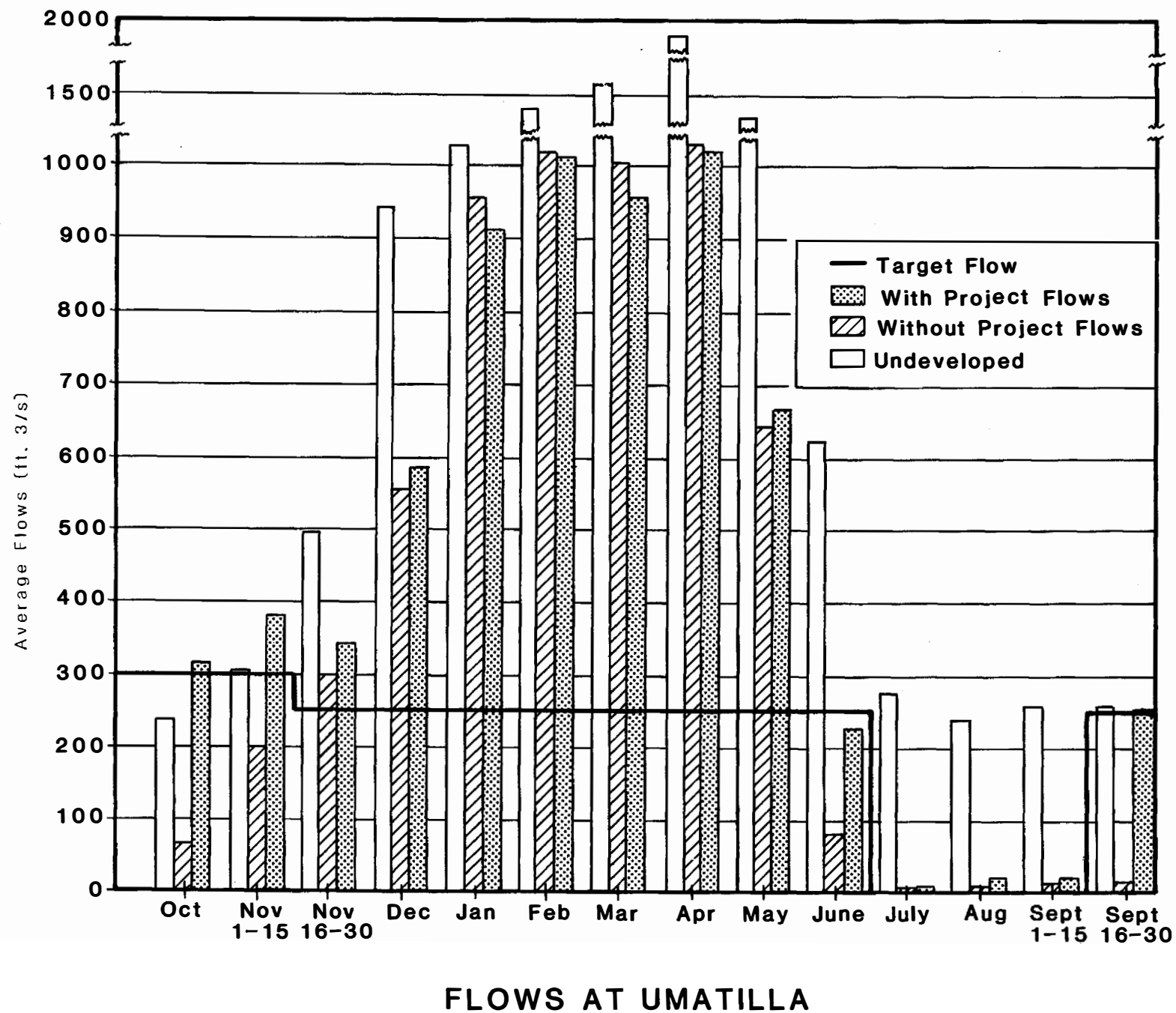
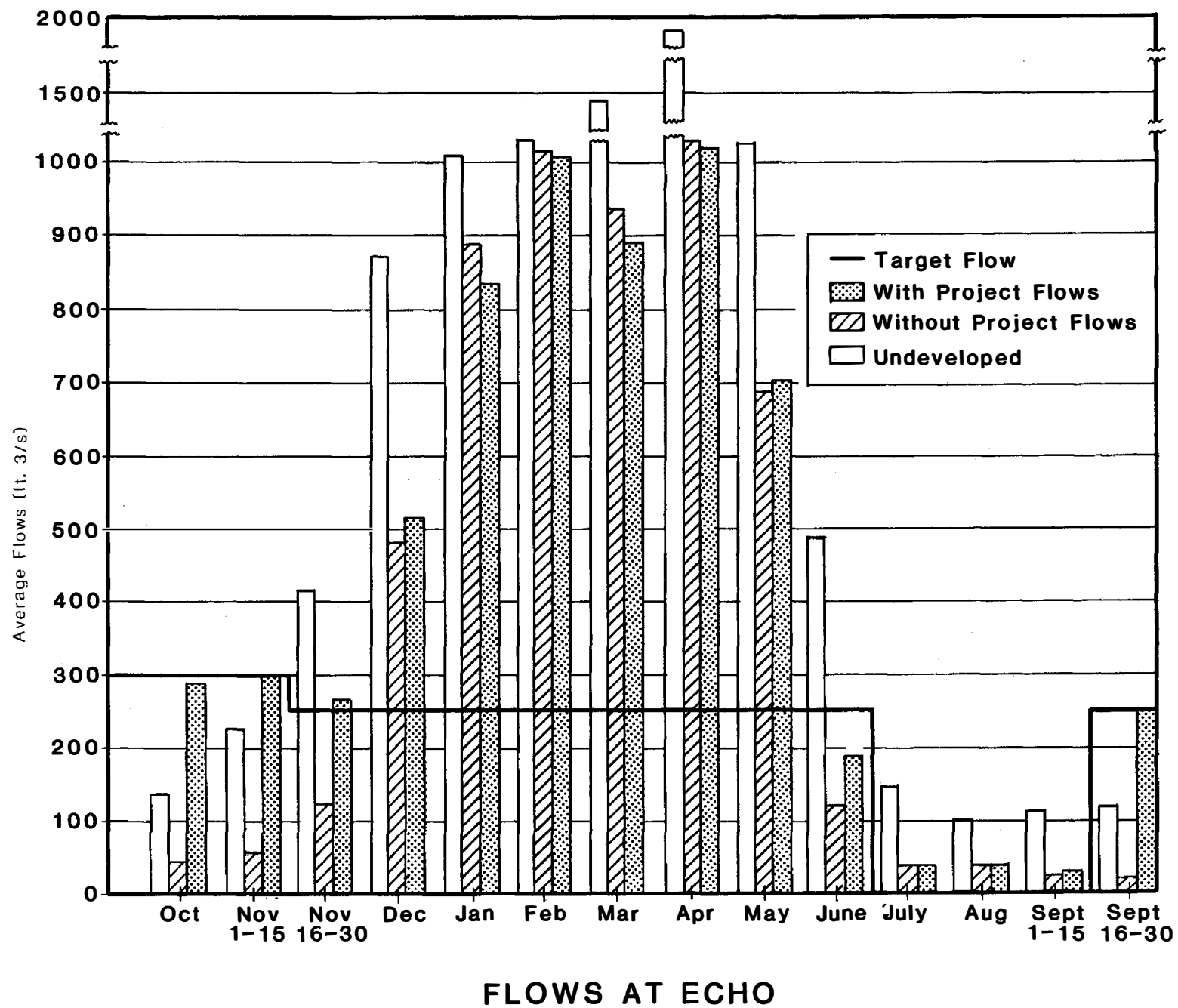




FIGURE 2-2





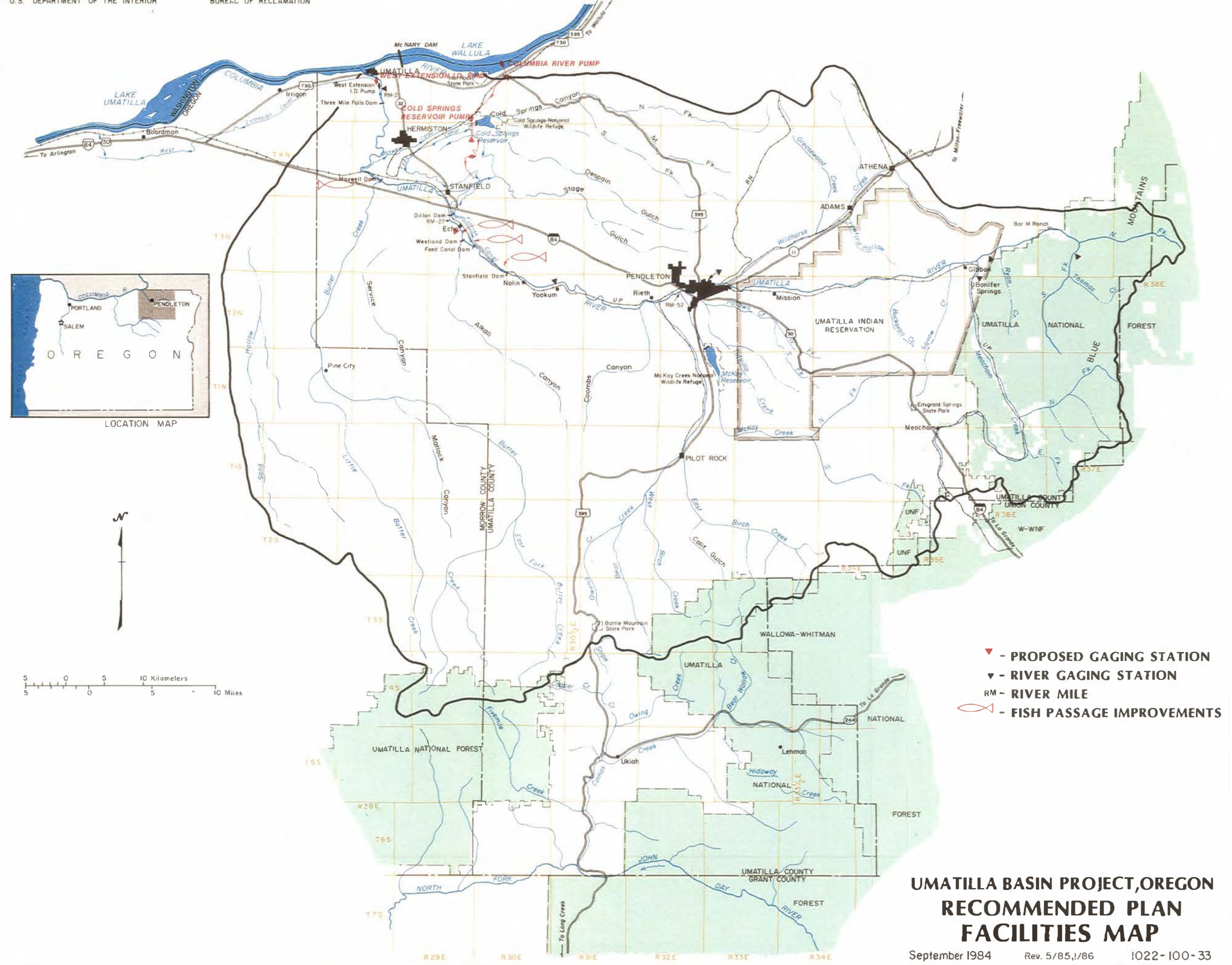




Table 2-b.--Anticipated Fish Harvest

<u>Fish Catch</u>	<u>Amount</u>
Fall chinook	71,294
Spring chinook	21,653
Summer steelhead	10,835
Coho	<u>8,250</u>
Total	112,032

Prior/Brown/Teel Water (PBT) Permits.--Paragraph deleted. PBT permits are now included in the revised project operation discussion in this chapter.

Resident Fishery

No change from PR/DES

Irrigation

The proposal to pump water from the Columbia River to the existing irrigation districts would provide a dependable water supply to the districts. The operation would remove the threat of an Indian/non-Indian confrontation and probable litigation over use of Umatilla River flows.

Irrigation districts involved in the exchange of water for fishery enhancement would not have an additional repayment obligation. They would continue to fulfill their existing contracts with the United States for repayment of construction and annual operating costs associated with McKay and Cold Springs storage, and would maintain their existing distribution systems. There is the possibility that during periods when project pumping capacity is available in excess of that needed for fishery resource benefits, such capacity could be made available to lands eligible for service from the irrigation districts that participate in the project. If such conjunctive use were to be authorized as a feature of the project, it would be secondary to the purpose of providing water for fishery resource purposes. Irrigators who benefit from the pumping would pay associated pumping power and power wheeling costs and a share of pumping plant operation and maintenance costs.

FEATURES AND FACILITIES

Columbia River Pumping Complex

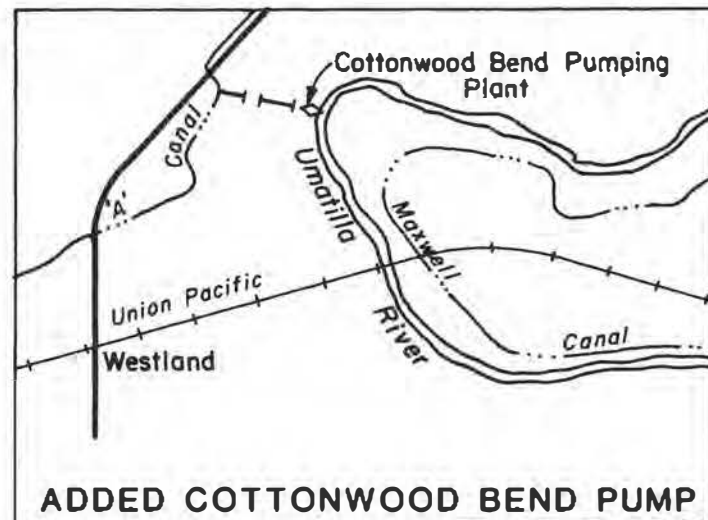
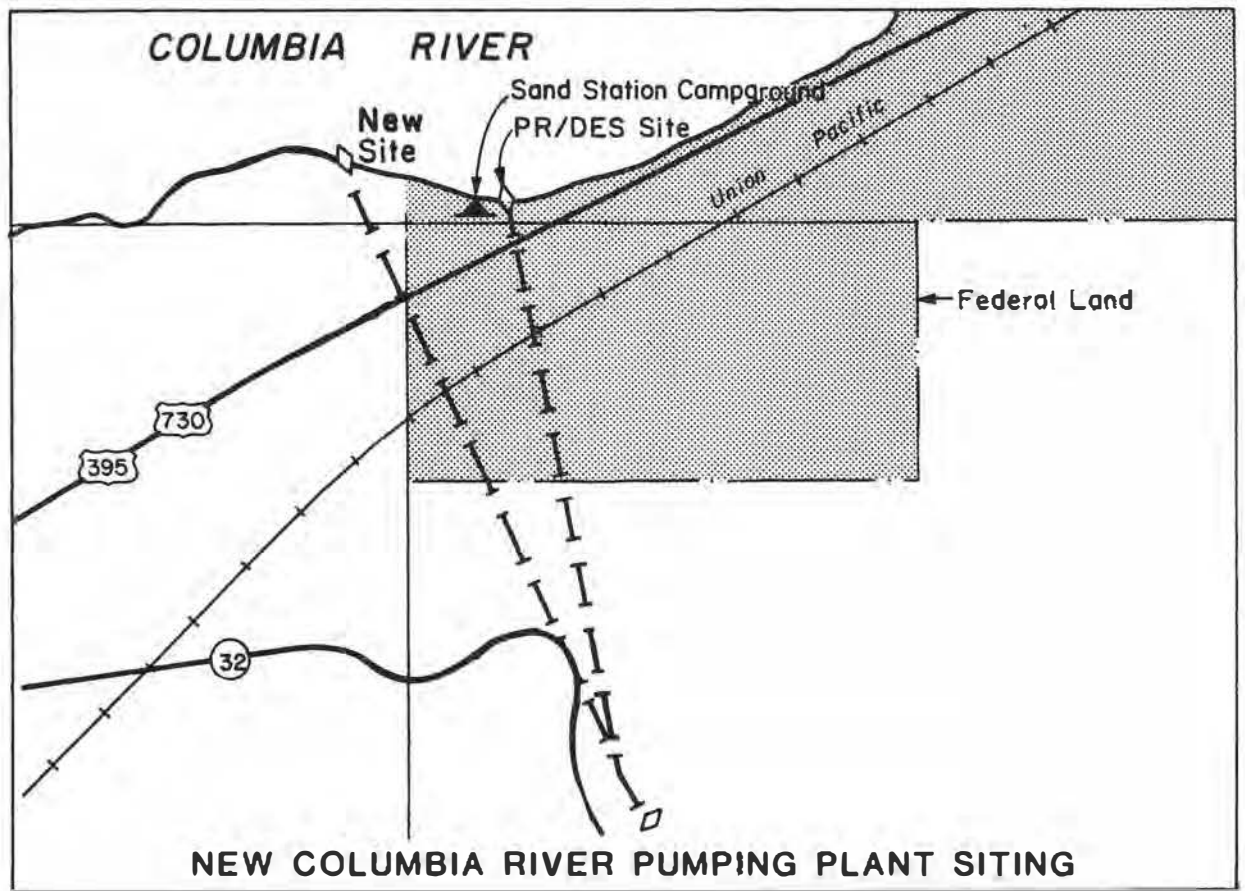
The basic plan for the Columbia River pumping complex remains the same as in the PR/DES. However, some changes have been made in the location and size of specific facilities. Revised statistical information is shown in table 2-1. Specific changes are discussed under each facility heading.

Table 2-1.--Columbia River Pumping Complex Statistical Information

Feature	Nominal Design Capacity	Total Dynamic Head	Average Annual Pumping	Average Annual Power	Installed Horsepower
	ft ³ /s	feet	acre-feet	megawatt- hours	
Pumping plants					
Columbia River	220	333	29,820	14,430	12,000
Cold Springs Reservoir	150	72	18,370	1,960	1,750
Stanfield relift	46	40	5,700	330	300
	<u>Initial Capacity</u>		<u>Length</u>	<u>Type</u>	
	ft ³ /s		miles		
Canals					
Columbia-Cold Springs canal	220		4.9	Concrete-lined canal and pipe	
Stanfield canal	91		2.1	Concrete-lined canal	
Stanfield relift canal	46		2.8	Concrete-lined canal and pipe	

Columbia River Pumping Plant

The Columbia River pumping plant site has been relocated downstream about 1/4 mile from the site used in the PR/DES (see Pumping Facilities Sites map). A plant at this site will minimize impacts on the Sand Station Recreation Area, and will have better foundation conditions. The Corps of Engineers concurs in selection of this site. The new site will require a longer discharge line, but the pump intake lines will be shorter. Other aspects of the design remain essentially unchanged. Construction costs were revised to reflect the longer discharge line; however, no reductions were made for the shorter intake lines. Feasibility designs and estimates for the new plant will be completed as an advance planning or preconstruction activity.



UMATILLA BASIN PROJECT-OREGON PUMPING FACILITIES SITES

Columbia-Cold Springs Canal

The canal was lengthened by about 3,000 feet to provide water to the revised site of the Cold Springs Reservoir pumping plant. See the discussion of Cold Springs Reservoir pumping plant modifications below.

Cold Springs Reservoir Pumping Plant

Concerns by Hermiston Irrigation District (HID) and Stanfield Irrigation District (SID) that the location of Cold Springs Reservoir pumping plant, as shown in the PR/DES, would cause operational problems at Cold Springs Reservoir resulted in a modification in the method of delivery of water from Columbia-Cold Springs canal to SID. Instead of diverting water through Cold Springs Reservoir and pumping from the A-Line Canal, the SID water would be pumped directly from the Columbia-Cold Springs canal near the right abutment of Cold Springs Dam (see Pumping Facilities Sites map). Columbia River pumping requirements for HID would still be diverted from the Columbia-Cold Springs canal into Cold Springs Reservoir as shown on the map.

The Cold Springs pumping plant discharge line would be lengthened by about 2,000 feet, and the Columbia-Cold Springs canal would be lengthened by about 3,000 feet. The increased costs of these facilities would be offset by a savings of 60 feet in pumping head and elimination of the wasteway and modifications to Cold Springs Dam outlet works which were included in the PR/DES. An automatic check upstream of the pumping plant would control flow to the pumping plant and releases into Cold Springs Reservoir. The check would also serve as an emergency wasteway in the event of power failure by wasting pump flows into the reservoir.

Feasibility designs and estimates for the modified facilities will be done as an advance planning or preconstruction activity. No net increases in construction costs are anticipated as a result of the changes.

Cold Springs Dam Outlet Works Modification and Rehabilitation

This PR/DES feature would no longer be required. See the previous discussion under "Cold Springs Reservoir Pumping Plant."

Stanfield Canal.--No change from PR/DES

Stanfield Relift Pumping Plant

Annual pumping requirements for the plant have been reduced by an average of 1,700 acre-feet as a result of revised project operation studies.

Stanfield Relift Canal.--No change from PR/DES

Stanfield Relift Siphon.--No change from PR/DES

West Extension Irrigation District Water Exchange Facilities

The purpose of this project feature is to exchange water presently diverted by WEID at Three Mile Falls Diversion Dam with water from the Columbia River. The exchange would help provide sufficient flows below the dam during March, April, May, June, September, and October to allow for upstream and downstream anadromous fish migration. WEID irrigation supplies would not be impaired since water would be pumped or diverted from the Columbia River directly into the WEID Canal during these periods. WEID irrigation water would be diverted at the dam, as at present, when migration flows are not needed.

Revised hydrologic operation studies done since the PR/DES show that 140 ft³/s will be needed to meet target flows below Three Mile Falls Diversion Dam. Therefore, the water exchange facility has been resized to provide a flow of up to 140 ft³/s (an annual average of about 9,700 acre-feet), rather than the 100 ft³/s shown in the PR/DES.

An alternative water exchange diversion site at McNary Dam is now also being considered; both sites will be evaluated further during advance planning studies. See West Extension Irrigation District Water Exchange Facility Sites map (on following page) for the location of each diversion site.

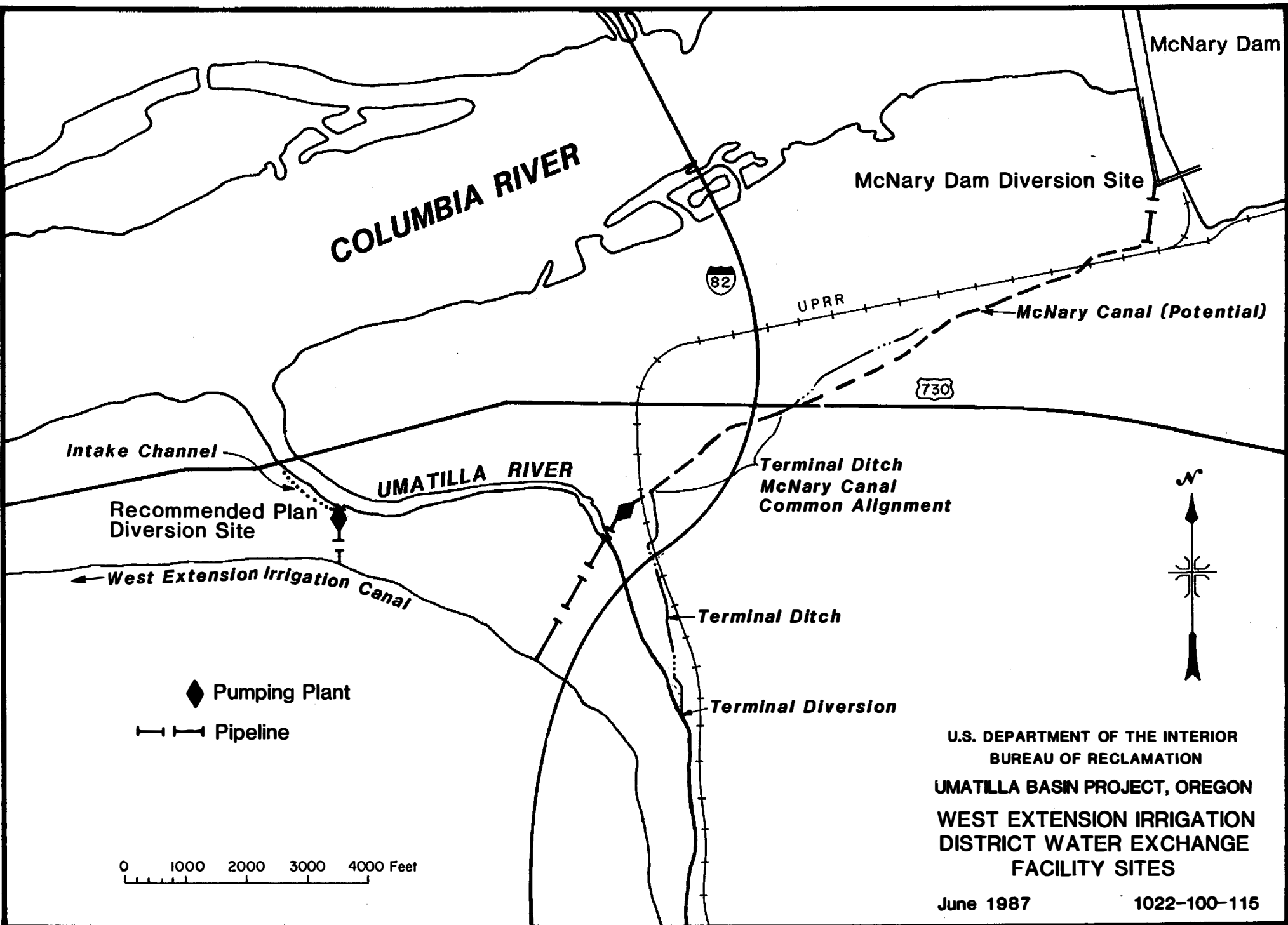
Recommended Plan Diversion Site

The WEID pump has been resized to pump 140 ft³/s as shown in table 2-5. It has been determined that a new pumping plant will be needed rather than enlarging the existing plant as shown in the PR/DES. Annual power requirements and operating costs have been revised to reflect changes in the operation studies (see tables 2-16 and 2-17).

Table 2-5.--WEID Pumping Plant Data

Nominal Design Capacity	Total Dynamic Head	Average Annual Pumping	Average Annual Energy Requirement	Installed Horsepower
ft ³ /s	feet	acre-feet	megawatt-hours	
140	150	9,680	2,110	3,400

The new pumping facility would be constructed at the site of WEID's existing auxiliary pumping plant near the mouth of the Umatilla River. To accommodate the diversion flows, the present intake channel would be deepened and extended about 600 feet to the vicinity of the existing highway bridge. From there, an approach channel would be excavated into the river to achieve sufficient depth to supply the intake channel. The intake would be able to function at a minimum John Day Pool elevation of 257 feet and would be equipped with screens to protect against fish loss.





Survey cross sections of the Umatilla River indicate that the backwaters of John Day Pool would extend about 500 feet beyond the highway bridge when at a minimum pool level. Consequently, the plant would draw water from the backwater of John Day Pool rather than directly from the Umatilla River.

The pumping plant replacement and modification in the intake channel would increase construction and annual operation costs above those estimated in the PR/DES. The increased costs are included in the construction cost estimate.

McNary Dam Diversion Site

Diversion of WEID exchange water at McNary Dam is being considered as an alternative to the Recommended Plan diversion. McNary Dam, operated by the Corps of Engineers, is located on the Columbia River about 2 miles east of the city of Umatilla, Oregon. Water could be diverted from the dam using an existing concrete pipe conduit located in the vicinity of the south shore fish ladder. The 60-inch pipe has surplus capacity which could provide the 140 ft³/s needed for the WEID canal. The existing pipeline conveys water to a pressure well that presently delivers water to a fish and wildlife area below McNary Dam. Use of the pipe conduit for the WEID water exchange would not affect water delivery to the fish and wildlife area.

The potential alternative diversion would require construction of a new 66-inch conduit from the pressure well to a concrete-lined canal sized to convey up to 140 ft³/s. The new canal would generally follow the alignment of the existing Terminal Ditch (also known as Brownell Ditch). The 2-1/2-mile-long canal would cross the railroad track, Interstate 82 at the interchange, and local roads before reaching the east bank of the Umatilla River. The water would then be lifted by a new pumping plant approximately 90 feet through a 60-inch discharge line across the Umatilla River into the WEID Canal.

The plant would have five or six vertical turbine units. Power requirements would be less than the WEID pumping plant diversion because a lower pumping head would be required to lift water into the WEID Canal. Based on appraisal-level information, construction costs for the McNary diversion would be comparable to the WEID pumping plant diversion.

Environmental impacts associated with diversion of WEID water at McNary Dam are discussed in the Affected Environment and Environmental Consequences chapter of this Planning Report/Final Environmental Statement (PR/FES).

Cottonwood Bend Pump

Revised operation studies show the need for additional fish flows in the reach of the Umatilla River from Westland Diversion Dam to Cottonwood Bend. An additional pumping plant has been added on the Umatilla River at Cottonwood Bend to meet this need (see Pumping Facilities Sites map). The small plant would pump from the Umatilla River into the Westland Irrigation District (WID) distribution system. The pumping plant would be located about 3 miles

south-west of Hermiston. The pumping plant would have a capacity of 30 ft³/s and would lift water about 50 feet through an 1,100-foot discharge line (see table 2-5a). The pumping plant intake would be screened to protect against fish loss. The pump would allow reduction in the amount of water diverted at Westland Diversion Dam. The district would bypass flows during critical periods when fish flows would otherwise not be met at Echo, and the bypassed diversions would be replaced to the district lands from the Cottonwood Bend pump.

Table 2-5a.--Cottonwood Bend Pump Data

Nominal Design Capacity	Total Dynamic Head	Average Annual Pumping	Average Annual Energy Requirement	Installed Horsepower
ft ³ /s	feet	acre-feet	megawatt-hours	
30	58	2,690	150	275

Power Facilities

No change from PR/DES

Wildlife Mitigation Measures

No change from PR/DES

Fish Passage and Protective Facilities

The basic plan for fish passage and protection remains the same, except some features have been added.

Improved Screening at Existing Diversions

No change from PR/DES

Upstream Passage Improvements at Existing Diversions

Adult upstream passage improvement facilities at Maxwell, Feed Canal, and Westland Diversion Dams are included in the plan. Review of the PR/DES led to identification of additional need to improve upstream passage at Stanfield Diversion Dam. A fish ladder at the diversion has been included in the plan and costs added to the project cost estimates.

Fish Barrier at Mouth of McKay Creek

The PR/DES identified the potential need for a fish barrier at the mouth of McKay Creek to prevent adult fall chinook salmon from migrating up the creek to spawn when releases are made from McKay Reservoir between September 15 and November 15. This need has been confirmed, and costs for the facility have been included in the project cost estimate.

Fishing Access Points

No change from PR/DES

Westland Juvenile Trap

The need for an upgraded juvenile trap facility at Westland Diversion Dam has been identified by fisheries agencies. The facility would include a holding pond, power crowder, fish pump, and a tank truck with trailer. Costs for these facilities, except the tank truck and trailer, have been added to the Recommended Plan. Capital and operating costs of the truck and trailer equipment would be funded by other sources. The Westland trap would be operated as part of the Oregon Department of Fish and Wildlife (ODFW)/tribal trap and transport program when springtime flows become too low for smolt migration in the Echo reach of the Umatilla River.

Permanent Operating Facilities

Since water levels will be critical to streamflow and passage enhancement programs, a measuring system will be put in place at key locations. Automated flow monitoring stations will be in place at Westland, Stanfield, Feed Canal, Three Mile Falls, and Maxwell diversions; Cold Springs/Columbia River canal; West Extension water exchange facilities; Cold Springs and McKay Reservoirs; and Umatilla River near Pendleton, Yoakum, Echo, and Umatilla. Stations will automatically report data through Reclamation's Hydromet system to project operators and advisors to aid in optimizing fishery enhancement objectives.

CONSTRUCTION COSTS AND SCHEDULE

The construction cost for the Recommended Plan is estimated at \$43,800,000 at October 1986 prices. The revised PF-2 Control Schedule is shown on the following page.

Costs

Construction costs are summarized in the following table for comparison with the PR/DES.

Table 2-7.--Construction Cost Summary

Feature	PR/FES (October 1986 Prices)	PR/DES (October 1983 Prices)
Columbia River pumping plant	\$14,200,000	\$13,000,000
Cold Springs pumping plant	6,500,000	6,200,000
Stanfield relift pumping plant	2,050,000	1,950,000
West Extension pumping plant	5,000,000	2,100,000
Columbia-Cold Springs canal	5,500,000	5,500,000
Stanfield canal	1,650,000	1,600,000
Stanfield relift canal	2,070,000	2,000,000
Cottonwood Bend pumping plant	950,000	--
Fish passage and protective facilities	4,200,000	3,100,000
Postconstruction evaluation program	523,000	500,000
Permanent operating facilities	73,000	70,000
General investigations	672,000	672,000
Historical and archeological costs	412,000	308,000
Total	\$43,800,000	\$37,000,000

Construction Schedule

The construction schedule developed for the project has been extended by 2 years. This extension represents a more realistic schedule of fund availability and provides for early implementation of the WEID water exchange facilities and fish screens and ladders.

ANNUAL OPERATING COSTS

Annual operating costs for the Recommended Plan have been revised to reflect an October 1986 price level; 1986 priority firm power rates,^{1/} the economic value of power,^{2/} the inclusion of additional facilities, and adjustments in pumping power. Table 2-8 summarizes annual operating costs. Operation, maintenance, and replacement costs rose from \$164,700 in the PR/DES to \$230,500, primarily as a result of cost indexing and added facilities. The PR/DES estimated total annual project pumping at 70,745 acre-feet, of which 38,245 would be associated with the Columbia River pumping plant. In the PR/DES, Columbia River pumping would result in a loss of 1,664 megawatt-hours of power generation at McNary Powerplant. Revised hydrological studies for the PR/FES show that less water is needed from the Columbia River. The addition of the Cottonwood Bend pumping plant would add to the pumping

^{1/} A rate schedule for the sale of firm power to preferred customers in the Pacific Northwest

^{2/} The cost to Bonneville Power Administration (BPA) to replace power used and foregone as a result of the project

LEGEND: Types of Activity
Preconstruction
and Other Work

Construction

LINE NO.	PROGRAM ITEM	QUANTITY	ESTIMATED TOTAL	ESTIMATED TOTAL TO SEPT. 30, 19 86	FISCAL YEARS												BALANCE TO COMPLETE	LINE NO.
					Year 1	Year 2	Year 3	Year 4	Year 5	Year 6								
1		2	3	4	5	6	7	8	9	10							11	
1	PROGRAM GOALS																	1
2	Fisheries Enhancement																	2
3																		3
4	CONSTRUCTION PROGRAM																	4
5	Columbia River Pump		13,994,000	276,000	6,000	255,000	583,000	4,502,000	8,372,000									5
6	Cold Springs Reservoir Pump		6,400,000	126,000	5,000	5,000	264,000	915,000	3,586,000	1,499,000								6
7	Columbia - Cold Springs Canal		5,392,000	127,000	5,000	43,000	96,000	1,739,000	3,382,000									7
8	Stanfield Canal		5,667,000	126,000		5,000	237,000	808,000	3,170,000	1,321,000								8
9	Fish Passage & Protective Works		4,687,000	65,000	95,000	127,000	2,104,000	1,446,000	50,000	420,000	380,000							9
10	Permanent Operating Facilities		73,000	1,000			10,000	62,000										10
11	West Extension Pump		4,967,000	121,000	100,000	220,000	4,526,000											11
12	Cottonwood Bend Pump		950,000	27,000		5,000	70,000	848,000										12
13																		13
14	TOTAL CONSTRUCTION COST		42,130,000	869,000	211,000	660,000	7,890,000	10,320,000	18,560,000	3,240,000	380,000							14
15	Other Project Costs		1,670,000	1,331,000	9,000	40,000	60,000	80,000	90,000	60,000								15
16																		16
17	TOTAL PROJECT COST		43,800,000	2,200,000	220,000	700,000	7,950,000	10,400,000	18,650,000	3,300,000	380,000							17
18																		18
19																		19
20																		20
21																		21
22																		22
23																		23
24																		24
25																		25

NOTES:

1/ Includes \$1,258,000 non-reimbursable G.I. costs (PL92-149) and \$412,000 non-reimbursable historical and archeological costs (PL 93-291)

RECOMMENDED:

(Operating Office Head)

(Date)

RECOMMENDED:

(Regional Director)

(Date)

RECOMMENDED:

(Chief, Div. of P C & F)

(Date)

APPROVED:

(Commissioner)

(Date)

REVISED:

(Date)

SHEET 1 OF 1 SHEETS

PF-2 (8-78)

UNITED STATES
DEPARTMENT OF THE INTERIOR
Bureau of Reclamation

CONTROL SCHEDULE
Umatilla Basin Project, Oregon
Recommended Plan
Columbia River Pumping Complex

PN 212

12 Nov. 1986

PN

OFFICE

DATE

REGION

☐ GENERAL INVESTIGATIONS
☒ CONSTRUCTION

☐ LOAN PROGRAM
☐ OTHER

OCT. 1986 Price Levels

requirements, but the overall project pumping requirement would be reduced to 66,460 acre-feet, of which pumping from the Columbia River pumping plant would account for 29,820 acre-feet. Power generation lost at McNary Powerplant would be reduced to 1,290 mWh.

Project costs associated with project pumping and loss of power generation at McNary Powerplant increased to \$450,000 as compared to \$379,200 in the PR/DES even though the amount of power needed and foregone decreased. The cost increase is primarily the result of applying a rate of 22.2 mills per kilowatt-hour (kWh) as compared to the 13.9 mills per kWh used in the PR/DES. However, the economic value of that power declined from the PR/DES estimate of \$531,000 to \$223,400. This is a result of the decrease in both power need for pumping and generation foregone at McNary Powerplant and a decrease in the difference between the priority firm cost per kWh versus the marginal cost per kWh: 19.49 mills difference in the PR/DES versus 11.00 mills in the PR/FES. Wheeling costs for power went up from \$152,200 to \$172,200, a \$20,000 increase, largely the result of increasing the WEID pumping plant capacity and adding the Cottonwood Bend pumping plant to the plan.

Some project pumping would occur during "offpeak" power hours. Since offpeak hours have lower costs per kWh, pumping costs with the Recommended Plan would be less than shown in table 2-8. Reclamation will cooperate with BPA to make possible the provision of power at the lowest reasonable cost. As basin irrigation districts pursue water savings projects, there is the possibility that with appropriate authorization, some of the available water resulting from these programs could be acquired for project flow enhancement purposes within the framework of state water law. This would reduce annual pumping requirements and associated power costs.

Table 2-8.--Operation, Maintenance, Replacement, and Power Costs

Item	Amount
Operation	\$ 76,600
Maintenance	137,100
Replacements	16,800
Subtotal	\$230,500
Power	
Pumping (18,980,000 kWh at 22.2 mills/kWh) ^{1/}	\$421,400
Power foregone (1,290,000 kWh at 22.2 mills/kWh) ^{1/}	28,600
Increment to economic value ^{2/}	
Pumping (18,980,000 kWh at 33.22 mills/kWh less \$421,400)	209,100
Power foregone (1,290,000 kWh at 33.22 mills/kWh less \$28,600)	14,300
Wheeling	172,200
Subtotal	\$845,600
Total	\$1,076,100

^{1/} 1986-87 priority firm rate

^{2/} Marginal cost rate; cost to meet additional capacity and energy load

OPERATION AND MAINTENANCE PLANS

Introduction

General Operating Considerations

Success of the project depends on coordinated operation of several different facilities. Reclamation would operate the Columbia River pumping complex in conjunction with McKay Dam.

The Columbia River pumping plant would be unattended. The plant and Columbia-Cold Springs canal would be monitored by Reclamation staff. Other facilities which would deliver water to SID would be operated by the district. Facilities delivering water to HID from Cold Springs Reservoir would be operated by HID. Operation of WEID and WID (Cottonwood Bend) pumping facilities would be by the respective district.

Operation of Cold Springs Reservoir and the other diversion and distribution facilities of the various districts would continue to be operated essentially as at present.

Electric power would be obtained from the Federal Columbia River Power System to meet project pumping requirements. The power would be wheeled over local utility facilities.

River and Reservoir Operational Model

A hydrologic model of the Umatilla River system was developed during the preparation of the PR/DES to help planners determine effects of project water supply proposals on Umatilla River flows. As a result of public and agency review of the PR/DES and updated hydrologic information, the Umatilla River operation model has been revised. The revisions result in differences in Umatilla River flows (average monthly) from those shown in the PR/DES for future conditions both without and with the proposed project. Principal results of the revised operation are (1) overall annual project pumping requirements are reduced from 70,745 acre-feet to 66,460 acre-feet, (2) most monthly flow accomplishments are improved slightly, and (3) operation of McKay and Cold Springs Reservoirs includes provision for maintenance of minimum pools.

A discussion of major revisions follows:

1. The period of hydrologic data included in the operation model has been shifted from 1935-78 in the PR/DES to 1947-84. This was done to drop river data prior to 1947, most of which had to be estimated, and to include more recent water years in the study.
2. Irrigation diversion requirements have been updated to represent the period 1966-84. These years are considered to best represent the present level and pattern of irrigation diversions. Also, this irrigation operation is expected to continue in future years. The operational model incorporated an average irrigation diversion requirement for the 1947-65 period and the actual diversions for the 1966-84 period. An additional operation run was

made for SID, which provided an average water supply each year for the entire 1947-84 period. Comparison of the two operations showed no major differences that would justify reduction of the Columbia River pumping plant capacity.

3. Demands on Cold Springs Reservoir have been based on actual release records for the 1966-84 period. The capacity of the reservoir has been reduced by nearly 12,000 acre-feet to account for sediment accumulation since construction of the dam.

HID diversions through the Feed Canal to Cold Springs Reservoir have been based on target storage levels and Umatilla River flows in excess of minimum instream flow requirements. The Columbia River pumping plant is used to replace flows that would no longer be diverted to the Feed Canal for irrigation, to achieve target storage levels at Cold Springs Reservoir needed to meet irrigation demands, and to maintain a minimum pool of 3,800 acre-feet in Cold Springs Reservoir.

4. McKay Reservoir releases for fish would occur as needed to meet instream fish flow requirements at Echo and Umatilla during September 16-30, October, and November. Releases would also be made occasionally during the winter months to meet minimum flows, but only when reservoir levels were above average so as to insure that irrigation operation would not be affected. A minimum pool of 6,800 acre-feet would be maintained.

The operation study reported in the PR/DES provided for release of fish flow storage on a constant basis. It was determined that this would not be efficient use of the storage since the minimum flow requirements would be exceeded in some periods in many years, therefore wasting water that could be used in later months. This operation also caused average monthly flows to be overstated.

In the revised operation, McKay Reservoir shows a significant increase in end-of-month contents because fish flow storage is held over to meet critical fall releases. Water levels would also remain higher than historically was the case because WID's level of irrigation demand decreased by 10 percent due to more recent irrigation data. This reduces the irrigation season demand on the reservoir and contributes to higher storage levels. Overall, the ability of McKay Reservoir to fill is enhanced under the revised operation, resulting in its being a more reliable supply for the basin.

5. The gauged diversions of HID have been reduced by the offstream releases into the A-Line Canal which occur above the Maxwell gauge.

6. The County Line Water Improvement District (CLWID) diverts flows from the Umatilla River as part of its ground-water recharge program. These diversions have been revised in the PR/FES to reflect actual use over the past several years rather than the maximum rate of 75 ft³/s allowed under the district's permit. The maximum amount diverted over the past several years is 60 ft³/s. CLWID diversions occur through the entire study period. The district's diversions are limited during December and curtailed during January and February because of icing conditions. This operation is expected to continue into the future.

7. PBT diversions have been included in the operation based on flow availability, the capacity of PBT facilities, and expected PBT operation throughout the study period.

8. The proposed WEID pumping plant with a 140-ft³/s capacity has been included in the operation.

9. The proposed 30-ft³/s capacity Cottonwood Bend pumping plant on the Umatilla River has been included as a project feature. This results in flow increases in the river reach between Westland Diversion Dam (river-mile 28) and Cottonwood Bend (river-mile 13).

Anticipated Future River and Reservoir Operations Without the Proposed Project

The following operation assumptions have been made for a "future without project" condition:

1. Irrigation diversions would be made at amounts indicated from historical 1966-84 records. In the river and reservoir operational model, these diversions were applied to SID's Furnish Canal, WID's Main Canal, the Allen Canal, the Dillon Canal, HID's Maxwell Canal, and WEID's Main Canal. HID's diversion to Cold Springs Reservoir through the Feed Canal was based on flow availability, maximum capacity of the canal, present capacity of the reservoir, and irrigation demand. CLWID and PBT diversions were made at the obtainable amounts discussed above.

2. McKay and Cold Springs Reservoirs would be operated to full irrigation capacity with no minimum pool reservations. Reservoir releases would be made based on irrigation demands only, except when spills were required to meet maximum allowable reservoir levels.

3. Minimum fish flows (target flows) were specified for the Umatilla River at Yoakum, Echo, and Umatilla in order to show shortages that would occur under without project operations. No attempt was made to meet these flows in the without project operations model.

The future without operation study serves as the base against which flow improvements with the project can be shown.

Anticipated Future River and Reservoir Operations With the Proposed Project

The concept of the proposed project is to modify Umatilla River diversions in such a way that instream flow needs for fish can be met under most conditions while continuing to meet existing irrigation demands. The present diversion patterns of SID, HID, WID, and WEID would be altered when necessary to meet the instream flow requirements. Reduced diversions would be replaced to the irrigation districts by exchange pumping.

The proposed project operation is summarized in table 2-8a. The differences between the operation as reported in the July 1986 PR/DES and the revised project operation for this PR/FES are highlighted in the table.

The following assumptions have been made in the revised project operation:

1. SID would exchange its McKay Reservoir storage water for a supply pumped from the Columbia River. SID diversions of Umatilla River natural flows at Stanfield Diversion Dam would occur only when flows exceed instream flow requirements for fish. The bypassed natural flows would be replaced by Columbia River pumping.
2. HID diversions of Umatilla River natural flows at the Feed Canal Diversion Dam would occur only when flows exceed instream flow requirements for fish. The bypassed flows would be replaced by Columbia River pumping.
3. The Columbia River pumping plant would move water from the Columbia River to facilities serving SID and to Cold Springs Reservoir for release to HID. The full capacity of the Columbia River pump would be used in 25 of 38 years of the period of study to exchange water with these districts. SID's pumped supply would not enter Cold Springs Reservoir but would be routed around the reservoir through the Cold Springs pumping plant and a relift pump to district lands.
4. WID would continue with much of its present operation. The district would bypass flows up to 30 ft³/s at Westland Diversion Dam during critical periods (especially during June) when instream flows are not being met at Echo. These bypassed diversions would be delivered to the lower district lands from a small pump station located on the Umatilla River at Cottonwood Bend.
5. CLWID would continue with its present operation. If target fish flows are not met, recharge diversions to the district would be curtailed.
6. The PBT diversions would be limited to a maximum of 100 ft³/s (see Attachment C).
7. WEID would reduce its diversion at Three Mile Falls Diversion Dam by up to 140 ft³/s during the irrigation season in order to meet minimum instream flows below Three Mile Falls Diversion Dam. The water not diverted would be replaced by the proposed WEID pumping plant.
8. Other diversions from the Umatilla River such as the Maxwell, Allen, and Dillon Canals would continue as at present.
9. McKay Reservoir would have higher water levels during the year since water would no longer be released for diversion to SID through Furnish Canal, but would be held in the reservoir for release during September 16-30, October, November, and occasionally in December to enhance instream flows. Additionally, WID's diversion demand has been reduced by about 10 percent to reflect the present level and pattern of diversion, and this results in less demand for McKay storage. A minimum reservoir content of 6,800 acre-feet would be met in all periods. The end-of-season content would be higher, and, therefore, the ability to fill the reservoir each season would be improved.

Table 2-8a.--Summary of Umatilla Basin Project, Oregon,
Project Operations Differences Between PR/DES and PR/FES

Item	July 1986 PR/DES	
	Future Without Project	Future With Project
Period of water record used	1935-78 (44 years)	Same as future without
Minimum flow targets in Umatilla River	None	September 16-30--250 ft ³ /s October 1-November 15--300 ft ³ /s November 16-June 30--250 ft ³ /s July 1-September 15--None
McKay Reservoir operations		
-Active storage (includes minimum pool)	73,840 acre-feet	Same as future without
-Minimum pool restriction	3,000 acre-feet	Same as future without
Cold Springs Reservoir operations		
-Active storage	50,000 acre-feet	Same as future without
-Minimum pool	None	5,000 acre-feet
-July end of month elevation restriction	None	610 feet mean sea level
SID		
-Water Supply	17,600 acre-feet average provided from natural flows and 20,200 acre-feet average from McKay Reservoir storage.	13,600 acre-feet average from natural flows and 24,200 acre-feet average from Columbia River pumping in exchange for McKay storage.
-Umatilla River diversions	Diversion at Stanfield Dam when natural flows available and when McKay Reservoir storage needed.	Does not divert when Umatilla River less than minimum flow targets. No McKay Reservoir storage used to meet irrigation demand.
HID		
-Water supply	89,400 acre-feet average provided from natural flow diversions at Feed Canal and Maxwell Diversion Dams.	56,600 acre-feet average diverted at Feed Canal and 19,800 acre-feet average diverted at Maxwell Diversion Dams plus 13,000 acre-feet average provided by Columbia River pump exchange.
-Umatilla River diversions	Diversions when natural flows available	Diversions restricted when Umatilla River flows less than minimum flow targets. No diversions in October and November.
WID		
-Water supply	55,300 acre-feet average provided from natural flows and McKay Reservoir storage.	Same as future without
-Umatilla River diversions	Diversion at Westland Dam when natural flows available and when McKay storage needed.	Same as future without
CLWID		
-Water supply and diversions	Maximum diversion of 75 ft ³ /s anytime if available October through March.	Same as future without
PBT permits		
-Water supply and diversions	Not included in operations	Not included in operations
WEID		
-Water supply	66,960 acre-feet average of natural and return flows	58,560 acre-feet average of Umatilla River flows diverted plus 8,400 acre-feet average exchanged at WEID pump.
-Umatilla River diversions	Natural and return flows diversions when available	Up to 100 ft ³ /s pumped at WEID pump plant when Umatilla River flows less than recommended targets.

Table 2-8a.--Continued

Future Without Project	PR/FES	Future With Project	Major Differences Between the PR/DES and PR/FES
1947-84 (38 years)		Same as future without	A more recent period of record in the PR/FES reflects a greater efficiency in irrigation water use.
None		Same as used in PR/DES	None
67,800 acre-feet		Same as future without	Original study used historic McKay operation which allowed overflow into the flood control pool.
None		6,800 acre-feet	New minimum pool designated in PR/FES for resident fish mitigation.
38,300 acre-feet		Same as future without	Active storage reduced in PR/FES reflects sediment accumulation in pool since original construction.
None		3,800 acre-feet	Smaller minimum pool in PR/FES reflects reduced active storage space.
None		610 feet mean sea level	None
34,700 acre-feet average from natural flows and McKay Reservoir storage.		16,100 acre-feet of average natural flows and 18,600 acre-feet average from Columbia River pumping in exchange for McKay Reservoir storage.	Irrigation demand reduced by 3,000 acre-feet in the PR/FES because a more recent period of record reflects a greater efficiency in irrigation water use.
Same as PR/DES		Same as PR/DES	None
76,700 acre-feet average provided from natural flow diversions at Feed Canal and Maxwell Diversion Dams.		66,000 acre-feet average provided from natural flow diversion plus 9,100 acre-feet average provided by Columbia River pumping exchange (2,200 acre-feet average pumped extra to meet minimum pool).	Diversion demand reduced by 8,700 acre-feet (not including Maxwell diversion) in the PR/FES due to the period of record reflecting a greater efficiency of irrigation water use.
Same as PR/DES		Diversions restricted anytime Umatilla River flows less than minimum flow targets.	Maxwell diversions reduced by 5,600 acre-feet. Diversions allowed in some years in October and November in PR/FES.
63,000 acre-feet average provided from natural flows and McKay Reservoir storage.		Same as PR/FES future without, but 60,300 acre-feet average from natural flows and 2,700 acre-feet average pumped at proposed Cottonwood Bend pump.	PR/FES supply increased by an average of 7,700 acre-feet to include Westland Canal diversions to Pioneer-Courtenay and Andrews Districts.
Same as PR/DES future without		Same as above	In PR/FES, an average of 2,700 acre-feet is bypassed at Westland Dam and pumped from the proposed Cottonwood Bend pump to increase flows in the Echo reach by up to 30 ft ³ /s.
8,800-acre-feet average. Maximum diversion of 60 ft ³ /s if available, but only during October, November, December, March, and April; maximum water supply of 9,000 acre-feet per year.		Same as PR/FES future without except curtailment of diversion if target fish flows can not be met in Echo reach.	CJWD has different diversion schedule in PR/FES to reflect actual diversions and wintertime icing conditions which physically curtail diversions.
25,500 acre-feet average supply. Maximum diversions limited to 100 ft ³ /s if available, from November 16 through September 30 except no January and February diversions due to icing.		Same as PR/FES future without	PBT included in PR/FES operations
50,800 acre-feet average of natural and return flows		41,100 acre-feet average of Umatilla River flows diverted plus average of 9,700 acre-feet average exchanged at WEID pump.	Irrigation demand reduced by 16,160 acre-feet in PR/FES because more recent period of record reflects greater use efficiency of irrigation water.
Same as PR/DES future without		Up to 140 ft ³ /s pumped at WEID pump plant when Umatilla River flows less than recommended targets.	Larger capacity at WEID pump plant in PR/FES. Results in more water exchanged with district in PR/FES.

10. Operation of Cold Springs Reservoir would be modified. The major change would be reduction of the diversion from the Umatilla River into the Feed Canal for filling the reservoir. This reduction would be made up by Columbia River pumping. Another major change involves the reduction of Cold Springs Reservoir capacity due to sedimentation. Shortages would occur during September in many years which could be reduced by Columbia River pumping. Additionally, a minimum pool of 3,800 acre-feet would be maintained in the reservoir by pumping from the Columbia River if necessary. The reservoir would be kept below elevation 610 after July 31 for the benefit of riparian vegetation and wildlife habitat.

11. The Umatilla River watermaster would monitor water released from McKay Reservoir and bypassed at irrigation diversions for instream flows for fish with the objective of assuring that they remain in the river for the intended purposes.

Fishery Operations

Table 2-9 shows how the system would be operated to meet recommended fish flows.

Adequacy of Supply.--Tables 2-10 and 2-11 provide projected future without project and future with project (Recommended Plan) flow conditions at the Echo and Umatilla flow gauging stations. The revised operations model results in overall improved future without and future with flow conditions in comparison to those presented in the PR/DES. This can be illustrated by comparing the percentage of time when average monthly flows would be less than the recommended minimum target flows of 250 ft³/s or 300 ft³/s. In part, flow accomplishments are greater under the new operations study because there is a more judicious release of McKay Reservoir fish water storage, the WEID pump capacity has been increased, and the added Cottonwood Bend pump helps to improve conditions in the Echo reach.

Table 2-9.--Anadromous Fishery Operation,
Main Stem Umatilla River--Recommended Plan

Month	Recommended Minimum Flows ^{1/}	Operational Procedures to Meet Recommended Minimum Flows
	ft ³ /s	
January	250	Flows provided by available natural flows plus HID and CLWID diversion restrictions.
February	250	
March	250	
April	250	
May	250	Flows provided through use of available natural flows plus SID and HID diversion restrictions. Fish migration to Three Mile Falls Diversion Dam during low flow periods improved by the use of the WEID pump and in the Echo reach by the Cottonwood Bend pump.
June	250	
July	--	Minimum flows for anadromous fish not applicable
August	--	
September 1-15	--	
September 16-30	250	Flows provided by available natural flows plus McKay Reservoir storage releases and SID diversion restrictions. Fish migration to Three Mile Falls Diversion Dam during low flow periods improved by the use of the WEID pump, and through the Echo reach by use of the Cottonwood Bend pump.
October	300	Flows provided by available natural flows, restrictions on HID and SID diversions and McKay Reservoir storage releases. Fish migration to Three Mile Falls Diversion Dam during low flow periods improved by the use of the WEID pump, and through the Echo reach by use of the Cottonwood Bend pump.
November 1-15	300	
November 16-30	250	Flows provided by available natural flows plus HID and CLWID diversion restrictions.
December	250	

^{1/} Minimum flows for Umatilla River from the confluence of McKay Creek downstream

Table 2-10.--Projected Future Without Project and Future With
Project Flows--Umatilla River at Echo

Period	Recommended	Future Without Project			Recommended Plan			Average Flow Change
	Minimum Flow	Average Flow	Number of Shortages ^{1/}	Average Shortage	Average Flow	Number of Shortages ^{1/}	Average Shortage	
	ft ³ /s	ft ³ /s		ft ³ /s	ft ³ /s		ft ³ /s	ft ³ /s
October	300	41	38	259	289	4	13	+248
November 1-15	300	99	36	253	299	10	27	+240
November 16-30	250	123	32	173	264	15	28	+141
December	250	481	16	79	513	13	25	+33
January	250	882	7	21	837	6	9	-45
February	250	1,150	1	6	1,110	1	3	-40
March	250	940	6	31	896	6	16	-44
April	250	1,305	3	13	1,277	4	8	-28
May	250	699	8	31	706	7	16	+7
June	250	122	33	164	190	32	96	+68
July	0	44	--	--	44	--	--	--
August	0	39	--	--	40	--	--	--
September 1-15	0	26	--	--	29	--	--	--
September 16-30	250	22	38	228	256	2	11	+234

^{1/} Based on 38 years of record (1947-84)

Table 2-11.--Projected Future Without Project and Future
With Project Flows--Umatilla River at Umatilla

Period	Recommended	Future Without Project			Recommended Plan			Average Flow Change
	Minimum Flow	Average Flow	Number of Shortages ^{1/}	Average Shortage	Average Flow	Number of Shortages ^{1/}	Average Shortage	
	ft ³ /s	ft ³ /s		ft ³ /s	ft ³ /s		ft ³ /s	ft ³ /s
October	300	67	38	233	317	4	12	+250
November 1-15	300	143	35	172	382	5	13	+239
November 16-30	250	201	30	110	342	7	10	+141
December	250	554	14	50	587	4	7	+33
January	250	960	5	12	915	2	4	-45
February	250	1,239	1	5	1,200	1	2	-39
March	250	1,004	6	28	960	6	13	-44
April	250	1,254	4	22	1,237	5	10	-17
May	250	644	11	48	672	6	11	+28
June	250	79	33	205	227	27	57	+148
July	0	1	--	--	1	--	--	--
August	0	4	--	--	6	--	--	--
September 1-15	0	13	--	--	16	--	--	--
September 16-30	250	15	38	235	251	2	11	+236

^{1/} Based on 38 years of record (1947-84)

Target minimum flows during the critical September 16 through November period for fall chinook migration and spawning are essentially met or exceeded on average at Echo and Umatilla. Out of a possible 152 flow periods (September 16-30, October, November 1-15, November 16-30) in 38 years of record, 31 shortages are experienced at Echo and 18 at Umatilla.

From December through May, minimum target flows are normally met at the two flow stations with the month of December having the most shortage occurrences.

Flow shortage occurrences are shown to increase in June in the revised operations model. This, in part, is a consequence of including the PBT water permit diversions in the operation. June is a high irrigation demand month throughout the Umatilla basin. Using the new model, the Recommended Plan shows shortages during the months of June in the 38-year period of record as follows: 84 percent at Echo (compared to 66 percent in the PR/DES), and 71 percent at Umatilla (compared to 50 percent in the PR/DES).

Overall, flow shortages are most common in the Echo reach, due primarily to substantial and nearly year-round diversions. The following tabulation summarizes the percent of total flow shortage periods at Echo and at Umatilla comparing the PR/DES with the PR/FES.

Percent of Flow Shortage Periods^{1/}

<u>Station</u>	<u>PR/DES</u>		<u>PR/FES</u>	
	<u>Future Without</u>	<u>Future With</u>	<u>Future Without</u>	<u>Future With</u>
Echo (river-mile 27)	61	41	52	24
Umatilla (river-mile 2)	57	20	51	17

^{1/} The PR/DES hydrology model used 44 years of record (1935-78), while the PR/FES hydrology model uses a more recent 38-year period of record (1947-84).

Steelhead.--Steelhead migration in October and November in the main stem Umatilla River would be improved by flow augmentation releases from McKay Reservoir. Winter and spring adult migration would be enhanced by HID, SID, and CLWID diversion restrictions.

Fall Chinook.--Fall chinook flow needs up to Three Mile Falls Diversion Dam during September 16 to November 15 would normally be met and would be supplied from McKay Reservoir storage releases and the WEID pumping plant exchange. There would be some years when recommended target flows would not be met from September 16 through November 15 above Three Mile Falls Diversion Dam, but there would be substantial flow enhancement over present conditions. Upriver fall chinook adult migration would be sustained from September through November in most water years.

Spring Chinook.--Spring chinook adult migration needs would essentially be met in April and May in the entire main stem Umatilla River. In June, the proposed WEID pumping facilities and recently completed channel modifications would allow adult fish to reach Three Mile Falls Diversion Dam. The Cottonwood Bend pump would improve flow conditions by adding up to an additional 30 ft³/s through the Echo reach. Main stem reaches above Three Mile Falls Diversion Dam would experience substantial flow shortages that may prohibit spring chinook migration in June in many water years. During these periods, adult fish could be trapped and hauled by truck upstream for release in good flow reaches above Echo.

Overall Fishery Accomplishments.--Except for the month of June, the Recommended Plan, on average, would meet all monthly target minimum flows at the Umatilla gauge and essentially meet minimum flows in the Echo reach below Westland Diversion Dam. In time, anadromous fish stocks could be selected that would be most adaptive in their freshwater life cycle to utilize Umatilla River streamflow and habitat constraints. A trap and haul program would be instituted during critical low flow periods whereby adult and juvenile fish would be collected and transported by truck around low flow problem reaches. Based on the hydrology operation model, this would most often occur in June (spring chinook adults and all species of salmon and steelhead smolts). Under this procedure, adult spawners would be captured in the fish traps at Three Mile Falls Diversion Dam and moved upstream for release into a better flow reach or to the Minthorn Springs and Bonifer holding facilities for artificial spawning. Likewise, smolts would be captured at the Westland Diversion Dam juvenile trap. These fish would then be transported and released downriver below the Echo low flow reach. The juvenile trap at Westland Diversion Dam would be constructed as part of the Recommended Plan and would be integrated with the ODFW/tribal truck and transport program being implemented through BPA as part of the Power Council's Fish and Wildlife Program.

During the postproject evaluation period, "flow shaping" could be done to develop optimum fishery water management strategies for the Umatilla River. Thus, future management flexibility, in combination with the Recommended Plan's project elements, would favor reaching fishery agency and tribal fish run objectives for the basin.

Postproject Fishery Monitoring and Management Program.--A program is included as a feature of the project to permit project operators and fishery experts to technically evaluate project accomplishments toward meeting fishery restoration objectives and to fine tune operations within real operating constraints to maximize accomplishments. This program would be administered by Reclamation in consultation with the tribal fishery experts, ODFW, and the Federal fishery agencies. This program is expected to extend over a 12-year period and would be a project cost.

Reclamation's Yakima Project Office would administer the Umatilla Basin Project. Reclamation would provide for operation and maintenance of the Columbia River pumping complex and other water exchange facilities and assure proper operation and maintenance of Recommended Plan fish facilities in cooperation with other agencies. Existing stream gauge stations would be utilized and several new stations established where needed to facilitate coordinated regulation of fish passage facilities, pumping plants, reservoirs, irrigation diversions, and instream flows in accordance with project

guidelines and water rights. Gauging stations would be automated so that important hydrological data would be instantaneously available. The Yakima office would monitor overall project operations. If appropriate, data receivers would be placed in the Umatilla watermaster's office, local offices of the irrigation districts, tribal headquarters, and the ODFW office.

The Oregon Water Resources Department (OWRD) would regulate project related flows in accordance with permits, rights, and agreements applicable to the project. Onsite water regulation and enforcement would be provided through the department's watermaster division office in Pendleton.

A Umatilla Basin Project oversight committee would be formed to provide a forum of communication among the project's varied water interests. The committee, made up of representatives from the affected irrigation districts, the ODFW, Confederated Tribes of the Umatilla Indian Reservation (CTUIR), the OWRD watermaster office, and Reclamation, would meet as necessary to disseminate information and coordinate activities concerning operations. ODFW and the CTUIR would develop annual fish passage and flow objectives within project guidelines. These and other responsibilities and funding arrangements would be specified in project operation and maintenance agreements.

Irrigation Operations

A summary of irrigation district operations under present and future with project conditions are discussed below. The graphs located at the end of this section are helpful in visualizing the operations.

HID.--HID presently begins about November 1 to divert water from the Umatilla River into the Feed Canal to fill Cold Springs Reservoir for the next irrigation season. Diversions usually continue until about June 15. With the project, only flows in excess of the minimum streamflow requirements (250 to 300 ft³/s) would be diverted from the Umatilla River.

Additional water required to fill Cold Springs or to maintain the minimum reservoir pool would be provided by Columbia River pumping. Rule curves for monthly reservoir levels have been developed both for natural flow and pumped flow in order to meet all of the reservoir demands. It is estimated that an average of 11,300 acre-feet would be pumped to Cold Springs Reservoir from the Columbia River to meet these demands. HID would receive the same amount of water as it presently does. Table 2-12 summarizes the HID present operation and projected operation with the Recommended Plan.

Table 2-12.--HID Water Supply, Future Without and Future With Recommended Plan

Month	Umatilla River Maxwell Diversion		Umatilla River Feed Canal Diversion		Columbia River Pump Supply	Cold Springs Reservoir Release		Total Diversion	
	Future Without	Future With	Future Without	Future With	acre-feet	Future Without	Future With	Future Without ^{1/}	Future ^{2/} With
October	1,360	1,360	0	0	300	0	0	1,360	1,660
November	50	50	8,490	2,210	240	0	0	8,540	2,500
December	0	0	10,030	8,190	10	0	0	10,030	8,200
January	0	0	2,750	4,270	30	0	0	2,750	4,300
February	0	0	1,250	2,350	10	0	0	1,250	2,360
March	190	190	13,400	13,280	0	80	80	13,590	13,470
April	2,000	2,000	7,860	8,200	0	6,360	6,360	9,860	10,200
May	2,630	2,630	11,500	10,550	1,360	9,780	9,780	14,130	14,540
June	2,160	2,160	7,280	2,780	5,070	10,420	10,420	9,440	10,010
July	2,030	2,030	0	0	110	12,130	12,130	2,030	2,140
August	1,900	1,900	0	0	660	10,100	10,390	1,900	2,560
September	1,860	1,860	0	0	3,480	4,230	4,650	1,860	5,340
Total	14,180	14,180	62,560	51,830	11,270	53,100	53,810	76,740	77,280 ^{3/}

1/ Based on two diversions--Maxwell and Feed Canals

2/ Based on three diversions--Maxwell and Feed Canals and Columbia River pump

3/ One percent increase in supply due to pumping to meet rule curve based on irrigation demand and reservoir pool requirements.

Filling of Cold Springs would start in November if water is available from the Umatilla River. Diversion or pumping from the Columbia River would be made to meet established rule curves in order that irrigation and reservoir level demands would be met. The minimum pool of 3,800 acre-feet would be met and the reservoir would be maintained below a content of 24,000 acre-feet after July 31 to maintain growth of riparian cover in the wildlife refuge.

Operation of Cold Springs Reservoir may require some modification based on results of Safety of Dams studies being done at the dam. Any modifications would be coordinated with the operational objectives for the plan of development recommended here.

SID.--SID obtains its irrigation water by diversions from the Umatilla River into the Furnish Canal during the irrigation season. These diversions usually begin about March 1 and end about September 15. Under the priority system of water rights, SID only diverts natural water when flows are above 90 ft³/s in the Umatilla River above Echo. The district diverts flows above this amount according to its demand up to its natural flow right and then calls on its storage right in McKay Reservoir. Table 2-13 summarizes present SID operations and operations with the Recommended Plan.

Table 2-13.--SID Water Supply, Future Without and Future With Recommended Plan

Month	Umatilla River Furnish Canal		Columbia River Pumping	Total	
	Future Without	Future ^{1/} With		Future Without	Future With
	----- acre-feet -----				
October	230	0	230	230	230
November	0	0	0	0	0
December	0	0	0	0	0
January	0	0	0	0	0
February	60	60	0	60	60
March	690	690	0	690	690
April	4,590	4,590	0	4,590	4,590
May	6,740	6,260	480	6,740	6,740
June	6,540	3,130	3,410	6,540	6,540
July	6,860	1,290	5,570	6,860	6,860
August	5,850	100	5,750	5,850	5,850
September	3,160	30	3,130	3,160	3,160
Total	34,720	16,150	18,570	34,720	34,720 (34,700)

^{1/} Does not include McKay storage water

The basic change made in the revised plan of operation for SID is a shift of water supply from storage in McKay Reservoir to Columbia River pumping. Natural flows would also be bypassed and replaced by pumping when the minimum instream flows are not met. SID would receive its present average level of McKay Reservoir storage (including historic average unallocated space supplies).

SID is interested in further making its water supply system more efficient and reliable and less costly to operate. One of the concepts that has been preliminarily considered by the district involves abandonment of Furnish Ditch (the district's primary water conveyance facility from the Umatilla River) and receipt of its entire supply by pumping from the Columbia River. In a variation of this concept, the district would use Furnish Ditch at a reduced capacity and compensate by pumping from the Columbia River. While these concepts could reduce canal operation, maintenance, and rehabilitation costs, they would have pumping power costs associated with them. Another consideration is that, at the present time, SID provides early-season water service to about 5,000 acres by diverting spring floodflows through its facilities. Additional service to these lands during the irrigation season might be possible if pumped water from the Columbia River were available at the end of the spring floodflow season. If Furnish Ditch were abandoned, there would be insufficient capacity in the SID system to provide water to the floodflow lands in some months.

There is physical capacity in the proposed Columbia River pumping plant to provide SID's entire water supply because the facility is sized to meet peak instream flow exchange requirements when all of the district's water supply would have to be pumped from the Columbia River during some periods. If SID pursues the above potentials, Reclamation would work with district representatives during advance planning studies to determine feasibility and operational and financial responsibilities that would have to be assigned to the irrigation district for any such use of the Columbia River pumping complex.

WID.--WID would continue to divert natural and stored water from the Umatilla River into Westland Canal. The district would bypass up to 30 ft³/s of flow at Westland Diversion Dam when the minimum instream flow requirements are not met at Echo. This flow would pass through the critical passage area below Echo and would then be pumped from the river at Cottonwood Bend for use on the lower WID lands (table 2-14).

Table 2-14.--WID Water Supplies, Future Without, and Future With Recommended Plan

Month	Umatilla River Flow and McKay Storage		Umatilla River Cottonwood Bend Pumping	Total	
	Future Without	Future With		Future Without	Future With
	----- acre-feet -----				
October	1,410	1,240	170	1,410	1,410
November	40	40	0	40	40
December	0	0	0	0	0
January	0	0	0	0	0
February	30	30	0	30	30
March	2,150	1,810	350	2,150	2,160
April	9,540	9,310	230	9,540	9,540
May	11,730	11,370	360	11,730	11,730
June	11,180	9,640	1,540	11,180	11,180
July	11,340	11,340	0	11,340	11,340
August	9,410	9,410	0	9,410	9,410
September	6,130	6,100	40	6,130	6,140
Annual	62,960	60,290	2,690	62,960	62,970 (63,000)

WEID.--WEID would continue to divert Umatilla River water into the West Extension Main Canal at Three Mile Falls Diversion Dam. Most of the water in the river at this point after May consists of return flows from upstream irrigation operations. The district's diversions from the river would be limited by up to 140 ft³/s to help maintain minimum streamflows below Three Mile Falls Diversion Dam during the period when the instream minimum flows are not met. Replacement water would be provided by the new WEID pumping plant. Table 2-15 summarizes WEID operations with and without the Recommended Plan.

Table 2-15.--WEID Water Supply, Future Without Project and Future With Recommended Plan

Month	Umatilla River		WEID Pump	Total	
	Future Without	Future With		Future Without	Future With
	-----		acre-feet	-----	
October	3,280	2,970	310	3,280	3,280
November	90	90	0	90	90
December	0	0	0	0	0
January	0	0	0	0	0
February	0	0	0	0	0
March	1,230	910	320	1,230	1,230
April	7,020	6,080	940	7,020	7,020
May	8,960	7,280	1,680	8,960	8,960
June	7,840	1,490	6,350	7,840	7,840
July	7,860	7,860	0	7,860	7,860
August	8,090	8,090	0	8,090	8,090
September	6,440	6,360	80	6,440	6,440
Total	50,810	41,130	9,680	50,810	50,810

Other Diversions.--CLWID and PBT diversions are included in the operation study at their anticipated diversion amounts. These diversions are not allowed to affect downstream users of the Umatilla River waters with senior rights.

CLWID diverts water from the Umatilla River as part of its ground-water recharge program. In the revised PR/FES operation study, CLWID diversions are based on the following assumptions:

1. Daily records for the Ordinance and Westland Canals for 1981-85 indicate that delivery losses to CLWID varied between 20-30 percent. Therefore, it would require a diversion of approximately 60 ft³/s from the Umatilla River to deliver 45 ft³/s to the district.

2. Although CLWID has indicated its willingness to limit diversions to aid in meeting instream flow objectives, it prefers to divert October and November flows since fall flows carry less silt. Therefore, diversions to the district were anticipated to begin in October.

3. Since severe icing problems occur in most years during the winter months, limited diversions would occur during December and would be curtailed during January and February.

4. Annual diversions have ranged from an estimated 4,000 to 8,000 acre-feet. The operation does provide up to 9,000 acre-feet in years when the water is available.

5. Ground-water levels have improved during the CLWID recharge program, and the program is expected to continue indefinitely. Therefore, CLWID diversions at the Westland Canal are expected to occur throughout the study period. The amount of diversion included in the operation study represents the average obtainable diversion based on the limitations discussed above.

Since no records are available for the PBT diversion, estimates of the amounts that might occur in the future are based on the following assumptions:

1. Diversions are limited to the amounts appearing in the individual permits (Prior 88 ft³/s, Brown 50 ft³/s, Teel 90 ft³/s) and the State's limitations of 1.5 acre-foot per acre prior to March and a 4.5-acre-foot-per-acre total irrigation season diversion.

2. Maximum diversion is limited to 100 ft³/s (if available) at any given time (see Attachment C).

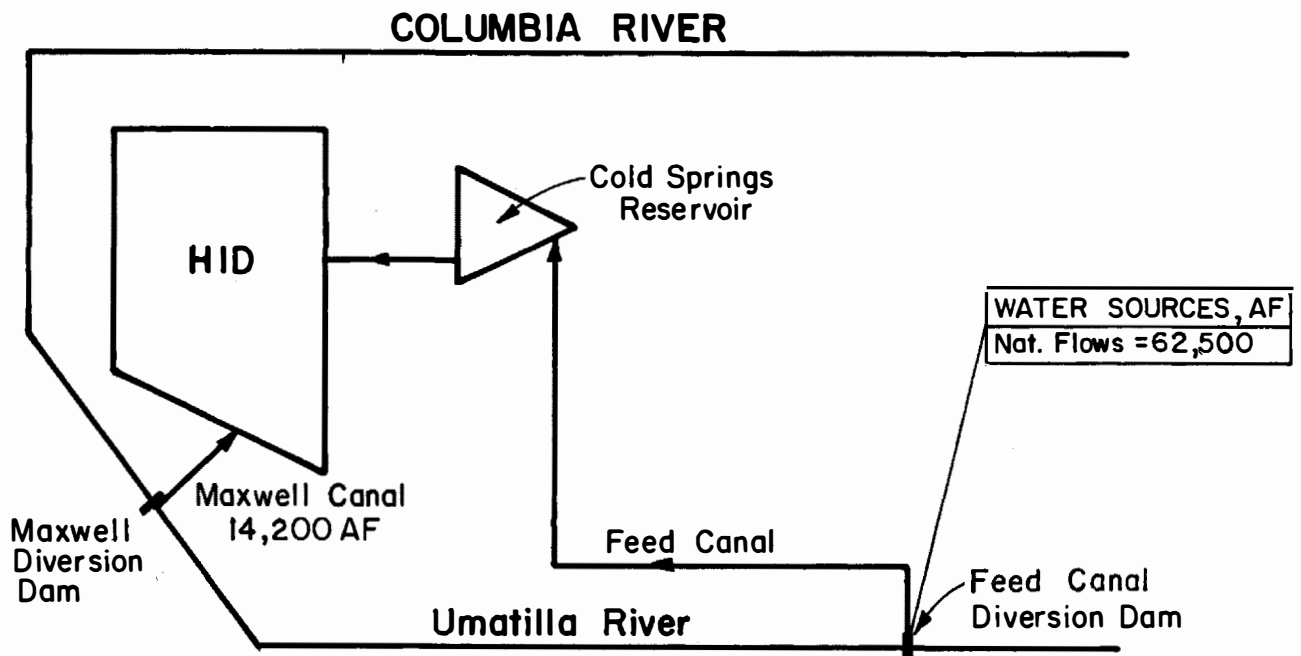
3. Facilities at the PBT diversion (near the mouth of Westland Canal) currently have a combined total capacity of 65 ft³/s and will be increased to 95 ft³/s in the near future.

4. Diversions for PBT at the Westland Canal occur throughout the period of study. The amounts represent the obtainable diversion based on the above criteria and limitations. As shown below, there would be no PBT diversions in October, November 1-15, January, February, July, August, and September 1-15.

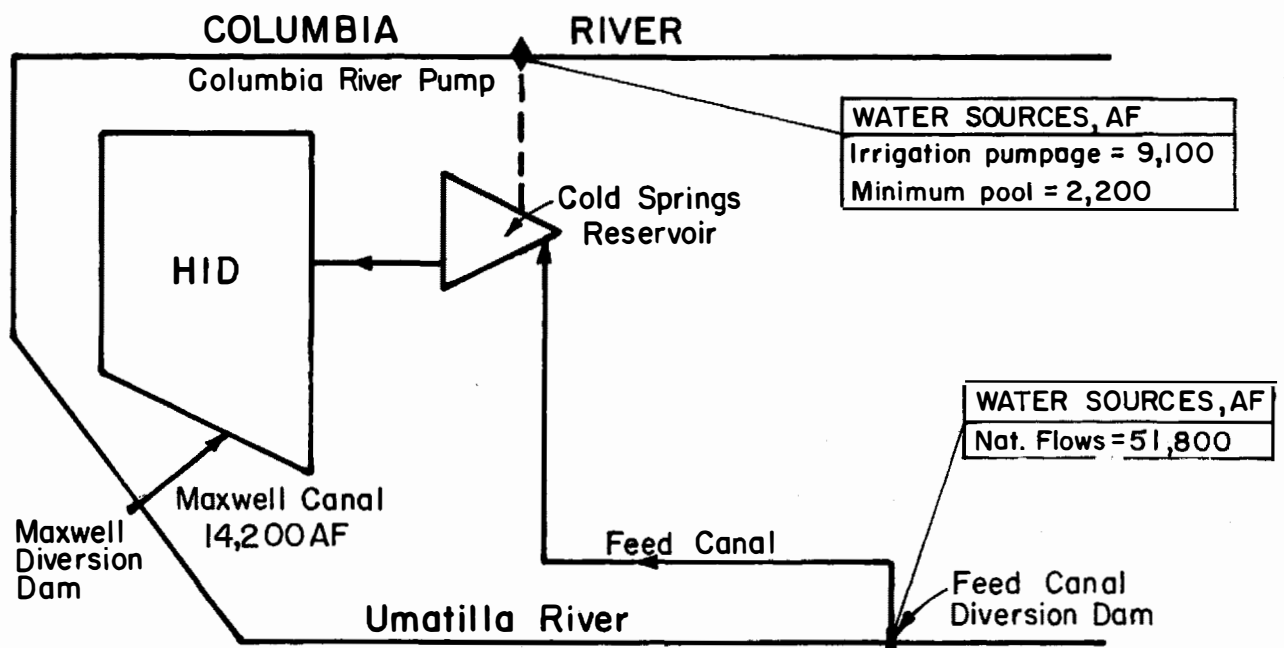
The average diversions for CLWID and PBT are presented in the following tabulation.

<u>Period</u>	<u>CLWID</u> ft ³ /s	<u>PBT</u> ft ³ /s	<u>Period</u>	<u>CLWID</u> ft ³ /s	<u>PBT</u> ft ³ /s
October	55	0	April	9	95
November 1-15	21	0	May	0	86
November 16-30	13	60	June	0	29
December 1-15	12	80	July	0	0
December 16-31	0	80	August	0	0
January	0	0	September 1-15	0	0
February	0	0	September 16-30	0	3
March	51	98			

The CLWID diversion has a priority date of 1972, while the Prior and Brown diversions have priority dates of 1981 and the Teel permits have priority dates of 1955 and 1958. All major downstream users have earlier priority dates. Therefore, these more recent diversions are only allowed to divert riverflow once the downstream diversions were met. Legislation enacted by the Oregon Legislature in 1987 placed ground-water recharge projects which were initiated after September 28, 1987, on an equal status with other water rights. The application of this legislation to the CLWID has not yet been determined. However, CLWID is unlikely to be granted priority over any other right initiated before September 28, 1987.



TOTAL OF TWO SOURCES = 76,700 AF
PRESENT CONDITION

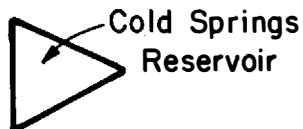


TOTAL OF THREE SOURCES = 77,300 AF
RECOMMENDED PLAN

HERMISTON IRRIGATION DISTRICT (HID)



COLUMBIA RIVER



TOTAL SOURCE = 34,700AF



WATER SOURCES, AF
Nat. Flows and McKay Storage
Total = 34,700

Furnish Ditch

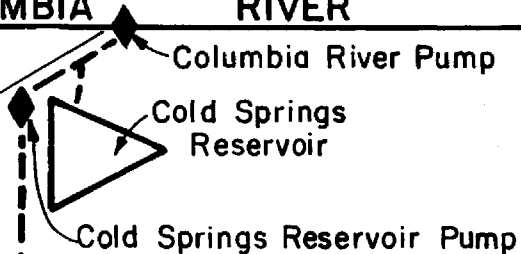
Stanfield Diversion Dam

Umatilla River

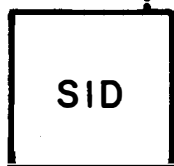
PRESENT CONDITION

COLUMBIA RIVER

COLUMBIA R. PUMPING REPLACEMENT, AF
McKay Storage and Natural Flows
TOTAL 18,600



TOTAL OF TWO SOURCES = 34,700AF



WATER SOURCES, AF
Nat. Flows = 16,100
McKay = 0
Total = 16,100

Furnish Ditch

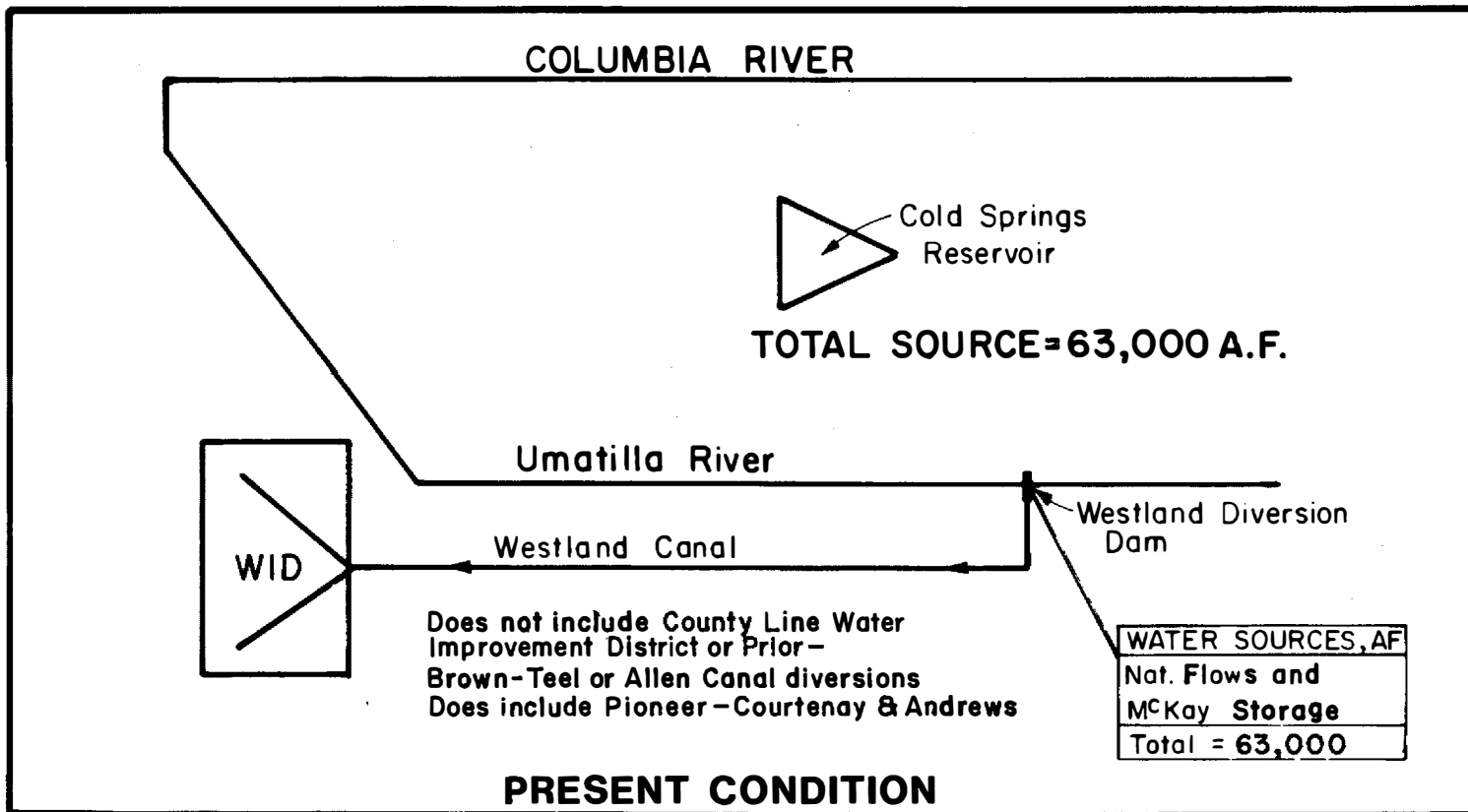
Stanfield Diversion Dam

Umatilla River

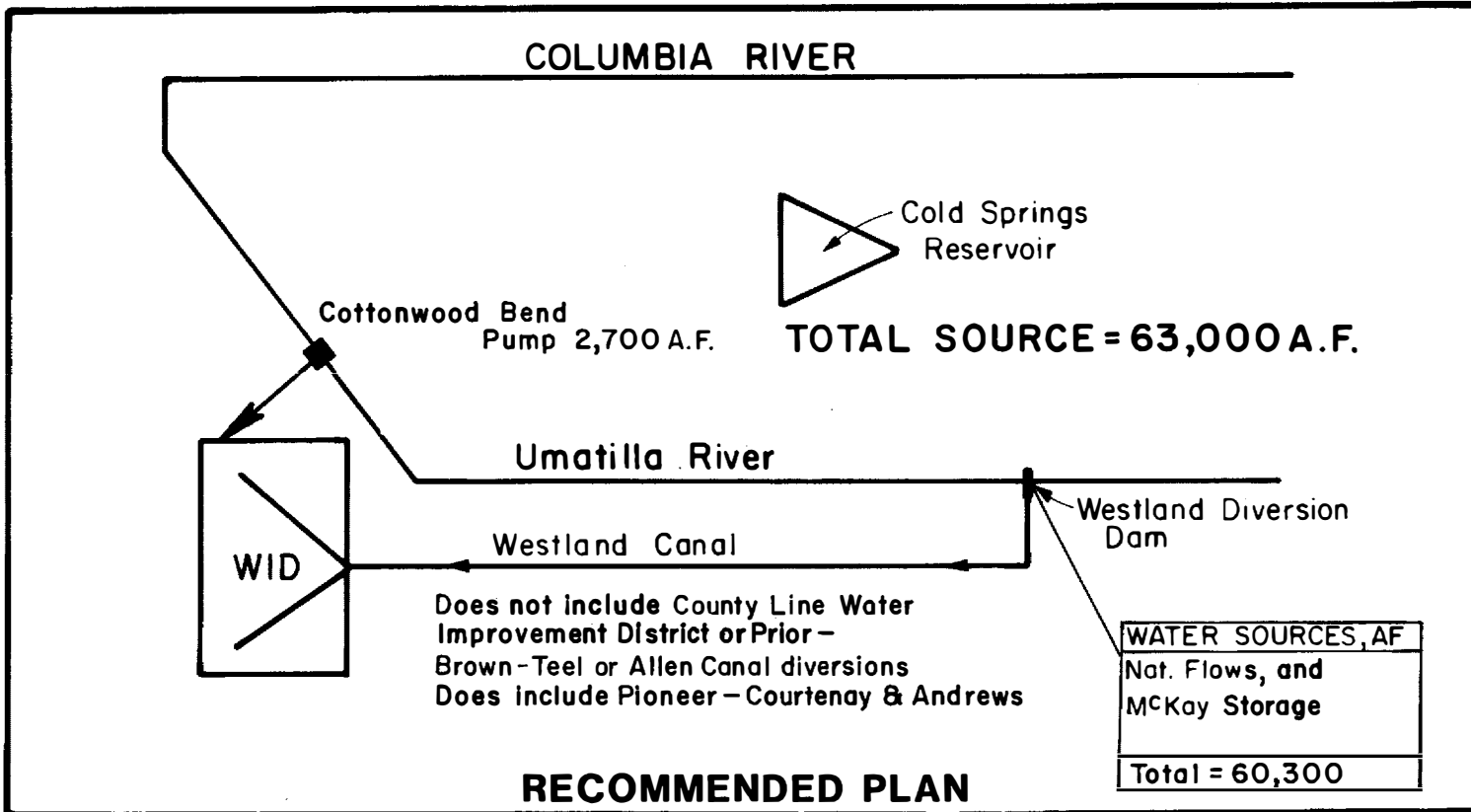
RECOMMENDED PLAN

STANFIELD IRRIGATION DISTRICT (SID)



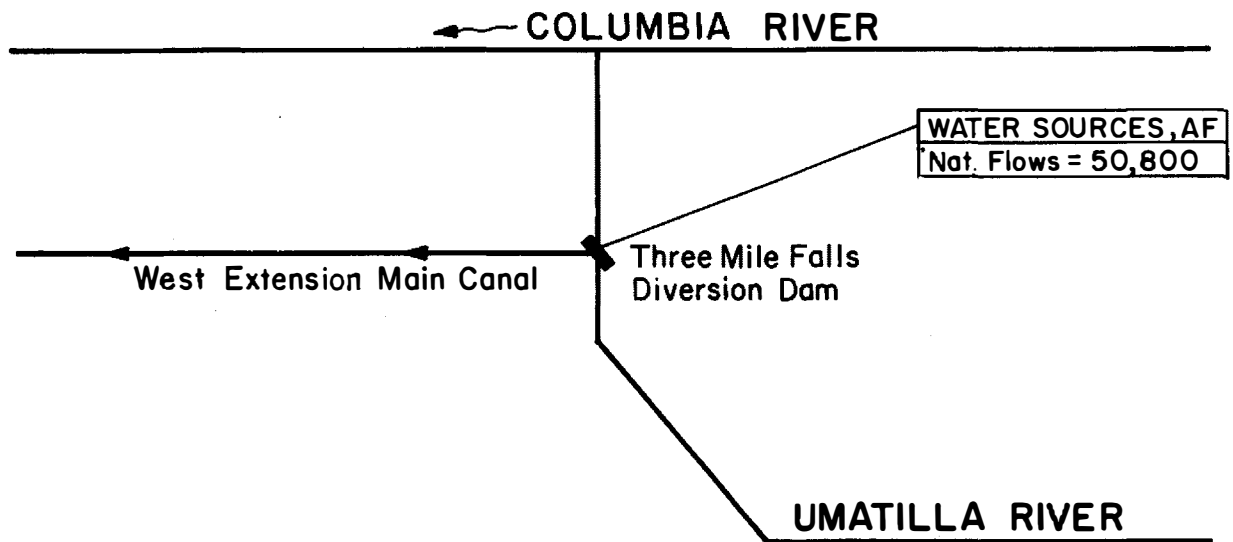


WESTLAND IRRIGATION DISTRICT (WID)



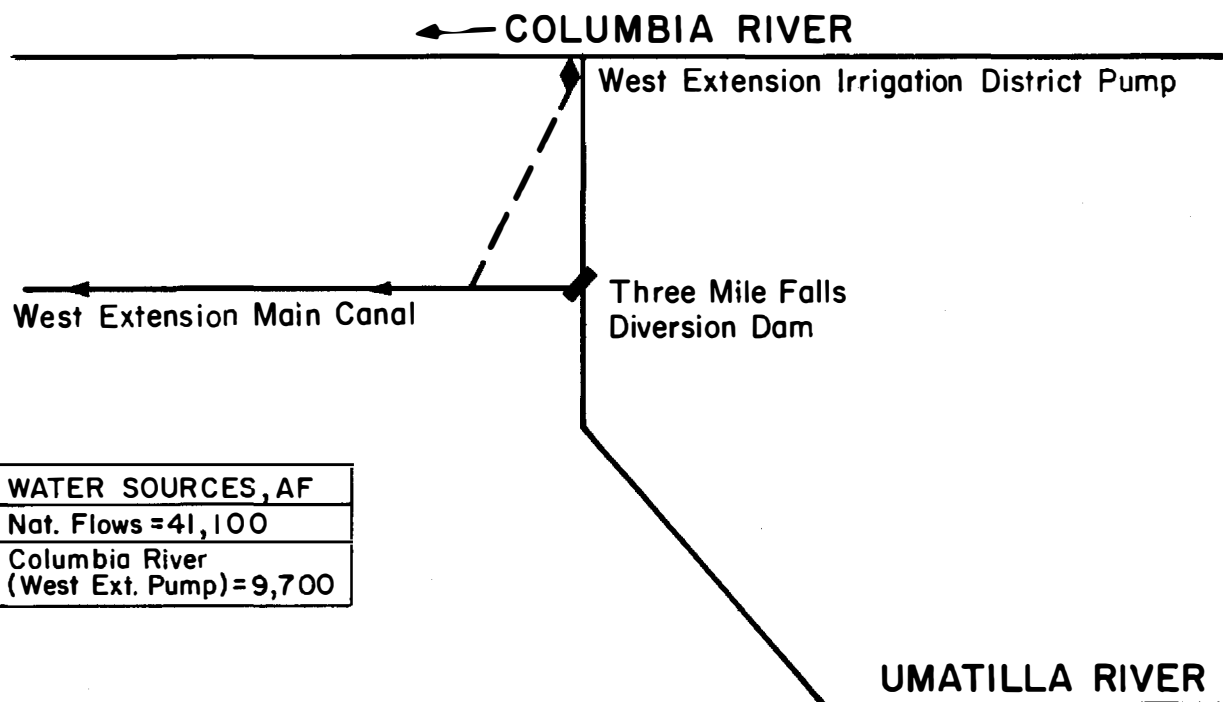
WESTLAND IRRIGATION DISTRICT (WID)





TOTAL OF TWO SOURCES = 50,800 AF

PRESENT CONDITION



TOTAL OF TWO SOURCES = 50,800 AF

RECOMMENDED PLAN

WEST EXTENSION IRRIGATION DISTRICT



Summary of Project Pumping Requirements

Average annual pumping requirements have been reduced from the PR/DES estimate by 4,285 acre-feet. This results primarily from the reduction in irrigation diversions in the revised operation study. Most of the pumping reduction is associated with the Columbia River pumping plant. Enlargement of the WEID pumping plant to 140 ft³/s and addition of the Cottonwood Bend pumping plant are reflected in the revised annual requirement. Replacement water supply for irrigators pumped from the Columbia River would average about 39,000 acre-feet annually and range over the period of study from a low of 12,900 acre-feet to a high of 74,500 acre-feet.

In conjunction with the pumping requirement, average annual power requirements for pumping were reduced by about 6,600 megawatt-hours from the PR/DES. Again, the principal reduction was for the Columbia River pump (4,250 megawatt-hours).

Estimated average annual pumping and pumping power requirements for the proposed project are shown in tables 2-16 and 2-17. Cold Springs pumping plant data include the Stanfield relift pump.

Table 2-16.--Pumping Requirements (Average Annual) With the Recommended Plan

Month	Columbia River Pump	Cold Springs Pump	Stanfield Relift Pump	WEID Pump	Cottonwood Bend Pump	Total
	----- acre-feet -----					
January	30	0	0	0	0	30
February	10	0	0	0	0	10
March	0	0	0	320	350	670
April	0	0	0	940	230	1,170
May	1,830	480	340	1,680	360	4,690
June	8,480	3,410	1,310	6,350	1,540	21,090
July	5,670	5,570	1,710	0	0	12,950
August	6,410	5,750	1,600	0	0	13,760
September	6,610	3,130	680	80	40	10,540
October	530	230	60	310	170	1,300
November	240	0	0	0	0	240
December	10	0	0	0	0	10
Total	29,820	18,570	5,700	9,680	2,690	66,460

Table 2-17.--Pumping Power Requirements (Average Annual)
With the Recommended Plan

Month	Columbia River Pump	Cold Springs Pump	WEID Pump	Cottonwood Bend Pump	Total
	----- megawatt-hours -----				
January	15	0	0	0	15
February	5	0	0	0	5
March	0	0	70	20	90
April	0	0	200	10	210
May	890	70	370	20	1,350
June	4,100	440	1,380	85	6,005
July	2,740	690	0	0	3,430
August	3,100	700	20	5	3,825
September	3,200	370	20	5	3,595
October	260	20	70	10	360
November	115	0	0	0	115
December	5	0	0	0	5
Total	14,430	2,290 ^{1/}	2,110	150	18,980

^{1/} Includes Stanfield relift pump

The project is designed for phased implementation. An immediate need is to energize the existing WEID pumping facilities to provide some flow improvement for fish at a critical reach in the lower Umatilla River. Average first phase power requirements for 60 days of pumping in June, September, and October would be about 1,260 megawatt-hours. The next phase would be to provide for larger WEID pumping capacity through the addition of new pumps to existing facilities or total new facility construction. This level of pumping would require an estimated average of 3,380 megawatt-hours of power annually. The final phase of project implementation would incorporate all Recommended Plan pumping facilities--including the WEID pump station, the Columbia River pumping plant, the Cold Springs pump, Stanfield relift pumps, and the Cottonwood Bend pump plant. On average, the Recommended Plan would require a total of about 18,980 megawatt-hours annually.

ECONOMIC ANALYSIS

This section describes the changes and updating made in the economic analysis of the Recommended Plan.

Benefits

Anadromous Fish

With Recommended Plan facilities in operation and improved flow conditions, juvenile fish from natural spawning and outplanting from hatcheries will experience a higher survival rate as they move downstream to the Columbia River. Returning adult spawners will also benefit from better upstream passage and flow conditions in the Umatilla River.

The Fish and Wildlife Coordination Act Report (CAR) of September 1984, "Umatilla Basin Project Impacts on Fish and Wildlife Resources" is the basis for determining where steelhead and chinook are caught "downriver" (i.e., ocean and Columbia River); commercial values; and number of days needed to catch anadromous fish in ocean and river sport fishing. That report was prepared by the U.S. Fish and Wildlife Service (FWS) in cooperation with the National Marine Fisheries Service (NMFS). Angler-day values are from 1970 and 1978 NMFS studies, while coho commercial values are from a prepublication draft of a 1986 NMFS study.

Since the CAR was released, additional anadromous fishery research in the basin has been done by ODFW. Findings of this research are published in a 1985 report entitled "A Comprehensive Plan for Rehabilitation of Anadromous Fish Stocks in the Umatilla River Basin" (Oregon Comprehensive Plan [OCP]). The FWS and NMFS now consider the OCP to be the best source for estimating fish numbers associated with enhancement programs in the basin.

A 1987 FWS Planning Aid Memorandum (PAM) incorporates data from the OCP and the latest fish management programs of the State of Oregon and the Confederated Tribes of the Umatilla Indian Reservation (tribes), and is the basis for fish numbers used in the PR/FES national economic development (NED) and regional economic development (RED) benefit analysis (see Attachment F).

The major changes in the benefits analysis as a result of the new studies and management decisions as set forth in the 1987 PAM are:

1. The numbers of adult steelhead and chinook returning into the Umatilla River without the Reclamation project are reduced substantially from the numbers shown in the CAR.
2. Catch-to-escapement ratios for spring chinook are reduced to 2.0:1.0 from 3.0:1.0. Ratios of 2.0:1.0 and 4.0:1.0 for steelhead and fall chinook, respectively, are unchanged from the CAR and are applied to naturally spawned fish that return to the Umatilla River to estimate the number caught downriver. These same factors are also applicable to hatchery produced fish returning to the Umatilla River in estimating the number of them caught downriver.

3. The increase in returns of hatchery produced fish into the Umatilla River with project implementation results in NED benefits creditable to the project. The project can now claim NED benefits from increased hatchery chinook and steelhead returns because they are from a proposed new regional hatchery planned for the Umatilla River and are not reprogrammed fish from outside the basin as assumed in the PR/DES benefit analysis. In the PR/DES, NED benefits were not claimed for hatchery produced fish because reprogramming fish from areas in the region outside the basin would not result in an increase in total fish numbers in the region.

4. The production of coho was not evaluated in the CAR because they had not been introduced into the basin at the time it was prepared. However, coho are now being planted in the Umatilla River, and the intent is to continue to plant them independent of whether Reclamation's project is implemented. The 1987 PAM recognizes this change in management. However, FWS believes the project should not be credited with NED coho associated benefits because they are produced at existing hatcheries in the region and should not be considered as "new" fish. FWS has no objection to including coho benefits in the RED analysis.

In order to maintain runs of both natural and hatchery steelhead, chinook and coho, a certain number of the adult fish returning to the Umatilla River are needed for brood stock. Returning adults surplus to natural brood stock needs would be available for inriver harvest and were included in the NED benefit analysis of the PR/DES. In this analysis, returning adult fish surplus to both natural and hatchery brood stock needs have been included in estimating NED benefits.

The net result of the above changes in the benefit analysis is a substantial increase in anadromous fish catch creditable to the project compared to the numbers used in the PR/DES. This is due to an increase in fish numbers attributable to the project and not the result of changes in commercial or sport catch values.

Table 2-19 compares the previous PR/DES and new PR/FES estimates of increased fish catch with the Reclamation project.

Table 2-19.--Estimated Increased Fish Catch

Fish Species	PR/DES	PR/FES
Fall chinook	42,751	71,294
Spring chinook	300	21,653
Summer steelhead	1,200	10,835 ^{1/}
Coho	0	8,250 ^{1/}

^{1/} Not included in PR/FES NED analysis

Since anadromous fish benefits in the PR/DES were limited to naturally produced fish, benefits were based on values per escapement spawner. In the PR/FES, anadromous fish benefits are based on increases in angler-day fishing and commercial catch for both natural and hatchery produced fish.

Angler-day values used in this analysis are \$51 and \$60 for freshwater and ocean sport fishing, respectively, for all species. Commercial values vary by species as follows:

Steelhead --\$3.13 per pound/10.4 pounds per fish
 Fall chinook --\$2.48 per pound/18.57 pounds per fish
 Spring chinook --\$3.00 per pound/18.0 pounds per fish
 Coho --\$7.01 each

Anadromous fish benefits have been discounted to allow for the time lag required for juvenile fish to migrate to the ocean and reach maturity. The discount factor also takes into consideration some project fish facilities will be operational prior to completion of the entire project.

The NMFS has done work recently to revise economic values and catch to escapement ratios associated with anadromous fish enhancement projects. These values have drawn interest from fishery groups, but their use in planning and evaluating Reclamation projects has not been approved at this time. However, a sensitivity analysis has been done showing what PR/FES benefits would be if revised NMFS fishery values were applied.

A summary of updated NED anadromous fish benefits for the Recommended Plan is shown in table 2-20. The table also shows anadromous fish benefits from the PR/DES; benefits used in the RED analysis; and benefits using catch escapement ratios and values for sport and commercial fishing favored by NMFS.

Table 2-20--Comparison of Anadromous Fish Benefits
 PR/DES and PR/FES

Species	PR/DES	PR/FES	
		NED/RED	Sensitivity
Fall chinook	\$1,970,500	\$3,226,200	\$5,760,700
Spring chinook	41,300	2,304,500	787,200
Steelhead	230,900	2,228,400	627,200
Subtotal	\$2,242,700	\$7,759,100 ^{1/}	\$7,175,100
Coho	0	252,700	0
Total	\$2,242,700	\$8,011,800 ^{2/}	\$7,175,100

1/ NED analysis total

2/ RED analysis total

Confederated Tribes of the Umatilla Indian Reservation

A primary objective of the Recommended Plan is to assist in meeting salmon and steelhead fishery restoration objectives of the CTUIR. At the time the PR/DES was done, fishery benefits available for use in the economic analysis did not adequately reflect the value of a restored anadromous fishery in the Umatilla River to the tribes. The CAR emphasized downriver benefits. The calculation of a CTUIR benefit was necessary to reflect NED benefits to the tribes.

As a proxy for benefits to the tribes which were not accounted for in the CAR, it was assumed that the value to the tribes would at least equal the difference between the NED anadromous fish benefits and total project costs. The rationale for this assumption is the Recommended Plan is the least cost method to provide fishing on the reservation. Therefore, the benefits to the tribes (CTUIR benefits) should as a minimum at least be equal to the above.

The most recent OCP fishery study in the basin measures anadromous fish returns in the Umatilla River. Based on these returns, the PR/FES benefit analysis estimate includes the NED value of the Umatilla River fishery to the tribes. Therefore, NED benefits to the tribes (CTUIR benefits) are already accounted for in the NED anadromous fish benefits shown in the PR/FES.

Resident Fish

No change from PR/DES

Unemployed Labor

Annual benefits from this source are currently estimated at \$316,500, an increase of \$6,500 from the PR/DES.

Summary of Benefits

In view of the above, table 2-20a has been prepared to summarize: (1) project benefits as shown in the 1986 PR/DES, (2) revised project benefits for the current PR/FES which have been used in determining project economic justification, (3) a "sensitivity" analysis showing what PR/FES benefits would be if benefits related to hatchery produced coho were included, and (4) a "sensitivity" analysis showing what PR/FES benefits would be if revised NMFS fishery values and catch to escapement factors were applied.

Table 2-20a.--Summary of Project Benefits

Item	PR/DES	PR/FES	Sensitivity	
			Coho Included	New NMFS Values
Anadromous fish	\$2,242,700	\$7,759,100	\$8,011,800	\$7,175,100
CTUIR	4,850,900	NA	NA	NA
Resident fish	79,500	79,500	79,500	79,500
Unemployed labor	310,000	316,500	316,500	316,500
Total	\$7,483,100	\$8,155,100	\$8,407,800	\$7,571,100

Costs

Derivation of the annual equivalent project cost, currently estimated at \$4,937,400, is shown in table 2-21. A brief explanation of each of the cost categories follows.

Investment Costs

The cost of the project is estimated at \$43.8 million at October 1986 prices. Costs associated with cultural resources protection (\$412,000) and preauthorization investigations (\$2,338,000) are subtracted from this cost because they are not relevant to producing project benefits. An interest charge during construction of \$2,448,000 is an added investment cost. With these adjustments, the net Federal investment in the project is \$43,498,000. Over a 100-year period of analysis, and applying a Federal interest rate of 8-7/8 percent, an annual equivalent value of the investment cost is \$3,861,300.

Table 2-21.--Federal Investment and Annual Equivalent Costs

Item	Capital Costs	Annual Equivalent Value ^{1/}
Federal investment		
Project costs	\$43,800,000	
Less preauthorization costs	-2,338,000	
Less historical and archeological salvage	-412,000	
Plus interest during construction	<u>2,448,000</u>	
Net Federal investment	\$43,498,000	\$3,861,300
Operation, maintenance, replacement, and power wheeling		\$402,700
Power costs ^{2/}		
Pumping		421,400
Power foregone ^{3/}		28,600
Increment to economic value ^{4/}		<u>223,400</u>
Total power		\$673,400
Total		\$4,937,400

^{1/} Based on 100-year period of analysis and 8-7/8 percent Federal interest rate

^{2/} Based on 18.98×10^6 kilowatt-hours at 22.2 mills/kWh

^{3/} Based on 1.29×10^6 kilowatt-hours at 22.2 mills/kWh

^{4/} Based on 18.98×10^6 kilowatt-hours at 33.22 mills/kWh less \$421,400 for pumping and 1.29×10^6 kilowatt-hours at 33.22 mills/kWh less \$28,600 for power foregone

Operation, Maintenance, Replacement, and Power Wheeling Costs

Annual costs associated with operation and maintenance of project facilities and establishment of a replacement fund are estimated at \$230,500. The annual cost of wheeling (transporting) power over non-Federal facilities from a Federal power source to project pumping facilities is estimated at \$172,200. These two costs total \$402,700.

Power Costs

There is a direct annual power charge to the project. This is the cost of providing an average of 18.98 million kilowatt-hours of electricity annually to operate the project's pumping plants. At a BPA rate of 22.2 mills per kilowatt-hour (average 1986 priority firm energy rate), the annual power charge would be \$421,400. In addition, the proposed diversion of water from the Columbia River would reduce power generation at downstream McNary Dam by an average of about 1.29 million kilowatt-hours annually. At 22.2 mills per kilowatt-hour, this power has an annual value of \$28,600.

There is currently a surplus of power available in the Pacific Northwest, and the impact of Recommended Plan power usage on the total resources and load of the Federal Columbia River Power System would not be substantial. However, to arrive at an economic value of power used or lost as a result of the project, a replacement cost was derived using the cost of a coal-fired thermal generating plant as a base. This value or cost was estimated by BPA to be 33.22 mills per kilowatt-hour (1986 new resource rate). This represents the present discounted cost of future acquisition of generating facilities to replace the power used by the project. Application of this value to the amount of power used and lost as a result of the project results in an incremental replacement cost of \$223,400, which when added to the direct power charges of \$450,000 discussed above, results in an economic value of power of \$673,400 for use in the economic analysis. Power foregone and economic value of power are real costs to the region. Decreased generation at McNary Powerplant reduces BPA revenues, and the cost to acquire generating resources to replace power used by the project will ultimately be reflected in BPA's rates paid by users of Federal power in the region.

The 1986 priority firm energy and new resource rates are consistent with price levels used throughout the economic analysis. An update of these rates, and other economic values, will be done during advance planning studies.

Comparison of Benefits and Costs

Annual benefits exceed costs by \$3,217,700. Table 2-22 compares annual benefits and costs of the Recommended Plan.

Table 2-22.--NED Benefits and Costs of the Recommended Plan

Beneficial Effects		Adverse Effects	
Annual Benefits ^{1/}		Annual Costs ^{1/}	
Anadromous fish	\$7,759,100 ^{2/}	Construction	\$3,644,000
Resident fish	79,500	Interest during construction	217,300
CTUIR	NA	Operation, maintenance, and power wheeling	402,700
Unemployed labor	316,500	Power cost	673,400
Total	\$8,155,100	Project pumping and losses at McNary Dam	(450,000)
		Incremental cost to arrive at economic value	(223,400)
		Total	\$4,937,400
Net benefits	\$3,217,700		

^{1/} 100-year period at 8-7/8 percent interest rate

^{2/} Does not include \$252,700 of benefits for coho fishery

Cost Allocation

A cost allocation is made to equitably apportion project costs among project functions in order to determine repayment obligations of project beneficiaries. Although the proposed project provides anadromous fish, resident fish, and unemployed labor benefits, anadromous fish benefits constitute 95 percent of the total NED amount. Resident fish and unemployed labor benefits are incidental to the main project purpose and occur as a result of measures designed to enhance anadromous fish.

The use of the "separable costs remaining benefits" method of cost allocation would result in all or nearly all project costs being allocated to the anadromous fish function. Therefore, project costs have been allocated or assigned to the two major beneficiaries of the project (i.e., Indians and non-Indians), proportional to benefits received. Resident fish and unemployed labor benefits were not utilized in the allocation. Table 2-22a shows the basis for making the allocation.

Table 2-22a.--Derivation of NED Benefits for Cost Allocation

Item	Amount	Percent of	
		Total	Anadromous Fish
Anadromous fish			
Confederated tribes	\$1,325,900		
Less coho ^{1/}	<u>-11,600</u>		
Subtotal	\$1,314,300		
Other treaty tribes	\$1,255,600		
Less coho	<u>0</u>		
Subtotal Indian	\$2,569,900		33
Non-Indian	\$5,430,300		
Less coho ^{1/}	<u>-241,100</u>		
Subtotal non-Indian	\$5,189,200		<u>67</u>
Subtotal	\$7,759,100	95	100
Resident fish	79,000		
Unemployed labor	<u>316,500</u>		
Total	\$8,155,100	100	

^{1/} Benefits due to increased propagation of coho were not included in the NED analysis and therefore are deducted when determining allocation of costs.

Table 2-22b presents a summary of project costs to be allocated.

Table 2-22b.--Summary of Project Costs

Item	Capital	Annual Equivalent
Total project costs	\$43,800,000	
Interest during construction	<u>2,448,000</u>	
Project investment	\$46,248,000	
Less preauthorization costs	-2,338,000	
Less historical and archeological salvage	<u>-412,000</u>	
Net project investment	\$43,498,000	\$3,861,300
Operation, maintenance, and replacement		230,500
Power ^{1/}		673,400
Wheeling		<u>172,200</u>
Total		\$4,937,400

^{1/} Includes power foregone (\$28,600) and increment to economic value (\$223,400).

Members of the other treaty tribes which fish in the Columbia River Zone 6 area benefit nearly as much as the Confederated tribal members from the project (\$1,255,600 annually versus \$1,314,300). For purposes of this cost allocation, "Indians" includes members of both the Umatilla tribes and other treaty tribes.

Based on the NED benefits shown in table 2-22a, 67 percent of total project costs would be allocated to non-Indians and the remaining 33 percent to Indians. Table 2-22c shows the annual equivalent amount of project costs allocated to each of the two groups.

Table 2-22c.--Cost Allocation

Item	Annual Equivalent	Percent
Net project costs	\$4,937,400	100
Allocated to:		
Indians	\$1,629,300	33
Non-Indians	\$3,308,100	67

Repayment

Total project costs of \$43,800,000 include \$2,338,000 for expenditures prior to authorization and \$412,000 for historical and archeological salvage, which are nonreimbursable under current law. Since this project is an anadromous fish restoration program to meet treaty related objectives of the tribes, it is recommended that project costs be nonreimbursable Federal costs.

It is anticipated that most (about \$3.8 million) of the project's fish passage and protective facilities will be funded under provisions of the Northwest Power Planning and Conservation Act of 1980. If this occurs, a request for Federal appropriations for construction of these facilities would not be made as part of Reclamation's project.

Irrigation districts would not be required to participate in repayment of project costs but would continue to fulfill their existing contracts for repayment of construction and annual operating costs associated with McKay and Cold Springs storage. They would also continue to maintain their own distribution systems. Operation and maintenance on newly constructed project facilities would be a project responsibility and not a charge to the districts.

Irrigation is not a planned purpose of the project, and pumping and delivery facilities were not sized to provide capacity for irrigation. However, if it becomes possible through project authorization for the irrigation districts to use project pumping capacity during periods when it is not required for fishery purposes, they would pay associated pumping power and wheeling costs and a share of other operation and maintenance costs.

Cost Sharing

The Recommended Plan is a part of a comprehensive, basinwide program to restore the Umatilla River fishery. Approximately \$21,000,000 of fishery facilities, identified in the basinwide program, has been approved for non-Federal funding under the Pacific Northwest Power Planning and Conservation Act of 1980 (Power Act of 1980). To date, \$7 million of these funds have been expended, and additional projects totaling \$8 million are in final design stages.

In addition to the funding provided through the Northwest Power Planning Council's Fish and Wildlife Program, ODFW is spending an estimated \$200,000 annually to fund hatchery outplantings in the basin. The WID is spending about \$3,000 annually for fishery studies, and anadromous fish are benefiting from the district no longer diverting floodwaters for irrigation use, which costs the district about \$18,000 annually in lost revenue. Private non-Indian landowners have donated land for fish propagation facilities. The State of Oregon is also funding the operating costs of the Umatilla Basin Project Steering Committee which amounts to about \$25,000 annually. The estimated annual equivalent value of expenditures to date under the council's Fish and Wildlife Program and current State and local entity costs is \$844,400. The following shows the derivation of this amount.

<u>Program</u>	<u>Capital Cost</u>	<u>Annual Equivalent Value</u>
Fishery facilities--Council's Fish and Wildlife Program	\$7,000,000 ^{1/}	\$621,400 ^{1/}
Hatchery outplantings--ODFW	-- ^{2/}	200,000
Steering Committee funding--State of Oregon	\$50,000 ^{2/}	4,400
Fishery studies--WID	\$7,000 ^{2/}	600
Donated land for fish propagation facilities	No estimate	--
Revenues foregone--WID		18,000
Estimated total		\$844,400 ^{1/}

^{1/} Does not reflect \$14,000,000 of the council's program that has not yet been expended

^{2/} Assumed for 2 years

In addition, non-Federal interests in the region would share directly in costs of the Recommended Plan. The Northwest Power Planning Council has adopted an amendment to the Columbia River Basin Fish and Wildlife Program whereby BPA would provide power or reimbursement for operation and maintenance costs associated with provision of power to Reclamation pumping plants designed to exchange Columbia River water for Umatilla River water for fishery purposes. Reclamation, as discussed earlier, will fund monitoring, evaluation, and oversight activities to maximize the effectiveness of the water exchange program in meeting fishing objectives. In addition, implementation of fish passage and protective works (except McKay Creek fish barrier) would occur under the Power Council's Fish and Wildlife Program.

Based on the allocation and the anticipated power supply agreement with BPA, regional Federal power users will cost share about 39 percent of the project costs allocated to non-Indians or 26 percent of total project costs. Table 2-22d shows the derivation of regional non-Federal cost sharing.

Table 2-22d.--Cost Sharing by Federal Power Users

<u>Item</u>	<u>Capital Cost</u>	<u>Annual Equivalent</u>
Fish passage and protective works	\$3,756,000	\$ 333,400
Interest during construction	\$66,000	5,900
Operation, maintenance, and replacement--fish passage and protective works		101,300
Power		673,400
Wheeling		172,200
Total		\$1,286,200
Amount allocated to non-Indians		\$3,308,100
Total project costs		\$4,937,400
Percent of allocation cost shared		39
Percent of total project costs repaid		26

A cost and repayment summary for this Recommended Plan is shown in table 2-22e.

Table 2-22e.--Cost and Repayment Summary

Item	Amount
Total project costs (shown in PF-2)	\$43,800,000
Interest during construction	2,448,000
Less preauthorization expenditures ^{1/}	<u>-2,338,000</u>
Funds to be accounted for	\$43,910,000
Cost shared by non-Federal	
Fish passage and protective facilities	\$3,756,000
Associated interest during construction	66,000
Nonreimbursable	
Historical and archeological salvage	412,000
Federal participation in tribal treaty fishery restoration objectives	<u>39,676,000</u>
Total	\$43,910,000

^{1/} Estimated investigation costs to September 30, 1986 (\$1,258,000); preconstruction costs to September 30, 1986 (\$869,000); and preconstruction costs in fiscal year 1987 (\$211,000)

ENVIRONMENTAL ACCEPTABILITY

No change from PR/DES

SOCIAL ACCEPTABILITY

The fishery enhancement plan is supported by the CTUIR, Columbia River Inter-Tribal Fish Commission, Columbia Basin Fish and Wildlife Council, NMFS, FWS, ODFW, and Umatilla Basin Project citizens steering committee.

The irrigation districts have worked closely with Reclamation, the Indians, and the fishery agencies. The districts have endorsed the concept of the pumping plant (although they have expressed concerns over operating responsibilities, operation and maintenance funding, and assured access to water). Specifics of water rights, exchanges, and project operation will be completed as the planning process continues, with both Reclamation and the districts confident that solutions agreeable to all parties can be found.

Environmental interests in the Umatilla basin have not taken an active role in formulation. However, when their opinion has been expressed, it has been supportive of the project. Members of the general public who are most aware of the project strongly support it.

ACTIONS AND PERMITS REQUIRED TO IMPLEMENT THE PLAN

Prior to initiation of construction of a Federal reclamation project, it is the policy of the Bureau of Reclamation to file application for and receive from the appropriate State water resource regulatory agency permits for the utilization of water to be provided by the project. Further, any necessary contracts and agreements pertaining to the use of, payment for, and operation of project water supplies and facilities must be consummated prior to construction.

Specifically in regard to the Umatilla Basin Project, two major categories of institutional arrangements must be completed before the project can be implemented: (1) permits to appropriate water and (2) agency/irrigation district agreements regarding the proposed water exchanges. An overview of each of these categories follows.

Permits to Appropriate Water

Three permits are required. Two of these are associated with the Columbia River pumping plant, and a third is for the WEID water exchange facilities.

Columbia River Pumping Plant

A permit for use of approximately 200 ft³/s would be obtained for instream flow purposes for anadromous fishery enhancement. This quantity could be adjusted downward as hydrologic analyses are refined during advance planning. The point of diversion would be on Lake Wallula at a site about 1/4 mile from Sand Station Campground. Place of water use would be the Umatilla River; actual use would be for irrigation via an exchange with SID for McKay Reservoir storage and some Umatilla River natural flows, and with HID for some Umatilla River natural flows used for irrigation. The period of use would be for the full year.

HID would receive an amount of water equal to its October-June diversions each year. In the SID exchange, the district would not receive a "one-for-one" replacement of the acre-feet of water it would have available under present conditions from McKay storage and that part of its natural flow affected by the project. Rather, the district would be supplied an amount of water equal to the average of the water supply it would have received over the period of study. The district would forego some water it would have had available in better than normal water years, and this water would be available for instream flows and fishery enhancement purposes. In dry years, the district would receive more water than it would have had historically available. In better than normal water years, Columbia River pumping would be limited to that necessary to replace water needed for instream flow needs. In dry years, the pumping demand would increase since there would be a need to

provide water to exchange for instream flows and to provide the irrigation district with its average supply. This concept permits economical sizing of the Columbia River pumping plant since it can be designed to meet average rather than peak water supply. Benefits of this approach to the fishery objective include reduced capital costs, lower peak pumping requirements, and some increase in streamflows in wet years.

To accommodate the above approach, a second permit at the Columbia River pumping plant of up to 200 ft³/s would be needed to cover the dry year irrigation pumping needs because the Umatilla River would not produce enough water for exchange. Reclamation would sponsor the application for this permit. Total pumping under this irrigation permit and the fishery permit discussed above would not exceed 200 ft³/s, which is the capacity of the Columbia River pumping plant.

WEID Pumping Facilities

A permit would be obtained for instream flow purposes for anadromous fishery enhancement in the Umatilla River below Three Mile Falls Diversion Dam if the current WEID pump diversion site is used for the water exchange. The point of diversion would be from the Columbia River near Umatilla. The period of use would be March, April, May, June, September, and October. This permit would be used to replace irrigation water now diverted by the WEID at Three Mile Falls Diversion Dam which, under the plan, would remain in the river for instream flow purposes.

If the alternative water exchange diversion site at McNary Dam is used, an agreement would need to be made with the Port of Umatilla prior to obtaining a State permit. The Port of Umatilla currently holds a permit to divert 155 ft³/s from the McNary Dam conduit, and there is insufficient capacity in the conduit to serve both the port's permit and the water exchange need. There is, however, currently no agreement or contract between the Port of Umatilla and the Corps of Engineers for use of the site or facilities. An agreement between Reclamation and the Port of Umatilla would be pursued in order to confirm the port's concurrence with this option.

Exchange Agreements

Agreements regarding the proposed water exchanges would be consummated among the irrigation districts involved in the exchange; ODFW; Reclamation; and any others necessary. The OWRD indicates that exchange agreements are neither specifically authorized nor prohibited by the Oregon Water Code. The Oregon Supreme Court has recognized and upheld such exchanges where the same quantity and the same quality were exchanged and were not prejudicial or adverse to the rights of others. Under these criteria, legal users could enter into exchange agreements which the watermaster would honor and distribute to accordingly.

SID

This agreement would involve SID and the Bureau of Reclamation. The agreement would cover the exchange of both Umatilla River natural flows and McKay Reservoir storage water and set forth the limitations and guarantees involved in the exchange.

HID

This agreement would involve the HID and the Bureau of Reclamation. The agreement would set forth the limitations and guarantees involved in the exchange of natural flow diversions from the Umatilla River at the existing Feed Canal for water pumped from the Columbia River and delivered through Cold Springs Reservoir.

WEID

This agreement would involve the WEID and the Bureau of Reclamation. The agreement would specify the limitations and guarantees involved in exchanging pumped water for Umatilla River water now diverted by the district at Three Mile Falls Diversion Dam. The exchange would be on a one-for-one basis.

WID

This agreement would involve WID and the Bureau of Reclamation. The agreement would specify the limitations and guarantees involved in the proposed Cottonwood Bend pumping operation.

Terminal Ditch Company

An agreement between the Terminal Ditch Company and the Bureau of Reclamation would be pursued if the WEID water exchange uses McNary Dam as the diversion point. The agreement would specify the limitations and guarantees involved in exchanging pumped water for Umatilla River water now diverted by Terminal Ditch Company below Three Mile Falls Diversion Dam.

OWRD

A memorandum of understanding would be entered into between the OWRD and the Bureau of Reclamation specifying respective responsibilities, obligations, and conditions of a program to monitor and regulate Umatilla Basin Project water supplies in accordance with the applicable permits, rights, and binding agreements.

Reclamation will coordinate with the OWRD, irrigation districts, and others to obtain the necessary permits and exchange agreements. Review of the project proposal by local interests suggests that obtaining the permits and agreements needed to exchange Columbia River water for Umatilla River natural flows and storage in McKay Reservoir for purposes of flow enhancement in the Umatilla River will not be protested. The congressional act enabling construction of the project would direct the Secretary of the Interior to obtain the necessary water use permits and rights in accordance with State water law and to enter into the appropriate exchange agreements with the affected parties prior to construction.

A postconstruction flow monitoring and regulation program would be designed to be responsive to requirements of the congressional construction authorization, water permits and rights obtained in accordance with State water law, and binding agreements regarding water exchanges. The program would be formulated during advance planning and be a cooperative effort of the irrigation districts, the tribes, State and Federal fishery agencies, the OWRD, and Bureau of Reclamation. The OWRD, through its regulatory authorities and responsibilities, would monitor and regulate project related flows in accordance with the permits, rights, and agreements applicable to the project. Flow studies, additional gauging stations, Hydromet installations, and other technical support determined necessary by the department for the regulation program would be provided as a part of project preconstruction and construction activities. Onsite water regulation services would be provided through the department's watermaster division office in Umatilla. Aspects of the program would be covered in a memorandum of understanding between the two agencies.

Flow enhancement has not been a specific water management or regulation objective in the Umatilla River basin in the past. Congressional authorization for the project; a basis for project operation in State water law; experience of the OWRD in regulation programs involving instream flows; and the desire by the tribes, fishery agencies, irrigation districts, Reclamation, and others to improve flow conditions will make it possible to establish an effective, long-term regulatory and monitoring program.

FOUR-ACCOUNT EVALUATION

This section presents an accounting of the national economic development, environmental quality, regional economic development, and social effects of the plan.

National Economic Development

The national economic development account in table 2-23 measures beneficial and adverse effects of the project in terms of changes in national income. Project implementation would result in net annual monetary benefits of about \$3.2 million.

Table 2-23.--National Economic Development Account--Recommended Plan

Item	Capital Costs	Annual Equivalent Value ^{1/}
Adverse effects		
Total project costs	\$43,800,000	
Interest during construction	2,448,000	
Less preauthorization costs	-2,338,000	
Less historical and archeological salvage	-412,000	
Net Federal investment	\$43,498,000	\$3,861,300
Operation, maintenance, replacement, and power wheeling		\$402,700
Power costs		
Pumping (18.98 X 10 ⁶ kilowatt-hours at 22.2 mills/kWh)		421,400
Power foregone (1.29 X 10 ⁶ kilowatt- hours at 22.2 mills/kWh)		28,600
Increment to economic value		
Pumping (18.98 X 10 ⁶ at 33.22 mills/kWh less \$421,400)		209,100
Power foregone (1.29 X 10 ⁶ kilowatt- hours at 33.22 mills/kWh less \$28,600)		14,300
Subtotal		\$1,076,100
Total		\$4,937,400
Beneficial effects		
Anadromous fish		\$7,759,100
Resident fish		79,500
CTUIR		NA
Unemployed labor		316,500
Total		\$8,155,100
Net benefits		\$3,217,700

^{1/} Based on 100-year period of analysis and 8-7/8 percent Federal interest rate

Environmental Quality

The environmental quality account shown in table 2-24 measures the degree to which the project benefits or adversely affects the quality of the natural and cultural resources and ecological systems of the area.

The Recommended Plan would provide highly significant overall environmental enhancement in the Umatilla basin. Most of this improvement would come from a significant increase in natural and hatchery production returns of salmon and steelhead. The project would also increase the migration and distribution range of hatchery and natural anadromous fish stocks in the main stem Umatilla River.

Table 2-24.--Environmental Quality Account--Recommended Plan

Environmental Factors	Present Quantity	Future Without Quantity	Recommended Plan		
			Quantity ^{1/}	Significance ^{2/}	
Fall chinook returns					
Natural production	3	2,602	11,217	(+8,615)	+++
Hatchery production	3	2,247	9,810	(+7,563)	+++
Spring chinook returns					
Natural production	41	301	1,162	(+861)	++
Hatchery production	565	2,398	9,235	(+6,837)	+++
Steelhead returns					
Natural production	682	1,482	3,404	(+1,926)	++
Hatchery production	2,080	2,189	5,027	(+2,838)	++
Coho returns					
Hatchery production	0	4,950	6,600	(+1,650)	+
Anadromous fish distribution (subjective estimate on utilization of main stem Umatilla River reaches) ^{3/}	3	5	9	(+4)	++
Irrigated cropland losses (acres)	0	0 ^{4/}	130	(-130)	-
Total environmental quality effect ^{5/}					+++

^{1/} Net changes compared to future without project condition shown in parentheses

^{2/} - = minor adverse, -- = moderate adverse, --- = highly adverse, + = minor beneficial, ++ = moderate beneficial, +++ = highly beneficial, and 0 = no difference

^{3/} Range 0 (no distribution), 10 (distribution covers entire basin)

^{4/} Does not include 49,600 acres of presently irrigated cropland with a water supply at risk without the project

^{5/} Compared to future without project conditions

Regional Economic Development

Page 2-40

The RED account shown in table 2-25a summarizes NED and RED benefits. It also shows who are the recipients of project benefits and who pays project costs.

Table 2-25a.--Regional Economic Development Account--Recommended Plan

Item	Region 1 ^{1/}			Region 2 ^{2/}	Region 3 ^{3/}	Rest of Nation	Total
	Confederated Tribes	Other Indians	Rest of Region				
Benefits							
NED							
Anadromous fish	\$1,325,900	\$1,255,600	\$494,800 ^{4/}	\$4,935,500			\$8,011,800 ^{7/}
Resident fish			79,500				79,500
Unemployed labor	316,500						316,500
Subtotal	\$1,642,400	\$1,255,600	\$574,300	\$4,935,500	0	0	\$8,407,800
RED							
Implementation	\$ 316,000		\$ 406,000			\$ -722,000	
Transfer ^{5/}	-6,500					-6,500	
Indirect and induced	732,000	\$361,000	2,041,000			-3,134,000	
Subtotal	\$1,041,500	\$361,000	\$2,447,000	0	0	\$-3,849,500	0
Total							\$8,407,800
Costs							
Construction					\$ 333,400	\$3,310,600	\$3,644,000
Interest during construction					5,900	211,400	217,300
Operation, maintenance, replacement, and power					946,900	129,200	1,076,100
Total	0	0	0	0	\$1,286,200 ^{6/}	\$3,651,200	\$4,937,400

1/ Region 1 is defined as BEA 156, Guideline 5

2/ Region 2 is the area outside of the Columbia River Zone 6 and Umatilla basin in which salmon and steelhead from the project are caught. It includes the area from northern California to Alaska having fishing fleets and charter boats which fish the ocean area through which these fish migrate during their life cycle. It also includes the Columbia River from its mouth to Bonneville Dam.

3/ Region 3 is the area served by Bonneville Power Administration and utilities which buy power from Bonneville Power Administration.

4/ Steelhead caught in Umatilla River by non-Indians (\$555,900 discounted by benefit buildup factor).

5/ PR/DES unemployment benefits not paid (\$6,000) adjusted for change in Consumer Price Index from 1983 to 1986 $\frac{323.4}{297.4} = 1.087$ to conform to change in project construction cost level.

6/ Provided as an element of the Northwest Power Planning Council's Columbia River Basin Fish and Wildlife Program. Bonneville Power Administration will receive credit toward meeting their obligation for fish mitigation and enhancement under the Pacific Northwest Electric Power Planning and Conservation Act.

7/ Includes \$252,700 of benefits to the coho fishery not included in national economic development account.

RED benefits differ from NED benefits in that they are "local" as opposed to national in scope. They are benefits which accrue to the region at the expense of another region. Consequently, RED benefits do not result in an increase in benefits to the Nation.

The RED portion of the table consists of three items: (1) implementation, (2) transfer, and (3) indirect and induced payments and benefits. All are shown as annual equivalent values.

Implementation benefits which accrue to the region are construction wages and salaries paid to onsite workers from the region. Transfer payments are losses to the region from unemployment benefits not paid because of an increase in construction jobs. Indirect and induced benefits result from secondary economic activity stemming from the project. In this case, they are a result of: purchases of consumer goods and services in the region from construction wages, purchases within the region of goods and materials used to construct project facilities, wages paid to personnel to operate and maintain project facilities, and purchases of regional consumer goods and services from wages and expenditures of commercial and recreational fishermen.

Table 2-25b is a summary of the increased anadromous fish catch which results from implementation of the project. Increased commercial and noncommercial fish catch by the two Indian groups and non-Indians for each species of fish is shown.

Table 2-25b.--Summary of Increased Anadromous Fish Catch

Item	Beneficiary			Total
	Confederated Tribes	Other Treaty Tribes	Non-Indian	
Commercial				
Steelhead	116	1,049	0	1,165
Fall chinook	8,423	4,793	44,763	57,979
Spring chinook	7,728	2,798	3,012	13,538
Coho	1,650	0	3,234	4,884
Subtotal	17,917	8,640	51,009	77,566
Noncommercial				
Steelhead	2,352	1,538	5,780	9,670
Fall chinook	133	1,198	11,984	13,315
Spring chinook	78	699	7,338	8,115
Coho	0	0	3,366	3,366
Subtotal	2,563	3,435	28,468	34,466
Total	20,480	12,075	79,477	112,032

The increase in regional employment resulting from the project is shown in table 2-25c. The number of onsite and indirect and induced employees related to construction activities is summarized by construction year. In addition, the place of origin or geographic location of the work force is shown for construction related employment. Direct employment associated with project related fishing and operation and maintenance activities is also shown.

Table 2-25c.--Summary of Increased Regional Employment

Time Period	Construction Related Employment					Geographic Occurrence		
	Contractor	Federal	Onsite Work Force	Indirect and Induced	Total	Basin Indians	Rest of Region	Rest of Nation
Construction year								
1	27	9	36	102	138	14	120	4
2	42	15	57	163	220	24	191	5
3	75	26	101	290	391	41	341	9
4	12	5	17	48	65	8	55	2
	Direct Employment							
	Anadromous Fish	Resident Fish	Operation and Maintenance	Indirect and Induced				
Project life	11	0	9	62	82	20	62	0

Social

The social evaluation is the determination of the extent and magnitude to which the project would affect the quality of life and social well-being in the area. Social impacts are displayed in table 2-26.

The Recommended Plan would (1) help make the Umatilla basin a viable homeland for the Umatilla Indians by restoring a salmon fishery and (2) preserve an existing agricultural economy by alleviating the threat of irrigation water loss.

Indians.--Indian social well-being ratings were determined as a result of discussions with tribal groups and individuals. Tribal values are reflected in the factors selected for inclusion in the analysis. The relative importance that the tribes assign to changes in the various factors is reflected in the weights associated with the factors.

For each factor, social well-being was rated on a 0-10 scale. Weights represent the relative importance of moving from 0 to 10 on one scale versus the importance of a similar move on the other scales.

Most of the factors were measured on subjective scales; therefore, no impact quantities are displayed for these scales. Weighted social well-being scores were determined by multiplying the normalized weight by the social well-being level for each factor. The projected improvements in social well-being for each factor and total improvements for each alternative over future without conditions are shown in parentheses.

Table 2-26.--Social Impacts--Recommended Plan

Indian Social Impacts

Factor	Normalized Weight	Present			Future Without			Recommended Plan		
		Impact Quantity	SWB ^{1/} Level	Weighted SWB Score	Impact Quantity	SWB Level	Weighted SWB Score	Impact Quantity	SWB Level	Weighted SWB Score
Culture	.19	<u>2/</u>	5	.95	<u>2/</u>	3	.57	<u>2/</u>	6	1.14
Community	.15	<u>2/</u>	4	.60	<u>2/</u>	5	.75	<u>2/</u>	6	(.57)
Self-esteem	.09	<u>2/</u>	3	.27	<u>2/</u>	5	.45	<u>2/</u>	6	.90
Economics	.14	<u>2/</u>	2	.28	<u>2/</u>	3	.42	<u>2/</u>	5	(.15)
Environment	.14	<u>2/</u>	4	.56	<u>2/</u>	5	.70	<u>2/</u>	5	.54
Salmon	.11	<u>2/</u>	0	0	<u>2/</u>	3	.33	<u>2/</u>	7	(.09)
Steelhead trout (catch)	.04	672	2	.08	1,045	3	.12	3,225	6	.70
Conflict	.13	<u>2/</u>	4	.52	<u>2/</u>	1	.13	<u>2/</u>	6	(.28)
										(.0)
										.77
										(.44)
										.24
										(.12)
										.78
										(.65)
Total				3.26			3.47			5.77
										(2.30)

1/ Social well-being

2/ Subjective scale

Non-Indian Social Impacts

Factor ^{1/}	Normalized Weight	Present			Future Without			Recommended Plan		
		Impact Quantity	SWB ^{2/} Level	Weighted SWB Score	Impact Quantity	SWB Level	Weighted SWB Score	Impact Quantity	SWB Level	Weighted SWB Score
Local sport fishery (fish caught)	.21	300	1	.21	1,045	2	.42	3,225	4	.84
Irrigated acres	.25	112,700	9	2.25	63,100 ^{3/}	0	0	112,700	9	(.42)
Small tracts lifestyle (degree of risk)	.15	<u>4/</u>	6	.90	<u>4/</u>	1	.15	<u>4/</u>	10	2.25
Financial security	.25	<u>4/</u>	5	1.25	<u>4/</u>	1	.25	<u>4/</u>	9	(2.25)
Local economics (potential employment level)	.09	26,200	10	.90	24,100 ^{3/}	1	.09	26,200	10	1.50
Conflict/competition	.05	<u>4/</u>	6	.30	<u>4/</u>	2	.10	<u>4/</u>	5	(1.35)
										2.25
										(2.00)
										.90
										(.81)
										.25
										(.15)
Total				5.81			2.06			7.99
										(5.93)

1/ Recreation and esthetic factors have normalized weights less than .01

2/ Social well-being3/ As many as 49,600 acres of presently irrigated cropland could go out of production in the event of Indian water right litigation causing the loss of about 1,200 jobs, and over 11 million dollars in regional income.4/ Subjective scale

Failure to implement a flow project in the Umatilla basin would almost certainly result in a major legal confrontation and social, economic, and political conflict between Indian and non-Indian residents.

With the project, the tribes would be assured of getting large, regular runs of chinook salmon in the Umatilla River. This would lead to numerous effects upon the Indian quality of life, tribal organization, and relations with the larger community, all of which are intimately interrelated. Traditional family roles would be reinforced. The tribes would also be provided with additional authority and jurisdiction over fishing on the reservation and at traditional sites. These effects would strengthen the traditional lifestyle of the tribes and, in turn, tribal authority. The plan would also reduce future competition over water resources between the tribes and the larger community.

Non-Indians.--Non-Indian social well-being ratings were determined as a result of discussions with a broad cross section of individuals and groups within the local impact area. A draft of the assessment was reviewed by local people, and changes were made.

The plan would significantly contribute to irrigation in Umatilla County by removing a threat of litigation and solidifying water supplies for many Umatilla irrigators. The considerable economic threat to the county's employment and income would be removed. Resolution of water issues would also remove the threat to the large small tract development and its accompanying lifestyle. The threat to the financial security of irrigators and small tract families (through potential loss of property values) would be largely removed. The local sport fishery would be significantly enhanced.

TEST OF VIABILITY

No change from the PR/DES

OTHER REVISIONS

This section contains relatively minor changes to sections of the July 1986 PR/DES which did not require major revisions during preparation of the PR/FES. Page numbers refer to the July 1986 PR/DES unless noted otherwise.

Page 3, last paragraph. Add sentence following fourth sentence: "The Umatilla tribes, ODFW, and the irrigators opted for the Columbia River pumping plan."

Page 4, paragraph 2, second sentence. Revise sentence to read: "Smaller pumping facilities would be installed in the vicinity of the Umatilla River mouth and at Cottonwood Bend on the Umatilla River to further improve flows in the river's lower reaches." Also, add sentence at end of paragraph: "Results of the monitoring program could suggest ways to reduce pumping requirements."

Page 4, paragraph 4. Add sentence to end of paragraph: "See table 2-a for a summary of increased escapement."

Page 6, paragraph 3. Change \$37 million to \$43 million, \$317,000 to \$416,000, and \$379,000 to \$450,000.

Page 6, paragraph 5. Add at end of paragraph: "(see table 2-20)."

Page 7, first full paragraph. Add sentence at end of paragraph: "In addition, other non-Federal activities include donation of lands and water resources for fish facilities, withdrawal of the river from appropriation, and minimum streamflows."

The Northwest Power Planning Council has adopted an amendment to the Columbia River Basin Fish and Wildlife Program whereby BPA would provide power or reimbursement for operation and maintenance costs associated with provision of power to Reclamation pumping plants designed to exchange Columbia River water for Umatilla River water for fishery purposes.

Page 8, fourth full paragraph. Change third sentence to read: "The plan is the least cost and most cost-effective approach to addressing the tribe's reserved treaty rights for the fishery and insuring the integrity of the existing Federal Umatilla Project."

Page 8, fifth full paragraph. Change the first sentence to read: "Subsequent to completion of plan formulation, irrigation district representatives and others expressed interest in the possibility of including irrigation as a project function."

Page 8, add the following paragraphs at the bottom of the page: "SID is interested in making its water supply system more efficient and reliable and less costly to operate. One of the concepts that has been preliminarily considered by the district involves abandonment of Furnish Ditch (the district's primary water conveyance facility from the Umatilla River) and instead receive its entire supply by pumping from the Columbia River. In a variation of this concept, the district would use Furnish Ditch at a reduced capacity and compensate by pumping from the Columbia River. While these concepts could reduce canal operation, maintenance, and rehabilitation costs,

they would have pumping power costs associated with them. Another consideration is that, at the present time, SID provides early season water service to about 5,000 acres by diverting spring floodflows through its facilities. Additional service to these lands during the irrigation season might be possible if pumped water from the Columbia River were available at the end of the spring floodflow season. If Furnish Ditch were abandoned, there would be insufficient capacity in the SID system to provide water to the floodflow lands in some months.

"There is physical capacity in the proposed Columbia River pumping plant to provide SID's entire water supply because the facility was sized to meet peak instream flow exchange requirements when all of the district's water supply would have to be pumped from the Columbia River during some periods. If SID pursues the above potentials, Reclamation would work with district representatives during advance planning to determine feasibility and operational and financial responsibilities for any such use of the Columbia River pumping complex."

Page 9, paragraph 6. Change second sentence to read: "The Task Force reported on its findings in 1986."

Add last sentence: "Reclamation hopes to continue the Umatilla Basin Project study to assist the State, tribes, irrigation districts, and others to focus on conjunctive use of ground water and surface water in the basin."

Page 11, paragraph 2, last sentence. Delete all after the word "downstream."

Page 11, under major features tabulation. Change WEID pumping plant discharge capacity to 140 ft³/s.

Page 12. See section of PR/FES entitled, "Recommended Plan Changes, Modifications, and Updating" which contains revised fish projections and flow accomplishments."

Pages 13, 14, and 15. See section of PR/FES entitled, "Recommended Plan Changes, Modifications, and Updating" which contains revised national economic development, regional development, environmental quality, and social well-being accounts."

Page 23, Selection of the Recommended Plan. Add the following items to the list:

- °Addresses treaty related fishery restoration objectives in the least cost manner

- °Provides for substantial tribal and nontribal fishery related economic development

- °Contributes substantial offsite benefits to the region, including fresh water and marine commercial and recreational fisheries

- °Is a nonconsumptive water exchange project

- °Has a substantial local cost share

Page 25, conclusion 6. Add this sentence at end: "The plan can be phase developed, with the first phase being construction of the new WEID pumping plant. Substantial flow improvements would be realized in the Umatilla River below Three Mile Falls Diversion Dam."

Conclusion 9. Change to read: "Endorsements of the project have been received from all major entities in the basin. The State has withdrawn the river from further appropriations to protect flows for the project and has established minimum flows in accordance with project goals."

Conclusion 10. Revise last sentence to read: "The Northwest Power Planning Council through the BPA implementation program has committed to measures totaling over \$21 million for Umatilla basin passage, habitat improvement, and propagation programs."

Page 26, recommendation 3. Revise to read: "Electric power to operate project pumping facilities be provided from the Federal Columbia River Power System."

Page 4-5, under heading "Northwest Power Planning Council's Federal Wildlife Program." Last sentence should read: "All of these fishery improvement projects are in the council's present program."

Page 4-6. Table 4-1 has been revised as shown.

Page 4-7, paragraph 3. Revise to read as follows:

"Adult salmon from these plants have returned to the Umatilla River since the fall of 1984. In 1985 and 1986, Umatilla River flows were augmented below Three Mile Falls Diversion Dam through use of WEID's existing pump facility at the mouth of the river. As a result, fall chinook were captured at the dam, tagged, and their upstream migration monitored. Some spawning was observed in 1986. In 1987, adult fish were trapped at the diversion, killed for research purposes, or passed upstream to allow fish to attempt to spawn. In the spring of 1988, the trucking program will be used to transport salmon and steelhead smolts from the trap at Westland Diversion Dam during low water conditions. Until streamflows are improved with construction of the proposed Umatilla Basin Project, the "truck and haul" program will provide an interim fishery management measure to help cope with lack of adequate flows. The program will be coordinated between the tribes and ODFW.

"In 1987, as part of the Northwest Power Planning Council's Fish and Wildlife Program, preliminary design data was collected for construction of new adult and juvenile fish passage facilities at Stanfield, Feed, Westland, and Maxwell Diversion Dams and canals. Final designs for these facilities will be started in 1988, with construction scheduled for completion in 1989 at Westland and in 1990 at the other three sites. It is anticipated that BPA will fund the work. The resulting fish passage improvements will substantially increase salmon and steelhead survival during critical migration periods."

Table 4-1.--Implementation Plan--Priority Umatilla River Basin Salmon and Steelhead Projects

Project	Implementation Schedule ^{1/} Years to Complete				
	1	2	3	4	5
Flow enhancement projects					
McKay storage plan	0				
Reclamation's Recommended Plan or Alternative Plan	+	+	+	+	+
Fishery rehabilitation projects					
Hatchery facility for 200,000 summer steelhead	+	+	0		
Fall and spring chinook and coho hatchery production	+	+	+	+	0
Three Mile Falls Diversion Dam upstream and downstream passage improvement	+	+	0		
Adult and smolt trapping/trucking program	+	0			
Westland upstream and downstream passage improvement and smolt trapping facility	+	+	0		
Cold Springs upstream and downstream passage improvement	+	+	+	0	
Maxwell and Stanfield upstream and downstream passage improvement	+	+	+	0	
Small diversions downstream passage improvement					
Brownell and Dillon	+	0			
Umatilla River unscreened diversions (5)		+	0		
Birch Creek unscreened diversions (11)			+	0	
Habitat improvement					
Meacham and North Fork Meacham Creeks	+	+	+	0	
North and South Forks Umatilla River					
Thomas Creek	+	+	0		
Main stem Umatilla River (Meacham Creek to Forks)		+	+	0	
Squaw Creek			+	0	
Birch Creek and East and West Forks Birch Creek			+	+	0

SOURCE: A Comprehensive Plan for Rehabilitation of Anadromous Fish Stocks in the Umatilla River, January 1986, ODFW with implementation schedule updated to 1987

1/ Subsequent to initial startup of the rehabilitation plan

+ Project initiation

0 Project completion

Page 4-7, under heading "Oregon Department of Fish and Wildlife," second sentence. Sentence should read: "ODFW has worked closely with tribal representatives on restoration programs and has given the Umatilla River high priority statewide."

Page following 4-10. See updated hydrographs in the Recommended Plan Changes, Modifications, and Updating section of this PR/FES.

Page 5-3, paragraph 3 under heading "Ground Water." Revise first sentence to read: "Ground-water problems in the Umatilla River basin have been a concern to the State of Oregon for many years, with particular attention given to the Ordinance and Butter Creek areas."

Page 5-3, under heading "Ground Water." Revise paragraph 5 to read: "Oregon Governor Atiyeh appointed a task force in 1985 to review and report on means of reversing the decline of the ground-water resource. The task force completed its findings in the spring of 1986, and concluded that ground-water improvements should be coordinated with other water actions in the basin and that coordinated studies should continue in the basin. Basin interests believe that conjunctive use of ground water and new storage may be necessary to resolve the ground-water crisis and maintain an adequate water supply for basin water uses."

Page 5-5, second full paragraph. Add sentence to end of paragraph: "Some fishery experts believe that limited fall chinook production may be possible under present flows with an adult and juvenile fish trapping and hauling program to transport fish around the low flow reaches."

ALTERNATIVE PLAN AND NO ACTION

No changes from Planning Report/Draft Environmental Statement



NEED FOR ACTION

Minor and editorial revisions are shown in the "Other Revisions" section of this document.



RESOURCES AND CAPABILITY

Minor and editorial revisions are shown in the "Other Revisions" section of this document.



PLAN FORMULATION AND EVALUATION

Minor and editorial revisions are shown in the "Other Revisions" section of this document.



AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

Several preliminary plans were considered in the study and are discussed in the "Plan Formulation and Evaluation" chapter in the 1986 Planning Report/Draft Environmental Statement (PR/DES). A summary of key environmental considerations of the preliminary plans is displayed in the 1986 document.

From among the preliminary plans, the Columbia River Pumping Plan was selected as the plan to be recommended for development and is discussed in depth in this Planning Report/Final Environmental Statement (PR/FES).

This section discusses the environmental consequences of the changes, modifications, and updating made to the Recommended Plan since the July 1986 PR/DES. The "Surface-water Resources" and "Fisheries" sections have been revised in total. However, the complete chapter "Affected Environment and Environmental Consequences" is not reproduced here, and revised sections are only presented where changes and revisions have been accommodated. Chapter sections are in the same order as appeared in the PR/DES chapter.

RECOMMENDED PLAN (Columbia River Pumping Plan)

Climate

Added subject since PR/DES

The climate of the Umatilla basin study area is temperate and semiarid, although there are great differences in temperature and precipitation between lower valley and higher elevations in the Blue Mountains. Precipitation is lowest near the Columbia River and increases with elevation. Precipitation occurs mostly in the fall, winter, and spring due to the greater incidence of moisture-bearing airmasses from the Pacific Coast. During the summer, thunderstorms occur and can be quite destructive to localized areas. Based on long-term annual averages, Umatilla at elevation 295 mean sea level receives about 9 inches of precipitation, Echo at elevation 638 receives about 10 inches, Pendleton at elevation 1135 receives nearly 14 inches, and Meacham located in the headwaters of the Umatilla River at elevation 3700 receives approximately 38-1/2 inches.

Mean annual temperature at Umatilla is about 54 °F and 41 °F at Meacham. The basin has hot, dry summers with mean July temperatures at Umatilla of 75 °F and at Pendleton of 73 °F with a few days above 100 °F. During the winter, occasional invasions of Arctic air produce brief periods of clear and cold winter weather.

The frost-free period and growing season are longest near the Columbia River and decrease as elevation increases. The frost-free period and growing season at Echo are 177 and 218 days, respectively, and 171 and 208 days at Pendleton. In the basin's higher elevation areas, represented by Meacham, frost can occur in any month.

Strong winds, generally from the west and southwest, occur at any time of the year, and in the summer they cause topsoil movement and excessive evaporation.

Surface-water Resources

Existing Conditions

McKay Reservoir.--McKay Reservoir is filled during November through June from runoff. Of the 73,840 acre-feet of storage capacity, all but 12,000 acre-feet is used to meet supplemental irrigation needs. The 12,000 acre-feet includes 6,000 acre-feet of noncontracted space most of which has historically been purchased by the Stanfield and Westland Irrigation Districts (SID, WID) and a few individuals on an annual basis, and 6,000 acre-feet of space which is reserved exclusively for flood control.

During the irrigation season, SID, and West Extension Irrigation District (WEID), the major users of McKay Reservoir storage, request storage releases after their natural flow rights have been exhausted. The majority of the releases are made during June through September.

Table 7-1 gives the end-of-month storage contents for McKay Reservoir.

Table 7-1.--McKay Reservoir, End-of-month Storage Contents,
Historic Record (Acre-feet)

Year	OCT	NOV 15	NOV 30	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT 15	SEPT 30
1947	19,470	21,770	24,070	35,700	48,920	56,700	66,310	71,300	64,830	54,660	33,190	16,600	13,620	10,640
1948	10,020	16,745	23,470	39,530	53,660	66,550	71,060	71,940	70,700	68,900	54,160	33,190	25,795	18,400
1949	18,930	19,475	20,020	25,100	26,400	42,700	58,250	64,940	67,580	57,520	36,290	14,970	12,615	10,260
1950	10,430	11,125	11,820	17,050	24,980	45,680	65,740	66,990	71,300	70,700	51,990	32,349	27,210	22,070
1951	21,900	23,990	26,080	40,080	56,800	62,270	63,930	67,820	69,740	65,170	45,500	25,400	19,500	13,600
1952	14,640	15,395	16,150	18,830	21,440	31,320	44,630	59,760	64,830	56,170	39,680	18,980	14,220	9,460
1953	9,140	9,160	9,180	9,860	22,700	40,800	65,290	71,060	71,820	71,820	50,770	28,440	21,110	13,780
1954	13,740	14,115	14,490	26,020	31,140	37,650	43,860	53,460	50,950	52,480	32,240	13,780	9,640	5,500
1955	5,810	6,080	6,350	6,890	9,060	13,050	20,200	40,640	61,390	58,690	41,610	17,410	11,680	5,950
1956	6,100	8,620	11,140	28,060	48,010	53,960	57,940	70,820	71,820	63,930	39,450	20,320	15,480	10,640
1957	10,800	11,050	11,300	15,850	17,110	26,400	52,380	71,940	72,060	59,430	36,290	14,970	10,445	5,920
1958	6,130	7,035	7,940	18,090	35,250	57,630	66,070	69,380	72,060	61,500	38,260	14,870	10,015	5,160
1959	5,230	6,360	7,490	25,100	43,620	57,100	68,540	69,500	70,700	61,720	37,490	12,920	9,055	5,190
1960	6,640	8,189	9,740	11,920	15,850	26,020	43,100	54,360	67,700	58,140	33,050	12,120	7,775	3,430
1961	4,050	5,900	7,750	11,820	17,000	34,970	53,660	62,600	68,180	54,360	27,350	3,290	1,850	410
1962	520	615	710	4,690	13,250	18,780	34,970	47,740	55,360	46,840	24,790	3,430	1,780	130
1963	810	2,145	3,480	10,640	14,340	31,250	39,680	59,540	63,490	43,100	22,020	5,290	3,315	1,340
1964	1,500	2,200	2,900	5,330	10,300	16,049	22,120	35,390	39,450	38,110	23,950	6,350	4,665	2,980
1965	2,400	3,105	3,810	30,850	65,960	59,000	63,380	70,700	72,440	67,820	49,010	30,970	27,190	23,410
1966	23,410	23,710	24,010	24,490	25,960	28,130	36,730	41,770	37,270	26,910	13,050	1,340	770	200
1967	290	935	1,580	11,340	25,460	32,009	38,810	46,570	56,370	48,460	28,970	10,180	8,630	7,080
1968	7,040	7,060	7,080	11,960	17,980	31,520	33,470	36,370	33,820	25,460	10,680	1,620	1,320	1,020
1969	1,200	3,110	5,020	13,700	31,730	40,640	55,560	70,820	70,940	66,990	51,720	35,110	30,415	25,720
1970	25,780	26,090	26,400	28,310	53,760	66,190	69,380	69,380	70,820	66,770	47,470	26,280	20,845	15,410
1971	15,800	17,050	18,300	22,070	34,890	41,000	49,190	62,160	64,879	66,940	47,110	24,640	20,720	16,800
1972	16,900	20,185	23,470	43,900	59,650	61,940	63,710	67,700	67,760	61,500	40,960	21,490	15,355	9,220
1973	9,220	9,480	9,740	14,900	19,320	22,650	28,100	32,490	31,660	19,100	6,460	220	220	220
1974	280	4,325	8,370	36,050	51,650	60,710	64,970	68,400	67,690	65,050	47,710	27,760	20,150	12,540
1975	10,800	10,905	11,010	15,090	43,560	57,930	62,740	66,870	67,880	64,030	46,880	29,360	23,370	17,380
1976	16,730	17,245	17,760	32,290	48,240	52,680	62,360	66,780	67,950	61,480	40,740	24,950	18,595	12,240
1977	11,820	11,895	11,970	12,330	13,290	14,060	21,730	29,700	31,190	19,670	8,080	1,480	1,530	1,580
1978	1,980	3,710	5,440	15,340	29,650	40,740	56,480	68,650	67,900	54,950	37,990	24,890	21,505	18,120
1979	18,400	18,515	18,630	27,290	29,520	48,010	67,890	68,060	67,860	55,280	35,320	19,590	14,965	10,340
1980	10,530	11,980	13,430	19,550	30,570	43,370	61,860	67,860	67,940	65,630	47,160	28,340	22,800	17,260
1981	17,760	18,255	18,750	25,740	29,020	46,220	64,739	67,830	67,830	66,860	50,930	31,340	24,350	17,360
1982	17,500	18,255	19,010	30,810	49,040	59,300	64,750	67,650	67,950	64,510	50,060	30,340	26,265	22,190
1983	23,550	25,145	26,740	42,090	49,530	60,040	67,660	67,100	67,940	56,400	42,080	25,440	20,910	16,379
1984	16,610	17,620	18,630	27,710	49,990	63,610	66,020	68,130	68,250	67,290	47,860	28,950	24,045	19,140
Average	10,891	12,067	13,243	22,010	33,384	43,385	53,612	60,899	62,903	56,167	37,324	18,920	14,835	10,749

Cold Springs Reservoir.--Cold Springs Reservoir is an off-channel reservoir. Water from the Umatilla River is diverted into the Feed Canal during the November through June filling season and flows 26 miles to Cold Springs Reservoir. Along the route different drainages empty into the canal, augmenting the diversion from the Umatilla River. Despain Gulch also serves as a source of water for the reservoir.

Hermiston Irrigation District (HID) operates the canal and reservoir. Present operation calls for the reservoir to be maintained below 26,000 acre-feet until March for flood control purposes. Releases are made from April through October to meet irrigation needs.

Table 7-2 gives the end-of-month storage contents for Cold Springs Reservoir based on a revised 1986 elevation capacity curve.

Umatilla River above Pendleton.--Few diversions are made from the Umatilla River above Pendleton. Pendleton's municipal supply and a few small irrigation diversions are all that deplete the Umatilla River flows in this area. Flows in this reach increase when rains start in mid-November and peak with snowmelt runoff in late April or May. Flows then recede until a base flow condition is reached during July through October. Table 7-3 shows recorded streamflow conditions at Pendleton.

Umatilla River below Pendleton.--Umatilla River below Pendleton is impacted by reservoir storage, stream channel losses, irrigation diversion, and return flows. Storage in McKay Reservoir and diversions from the river for storage at Cold Springs Reservoir reduce flows in the river during the nonirrigation season. The ground-water recharge program of County Line Water Improvement District (CLWID) in which up to 75 cubic feet per second (ft³/s) can be diverted from the Umatilla River at the Westland Canal, also reduces flow during the nonirrigation season.

During the irrigation season, the river is substantially diverted at the major irrigation dams--Stanfield, Westland, Dillon, Maxwell, and Three Mile Falls Diversion. Riverflow occasionally can be totally diverted at Westland and Three Mile Falls Diversion Dams.

Tables 7-4 through 7-6 show monthly flows for the Umatilla River at important points for the 1947-84 period. Hydrographs in chapter 2 of the PR/FES compare high, average, and low flow conditions at important points on the river.

Future Without Project Conditions

Without the Recommended Plan, it is assumed that streamflows, irrigation storage, and water uses will remain generally unchanged. However, a final disposition of Indian water rights could change present use patterns.

Table 7-2.--Cold Springs Reservoir, End-of-month Storage Contents,
Historic Record (Acre-feet)

Year	OCT	NOV 15	NOV 30	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT 15	SEPT 30
1947	4,200	9,950	15,700	28,200	32,900	43,300	50,000	49,500	40,700	30,700	16,700	4,800	3,200	1,600
1948	3,800	4,150	4,500	27,000	38,200	45,600	50,000	49,700	49,100	47,100	33,400	19,900	14,900	9,900
1949	11,600	13,500	15,400	23,900	23,900	35,000	45,700	48,000	46,000	34,600	20,300	6,600	4,400	2,200
1950	3,100	5,500	7,900	19,100	21,000	35,600	45,400	49,900	48,600	47,500	32,400	17,300	11,700	6,100
1951	8,200	13,050	17,900	30,700	41,700	46,600	50,000	48,100	44,900	36,300	19,400	3,900	1,950	0
1952	0	6,400	12,800	23,300	31,500	42,200	33,000	45,500	43,200	31,700	15,600	2,400	1,200	0
1953	2,500	3,650	4,800	9,500	20,000	33,000	44,200	48,600	50,000	45,600	29,700	14,100	8,300	2,500
1954	2,500	4,550	6,600	19,700	29,400	40,400	50,000	50,000	38,400	31,700	16,500	10,100	5,050	0
1955	0	1,800	3,600	8,100	18,000	30,100	42,300	49,200	50,000	43,400	30,500	14,600	9,950	5,300
1956	5,200	7,350	9,500	22,900	35,300	39,800	49,400	49,200	48,800	39,800	24,600	11,100	5,550	0
1957	2,900	4,150	5,400	15,100	22,000	31,000	45,200	50,000	49,800	36,500	2,200	6,400	3,200	0
1958	4,700	8,100	11,500	22,000	34,000	44,000	50,000	50,000	50,000	37,200	21,600	6,500	4,650	2,800
1959	2,900	5,850	8,900	22,300	33,600	45,400	50,000	50,000	50,000	37,800	21,900	6,900	5,050	3,200
1960	4,300	9,850	15,400	27,300	39,700	41,500	50,000	50,000	50,000	40,000	22,800	7,900	5,450	3,000
1961	3,000	6,750	10,500	24,000	38,000	48,500	50,000	50,000	49,100	35,500	19,000	5,600	3,900	2,200
1962	4,500	6,600	8,700	19,000	28,400	40,400	50,000	50,000	50,000	40,300	24,200	9,900	6,850	3,800
1963	6,000	10,100	14,200	27,400	32,700	43,900	50,000	50,000	46,300	31,000	16,100	3,500	3,750	4,000
1964	4,300	8,250	12,200	23,900	36,000	48,000	50,000	50,000	49,600	44,500	28,400	12,200	8,250	4,300
1965	5,200	7,200	9,200	22,200	29,600	41,800	50,000	50,000	49,700	38,700	23,000	9,200	6,400	3,600
1966	4,400	7,050	9,700	15,200	26,000	36,400	49,200	47,700	37,800	26,200	11,700	7,700	5,750	3,800
1967	3,700	6,700	9,700	24,100	35,600	39,600	50,600	50,400	50,200	38,600	22,200	5,000	4,350	3,700
1968	3,800	5,600	7,400	11,800	26,000	38,700	47,500	44,800	32,900	22,800	8,200	3,800	3,800	3,800
1969	3,810	8,365	12,920	24,500	30,610	40,730	50,990	49,660	49,620	36,150	19,600	8,300	4,310	320
1970	320	2,800	5,280	12,310	22,030	35,600	48,890	50,750	50,990	41,650	26,530	13,940	8,934	3,930
1971	3,830	8,490	13,150	25,760	35,600	42,000	50,200	49,580	49,740	44,690	29,920	13,940	9,040	4,140
1972	2,600	6,480	10,360	21,430	29,000	33,740	43,330	49,820	50,910	41,790	26,950	13,000	8,100	3,200
1973	2,680	4,970	7,260	12,310	21,430	34,470	47,240	45,630	36,480	23,230	11,720	2,130	2,380	2,630
1974	3,040	7,160	11,280	24,060	30,850	39,130	49,510	49,970	49,820	45,490	31,800	18,420	12,035	5,650
1975	5,920	6,565	7,210	14,500	26,200	39,330	49,510	49,580	49,820	41,230	27,640	13,460	8,430	3,400
1976	3,070	6,299	9,530	23,440	33,740	39,460	49,970	50,670	48,590	36,230	21,430	10,360	6,654	2,950
1977	3,330	4,625	5,920	9,800	11,170	16,100	23,020	28,890	26,530	19,030	8,740	2,360	2,575	2,790
1978	2,790	4,060	5,330	19,070	28,600	38,150	49,820	49,820	44,910	32,400	6,430	3,930	3,325	2,720
1979	2,700	3,650	4,600	15,100	16,900	24,900	37,500	49,000	48,100	36,000	21,000	9,700	6,550	3,400
1980	3,400	4,750	6,100	18,600	24,500	33,100	47,600	46,800	42,400	38,400	25,600	13,100	8,600	4,100
1981	4,200	4,400	4,600	11,900	25,000	35,600	47,800	47,000	48,700	40,000	27,600	13,600	9,000	4,400
1982	5,100	7,000	8,900	20,100	28,400	34,300	45,300	51,000	49,500	41,400	28,200	14,300	9,750	5,200
1983	5,800	7,350	8,900	19,700	31,700	38,300	47,800	49,300	49,500	38,100	26,300	12,600	7,950	3,300
1984	0	2,300	4,600	11,900	16,700	29,100	40,300	47,600	50,100	47,600	34,300	21,400	16,650	11,900
Average	3,771	6,457	9,143	19,768	28,577	38,021	46,876	48,570	46,600	37,392	22,473	9,841	6,629	3,417

Table 7-3.--Historic Average Monthly Flows--Umatilla River at Pendleton Gauge
(cubic feet per second)

Year	OCT	NOV 15	NOV 30	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT 15	SEPT 30
1947	106	256	696	1,619	683	810	866	951	364	168	52	29	36	44
1948	93	726	964	818	862	1,065	771	1,629	2,519	740	147	58	45	52
1949	60	80	213	401	149	1,143	1,785	2,012	1,155	238	58	32	37	44
1950	60	69	174	259	495	1,261	1,483	1,386	1,139	807	121	44	34	45
1951	89	436	411	855	1,061	1,205	874	1,198	609	359	60	31	36	40
1952	201	198	300	379	312	767	835	1,778	894	224	105	33	39	35
1953	44	60	63	79	1,059	1,291	1,198	1,581	923	623	89	40	34	35
1954	51	59	153	677	460	716	532	986	355	435	82	49	49	58
1955	58	66	90	81	163	316	427	1,157	1,667	533	120	34	35	53
1956	68	159	515	1,249	1,183	434	1,184	1,474	1,164	259	67	42	42	40
1957	61	100	111	636	151	928	1,539	1,667	1,210	189	52	35	33	45
1958	75	100	175	609	753	1,695	539	2,229	1,183	216	56	31	37	47
1959	53	136	462	1,133	1,431	845	825	1,142	669	215	54	31	46	124
1960	246	246	622	212	211	644	1,198	1,119	1,061	263	51	41	45	42
1961	63	105	773	265	286	1,533	1,420	915	673	197	44	28	44	44
1962	64	82	119	408	612	421	867	1,425	752	250	53	36	38	44
1963	124	112	438	549	206	1,060	528	1,075	512	107	45	33	34	44
1964	45	122	240	226	364	432	530	1,370	941	427	89	48	46	51
1965	61	71	163	1,686	1,739	1,574	634	1,454	611	304	84	63	54	64
1966	56	62	77	77	188	254	794	769	276	103	57	33	38	42
1967	56	70	195	611	961	611	599	694	1,025	222	47	27	32	37
1968	60	97	104	644	430	1,323	439	385	198	100	40	43	44	73
1969	85	302	529	532	1,339	540	936	2,127	993	230	85	29	28	41
1970	60	71	65	207	2,088	991	972	1,100	1,154	367	60	31	46	50
1971	90	193	447	368	1,057	847	723	949	753	534	85	36	53	48
1972	63	201	480	845	851	1,216	2,672	1,155	1,182	334	66	36	37	47
1973	58	82	108	470	481	286	461	446	269	67	35	28	35	54
1974	58	602	822	1,786	1,370	969	1,309	2,347	1,551	892	135	52	44	40
1975	54	71	83	267	1,467	860	1,220	1,197	1,745	468	125	61	50	45
1976	83	129	343	1,480	1,250	728	878	1,876	1,151	268	73	76	55	56
1977	65	84	80	79	99	107	410	854	319	120	43	37	60	76
1978	95	121	568	1,203	816	869	1,035	871	524	130	83	51	65	59
1979	59	71	81	339	178	1,026	1,232	1,516	1,197	193	55	49	50	43
1980	69	86	163	340	594	646	877	971	551	358	83	49	56	62
1981	82	118	153	702	288	1,148	745	925	655	492	100	44	39	49
1982	71	74	182	627	967	2,375	1,744	1,751	1,535	331	112	50	51	68
1983	108	179	241	770	1,040	1,249	1,644	927	815	172	87	53	51	57
1984	63	106	209	504	1,199	839	1,814	1,449	1,445	949	120	62	65	62
Average	78	155	306	631	759	922	1,014	1,286	941	339	77	42	44	52

Table 7-4.--Historic Average Monthly Flows--Umatilla River at Yoakum Gauge
(cubic feet per second)

Year	OCT	NOV 15	NOV 30	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT 15	SEPT 30
1947	126	281	764	1,782	861	924	999	1,178	524	409	378	302	236	50
1948	118	776	1,088	1,032	983	1,142	1,062	2,500	3,446	923	392	358	277	323
1949	88	107	235	492	171	1,353	2,017	2,434	1,291	416	397	364	191	58
1950	71	88	199	289	558	1,466	1,600	1,812	1,409	1,220	411	351	308	110
1951	90	407	443	931	1,215	1,742	1,347	1,520	731	522	371	341	273	186
1952	219	225	324	421	368	920	990	2,018	1,019	358	360	345	304	96
1953	49	68	76	97	1,167	1,458	1,422	2,139	1,255	876	425	386	273	254
1954	63	83	188	735	492	778	602	1,131	424	576	418	334	305	61
1955	65	77	107	95	178	348	480	1,357	2,041	639	387	401	353	101
1956	72	148	541	1,350	1,333	585	1,695	1,941	1,614	459	449	337	278	112
1957	65	109	124	636	171	923	1,647	1,852	1,396	419	402	357	308	55
1958	91	126	223	708	823	1,895	684	3,322	1,552	454	419	386	296	104
1959	58	138	450	1,118	1,419	989	982	1,503	839	401	426	416	287	163
1960	264	282	644	241	237	727	1,346	1,298	1,250	487	456	373	339	57
1961	78	113	773	298	318	1,666	1,490	990	735	413	445	404	150	47
1962	67	88	118	404	658	414	900	1,562	868	427	384	354	154	50
1963	125	117	449	608	261	1,334	609	1,320	737	433	369	281	154	55
1964	53	131	256	247	408	484	573	1,566	998	460	301	304	105	90
1965	72	83	170	2,054	2,285	2,002	613	1,639	685	423	381	356	201	216
1966	82	100	109	97.5	219	278	844	877	373	287	284	222	83.8	44
1967	57	76	244	604	956	640	620	764	1,287	372	350	310	134	58
1968	58	92	100	678	471	1,414	487	404	256	244	253	178	73.0	76
1969	77	296	570	602	1,364	613	978	2,541	1,220	348	342	307	211	222
1970	82	94	87	260	2,066	1,155	1,274	1,450	1,381	455	358	356	263	193
1971	97	184	439	356	1,278	1,016	852	1,206	823	627	386	382	221	147
1972	79	194	522	1,020	1,050	1,767	3,654	1,611	1,413	476	403	347	261	237
1973	71	97	122	509	562	333	497	517	328	276	221	123	34	58
1974	61	667	938	2,025	1,740	1,345	1,753	3,334	1,892	819	424	368	317	292
1975	106	98	116	330	1,656	955	1,483	1,530	2,221	609	425	352	261	247
1976	113	146	371	1,740	1,848	862	1,053	2,511	1,251	381	421	359	303	281
1977	113	102	96	97	118	115	413	895	355	321	241	137	63	73
1978	100	120	590	1,386	1,026	1,010	1,320	1,291	811	369	358	267	164	173
1979	66	77	92	405	217	1,501	1,688	2,553	1,674	380	350	288	225	154
1980	85	110	205	371	764	859	1,143	1,260	782	584	369	312	258	212
1981	100	138	187	903	380	1,715	1,109	1,572	937	790	351	333	288	245
1982	86	94	250	805	1,215	3,058	2,183	2,115	1,570	483	359	313	252	171
1983	135	221	275	901	1,449	1,750	2,676	1,437	1,330	406	329	324	244	192
1984	88	142	238	512	1,396	1,051	2,643	2,282	1,820	1,259	451	359	270	213
Average	92	171	335	713	886	1,121	1,256	1,664	1,172	521	375	326	229	144

Table 7-5.--Estimated Historic Average Monthly Flows--Umatilla River at Echo
(cubic feet per second)

Year	OCT	NOV 15	NOV 30	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT 15	SEPT 30
1947	136	109	602	1,582	808	757	850	738	124	155	110	90	76	81
1948	78	613	946	902	847	1,033	967	2,141	3,281	629	128	121	123	153
1949	132	63	123	387	200	1,421	1,863	2,021	792	127	116	108	84	95
1950	68	47	92	131	543	1,406	1,446	1,417	924	844	89	99	90	77
1951	96	285	306	781	1,142	1,696	1,354	1,140	307	205	100	96	97	68
1952	192	96	177	302	346	820	853	1,648	556	101	101	89	102	73
1953	59	47	47	51	1,020	1,326	1,149	1,618	800	493	105	112	102	103
1954	80	57	76	549	395	635	442	678	109	308	104	107	100	89
1955	88	107	73	52	57	155	166	881	1,576	22	104	100	104	98
1956	118	115	494	1,168	1,220	638	1,557	1,487	1,205	140	113	109	101	81
1957	99	136	70	541	101	821	1,443	1,488	998	97	103	102	98	72
1958	88	75	113	585	680	1,746	598	3,053	1,094	106	98	109	111	76
1959	81	180	302	932	1,322	844	845	1,089	406	112	107	119	122	137
1960	274	121	526	113	244	553	1,142	803	817	126	109	128	127	80
1961	55	74	605	129	141	1,476	1,367	502	287	97	95	109	90	65
1962	73	63	62	260	515	252	662	1,032	520	106	85	97	93	73
1963	102	44	262	423	190	1,246	396	985	384	96	90	85	73	85
1964	49	49	67	89	211	302	472	1,069	497	140	80	77	77	66
1965	79	45	80	1,885	2,150	1,977	519	1,261	265	142	125	109	87	77
1966	77	41	35	48	78	109	617	436	104	74	73	65	39	40
1967	48	48	63	447	789	567	249	306	761	91	75	73	51	38
1968	62	49	37	556	265	1,125	170	68	50	49	54	58	49	42
1969	75	211	386	446	1,338	535	809	2,185	733	138	105	96	89	113
1970	107	80	38	149	1,917	983	1,052	1,049	905	129	99	101	112	83
1971	126	96.2	255	202	1,140	900	628	734	364	291	94	96	111	83
1972	99	122	330	823	900	1,652	3,533	1,140	901	139	102	95	94	88
1973	86	70	45	467	497	120	176	74	71	51	53	26	14	25
1974	26	523	692	1,825	1,771	1,255	1,477	2,920	1,365	373	119	100	99	89
1975	67	105	72	219	1,527	783	1,296	1,157	1,553	202	112	99	83	63
1976	112	120	187	1,467	1,581	769	824	2,064	775	92	104	123	86	71
1977	65	36	310	41	87	32	163	390	51	32	30	14	11	12
1978	19	118	435	1,131	774	735	1,016	919	440	62	89	81	43	38
1979	31	82	49	240	166	1,423	1,370	2,176	1,277	88	71	62	51	31
1980	43	62	54	149	675	777	911	1,052	400	207	71	53	60	49
1981	78	139	194	767	182	1,459	831	1,276	509	578	61	53	62	64
1982	104	101	120	598	1,133	2,890	1,952	1,795	1,051	122	67	65	41	59
1983	83	190	113	768	1,233	1,559	2,465	1,166	867	102	81	84	71	63
1984	75	128	146	503	1,489	936	2,505	2,025	1,396	841	109	75	61	68
Average	88	122	219	571	781	992	1,056	1,263	751	208	93	89	81	73

Table 7-6.--Historic Average Monthly Flows--Umatilla River at Umatilla
(cubic feet per second)

Year	OCT	NOV 15	NOV 30	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT 15	SEPT 30
1947	150	202	699	1,621	870	829	845	588	154	67	35	25	27	58
1948	86	689	1,067	1,024	939	1,083	991	2,120	3,362	552	41	57	105	116
1949	148	153	213	501	276	1,632	1,964	1,872	652	31	20	35	31	43
1950	64	135	164	202	596	1,537	1,508	1,363	797	805	12	51	65	48
1951	151	386	397	870	1,282	1,838	1,430	1,054	218	140	32	21	38	14
1952	191	196	284	394	421	909	829	1,501	431	23	27	19	42	22
1953	46	72	129	127	1,057	1,440	1,150	1,482	726	417	26	68	78	73
1954	102	158	158	613	486	736	456	560	13	221	25	35	26	88
1955	51	194	160	131	132	219	172	737	1,479	116	28	45	44	45
1956	49	186	595	1,266	1,360	769	1,703	1,376	1,108	44	14	44	32	15
1957	78	244	162	634	166	880	1,499	1,408	915	40	12	37	21	15
1958	161	183	223	686	765	1,926	695	3,056	980	11	8	46	50	8
1959	50	284	400	998	1,428	948	894	981	318	35	19	25	95	142
1960	331	207	613	211	326	634	1,132	640	726	34	17	66	73	18
1961	15	154	688	225	226	1,527	1,395	405	218	24	19	25	59	5
1962	16	161	152	324	563	348	706	891	442	34	19	9	25	18
1963	137	139	330	502	261	1,415	440	942	333	7	9	20	7	10
1964	30	156	164	175	282	382	433	936	378	67	8	16	9	8
1965	26	72	126	1,937	2,366	2,305	566	1,167	176	53	35	18	6	4
1966	50	73	103	113	141	159	634	289	6	6	10	6	4	2
1967	11	108	116	539	860	660	248	188	619	9	6	6	5	6
1968	60	123	106	552	311	1,123	165	5	4	3	4	4	4	4
1969	84	263	408	506	1,381	641	897	2,188	604	54	26	13	18	50
1970	148	168	112	197	1,981	1,088	1,106	943	839	25	4	5	76	14
1971	138	186	333	291	1,191	943	628	602	250	198	24	18	87	32
1972	95	200	376	824	916	1,663	3,678	1,023	795	42	17	17	21	26
1973	118	166	125	536	598	180	236	8	7	7	5	6	5	6
1974	16	516	690	1,948	2,061	1,351	1,420	2,799	1,255	296	21	18	16	27
1975	76	184	148	275	1,631	873	1,331	996	1,270	59	15	16	11	13
1976	118	214	250	1,442	1,541	813	784	1,922	645	13	11	17	7	5
1977	56	118	105	106	139	87	154	268	2	2	3	3	3	1
1978	4	165	448	1,177	757	727	1,031	784	344	10	24	33	19	10
1979	21	148	118	292	164	1,475	1,445	2,194	1,205	1	1	2	1	1
1980	56	137	114	216	720	866	1,007	1,058	369	181	24	3	17	59
1981	108	216	267	818	252	1,487	890	1,202	431	561	2	1	2	62
1982	173	174	190	717	1,213	2,994	2,102	1,801	907	45	27	5	46	143
1983	180	308	195	840	1,231	1,565	2,714	1,160	836	26	27	24	54	71
1984	125	212	237	646	1,762	1,065	2,734	2,180	1,395	776	11	8	40	77
Average	93	201	295	644	859	1,082	1,106	1,176	660	133	17	22	33	36

Environmental Consequences

McKay Reservoir.--With the Recommended Plan, SID storage in McKay Reservoir (an average of 19,320 acre-feet) would be used to meet fall chinook flows in the Umatilla River from September 16 to November 15. Operation studies are premised on use of all storage water each calendar year. With this operation, reservoir levels would be lower during the December through March filling season, essentially the same during April and May, and would be higher during June through November when compared to future without conditions. Reservoir elevation differences would be most significant in July, August, and September. The reservoir would be maintained at higher levels than at present during the summer months. Thus, the surface area would be larger during the summer months, and some additional evaporation would occur. Storage releases would be lower than at present during the irrigation season and higher during September 16 to November 15. The following table compares average end-of-month contents for the future without and Recommended Plan condition.

Table 7-7.--Comparison of Average Future Without Project and Recommended Plan--McKay Reservoir Operation, End of Period Content, and Elevation

Period	Future Without (A)		Recommended Plan (B)		Difference (B-A)	
	acre- feet	feet elevation	acre- feet	feet elevation	acre- feet	feet elevation
October	24,360	1261.6	21,340	1258.0	-3,020	-3.6
November 15	25,090	1263.6	18,340	1252.4	-6,750	-11.2
November 30	26,920	1267.0	18,840	1253.5	-8,080	-13.5
December	35,730	1280.1	27,420	1268.4	-8,300	-11.7
January	46,130	1293.6	39,030	1284.8	-7,100	-8.8
February	55,210	1303.6	49,220	1297.1	-5,990	-6.5
March	61,030	1309.9	58,190	1306.9	-2,840	-3.0
April	63,710	1312.7	62,480	1311.5	-1,230	-1.2
May	63,330	1312.2	63,480	1312.5	+150	+0.3
June	57,090	1305.7	62,650	1311.4	+5,560	+5.7
July	43,050	1289.6	54,070	1303.0	+11,020	+13.4
August	29,780	1270.0	46,240	1294.6	+16,460	+24.6
September 15	26,360	1264.4	44,220	1292.2	+17,860	+27.8
September 30	24,050	1260.6	36,130	1281.9	+12,080	+21.3

Future without and future with project storage is greater in all months (except May) in the revised McKay Reservoir operation than reported in the PR/DES. This reflects greater irrigation water use efficiency in the basin in the more recent period of record. Thus, storage releases are reduced and additional storage carryover could occur. Reservoir end-of-month elevations also change. Water surface elevations would be lower from October through April and higher May through September than those described in the PR/DES.

Cold Springs Reservoir.--In the Recommended Plan the present filling schedule for Cold Springs Reservoir would be modified to permit water now diverted from the Umatilla River to fill Cold Springs Reservoir to remain in the river to meet fish flow needs. Diversions from the river during October through May would be limited to runoff in excess of recommended fish flows. The water needed to fill the reservoir, beyond that provided by permissible diversions, would be pumped from the Columbia River. HID and SID would have their water supply needs met in this way.

Cold Springs Reservoir would not be filled above 26,000 acre-feet until after March 1 for flood control purposes and would be reduced to 24,000 acre-feet by August 1 and stay below that level until the end of December to maintain riparian habitat for wildlife refuge needs.

The following table shows the operation of Cold Springs Reservoir for an average year for the future without and Recommended Plan conditions.

Table 7-8.--Comparison of Average Future Without and Recommended Plan Cold Springs Reservoir Operation

Period	Future Without (A)		Recommended Plan (B)		Difference (B-A)	
	acre- feet	feet elevation	acre- feet	feet elevation	acre- feet	feet elevation
October	1,430	571.6	4,330	583.8	+2,900	+12.2
November 15	5,520	586.0	5,320	585.7	-200	-0.3
November 30	9,260	592.2	6,570	587.7	-2,690	-4.5
December	19,740	605.5	15,350	599.8	-4,390	-5.7
January	24,080	610.0	21,130	606.5	-2,950	-3.5
February	26,270	611.9	24,350	609.8	-1,920	-2.1
March	38,040	621.3	36,010	619.5	-2,030	-1.8
April	38,160	621.4	36,450	619.9	-1,710	-1.5
May	37,520	620.9	36,290	619.8	-1,230	-1.1
June	32,420	616.9	32,080	616.6	-340	-0.3
July	18,240	603.5	18,010	603.3	-230	-0.2
August	6,380	585.0	6,520	587.6	+140	+2.6
September 15	1,580	570.8	4,060	583.2	+2,480	+12.4
September 30	1,180	569.7	4,040	583.2	+2,860	+13.5

Years of sedimentation have reduced storage capacity from about 50,000 acre-feet to an estimated 38,000 acre-feet. This reduction is reflected in the revised operation and the result is that both without and with project storage is less than presented in the PR/DES. However, reservoir drawdown and filling relationships remain the same. As described in the PR/DES, average end-of-month elevations would be lower from November through June/July and higher from July/August through October than under present conditions.

Umatilla River above Pendleton.--There would be no change from the present condition.

Umatilla River below Pendleton.--With the Recommended Plan, the following would occur in the Umatilla River below Pendleton:

1. HID would not divert to fill Cold Springs Reservoir until minimum streamflows have been met. Storage supplies not met by this restriction would be provided from the Columbia River.

2. SID would not divert natural flow water until minimum streamflows have been met, and the district would not take stored water from McKay Reservoir. The Columbia River pump would provide an exchange supply.

3. WEID would limit its diversions during April through June, September, and October by up to 140 ft³/s so that minimum streamflows can be met. The district would receive an exchange supply from the new West Extension pumping facilities located near the mouth of the Umatilla River.

4. SID water in McKay Reservoir would be released for fisheries mostly between September 16 and November 15.

5. CLWID would continue with its present operation. If target fish flows are not met, the district would be asked to curtail diversions.

Under these conditions, present flow patterns in the Umatilla River below Pendleton would be greatly modified. Tables 7-9 through 7-11 compare the future without and Recommended Plan operation as measured at Yoakum, Echo, and Umatilla.

Table 7-9.--Comparison of Average Future Without Project With Recommended Plan Flows--Umatilla River at Yoakum

Month	Recommended	Future without Project			Recommended Plan		
	Minimum Flow	Average Flow	Number of Shortages ^{1/}	Average Shortage	Average Flow	Number of Shortages ^{1/}	Average Shortage
	ft ³ /s	ft ³ /s		ft ³ /s	ft ³ /s		ft ³ /s
October	300	89	38	211	331	4	10
November 1-15	300	171	35	154	297	11	29
November 16-30	250	335	20	52	378	10	24
December	250	713	6	16	716	5	16
January	250	903	7	12	883	6	11
February	250	1,139	1	4	1,119	1	4
March	250	1,328	0	0	1,277	0	0
April	250	1,748	0	0	1,722	0	0
May	250	1,210	0	0	1,188	1	1
June	250	512	1	0	421	13	15
July	0	293	--	--	202	--	--
August	0	237	--	--	145	--	--
September 1-15	0	143	--	--	88	--	--
September 16-30	250	121	36	130	307	2	10
							+186

^{1/} Based on 38 years of record (1947-84)

Revised Table 7-10.--Comparison of Average Future Without Project With Recommended Plan Flows--Umatilla River at Echo

Month	Recommended	Future without Project			Recommended Plan			
	Minimum Flow	Average Flow	Number of Shortages ^{1/}	Average Shortage	Average Flow	Number of Shortages ^{1/}	Average Shortage	Average Flow Change
	ft ³ /s	ft ³ /s		ft ³ /s	ft ³ /s		ft ³ /s	ft ³ /s
October	300	41	38	259	289	4	13	+248
November 1-15	300	59	36	253	299	10	27	+240
November 16-30	250	123	32	172	264	15	28	+141
December	250	481	16	79	514	13	25	+33
January	250	882	7	21	837	6	9	-45
February	250	1,150	1	6	1,110	1	3	-40
March	250	944	6	30	898	6	17	-46
April	250	1,308	3	13	1,279	4	8	-96
May	250	699	8	31	706	7	16	+7
June	250	122	330	164	190	32	96	+68
July	0	44	--	--	44	--	--	--
August	0	39	--	--	40	--	--	--
September 1-15	0	26	--	--	29	--	--	--
September 16-30	250	22	38	228	256	2	11	+234

^{1/} Based on 38 years of record (1947-84)

Revised Table 7-11.--Comparison of Average Future Without Project With Recommended Plan Flows--Umatilla River at Umatilla

Month	Recommended	Future without Project			Recommended Plan			
	Minimum Flow	Average Flow	Number of Shortages ^{1/}	Average Shortage	Average Flow	Number of Shortages ^{1/}	Average Shortage	Average Flow Change
	ft ³ /s	ft ³ /s		ft ³ /s	ft ³ /s		ft ³ /s	ft ³ /s
October	300	67	38	233	317	4	12	+250
November 1-15	300	143	35	172	382	5	13	+239
November 16-30	250	201	30	110	342	7	10	+141
December	250	554	14	50	587	4	7	+33
January	250	960	5	12	915	2	4	-45
February	250	1,239	1	5	1,200	1	2	-39
March	250	1,008	6	281	962	6	14	-46
April	250	1,257	4	22	1,241	5	9	-16
May	250	644	11	48	672	6	11	-28
June	250	79	33	205	227	27	57	-148
July	0	1	--	--	1	--	--	--
August	0	4	--	--	6	--	--	--
September 1-15	0	13	--	--	16	--	--	--
September 16-30	250	15	38	235	251	2	11	+236

^{1/} Based on 38 years of record (1947-84)

The revised operation model results in generally improved future without and future with flow conditions in comparison to those presented in the PR/DES. This can be illustrated by comparing the percent of time (months or half-month periods) when average monthly flows are less than the recommended minimum target flows of 250 ft³/s or 300 ft³/s. The flow periods are September 16-30, October, November 1-15, November 16-30, December, January, February, March, April, May, and June. The PR/DES operation used 44 years of record (1935-78), while the PR/FES hydrology model uses a more recent 38-year period of record (1947-84). The tabulation below presents the comparison.

<u>Station</u>	<u>Percent of Flow Periods With Shortages</u>			
	<u>PR/DES</u>		<u>PR/FES</u>	
	<u>Future Without</u>	<u>Future With</u>	<u>Future Without</u>	<u>Future With</u>
Yoakum (river-mile 37)	38	30	34	13
Echo (river-mile 27)	61	41	52	24
Umatilla (river-mile 2)	57	20	51	17

Target minimum flows during the critical September 16 through November period for fall chinook migration and spawning are essentially met or exceeded on average at Yoakum, Echo, and Umatilla. Out of a possible 152 flow shortage periods at each station, 27 shortages are experienced at Yoakum, 31 at Echo, and 18 at Umatilla.

From December through May, minimum target flows are normally met at the three flow stations with the month of December having the most shortage occurrences.

Flow shortage occurrences are shown to increase in June in the revised hydrology model. This, in part, is a consequence of including the Prior/Brown/Teel water permit diversions in the revised hydrology model. June is a high irrigation demand month throughout the Umatilla basin. Using the revised operation, the Recommended Plan had 34 percent flow shortage in June at Yoakum, 84 percent at Echo, and 71 percent at Umatilla compared to 11 percent, 66 percent, and 50 percent, respectively, estimated for these stations from the PR/DES. June is projected to be an important month for upstream spring chinook adult and downstream smolt migration in the main stem Umatilla River.

Overall, flow shortages are most common in the Echo reach, due primarily to substantial and nearly year-round diversions.

Even during those times when minimum flows are not achieved, the actual severity of flow shortage in all reaches below Pendleton are dramatically decreased with the project from conditions without the project.

Fisheries

Existing Conditions

Anadromous Fish.--Inadequate streamflow and passage conditions are limiting factors to natural production of salmon and steelhead in the basin.

Umatilla River.--

Summer Steelhead.--Summer steelhead is the primary anadromous fish species in the basin. Annual run sizes past Three Mile Falls Diversion Dam have fluctuated widely from 700 to over 3,000 fish as shown on table 7-12. There is a correlation between good fall and winter flow conditions and successful fish passage at the diversion dam.

Adult steelhead use the main stem Umatilla River primarily as a migration corridor to headwaters areas. Adults begin migrating upstream in October or November, and peak migration occurs between November and March. Most steelhead spawn in Umatilla River tributaries in April and May. The Anadromous Fish Spawning and Rearing Areas map in the PR/DES shows the major steelhead spawning streams in the basin, and the distribution of steelhead in major streams is estimated below.

Meacham Creek	40 percent
South Fork Umatilla River	17 percent
North Fork Umatilla River	10 percent
Main stem Umatilla River	10 percent
Squaw Creek	5 percent
Birch Creek	15 percent
Other tributaries	3 percent

The steelhead run has been increasing in recent years. In the last 4 years of record, an average of 2,895 fish have been counted at Three Mile Falls Diversion Dam. This compares to an average of 2,064 fish during the 18 years of count.

Marginal survival of juveniles from irrigation diversion mortalities and low flows are probably the main factor limiting the steelhead population. To compensate for poor juvenile survival, the State has released hatchery reared smolts into the river since 1981.

Egg incubation from naturally spawning fish occurs in the basin from April through July. Most rearing takes place in the same tributary streams where spawning was completed, and juveniles typically spend 2 years rearing in freshwater before migrating to the Pacific Ocean as smolts. An estimated 50,000-100,000 native smolts migrate from the basin annually, and return as adults after an average of 2 years in the ocean.

Table 7-12.--Umatilla River Summer Steelhead Counts at
Three Mile Falls Diversion Dam^{1/}

Year	October	November	December	January	February	March	April	May	Total
1966-67	0	1	110	288	394	376	338	271	1,778
1967-68	44	174	60	281	357	14	0	0	930
1968-69	0	200	0	4	95	243	543	832	1,917
1969-70 ^{2/}	0	0	39	7	537	407	1,299	0	2,298
1970-71 ^{3/}	0	249	404	19	--	--	--	--	NA
1971-72 ^{3/}	--	--	--	--	--	--	--	--	NA
1972-73 ^{4/}	0	0	0	32	204	1,821	0	0	2,057
1973-74 ^{5/}	0	680	557	558	284	478	0	0	2,557
1974-75 ^{6/}	0	0	264	315	1,476	59	40	17	2,171
1975-76 ^{7/}	0	0	258	966	1,190	108	12	0	2,584
1976-77 ^{8/}	0	22	100	163	21	222	25	0	553
1977-78 ^{9/}	0	0	828	1,432	641	179	0	0	3,080
1978-79 ^{9/}	--	--	--	--	--	4	--	--	NA
1979-80	0	0	870	147	427	609	269	45	2,367
1980-81	0	210	492	319	47	142	78	10	1,292
1981-82	34	91	155	77	73	178	129	31	768
1982-83	32	95	133	128	225	276	280	5	1,264
1983-84	105	502	251	296	642	216	45	5	2,062 ^{10/}
1984-85	--	461	10	64	20	1,860	1,001	20	3,436 ^{10/}
1985-86	473	440	67	1,140	517	261	61	--	2,959 ^{10/}
1986-87	346	1,220	355	68	483	364	270	18	3,124 ^{10/}
18-year average = 2,064									

1/ SOURCE: Oregon Department of Fish and Wildlife

2/ Counter damaged January 5 and not replaced

3/ Counter not installed

4/ In addition to the 1973-74 total, 83 steelhead were taken as hatchery brood stock.

Twelve of these (8 females and 4 males) were taken in January, and the other 71 (50 females and 21 males) were taken in February.

5/ One fish shown for May was passed upstream manually on June 4.

6/ Good numbers of fish passed upstream before the counter was operable on December 24. Therefore, this count was quite low. The ladder was opened October 22.

7/ Extremely low flows prevented steelhead passage during much of the season. A total of 205 steelhead (98 females and 107 males) were transported upstream near Rieth. Also, the counter was out, and passage conditions were good for a 2-week period in late March-early April. Probably at least 300 steelhead passed during that time.

8/ Counter did not operate the first 12 days after installation (November 30 to December 12). Counter damaged following March 10 count by vandalism.

9/ No count available. Counter was not calibrated accurately.

10/ Includes brood fish. Estimate is derived from the actual count in the West Bank ladder.

Steelhead sport fishing provides an important recreational activity, with most activity downstream of Three Mile Falls Diversion Dam. Records indicate that an average of over 700 fish are harvested each year.

Fall Chinook.--A self-sustaining run of fall chinook has not existed in the Umatilla River since shortly after the construction of Three Mile Falls Diversion Dam. However, an abundance of potential fall chinook habitat exists in the main stem Umatilla River and in Meacham Creek downstream from the North Fork Meacham Creek. Recognizing this, the State and tribes have been releasing juvenile fall chinook in the Umatilla River since 1982 in the following numbers.

1982	3,828,526	Fish of tule stock
1983	100,564	Fish of upriver bright stock
1984	860,822	Fish of upriver bright stock
1985	225,000	Fish of upriver bright stock
1986	225,000	Fish of upriver bright stock
1987	1,800,000	Fish of upriver bright stock

During the fall of 1984, adult tule and upriver bright fall chinook returned to the mouth of the Umatilla River from the 1982 and 1983 hatchery releases. The tules were 10 to 15 pounds and were mature spawners. The upriver brights were immature males (jacks) of 20-24 inches in length. Due to channel work in progress below Three Mile Falls Diversion Dam, these fish were unable to move above the river mouth. In the fall of 1985, the Oregon Department of Fish and Wildlife (ODFW) evaluated chinook salmon and early steelhead migration through the modified channel reach, and returning fish demonstrated the potential for restoring chinook runs when streamflow and passage problems are corrected. During the fall of 1986, about 440 returning fall chinook were counted through the west bank ladder at Three Mile Falls Diversion Dam. A portion of these fish were mature adults and spawning was observed near river-mile 7. Most fish returned in November when Umatilla River flows were higher. Fishery agencies believe that without additional flows in the months of September, October, and November, sustained fall chinook natural production will not occur because it is unlikely that adult fish can consistently migrate past Three Mile Falls Diversion Dam. Interim measures such as a water exchange pumping program with WEID plus trapping and transporting adult fish upstream could be employed pending a permanent solution to the chronic low flow problem.

Low streamflows in the main stem Umatilla River from September through early November and adult and juvenile passage problems at diversion dams are the principal constraints to restoration of fall chinook natural production in the Umatilla River. Figure 7-1 and table 7-13 illustrate the coincidence of the upriver bright fall chinook migration in the Columbia River near the Umatilla River and the present low flow conditions that occur in the Umatilla River in the fall of each year.

With adequate flows, adult fall chinook would enter the Umatilla River in September through December, with most spawning expected to occur in November and December. Egg incubation would occur from November to mid-March, with rearing between February and the end of May. Fingerlings would migrate

downstream to the Columbia River in March through June. The Anadromous Fish Spawning and Rearing Areas map (in the PR/DES "Need for Action" chapter) shows the stream reaches that have potential for fall chinook.

Revised Table 7-13.--Umatilla River Streamflows--Present Conditions^{1/}

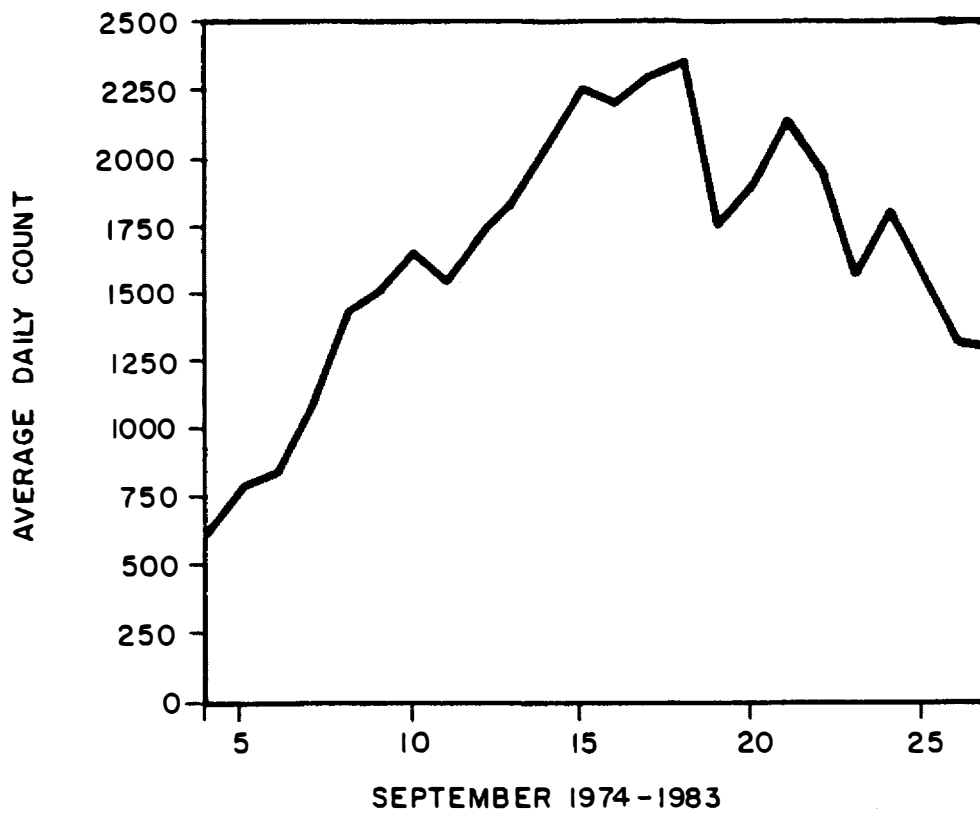
Location	September 16-30		October		November 1-15		November 16-30		May		June	
	250 ft ³ /s Minimum Flow Needed		300 ft ³ /s Minimum Flow Needed		300 ft ³ /s Minimum Flow Needed		250 ft ³ /s Minimum Flow Needed		250 ft ³ /s Minimum Flow Needed		250 ft ³ /s Minimum Flow Needed	
	Years of Record		Years of Record		Years of Record		Years of Record		Years of Record		Years of Record	
	Average Flow	Minimum Flow Met	Average Flow	Minimum Flow Met	Average Flow	Minimum Flow Met	Average Flow	Minimum Flow Met	Average Flow	Minimum Flow Met	Average Flow	Minimum Flow Met
	ft ³ /s		ft ³ /s		ft ³ /s		ft ³ /s		ft ³ /s		ft ³ /s	
Umatilla gauge river-mile 2.1	15	0	67	0	143	2	201	8	644	27	79	5
Maxwell Diversion river-mile 15	47	0	64	0	98	2	158	7	730	31	120	6
Echo gauge river-mile 26	22	0	41	0	59	2	123	6	699	30	122	7
Feed Canal Diversion river-mile 28	95	0	102	0	64	2	180	11	944	34	308	18
Yoakum gauge river-mile 37	121	2	89	0	171	3	335	18	1,210	38	512	37

SOURCE: Reclamation Operation Study, November 19, 1986

^{1/} Based on 38 years of record, 1947-84

Spring Chinook.--Spring chinook are not presently found in the Umatilla basin. This species is highly regarded as a sport fish and for its eating quality, and the State and tribes want to establish a spring chinook run through a planting program. Juvenile spring chinook were first introduced into the Umatilla River system during the spring of 1986 (400,000 yearlings). Adults from this first plant would be expected to return to the Umatilla River in the spring of 1988. Annual stocking of juvenile fish will continue. Constraints to reestablishment are similar to the main stem and tributary habitat deficiencies associated with summer steelhead. Due to irrigation diversions, June main stem flows (see table 7-13) are seldom sufficient downstream of Westland Diversion Dam to provide good upstream migration and passage conditions for adult spring chinook. However, based on run timing in other river systems, the majority of spring chinook adults would run upriver in April and May before June irrigation depletions preclude passage. Later-arriving fish could be harvested at Three Mile Falls Diversion Dam or collected and transported by truck for release near spawning sites. There is a lack of deep pools in the upper drainages for over-summering adults, although some potential spring chinook adult habitat does exist in the upper main stem, lower North Fork and South Fork Umatilla River, and in lower Meacham Creek.

Under desirable conditions, spring chinook adults would enter the Umatilla River in April, May, and June to migrate to upstream resting pools near spawning grounds. Adults would hold in these pools until spawning commenced in late August and September. Most juveniles would rear for 1 year prior to downstream migration in April, May, and June. Potential spawning areas for spring chinook are shown on the Anadromous Fish Spawning and Rearing Areas map in the PR/DES "Need for Action" chapter.



SOURCE: Umatilla River Basin Coordination Act Report, National Marine Fisheries Service, July 1984.

McNARY DAM
DAILY AVERAGE FISH PASSAGE
CHINOOK SALMON



Table 7-14 summarizes various life stages for steelhead and potential fall and spring chinook runs in the Umatilla River basin and shows periods when flows are deficient in meeting migration, spawning, and rearing needs. In dry years, deficient flow conditions can be of longer duration.

Table 7-14.--Timing of Existing and Potential Umatilla River Anadromous Fish Life Cycle Periods

Species	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Existing summer steelhead												
Adult upstream migration		*****	-----									
Adult spawning								-----				
Egg incubation								-----	*****			
Adult downstream migration								-----	*****			
Juvenile rearing (2 years)	*****	-----								*****		
Juvenile downstream migration								-----	*****			
Potential fall chinook												
Adult upstream migration	*****	-----										
Adult spawning		*****	-----									
Egg incubation			-----									
Juvenile rearing and downstream migration							-----		*****			
Potential spring chinook												
Adult upstream migration								-----	*****			
Adult spawning	*****										*****	
Egg incubation	*****	-----									*****	
Juvenile rearing (1 year)	*****	-----								*****		
Juvenile downstream migration								-----	*****			

***** = Periods of Umatilla River or tributary flow deficiencies in life cycle

Table 7-14a provides an estimate of adult anadromous fish returns to the Umatilla River, under current stocking levels and water limitations. These estimates were developed by the ODFW for fishery evaluation and planning purposes and published in a 1986 report entitled "A Comprehensive Plan for Rehabilitation of Anadromous Fish Stocks in the Umatilla River."

Table 7-14a.--Adult Anadromous Fish Returns to the Umatilla River--Existing Conditions

Species	Return Estimates
Natural production	
Steelhead	682
Fall chinook	3
Spring chinook	41
Hatchery production	
Steelhead	2,080
Fall chinook	3
Spring chinook	565

Resident Fish.--Resident fish species are found in the main stem Umatilla River, Cold Springs and McKay Reservoirs, and Meacham Creek basin.

The lower main stem Umatilla River provides limited habitat for warm water game fish including largemouth and smallmouth bass, bluegill sunfish, white crappie, and brown bullhead. Estimated fishing use is about 400 angler-days per year.

Increasingly popular warm water fisheries have developed at Cold Springs and McKay Reservoirs. Habitat for largemouth bass, black and white crappie, bluegill sunfish, brown bullhead, and channel catfish exist at both areas. The state has planted rainbow trout in both reservoirs in the past but none have been released recently.

As part of the overall refuge management at the two reservoirs, fishing use is regulated to insure compatibility with other refuge uses. Table 7-15 shows fishing use at the reservoirs.

Table 7-15.--Fishing User-days at Cold Springs and McKay Reservoirs^{1/}

Month	Cold Springs Reservoir		McKay Reservoir	
	1983	1972-82	1983	1972-82
January	Closed	Closed	Closed	Closed
February	300	84	Closed	Closed
March	500	242	3,965	665
April	2,350	816	3,115	928
May	3,401	1,156	9,132	1,208
June	2,227	1,510	5,485	1,759
July	2,317	1,004	5,325	1,810
August	1,510	647	4,074	1,228
September	550	820	4,074	1,468
October	50	147	Closed	Closed
November	Closed	Closed	Closed	Closed
December	Closed	Closed	Closed	Closed
Total	13,205	6,426	35,170	9,066

^{1/} Information provided from Umatilla National Wildlife Refuge, Umatilla, Oregon Public Use Reports. The figures for 1972 to 1982 represent the monthly average use.

Nongame species throughout the basin include carp, squawfish, Pacific lamprey, dace, chiselmouth, reidside shiner, cottids, and suckers. Low flow and warm summer temperatures in the lower river encourage production of these species which compete with game species for cover and food.

Future Without Project Conditions

Anadromous Fish--Umatilla Basin Perspective Overview.--There is great interest in improving anadromous fish runs in the Umatilla Basin. The State and tribes have an aggressive restoration program underway and accordingly,

Bonneville Power Administration (BPA) has committed to substantial fishery improvements under the Northwest Power Planning Council's Fish and Wildlife Program. The following measures are scheduled for implementation in the near term future without Reclamation's project condition. They include:

1. Construction of the Umatilla Fish Hatchery near Irrigon, Oregon. This facility will produce summer steelhead and chinook salmon smolts for release into the Umatilla River. Construction is scheduled for completion in 1989. In the future, an additional hatchery will be constructed to provide more artificial production of chinook salmon for rivers in northeast Oregon (including the Umatilla). All these fish will be outplanted at Bonifer and Minthorn Springs and in the Umatilla River and its tributaries.

2. Improved adult fish passage, trapping, and counting facilities, and juvenile fish screens will be installed at Three Mile Falls Diversion Dam beginning in 1987. These facilities will be completed in 1988.

3. A 2,500 gallon fish tank truck will be acquired to haul salmon and steelhead during critical low water periods. Adults will be trapped at Three Mile Falls Diversion Dam and trucked upstream to tribal holding facilities or released into better flow reaches. Smolts will be taken at the Westland Dam juvenile trap facilities and trucked downstream for release into the Umatilla or Columbia Rivers. The new truck and haul program will be operational in 1988.

4. Fish habitat improvement projects in Umatilla basin tributaries will begin on Forest Service lands in 1987 and private and tribal lands in 1988. These instream and riparian habitat enhancement projects will increase natural spawning and rearing of salmon and steelhead in numerous headwater tributaries.

5. Fish screens will be installed at small irrigation diversion ditches on Birch Creek and the main stem Umatilla River.

6. Hatchery production, as described in Measure 1 above, will result in additional and continued future releases of fall chinook, and spring chinook salmon into the Umatilla River. Coho salmon will be released beginning in 1987 as part of the United States versus Oregon settlement--coho adults will begin to return in the fall of 1988.

7. Adult (fish ladders) and juvenile fish (screens) passage facilities will be upgraded at Furnish, Feed, Westland, and Maxwell diversion facilities. A new and expanded juvenile trap will be constructed in connection with fish screen facilities at Westland diversion works. Construction is scheduled to extend from 1988 to 1990.^{1/}

^{1/} Action 7 is presently programmed for funding under the Northwest Power Planning Council's Fish and Wildlife Program. These facilities are plan elements in the Recommended Plan. When these facilities are constructed under that program, their funding will be considered "early action" non-Federal cost-sharing contributions towards Reclamation's Umatilla Basin Project.

8. The Northwest Power Planning Council calls for BPA, beginning in 1987, to provide pumping power or repay operating and maintenance costs associated with an interim water exchange program (prior to construction of the Recommended Plan) to improve spring and fall fishery streamflows in the lower Umatilla River below Three Mile Falls Diversion Dam. This measure will enhance both upstream migration of salmon and steelhead adults and downstream passage of all species of smolts.^{1/}

Most of the above actions are associated with BPA's implementation and funding of the Northwest Power Planning Council's Fish and Wildlife Program for the Umatilla basin. Ultimately, over \$21 million could be spent by BPA on fish facility capital improvements under this program.

In 1985, ODFW staff completed a report entitled "A Comprehensive Plan for Rehabilitation of Anadromous Fish Stocks in the Umatilla River Basin" under contract with BPA. This document was written with substantial collaboration from State, Federal, and tribal fishery interests. BPA published this report in January 1986, and it is considered the most definitive evaluation of Umatilla River fishery problems, needs, solutions, and project benefits developed to date. This report is now being used as the basis for estimating anadromous fish run improvements expected for both the future without and future with Reclamation's Recommended Plan. Most of the following discussion on future without conditions has been derived from a combination of the ODFW Comprehensive Plan report and anticipated construction of fishery rehabilitation measures as directed under the council's Fish and Wildlife Program. Table 7-15a displays the estimated increase of adult spawner returns by species into the Umatilla River for the future without. This table also lists the future without fishery measures that are scheduled for completion between now and the early 1990's. The category I measures (except for United States versus Oregon, and small diversion screening) will be funded by BPA and represent a net estimated increase of 12,795 fish into the Umatilla River. Fish passage and trapping facilities listed in category II are also scheduled for BPA funding, but these elements and their costs have always been included as Bureau of Reclamation Recommended Plan facilities. Therefore, they are distinguished as early action, non-Federal cost-sharing components towards the Reclamation Umatilla Basin Project. Based on the ODFW Comprehensive Plan estimates, completion of fish facilities at Maxwell, Westland, Cold Springs, and Stanfield diversions will increase net returns by 11,219 fish. In total, implementation of all measures in table 7-15a will provide 24,014 more hatchery and natural run fish to the Umatilla River system. The increase in returns, by species, is discussed following table 7-15a:

^{1/} Based on the Northwest Power Planning Council's 1987 Columbia River Basin Fish and Wildlife Program.

Table 7-15a.--Incremental Future Without Adult Fish Returns
into the Umatilla River

Species	Category I Measures	
	Umatilla Fish Hatchery and new Northeastern Oregon Hatchery Production; Three Mile Falls Diversion Dam Passage Improvements and Trap; Trucking; Tributary Habitat Improvements; Reprogramming of Mitchell Act, John Day Hatchery Production, and United States versus Oregon Fish; Interim Pumping Program; Small Diversion Fish Screens	
		Category II Measures Maxwell, Westland, Cold Springs, Stanfield Juvenile and Adult Passage Improvements; Westland Juvenile Trap
Natural production		
Steelhead	800	1,482
Fall chinook	2,599	2,602
Spring chinook	260	301
Hatchery production		
Steelhead	109	2,189
Fall chinook	2,244	2,247
Spring chinook	1,833	2,398
Coho	4,950	0 ^{1/}
Total	12,795	11,219

1/ A portion of category I returns are attributed to category II juvenile fish passage improvements and the Westland juvenile trap. However, data are not available to separate incremental coho returns between categories I and II.

Summer Steelhead.--With completion of all the measures identified in table 7-15a, an increase of 4,580 steelhead is expected. This increase is equally divided among hatchery and naturally produced steelhead (2,298 and 2,282 fish, respectively). However, 80 percent of the total run improvement would be attributable to adult fish ladder and juvenile fish screen replacements at Maxwell, Westland, Cold Springs, and Stanfield diversions plus the new juvenile fish trap facilities at the Westland diversion. These projects would substantially enhance adult and juvenile fish survival during Umatilla River migration phases.

Fall Chinook.--Fall chinook returns to the Umatilla River should be established in the near future with the completion of adult and juvenile passage projects, increased hatchery production, and implementation of the trucking program. However, low streamflows during upstream and downstream migration will continue to limit fall chinook production. The interim pumping program to increase lower Umatilla River flow will markedly increase adult passage to Three Mile Falls Diversion Dam where arriving fish can be harvested, passed above, or trucked upriver. Trucking fish upriver to better flow and spawning reaches will allow for some natural spawning production where there is none now. The key is to get fish to Three Mile Falls Diversion Dam for capture and sorting during peak September and October spawner migration. Replacement of existing canal fish screens with new facilities

that meet fall chinook smolt passage criteria will increase Umatilla River downstream survival for both hatchery and naturally produced fish. During late spring low water periods, fall chinook smolt will be captured at the Westland juvenile trap, trucked and released below the Echo critical flow reach. With future without fishery improvement measures in place, 9,692 more adult fall chinook are estimated to eventually return into the Umatilla River.

Spring Chinook.--The first returns of adult spring chinook to the Umatilla River are expected in 1988. As with steelhead and fall chinook, spring chinook runs will be increased with implementation of future without fishery measures. Ultimately, an increase of 4,792 adults would be expected. Interim springtime pumping and passage modifications will notably increase spring chinook returns. Adults will normally find flow conditions in the Umatilla River in April and May suitable for migration to headwater spawning reaches. During June low flows, many adult fish will be captured at Three Mile Falls Diversion Dam for harvest or trucking upriver. Likewise, smolts will be trapped at the Westland juvenile capture facility and taken downriver during low spring runoff June periods.

Coho.--After many years of absence, 1,000,000 coho salmon smolts were released into the Umatilla River in 1987. Adult coho will return during the fall of 1988. These plants will continue into the future as a result of settlements reached from the litigation of United States versus Oregon. The tribes and ODFW will manage only for a hatchery supported coho run and do not want this species to establish and spawn naturally in the Umatilla basin. Therefore, returning adults will be captured and harvested at Three Mile Falls Diversion Dam. The interim fall pumping program will allow adults to reach the dam, and eventually, 4,950 fish will return in the future without conditions. Category II fish ladder improvements will not benefit coho since spawners will not be permitted above Three Mile Falls Diversion Dam. However, juvenile screens and the trap at Westland will increase survival of outplanted hatchery coho smolts in the Umatilla River.

Environmental Consequences

Anadromous Fish.--The Recommended Plan provides a significant increase in main stem Umatilla River flows from the confluence of McKay Creek (river-mile 51) downstream to the river's mouth during important adult and juvenile anadromous fish migration times. These flows would be provided through a combination of storage release from McKay Reservoir, restrictions on Umatilla River irrigation withdrawals, use of the Cottonwood Bend pump, and use of the WEID pumping facilities at the mouth of the Umatilla River to increase flows in the river from Three Mile Falls Diversion Dam downstream during fall and spring low flow periods. New fish screen structures would be installed in Furnish, Feed, Westland, and Maxwell irrigation canals and adult fish passage modifications included at Stanfield, Feed Canal, Westland, and Maxwell Diversion Dams. A migration barrier would be constructed at the mouth of McKay Creek to prevent fall chinook from spawning in the creek during the September 15 through November 15 reservoir release period. A 12-year postproject fish monitoring program would be conducted to evaluate fishery accomplishments and recommend operational adjustments to optimize fish production.

Flow accomplishments and project operations are summarized in the "Recommended Plan" section of this document. Table 7-16 displays the operational procedures that would be utilized to provide flow augmentation. Major benefits would occur to fall chinook, spring chinook, and steelhead. Table 7-17 indicates the anadromous fishery benefits associated with the flow and nonflow elements of the Recommended Plan increases over without project conditions. The category II measures in table 7-17 are the same as those shown in table 7-15a and represent the nonflow elements. These passage improvements will be funded by BPA and are scheduled for construction between 1988 and 1990. Upon completion of the category II measures, increases in smolt survival will be realized which will provide an estimated increase in return of 11,219 salmon and steelhead spawners to the Umatilla River. Larger numbers of smolts will survive downstream migration with category II juvenile fish screen upgrading and construction of a new juvenile fish trap at the Westland Canal diversion. Likewise, adult passage and survival will be improved with new diversion dam fish ladders that will pass fish efficiently under a wide range of flow conditions.

Table 7-16.--Anadromous Fishery Operation, Main Stem
Umatilla River--Recommended Plan

Month	Recommended Minimum Flows ^{1/} ft ³ /s	Operational Procedures to Meet Recommended Minimum Flows
January February March	250	Flows provided by available natural flows plus HID and CLWID diversion restrictions.
April	250	
May June	250	
July August September 1-15	--	
September 16-30	250	Flows provided through use of available natural flows plus SID and HID diversion restriction. Fish migration to Three Mile Falls Diversion Dam during low flow periods improved by the use of the WEID pump and Cottonwood Bend pump exchanges.
October November 1-15	300	Minimum flows for anadromous fish not applicable.
November 16-30 December	250	
September 16-30	250	Flows provided by available natural flows plus McKay Reservoir storage releases and SID diversion restrictions. Fish migration to Three Mile Falls Diversion Dam during low flow periods improved by the use of the WEID pump and through the Echo reach by use of the Cottonwood Bend pump exchange.
October November 1-15	300	Flows provided by available natural flows, restrictions on HID SID diversions and McKay Reservoir storage releases. Fish migration to Three Mile Falls Diversion Dam during low flow periods improved by the use of the WEID pump and through the Echo each by use of the Cottonwood Bend pump exchange.
November 16-30 December	250	

^{1/} Minimum flows for Umatilla River from the confluence of McKay Creek downstream

Table 7-17.--Recommended Plan Umatilla River Adult Fish Returns and Associated Harvest Estimates, Net Increases

Species	Category II Measures		Category III Measures		Total	
	Maxwell, Westland, Cold Springs, Stanfield, Juvenile and Adult Passage Improvement; West-1/land Juvenile Trap		Umatilla River Flow Enhancement (WEID, CRP, Cottonwood Bend Pumps); McKay Creek Fish Barrier			
	Adult Returns	Resulting ^{2/} Harvest	Adult Returns	Resulting ^{2/} Harvest	Adult Returns	Harvest
Natural production						
Steelhead	1,482	1,787	439	534	1,921	2,321
Fall chinook	2,602	10,044	6,013	23,435	8,615	33,479
Spring chinook	301	400	559	742	860	1,142
Hatchery production						
Steelhead	2,189	6,556	648	1,958	2,837	8,514
Fall chinook	2,247	11,344	5,315	26,471	7,562	37,815
Spring chinook	2,398 ^{3/}	7,179	4,438	13,332	6,836	20,511
Coho		<u>3/</u>	<u>1,650</u>	8,250	<u>1,650</u>	<u>8,250</u>
Total	11,219		19,062		30,281	112,032

1/ Funded under Columbia River Basin Fish and Wildlife Program

2/ Includes ocean and Columbia and Umatilla recreational harvest, ocean and freshwater, non-Indian commercial harvest, and Zone 6 and Umatilla River Indian harvest

3/ Data not available to credit coho returns/harvest to Category II measures, see footnote 1, table 7-15a.

Flow enhancement under category III measures will, when combined with categories I (future without the Recommended Plan, table 7-15a) and II fishery measures, optimize overall basin fishery production and returns. With project flow increases, streamflows will closely resemble preirrigation development conditions. Enhanced flows will improve upstream spawner migration in the Umatilla River--subjecting fish to less delay and allowing adults to reach spawning locations in better condition. Providing the minimum flow targets in the fall and spring will benefit fish passage in all reaches of the river and at all diversion dam structures. Higher flows will subject substantially fewer adults and smolts to the artificial transport truck and haul program, increasing survival. With target flow enhancements, fewer smolts will enter diversion canals and downstream migration should be accomplished in less time. The category III flow component will increase salmon and steelhead returns by 19,062 fish. When flows are combined with category II measures, the entire Recommended Plan will increase returns by 30,281 fish to the Umatilla River.

The following sections discuss Recommended Plan fishery accomplishments by species.

Summer Steelhead.--Of the anadromous fish species affected by the Recommended Plan, summer steelhead would realize the least improvement although an estimated increase of 4,758 fish would be expected. Category II passage measures would provide 77 percent of this increase--contributing an estimated 3,671 fish. Flow enhancement would furnish another 1,087 fish. However, flow releases in the fall from McKay Reservoir would aid spawner steelhead to enter the Umatilla River earlier and contribute to better migration distribution. Biologists believe that steelhead migration in the fall is now delayed because of low streamflows and that Recommended Plan flows would allow the fish to readily enter and move up the Umatilla in October.

New screens at irrigation diversions would increase survival of downstream migrant smolts, the major source of project benefits, and passage improvements would create better upstream migration conditions for adult fish past diversion dams particularly during low flow periods.

Fall Chinook.--Fall chinook salmon would be the fish species benefiting the most from the Recommended Plan. McKay Reservoir flow releases from September 16 to November 15 would significantly increase Umatilla River main stem flows from McKay Creek (river-mile 51) to the mouth. The Cottonwood Bend pump would add up to 30 ft³/s in the Umatilla River from Westland Diversion Dam (river-mile 27) downstream to Cottonwood Bend (river-mile 13) from mid-September to mid-October. In dry years when McKay Reservoir did not fill, WEID pumping facilities at the mouth of the Umatilla River would be used to reduce irrigation diversions at Three Mile Falls Diversion Dam so that more water could pass downstream to improve conditions for migration of adult fall chinook. This "exchange" could be done in September and October, and studies show that the pumping facilities would have been used 7 out of 76 months of record for fall chinook, which would have allowed up to an additional 140 ft³/s to pass downstream of Three Mile Falls Diversion Dam and would be used in all 76 months of record in absence of the Columbia River Pump-McKay Reservoir storage releases. The WEID pump (first phase of construction of Recommended Plan) also could be used to simulate freshet flows to trigger upstream migration of fall chinook. Use of the pumping facilities would allow adults to at least migrate to the dam where they could be collected. After October, natural streamflows and restrictions on irrigation diversions would provide good flow conditions in the river in most years.

Tables 7-9, 7-10, and 7-11 in the PR/FES show Recommended Plan flow accomplishments at Yoakum, Echo, and Umatilla. Shortages in meeting recommended fish flows would occur but they would be significantly lower than at present. The tables show flow augmentation from McKay Reservoir occurring at a constant rate over a 60-day period. However, in actual operation these releases could be "shaped" to better match the annual timing of the fall chinook run. These operational changes could be developed during the postproject fish monitoring studies.

With flow augmentation, fall chinook would readily migrate upstream to spawning areas (75 percent are located above Pendleton). By the time most of the fall chinook would have passed through the 51 miles of the lower main stem influenced by McKay storage releases late in September, October, and early November, natural streamflows in upstream areas would have begun to increase to provide for inriver spawning above Pendleton. The proposed new fish

screens in four major diversion canals would protect against the loss of fall chinook fry (less than 60 millimeters in length) during springtime outmigration periods.

These beneficial effects of the Recommended Plan would result in a net increase of 16,177 fall chinook. Seventy percent of the increase would be attributed to flow enhancement. More "wetted habitat" would be available in the main stem Umatilla River below McKay Creek allowing for increased natural spawning. Thus, natural production would benefit more than hatchery production. With the project, fall chinook would be able to migrate up the Umatilla River earlier and in a "bright" condition starting in mid-September. This would provide higher quality fish to Umatilla Indian and non-Indian fisheries. Earlier entry would allow chinook to be susceptible to basin fisheries management and harvest for a longer period, increasing management flexibility. Chinook would be well distributed to upriver reaches due to the earlier return and longer run period. Of greater importance to the tribe's treaty rights is the fact that fish would be able to migrate upriver naturally to reservation collection facilities with a minimum need for artificial transport.

Spring Chinook.--The Recommended Plan would increase flows in the lower main stem Umatilla River during April through June to improve upstream migration of spring chinook adults and downstream passage of smolts. This would be accomplished by restricting irrigation diversions from the Umatilla River until minimum streamflows of 250 ft³/s have been met. This restriction would seldom be enforced in April and May because of normal high runoff conditions. In addition, WEID pumping facilities would be used in April, May, and June in dry years to help meet minimum flows. The pump would have been used 49 out of 114 months of record for spring chinook, most often in June, and result in up to an additional 140 ft³/s in the river downstream from the dam and would be used in 48 months out of 114 months of record in absence of the Columbia River Pump-McKay Reservoir releases. The WEID pump (first phase of construction of the Recommended Plan) also could be used to simulate freshet flows to trigger upstream migration of spring chinook. Tables 7-9, 7-10, and 7-11 show Recommended Plan flow accomplishments in April, May, and June at Yoakum, Echo, and Umatilla. Flows would be most improved from Three Mile Falls Diversion Dam downstream. There would be a few years when recommended flows in April and May could not be met in the Yoakum and Echo reaches of the Umatilla River. In most water years, recommended flows would not be completely met in June in the Echo reach and below Three Mile Falls Diversion Dam. During some of these June periods, the truck and haul program would be used to transport smolts and adult spawners.

It is estimated that the Recommended Plan would result in about 7,696 more spring chinook returning to the basin. While the project would provide improved migration flows in the main stem, upstream habitat deficiencies including warm water temperatures and lack of adult holding pools would limit spring chinook natural production. As a result, natural production would only increase by 861 fish. However, an estimated increase of 6,836 fish of hatchery origin would return to the basin primarily because of higher flow conditions. Sixty-five percent of the spring chinook increases would be related to the flow enhancement component.

Coho.--Adult coho salmon returns would be expected to increase by 1,650 fish as a result of Recommended Plan implementation. These fish would be harvested or trapped for egg taking purposes at Three Mile Falls Diversion Dam. Coho would be benefited most by Recommended Plan accomplishments during their downstream migration phase. Smolt survival would be increased by upgraded fish screen facilities and subject to less migration delay and canal losses due to increased main stem Umatilla River flows. During late spring low flow periods, coho smolt survival would also be enhanced by operation of the Westland juvenile trap facility.

Anadromous Fish Effects Overview

Based on the results of recent radiotelemetry tracking of adult fall chinook and steelhead in the Umatilla River by ODFW and others, the recommended target flow levels established for the proposed project will provide good passage and spawning streamflow levels for chinook and coho salmon and steelhead.

Tables 7-17a and 7-17b provide updated streamflow estimates that have been developed from the revised project operations model. The tabulations present average flow conditions that would be expected under (1) undeveloped or preirrigation conditions, (2) future without project conditions, (3) future with project conditions at Echo (river-mile 26) and Umatilla (river-mile 2). A graphic display of these flows is provided in the fisheries accomplishments discussion in section 2 of the PR/FES. Average with project flows would exceed all target flow levels at the Umatilla gauge for all months except June. Likewise, average project flows would essentially meet or exceed target levels in the Echo reach during all months except June. The operations model shows that streamflows with the project would be equal to or greater than preirrigation development in the period from September 16 through November 15. This timing coincides with peak fall chinook and coho adult migration and spawning. Beginning about mid-September, fall chinook and coho would enter the Umatilla River and migrate to upstream spawning or capture sites. Project flow releases from McKay Reservoir coupled with WEID and Westland Irrigation District (WID) pumping operations would assure sustained migration and spawning distribution throughout the length of the Umatilla River. Coho would be stopped and taken at Three Mile Falls Diversion Dam to preclude this species from spawning in the Umatilla River. In low water years, fall chinook adults could be captured at Three Mile Falls Diversion Dam for brood stock selection, harvest or transport under the trap and haul program. The trucking program would allow fish to be artificially hauled past dewatered sections for release into good streamflow reaches and/or taken directly to onreservation holding facilities.

Under normal with project flow circumstances, summer steelhead could begin to enter the Umatilla River with fall chinook and coho and continue through the winter and early spring months as occurs now. In time, an earlier arriving run of summer steelhead would probably be fostered in the Umatilla River due to better passage flows in the fall provided by McKay Reservoir releases.

Table 7-17a.--Average Umatilla River Flows at Echo (ft³/s)

Month	Target	Undeveloped ^{1/}	Without Project	With Project
October	300	135	41	289
November 1-15	300	223	59	299
November 16-30	250	418	123	264
December	250	874	481	514
January	250	1,092	882	837
February	250	1,329	1,150	1,110
March	250	1,454	944	898
April	250	1,841	1,308	1,279
May	250	1,289	699	706
June	250	487	122	190
July	0	144	44	44
August	0	101	39	40
September 1-15	0	112	26	29
September 16-30	250	118	22	256

Table 7-17b.--Average Umatilla River Flows at Umatilla (ft³/s)

Month	Target	Undeveloped ^{1/}	Without Project	With Project
October	300	239	67	317
November 1-15	300	311	143	382
November 16-30	250	497	201	342
December	250	948	554	587
January	250	1,170	960	915
February	250	1,419	1,239	1,200
March	250	1,542	1,008	962
April	250	1,948	1,257	1,241
May	250	1,429	644	672
June	250	621	79	227
July	0	275	1	1
August	0	239	4	6
September 1-15	0	254	13	16
September 16-30	250	252	15	251

^{1/} Represents riverflows if no diversions are made from Pendleton to the mouth

Spring chinook would experience good migration conditions in April and May in the Umatilla River. These conditions would be provided by natural spring runoff plus diversion restrictions and the use of the WEID and WID pumping facilities in dry years. Most spring chinook would enter the Umatilla River in April and May. However, with high irrigation demand and lack of available storage for fish water release, June would normally be a shortage month for meeting target flows. In June, and with WEID pumping, adult spring

chinook would reach Three Mile Falls Diversion Dam. June arriving fish could be harvested or artificially transported for release near headwater spawning sites or into tribal adult holding facilities. Adult fish of all species would usually have good passage at Stanfield, Cold Springs, Westland, and Maxwell Diversion Dams, under all flow conditions September 15 through May.

Smolt outmigration of all species would normally be good in April and May. However, in June in many years, smolt would have difficulty migrating past Westland Diversion Dam. Due to reduced natural flows and higher irrigation demands, the Westland smolt trap facility would be used to collect downstream migrants in June, and in April and May in dry years. These fish could then be hauled to the lower Umatilla River for release where flow conditions were adequate.

The intake for the new WEID pumping plant is located next to the Umatilla River U.S. Highway 730 bridge. The backwaters of John Day Pool would extend about 500 feet beyond the bridge when at a minimum pool elevation of 257 feet. Consequently, the plant would draw water from the backwater of John Day Pool rather than directly from the Umatilla River. Entry of juvenile and adult fish into the pump intake channel would be prevented by a vertical traveling fish screen designed to meet present-day water intake maximum velocity criteria of 0.5 feet per second.

The "mixing" location of the Umatilla River and Columbia River water at the Umatilla River mouth is not well understood, and there appears to be speculation concerning the relationship of Umatilla River inflow to John Day Pool operations. Some fishery biologists have reservations that WEID pumping plant operation could draw a portion of Umatilla River flows into the pump intake, thereby reducing the net inflow of Umatilla River to the John Day Pool. If this were to occur, anadromous fish migration delays might result, especially for downstream migrant smolt. Adult fish upstream migration into the Umatilla River might also be delayed if less attraction water entered the John Day Pool. Other biologists believe that McNary Dam tailwater operations (2.5 miles upstream from the mouth of the Umatilla River) have greater influence on flow dynamics at the mouth of the Umatilla River than would the WEID pumping facility.

Resident Fish

Tables 7-7 and 7-8 reflect the differences between future without and future with project operations of McKay and Cold Springs Reservoirs. Tables 7-18 and 7-19 portray the differences in surface acreage between the future without and future with project operations of McKay and Cold Springs Reservoirs. A new minimum pool operations feature would provide resident fishery improvement at both reservoirs. The minimum pool requirement in McKay Reservoir would be 6,800 acre-feet and 3,800 acre-feet in Cold Springs. In the past, both reservoirs have been drained occasionally which completely eliminated resident fish populations.

Revised Table 7-18.--Future Without and Recommended Plan
Surface Acres at Cold Springs Reservoir

Month	Future Without Condition Surface Acres	Recommended Plan Condition Surface Acres	Difference Surface Acres
October	258	508	+258
November 1-15	544	537	-7
November 16-30	656	575	+19
December	942	820	-120
January	1,056	977	-79
February	1,115	1,063	-52
March	1,428	1,374	-54
April	1,430	1,385	-45
May	1,414	1,381	-33
June	1,283	1,274	-9
July	900	894	-6
August	515	573	+58
September 1-15	238	500	+262
September 16-30	216	499	+283

Revised Table 7-19.--Future Without and Recommended Plan Surface
Acres at McKay Reservoir

Month	Future Without Condition Surface Acres	Recommended Plan Condition Surface Acres	Difference Surface Acres
October	581	556	-29
November 1-15	598	518	-82
November 16-30	629	526	-104
December	748	639	-110
January	884	792	-92
February	1,005	925	-81
March	1,085	1,047	-39
April	1,121	1,103	-19
May	1,115	1,117	+2
June	1,032	1,106	+73
July	837	993	+154
August	651	888	+233
September 1-15	605	860	+251
September 16-30	575	752	+173

McKay Reservoir with project operations would be notably different from the without project condition. On average, the reservoir pool would be lower from mid-fall through mid-spring. Starting in June and through September, water levels would be held higher to maintain storage for fall chinook flow augmentation releases. The actual effects of the operational changes on the reservoir fishery are somewhat speculative at this time. McKay Reservoir

willow stands around the shoreline fringes would be flooded longer. This could enhance bass spawning and juvenile recruitment and overall warm water fish populations could increase. However, some lower elevation willow patches might die out due to the longer extent of flooding. Woody riparian plants would be expected to be replaced by vascular rooted aquatic plants which would also offer good fish cover and fish food habitat. Yearly colonization of dry shoreline areas would be maintained by annual forbs and grasses. The effect of project operation on vegetation will be monitored. The minimum pool does not constrain the with project water operations and would be sustained through normal reservoir filling procedures. The 6,800 acre-feet minimum pool would help sustain long-term fish populations in McKay Reservoir. Due to a larger reservoir surface area during the prime summer recreational period, water recreation (including fishing), would be expected to increase. To evaluate changes in the McKay Reservoir fishery, a review of resident fishery effects would be done as part of the postconstruction fishery monitoring program.

Cold Springs Reservoir on average, would be at a lower level from late fall until spring, as reflected in tables 7-8 and 7-18, with the project. From mid-summer to early fall, elevations would be higher. In July, there would be essentially no difference and the with project reservoir pool would be below the 610 foot mean sea level elevation to protect valuable riparian woodland vegetation. Good springtime spawning conditions would be expected to be maintained for crappie and bass with the Recommended Plan. The higher reservoir storage in the late summer and early fall could increase recreational fishing use at Cold Springs. Fall and winter increased drawdowns would not adversely affect the fishery and may be beneficial by encouraging predation by larger fish on younger fish to help keep species populations in check. Stunting can easily occur with some warm water species where overpopulation occurs, and fishing pressure is not adequate to reduce it. Cold Springs Reservoir levels would continue to peak in April and May and then decline. A minimum pool of 3,800 acre-feet would be provided to assure annual carryover of fish populations. This would be an enhancement over existing conditions. On average, about 2,200 acre-feet would need to be pumped from the Columbia River pumping plant to maintain the minimum pool each year.

With the proposed operational changes, it is predicted that fishing use would increase by about 1,240 and 4,050 angler-days annually at Cold Springs and McKay Reservoirs, respectively.

Streamflow improvements in the lower Umatilla River that are being provided for anadromous fish are not expected to affect the resident warm water fishery. A summary of resident fish benefits attributable to the Recommended Plan is provided in table 7-20.

Table 7-20.--Annual Resident Fish Benefits--Recommended Plan

Area	Without the Project	With the Project	Increase
	- - - - -	angler-days - - - - -	
Cold Springs Reservoir	13,200	14,450	1,250
McKay Reservoir	35,170	39,230	4,050
Lower Umatilla River (warm water)	400	400	0

Electric Energy

Existing and Future Without Project Conditions

No change from PR/DES

Environmental Consequences--Recommended Plan

The Bonneville Power Administration has provided an analysis of pumping power impacts of the Recommended Plan on the Federal Columbia River Power System. Power system impacts would be those associated with the project's pumping powerload and withdrawal of water from the Columbia River at Lake Wallula which would reduce downstream hydroelectric generation at McNary Dam.

The average annual project pumping requirement from Lake Wallula is 29,820 acre-feet. An average of 1,290 megawatt-hours will be lost to McNary generation by diverting this volume of water from the lake. The withdrawal of water from Lake Wallula would result in an equal decrease of water withdrawn for irrigation from the Umatilla River thereby again becoming available for generation at downstream projects. Considering these factors, the amount of water involved in the project withdrawal is extremely small in comparison to the total flow through McNary Powerplant and at downstream projects, and the loss of 1,290 megawatt-hours is not a significant impact on the operations of the Federal Columbia River Power System. During those times when the hydro-system is surplus, the energy loss reduces the amount of marketable energy. When the system is deficit, the energy loss will have to be recovered, although it is not of the magnitude that will require a major resource acquisition.

Average annual pumping power required by the Recommended Plan's Columbia River, Cold Springs, WEID, and Cottonwood Bend pumping plants totals 18,980 megawatt-hours. Table 2-17 in the PR/FES summarizes monthly and annual pumping power requirements. This load is considered very small in comparison to the total Federal Columbia River Power System load and resource capabilities.

In summary, the total demand on the Federal Columbia River Power System resulting from the Recommended Plan, including hydropower production foregone at McNary Dam, is estimated at 20,270 megawatt-hours.

Wildlife Resources

Wildlife species in the Umatilla basin reflect the diversity of land uses and vegetation. Lower elevations are characterized by dryland or irrigated farming, rangeland, and riparian vegetation along streams, rivers, and reservoirs. As precipitation increases with elevation, range lands become mixed with woody shrub/scrub plants and the forest types increase. The basin's highest elevations are within the Umatilla National Forest and are predominantly forest cover types.

Existing Conditions

No change from PR/DES

Future Without Project Conditions

No change from PR/DES

Environmental Consequences

Columbia River Pumping Complex (CRP).--Impacts to wildlife resources with construction and operation of the CRP facilities would be minimal. To a great extent, project facilities would cross areas devoid of high value wildlife habitats--such as dry native rangeland and farmlands that are fallow during the nongrowing season. The 7.5 miles of canals and three pumping plants would eliminate about 40 acres of desert rangeland habitat and about 130 acres of irrigated cropland. The alignment of the canal through five irrigation pivot systems would prohibit irrigation of 94 acres and cause the acreage to be converted to dryland grain production. About 8 acres of rangeland and 17.5 acres of irrigated acreage would be temporarily impacted during construction of buried pipelines. These actions would affect upland game birds, passerine birds, and small mammals. No wetland areas would be impacted by CRP facilities.

Portions of the Columbia-Cold Springs canal and the Stanfield canal would cross lands at Cold Springs National Wildlife Refuge. While impacts to wildlife habitat and wildlife usage at the refuge would be insignificant, appropriate right-of-way conditions would be recognized to insure continued, effective refuge management. These include concerns for fencing, cattle guards, and/or gates to control grazing and public access at appropriate locations. The specifics for these measures would be developed in cooperation with the refuge staff during advance planning.

The project includes two other pumping features. The WEID water exchange would be accomplished by constructing a new pumping plant at the site of the existing WEID pump. Wildlife resources are limited at this site. Construction would result in temporary noise that would discourage wildlife uses. The new discharge line right-of-way would be reseeded. Overall wildlife impacts would be insignificant. Impacts associated with construction of Cottonwood Bend pump would be similar.

Cold Springs and McKay Creek National Wildlife Refuges.--Annual operations of Cold Springs and McKay Reservoirs were discussed in the Recommended Plan chapter. In general, both areas would have higher water levels in summer than at present but would still be drawn down to their lowest levels in fall and gradually refill in winter months. McKay Reservoir would be lower from October to mid-spring, then hold at higher water elevations through September; Cold Springs would generally be lower from December through July and higher from August into November. An operational constraint has been developed for Cold Springs Reservoir to insure that water elevations would be no higher than 610 feet elevation (mean sea level) after July 30. This would protect the integrity of the shoreline woodland/riparian vegetation. These reservoir operations are not expected to adversely affect wildlife resources.

No wildlife impacts would be associated with diversion dam modifications, the McKay Creek fish barrier, or fish screen facility construction.

Threatened and Endangered Species

No change from PR/DES

Wildlife Mitigation Measures

Revegetation on nonagricultural lands disturbed by construction activities for canals, pipelines, and pump stations would be done in areas where such action would be beneficial. Topsoil would be stockpiled and then reapplied after construction. These areas would be reseeded with plant species beneficial for wildlife food and cover. Species to be planted, seedling mixture, and rates would be determined cooperatively with the ODFW, U.S. Fish and Wildlife Service, and Bureau of Reclamation during advance planning. In addition to grass and forbs and where possible, shrubs and small trees would be planted within the right-of-way strip that could be supported without artificial watering. Such areas would generally be natural drainages or depressions that capture more moisture than surrounding terrain.

Reclamation would coordinate with the Umatilla National Wildlife Refuge to develop a plan for canal and power line alignments crossing land within the Cold Springs National Wildlife Refuge so as to minimize impacts to habitat and wildlife to assure compatibility with the National Wildlife Refuge Administration Act. Powerlines would be designed in accordance with design criteria provided in the publication, "Suggested Practices for Raptor Protection on Power Lines, the State of the Art in 1981," Raptor Research Report No. 4, Raptor Research Foundation, Inc., 1981.

Water Quality

Existing Conditions

No change from PR/DES

Future Without Project Conditions

No change from PR/DES

Environmental Consequences

Localized temporary water quality impacts would occur with construction of the Columbia River pumping plant and fish passage modifications. As presently designed, the pumping plant would be sited back from and above the high waterline of Lake Wallula, and the only inwater excavation work would be associated with burying the intake water lines about 200 feet into the lake.

Oregon State Umatilla basin water quality standards are found in Attachment I of the PR/DES. These standards also apply to the area on the Columbia River where the main pump station would be located. Construction activities would likely cause the turbidity standards to be temporarily violated. However, under Oregon Administrative Rules ORS 340-41-645(2)(c),

turbidity limits may be exceeded for the shortest practical period to accommodate construction activities. It is expected that turbidity at the pumping plant construction site would quickly dissipate downstream since on average the Columbia River passes through Lake Wallula at flows ranging from a minimum of 96,000 ft³/s (October) to a maximum of 414,000 ft³/s (June). The WEID pumping facilities would be reconstructed near the present plant at the mouth of the Umatilla River. Construction and removal of a cofferdam at this location would cause temporary turbidity impacts similar to the Columbia River pump station on Lake Wallula.

Constructing fish passage facilities at Maxwell, Westland, Stanfield, and Feed Canal Diversion Dams and Cottonwood Bend pump would require temporary gravel dike cofferdams. This work would cause temporary turbidity, which would disappear within a few hours as natural streamflow cleansed the area. This work could most easily be accomplished and with the least impacts on water quality during the low flow fall months.

Fish screen structures and the McKay Creek fish barrier would be constructed during the nonirrigation season. Thus, there would be no water in diversion canals or in McKay Creek and no effect on water quality conditions.

Implementation of the Recommended Plan would reduce average annual diversions of Umatilla River water into Cold Springs Reservoir from 63,000 acre-feet to about 52,000 acre-feet. Columbia River water pumped from Lake Wallula would replace the remainder of feed water into the reservoir. Columbia River water is less turbid and contains lower concentrations of nutrients and dissolved salts than present in the lower Umatilla River. Biological productivity of the reservoir is most likely limited by turbidity and extreme drawdown. Water clarity in Cold Springs Reservoir would probably remain low, however, because of continued loading of the shallow impoundment with sediment and nutrients from the lower Umatilla River. Changes in water quality would have no appreciable impact on agricultural users because water quality in both the Umatilla and Columbia Rivers is suitable for irrigation. Some existing irrigation storage in McKay Reservoir would be utilized to improve flows in the Umatilla River from September 16 through mid-November. The temperature of releases from McKay Reservoir would be suitable for fishery purposes; 1983 late summer release temperatures reached a maximum of 63 °F on September 13 and declined to 58.6 °F on September 29 when the outlet works were closed. Reaeration occurs as releases plunge from the existing outlet gate into McKay Creek. Releases tend to be turbid, probably due to resuspension of fine materials in the reservoir from shoreline banks as the pool is drawn down. Turbidity levels are likely to persist after releases enter the main stem Umatilla River but will not inhibit upstream migration of adult fall chinook.

Water Quality Mitigation Measures

Contractors would be required to comply with State and Federal laws and regulations regarding the control and abatement of water pollution. Waste material and sewage resulting from construction activities or project constructed features would be disposed of as specified by State and Federal health and pollution control regulations. Construction activities would be

performed by methods that would prevent entrance or accidental spillage of solid matter, contaminants, debris, and other objectionable pollutants and wastes into streams, flowing or dry watercourses, and underground water sources.

Before discharging any wastewater or other pollutants, the contractor must have a permit to discharge pollutants as required under the National Pollutant Discharge Elimination System, established under Public Laws 92-500 and 95-217. Before discharging any dredged or fill materials into navigable waters, a permit must be issued by the Corps of Engineers to discharge such materials as provided in section 404 of the Clean Water Act of 1977, Public Law 95-217. Construction of the Columbia River pumping plant and the WEID pumping plant would require section 10 permits under the River and Harbor Act of 1899. Removal, filling, or alteration of more than 50 cubic yards of material for inriver project facilities will require a permit from the Oregon Division of State Lands under ORS 541.605-541.695.

Dewatering work for structure foundations or earthwork operations adjacent to, or encroaching on, streams or watercourses would be conducted in a manner to prevent muddy water and eroded materials from entering the streams or watercourses by construction of intercepting ditches, bypass channels, barriers, settling ponds, or by other approved means. Excavated materials or other construction materials would not be stockpiled or deposited near or on streambanks or other watercourse perimeters where they could be washed away by high water or storm runoff or could in any way encroach upon the actual watercourse itself.

Wastewaters from aggregate processing, concrete batching, or other construction operations would not enter streams, watercourses, or other surface waters without the use of such turbidity control methods such as settling ponds, gravel-filter entrapment dikes, approved flocculating processes that are not harmful to fish, recirculation systems for washing of aggregates, or other approved methods. Any such wastewater discharged into surface water would be essentially free of settleable material.

Land Uses

Existing Conditions

Land areas affected by the Recommended Plan's pumping stations, pipelines, and canals are shown on the CRP Complex map in the "Recommended Plan" chapter of the PR/DES.

Most private lands are irrigated cropland; however, some rangeland is present. Agricultural lands north of Cold Springs Reservoir are irrigated by circle pivot systems using water from Lake Wallula. Commonly grown crops on these farms are corn, alfalfa, potatoes, and grain. Lands south of Cold Springs Reservoir are within the SID and receive water from the Umatilla River. Crops include corn, alfalfa, potatoes, grain, mint, melons, sugar beets, asparagus, onions, and pasture.

Public lands bordering Lake Wallula in this area are administered by the Corps of Engineers. The Corps maintains the popular Sand Station Campground near the Columbia River pumping plant site. The campground is adjacent to State Highway 730/395. The Cold Springs National Wildlife Refuge is located in this area and encompasses 3,100 acres of public lands.

Recommended Plan facilities would be within Umatilla County and are within purview of the Umatilla County Comprehensive Plan and Development Ordinance. The Columbia River pumping plant and discharge line would be located both on public lands administered by the Corps of Engineers and private lands owned by Lewis and Clark College. Columbia River pump complex features located in private ownership areas, except for Maxwell Diversion Dam and Cottonwood Bend pump, would be on land zoned for "exclusive farm use"--a designation intended to preserve agricultural uses. Maxwell Diversion Dam borders both exclusive farm use and "heavy industrial" zoning areas. The Cottonwood Bend pump and pipeline would be in an area zoned as light industrial. The McKay Creek fish barrier would be sited near the mouth of McKay Creek. The Pendleton sewage treatment plant occupies land on the north side of McKay Creek and is located in a county zoning designation of "urban growth." Urban growth identified a county area that could be suitable for community expansion within the next 20-year period. The south side of McKay Creek is zoned for exclusive farm use. County zoning jurisdiction does not apply to Federal lands affected by the project.

Existing WEID pumping facilities near the mouth of the Umatilla River are within Umatilla city limits and near some residential subdivisions in an area zoned "community service" by the city of Umatilla. Land use changes would not occur as a result of upgrading these pump facilities for project purposes.

Future Without Project Conditions

No change from PR/DES

Environmental Consequences

Acreages impacted by various features of the Columbia River pumping complex are shown in the following table.

Land use changes on lands traversed by canals and occupied by pump stations would be permanent. Land use impacts would be temporary in areas where pipelines are to be buried. Construction activities would be scheduled in cropland areas to minimize destruction of farming operations and damage to crops.

Construction of the Columbia-Cold Springs canal would result in a loss of irrigated farmland. Three circle pivot systems located in sections 24, 25, and 26, T. 5 N., R. 29 E. would be traversed by the canal. Underground pipe through the area would be prohibitively expensive. It is believed that the pivot systems could continue to operate but irrigation of about 110 acres would be terminated. However, about 90 acres of this could be used for dryland wheat production. The remaining acreage would be permanently removed from crop production. Canal construction would eliminate about 22 acres of dry rangeland north of Cold Springs Reservoir.

Revised Table 7-24.--Acreage Estimates for Facilities Associated
With the Columbia River Pump Complex

Feature	Lands			Length			Easement or Right-of-way Width feet	Permanant Land Use Changes		
	Private	United States	Total	Private	United States	Total		Private	United States	Total
	----- acres -----			----- feet -----				----- acres -----		
Columbia River pumping plant	2.5	0.5	3.0	--	--	--	--	2.5	0.5	3.0
Discharge pipeline	3.5	1.5	5.0	2,800	1,000	3,800	50	0	0	0
Columbia-Cold Springs canal	39.8	8.0	47.8	17,300	3,600	20,900	100	39.8	8.0	47.8
Buried pipeline	2.2	0	2.2	1,900	0	1,900	50	0	0	0
Cold Springs Reservoir pumping plant	0	1.0	1.0	--	--	--	--	0	1	1.0
Discharge pipeline	2.5	6.5	9.0	2,300	5,400	7,700	50	0	0	0
Stanfield canal	20.2	0	20.2	11,200	0	11,200	80	20.2	0	20.2
Buried pipelines	1.8	0	1.8	1,600	0	1,600	50	0	0	0
Stanfield relift pump (includes reregulating pond)	1.2	0	1.2	--	--	--	--	1.2	0	1.2
Discharge pipeline and wasteway	2.8	0	2.8	2,600	--	2,600	50	0	0	0
Stanfield relift canal	14.3	0	14.3	7,800	0	7,800	80	14.3	0	14.3
Siphon	7.5	0.2	7.7	6,590	240	6,830	50	0	0	0
West Extension Irrigation District Pump (existing site)	1.0	0	1.0	850	0	850	50	1.5	0	1.5
Cottonwood Bend Pump	1.5	0	1.5	1,100	0	1,100	50	1.5	0	1.5
Total (rounded)	101	18	118			66,280		81	9	91

The Columbia River pumping plant at Lake Wallula and the Cold Springs pumping plant would occupy a total of about 1.5 acres of public land. A land use permit from the Corps of Engineers will be required to locate a pumping plant facility along the shoreline of Lake Wallula.

Burying pipeline across private properties would temporarily impact use of about 21 acres. Once the pipelines were buried, farming and other land use could resume.

No long-term impacts on road transportation would occur with construction of the CRP complex. Three bridges would be constructed at State highway and county road crossings, and 14 farm bridges would be built across canals to facilitate access.

Land use activities at Feed Canal, Maxwell, Stanfield, and Westland Diversion Dams; the McKay Creek fish barrier; the West Extension and Cottonwood Bend pumping plant sites; or the fish screen facility sites would not change.

A review of Soil Conservation Service classification maps indicates that none of the affected lands are considered prime and unique farmlands.

Construction of canals, pump stations, and the fish barrier would require a zoning permit from Umatilla County. A permit would probably not be required for fish passage modification work at Maxwell, Stanfield, Westland, and Feed Canal Diversion Dams because of its minor nature.

Vegetation

Existing Conditions

Vegetation on lands affected by the canals, buried pipelines, and pumping plants consists of upland desert vegetation and irrigated cropland.

Upland desert vegetation is the same shrub-steppe plant community which occupies a large portion of the dry rangelands in the central Columbia Basin region. Within the project area, this shrub-steppe community is found on noncultivated lands adjacent to Lake Wallula and north of Cold Springs Reservoir at elevations ranging from 340 to about 680 feet and in areas averaging about 9 inches of precipitation annually. The shrub species consist of big sagebrush, bitterbrush, and rabbitbrush. Cheatgrass dominates the understory vegetation.

Cold Springs and McKay Reservoirs have extensive riparian woodland vegetative zones. Vegetation growth is promoted by annual reservoir drawdown which allows invasion of forbs and growth of woody species such as willow, cottonwood, and Russian olive. Tree species would not survive if they were under water year-round. During periods of drawdown, reservoir bottoms and woody vegetation stands dry. Dried shorelines typically become thick with invading weedy forb species and lush regrowth from willows and trees. Regrowth is then flooded during winter and spring when the reservoirs refill.

A mix of cottonwood, willow, sagebrush, and annual forb and grass understory species are common at Feed Canal, Westland, Stanfield, and Maxwell Diversion Dams, the Cottonwood Bend pump, and at the McKay Creek fish barrier location.

No threatened and endangered plant species are known to exist in the Columbia River pumping complex area.

Future Without Project Conditions

No change from PR/DES

Environmental Consequences

Table 7-25 shows estimated short-term and permanent vegetation changes that would occur with construction. Buried pipelines and the Stanfield canal siphon would not result in permanent changes in vegetation cover. Easements would be purchased on private lands and rights-of-way granted on public land that would allow continuation of surface land uses and vegetation maintenance. Revegetation of native plants on dry rangeland sites would require time, although reseeding would accelerate reestablishment. Annual grasses would invade disturbed soils within one season. However, brush species would require 5 to 10 years to reach mature stature.

Pumping plant facilities and open conveyance canals would permanently remove vegetation. The small wetland area near the alternative WEID pump site location would not be directly affected, however. An estimated 4.2 acres of land would be needed for pumping plants facilities. Canal easements for the

project would be 80 or 100 feet wide. It is estimated that canal construction would eliminate about 130 acres of irrigated cropland and about 40 acres of native rangeland. Ninety-four acres of the lost irrigated land could probably be converted to dryland wheat farming.

Recommended Plan operation of Cold Springs Reservoir would not change the riparian/woodland shoreline vegetative community found there. Also, construction of fish passage and screen improvements would not impact vegetation.

Vegetation Mitigation Measures

No change from PR/DES

Revised Table 7-25.--Estimated Vegetative Changes with Recommended Plan

Feature	Short-term Vegetative Changes		Permanent Vegetative Changes	
	Rangeland	Irrigated	Rangeland	Irrigated
	----- acres -----			
CRP plant	0	0	1.5	0
Discharge pipeline	4.0	0	0	0
Columbia-Cold Springs canal	0	0	22.0	110.0 (94 acres converted to dryland)
Buried pipeline	0	2.2	0	0
Cold Springs pumping plant	0	0	1.0	0
Discharge pipeline	4.0	3.0	0	0
Stanfield canal	0	0	14.2	6.0
Buried pipelines	0	1.8	0	0
Stanfield relift pump (includes reregulating pond)	0	0	1.2	0
Discharge pipeline and wasteway	0	2.8	0	0
Stanfield relift canal	0	0	0	14.3
Canal siphon	0	7.7	0	0
Cottonwood Bend pumping plant	0	0	0.5	0
Discharge line	1.5	0	0	0
West Extension pumping plant	0	0	0	0
Total	9.5	17.5	40.5	130.3

Recreation

Recommended Plan facilities and operation are related to existing recreation areas at Cold Springs and McKay Reservoirs. In addition, recreation would be affected on the Umatilla River. None of these locations are designated under the National Wild and Scenic River system, the Oregon Scenic Waterways Inventory, the National Trails System or within Forest Service or Bureau of Land Management wilderness areas.

Existing Conditions

Sand Station Campground.--Discussion deleted since new Columbia River pump site would not impact the campground.

Cold Springs Reservoir.--Fishing is the most popular recreation activity at Cold Springs Reservoir. A peak use of 550 anglers per day coincides with the April and May spawning period for crappie, bass, and catfish. Later, during summer irrigation drawdown and hot weather, fishing use and success decline. Cold Springs National Wildlife Refuge provides waterfowl, upland game, and rabbit hunting. Other recreation activities include wildlife observation, boating, horseback riding, and picnicking. Camping is prohibited. Public use facilities include boat launching ramps, visitor contact points, toilets, and parking lots. A total of 84,000 recreation visits were made to Cold Springs in 1985.

McKay Reservoir.--Fishing for warm water game fish is the most popular recreational pursuit at McKay Reservoir. Waterfowl and upland game bird hunting is allowed at the southern end of McKay Creek National Wildlife Refuge. Other activities include wildlife observation, horseback riding, picnicking, swimming, boating and waterskiing. No overnight camping facilities are available. Public use facilities at McKay include trailer boat ramps, toilets, and parking. There were an estimated 70,500 recreation visits at McKay in 1985.

Umatilla River.--Recreational use of the Umatilla River consists primarily of sport fishing. Hatchery trout are planted in the river above Pendleton, and offer some good angling year round. Aquatic conditions in the lower river are generally too degraded for trout habitation, but an estimated 400 angler-days of fishing for warm water game fish occur. Other recreation activities include picnicking, camping, river floating, and sightseeing.

Future Without Project Conditions

Recreation demand at Cold Springs and McKay Reservoirs is projected to increase. Countywide projections are provided by the Oregon Statewide Comprehensive Outdoor Recreation Plan. Using Statewide Comprehensive Outdoor data and combining all recreation activity (sightseeing, picnicking, boating, fishing, hunting, camping, swimming, waterskiing) projections, an increase in overall recreation demand of 25 percent was estimated for the period 1980 to 2000.

Existing recreation facilities may become overcrowded as use increases. There are, however, no plans to build additional facilities at Cold Springs, and McKay Reservoirs at this time.

A number of anadromous fish improvement programs will be completed in the next few years in the Umatilla basin, and this will generate increased sport fishing harvest in both the Columbia and Umatilla Rivers.

Significant recreational uses of the Umatilla River other than fishing are not expected to occur in the future.

Environmental Consequences

Sand Station Campground.--Deleted since new Columbia River pump site will not impact the campground.

Cold Springs Reservoir.--Recreation opportunities would be improved at Cold Springs Reservoir because of enhanced fishery conditions that would occur with the project. An increase of about 1,250 angler-days annually is expected because of an enlarged reservoir area during the prime fish growth months of August through October. Surface area increases would range from 58 to 283 acres on average during those months.

McKay Reservoir.--Recreation opportunities would increase at McKay Reservoir. An increase of 4,050 angler-days is projected for the reservoir. The reservoir would have a larger water surface area in May through September, ranging from an average increase of 2 acres in May up 251 acres in September.

Umatilla River.--Umatilla River recreation opportunities would be greatly improved with the Recommended Plan. Streamflow increases would occur from September through June with a minimum flow targets of 250 to 300 ft³/s from McKay Creek downstream (river-mile 51) from September 16 through June 30. Flow increases in September, October, and June could increase the popularity of boating the main stem, particularly in conjunction with sport fishing for salmon and steelhead. Associated recreational activities such as picnicking, camping, and sightseeing would be expected to increase.

Significant additions to ocean and river sport catches of chinook salmon and increases in recreational river harvest of steelhead would occur. Increased harvest projections do not delineate specifically where ocean or river sport harvests would occur. Inriver sport harvest would occur in the Columbia River and Umatilla River systems but, at this time, it is not possible to conclusively establish how may chinook salmon and steelhead would be harvested by sport fishing methods in the Umatilla River. Harvest regulations for the Umatilla River would be established by the ODFW in coordination with the Confederated Tribes of the Umatilla Indian Reservation. Too, sport harvest levels would be dependent on tribal treaty fishing considerations and spawning escapement needs in the basin.

Recreation Mitigation Measures

No change from PR/DES

Air Quality

No change from PR/DES

Noise

Existing Conditions

No change from PR/FES

Future Without Project Conditions

No change from PR/DES

Environmental Consequences

Delete paragraph on Sand Station Campground

Noise Abatement Measures

No change from PR/DES

Social and Economic Considerations

Umatilla Tribes

Salmon.--

Existing Conditions.--Presently, there are no salmon runs in the Umatilla River.

Future Without Project Conditions.--Current efforts by the tribes, including planting of salmon in the Umatilla River and instream improvements, constitute an attempt to establish chinook and coho runs in the Umatilla River. However, no salmon would be harvested above Three Mile Falls Diversion Dam unless additional water supplies are obtained through litigation. Without additional flows, the tribes might eventually catch as many as 6,700 salmon below Three Mile Falls Diversion Dam annually.

Consequences.--A fishery for fall chinook and spring chinook salmon would be established in the Umatilla River up through the reservation, and the coho run below Three Mile Falls Diversion Dam would be enhanced. The tribes could expect to catch about 8,300 fall chinook and 8,700 spring chinook (depending upon hatchery programs) and about 6,600 coho. These runs would meet most of the tribes' fall chinook objectives and meet a significant portion of their spring chinook goal. The bringing of such large numbers of chinook salmon to the reservation would have extremely significant impacts that would be felt throughout the tribes' whole society.

Steelhead.--

Existing Conditions.--The present run of steelhead is the only run of anadromous fish on the reservation. It is highly valued both by the tribes and other interests within the Columbia Basin. However, to fully develop the resource, they will need to provide increased summer and fall flows in Meacham Creek.

Future Without Project Conditions.--Present tribal efforts will help to increase the harvest of steelhead to about 1,000 fish in the Umatilla basin.

Consequences.--Steelhead harvest would increase by about 2,200 fish per year (about 200 percent) over future conditions without the project. These improvements would be highly valued by the tribes, but they are not of the same magnitude as establishing large runs of chinook salmon.

Non-Indian Factors

Pacific Northwest Commercial and Sport Fishery.--

No change from PR/DES

Local Sport Fisheries.--

Existing Conditions.--Presently, there are minor steelhead and trout fisheries in the Umatilla River, attracting mostly local fishermen.

Future Without Project Conditions.--The trout fishery in the Umatilla River is not likely to improve appreciably in the near future. With the Northwest Power Planning Council's fish program and tribes' present efforts, the anadromous fish catch in the Umatilla River should increase modestly to an annual catch of about 1,000 fish.

Consequences.--The steelhead fishery in the Umatilla River would be enhanced considerably over the future conditions without the project, and the catch rates would triple over the without condition.

Irrigation.--

No change from PR/DES

Small Tracts.--

No change from PR/DES

Financial Security.--

No change from PR/DES

Local Economics.--

No change from PR/DES

Conflict-Competition.--

Existing Conditions.--Competition created as different groups have sought to acquire and/or protect their water supply has created derisiveness within the county, pitting water districts against each other, irrigators against municipalities, and all users against the Confederated Tribes. The situation has temporarily improved as the interests have cooperated in formulating a Federal project to relieve some of the pressure.

Future Without Project Conditions.--Without the project the level of conflict in the basin would increase dramatically. The tribes would end up in severe conflict with Umatilla River irrigators over water. The ground-water problems and power pumping costs will worsen, leading to likely conflicts between ground water and surface irrigators. The increased scarcity of supply will ultimately heighten competition among all water users in the basin.

Consequences.--The project would greatly reduce the potential for Indian/non-Indian water use conflict in the Umatilla basin for the foreseeable future. However, competition among other parties in the basin is likely to escalate in spite of the project because of the deteriorating ground-water situation, the increasing likelihood of state restrictions, etc.

Recreation.--

Existing Conditions.--There is some recreation use which occurs that is unrelated to the salmon, steelhead, and trout fisheries at Cold Springs and McKay Reservoirs, the Umatilla River, the Columbia River, and the North Fork Meacham Creek drainage.

The national wildlife refuges at Cold Springs Reservoir and McKay Reservoir are valued for wildlife observation. These reservoirs also contain good warm water fisheries and are popular bird hunting areas.

The Umatilla River is presently a poor summer recreation resource because of typically low stream flows and poor water quality.

Future Without Project Conditions.--Recreation use of the above areas will increase as demand for recreation grows in the basin.

Consequences.--Umatilla River recreation would increase somewhat because of increased flows in late spring and fall.

Cultural Resources

Overview

No change from PR/DES

Existing Conditions

The Umatilla Basin Project study area has been variously studied archeologically in the past 40 years. The most intensive efforts have taken place along the Columbia River in areas that are now inundated by Lake Wallula and John Day Reservoir. Large habitation and fishing sites are extensively concentrated in the riparian zone of the Columbia River. The largest site is located at the old Umatilla townsite at the mouth of Umatilla River. Several small sites have been recorded and excavated in the dry canyons and breaks upstream of McNary Dam, but only one, the Box Canyon site is on the south side. The Box Canyon site contains significant deposits of pre-Mazama volcanic ash and is considered eligible for listing in the National Register of Historic Places. South of the narrow Columbia River canyon lies the

rolling, grass covered Deschutes-Umatilla plain. This area is little known archeologically, but the steep canyons associated with the permanent and major intermittent streams may have provided sufficient resources for aboriginal occupation. The Umatilla River canyon probably would have been the major area of use. The Blue Mountains, approximately 45 miles south of the Columbia River, contains numerous, small sites which appear to indicate use of the area by small groups for hunting, plant gathering, and quarrying. The Forest Service has recorded most of the Blue Mountain sites on ridges and meadows occurring within prospective timber sales. Very little is known of these sites as none have been intensively investigated.

The most notable historical sites in the basin are the route of the Oregon Trail and three properties listed in the National Register of Historic Places--the Ishram Sailing House in Weston, the Bowman Hotel, and the Edger Summerville House in Pendleton. The Oregon Trail runs from southeast to northwest approximately along the route of Interstate 84. The Forest Service has recorded a number of 20th century sites associated with logging, railroads, and homesteading in the Blue Mountains; none of these sites have been listed in or determined eligible for listing in the National Register of Historic Places. None of these sites, however, are located within the proposed project impact area.

A survey undertaken for the Umatilla Basin Project has identified two historic period European-American sites in areas that could be affected by construction of Recommended Plan elements. The survey included: consultation with the State Archeologist and the Umatilla National Forest Archeologist; a literature review and document search, and; a sample field survey of potential impact areas judged to have the greatest chance for containing relatively intact cultural resources. The field survey was a judgmental sample of the direct impact areas of the proposed plan. It included the location of most of the proposed features situated in relatively undisturbed areas having at least moderate surface visibility. The goal of the survey was to evaluate cultural resources in the areas surveyed and determine future needs. The intensively surveyed areas were walked in parallel transects spaced no more than 10 meters apart. The confidence level for locating sites during this survey was estimated at 90 percent plus or minus 5 percent. In addition to the field survey, Reclamation corresponded with and met with the tribes before the survey to identify any Indian religious sites or traditional areas of use that would be affected by the project. No sites were identified, but a protocol for contacting the Umatilla tribal officials was agreed to, should Indian burials have been discovered during the survey.

The evaluations pertaining to the eligibility of sites for listing in the National Register of Historic Places were made by Reclamation's cultural resources consultant with input from Reclamation's regional archeologist. All sites were evaluated with the criteria for listing in the National Register of Historic Places set forth in 36 CFR 60. Reclamation formally consulted in 1985 with the State Historic Preservation Officer, as required in 36 CFR 800. The evaluations offered by Reclamation were concurred in by the State Historic Preservation Officer (see Attachment L in the PR/DES).

The field survey examined two possible pump site locations for the Cold Springs Reservoir pump and portions of their discharge pipelines within the boundaries of the Cold Springs National Wildlife Refuge. Two historic sites in the area--a small household dump possibly dating to the 1930's and an abandoned ranch or farmstead--were observed and recorded. Neither is eligible for the National Register of Historic Places. A cultural resources evaluation would be made of any other sites identified during advance planning.

A 1/4-mile-wide corridor the the proposed Columbia-Cold Springs canal and pipeline was partially surveyed. Undeveloped rangeland was surveyed (2 miles in length), while 1.5 miles of irrigated crop land could not be examined due to seasonal crop production. No cultural resources were observed. The entire area was once dry grassland.

Locations for the Columbia River pumping plant site on Lake Wallula and the associated discharge line alignment were not surveyed pending final site selection in advanced planning. The pump and discharge line would be situated on land that is presently undeveloped native range.

The proposed Stanfield canal, Stanfield relift pump, and Stanfield relift canal and siphon features were not surveyed at this time because they cross irrigated croplands. This area was formerly dry grassland, and any sites that may have occurred would probably be shallow and easily destroyed by farming. In any case, surveys would not have been productive because of dense crop cover. Surveys of this area and the undeveloped areas of the proposed canal alignment would be completed during advance planning. Farmland would be surveyed after plowing when it would not interfere with crop production. WEID and Cottonwood Bend pumping sites were not surveyed but will be during advance planning.

Future Without Project Conditions

No change from PR/DES

Environmental Consequences

Within the area surveyed, the Recommended Plan would affect no cultural resources judged to be eligible for listing in the National Register of Historic Places. Facilities would be built mainly on the formerly dry grasslands south of the Columbia River. A sample survey of this area indicates that minor 20th century historical sites, such as household dumps, will probably occur in this area. Construction could damage or destroy sites that may occur, but the impact would be insignificant since the sites would probably not be eligible for listing in the National Register of Historic Places. The only exception to this may be the Columbia River pumping plant and discharge pipeline. These facilities would be located in the dry Columbia River breaks where significant prehistoric archeological sites have been found. One site, Box Canyon, is located approximately 5 miles downstream from the proposed pump site and would not be affected by the project. Any relatively undisturbed archeological sites that may occur at the pump and pipeline alignments are likely to be eligible for listing in the National Register of Historic Places. Columbia River pumping, WEID, and Cottonwood

Bend pump site locations will be surveyed during advance planning. Procedures of the Advisory Council on Historic Preservation to assure cultural resource preservation will be followed.

Mitigation of Cultural Resources

No change from PR/DES

UNAVOIDABLE ADVERSE EFFECTS

Construction of the pumping plants, canals, and fish passage improvements could be completed in about 18 months. Construction would be scheduled to occur at several different locations concurrently. This would produce a number of localized incidents of air quality reductions, primarily due to increases in airborne dust particulates and heavy equipment exhaust emissions from internal combustion engines. In similar fashion, local increases in noise levels would be associated with construction work. These air quality and noise impacts would generally be short term and intermittent at the specific work site--depending on equipment used and character of the work.

There would also be short-term reductions in water quality when cofferdams were built and removed in construction of the Columbia River pumping, WEID, and Cottonwood Bend pump plants and the fish passage improvements at diversion dams on the Umatilla River. Temporary downstream increases in turbidity levels would be experienced at these sites--these would be short term and not have a significant effect on the aquatic environment.

Project construction would result in certain temporary and permanent land use changes. These changes would occur mostly in rural settings and not affect any densely populated locations. The project would cause about 130 acres of irrigated farmland to go out of production--94 acres of which could be utilized for dryland farming after construction was finished. Canal components would eliminate about 40 acres of dry rangelands and temporarily disturb 21 acres of private properties during buried pipeline installation.

Unknown archeological and cultural material that lie beneath the land surface may be disturbed by construction before they are recognized as being of scientific value and could be irretrievably lost. Even if items are salvaged under proper clearance procedures, site disturbance may preclude future study even with advanced techniques.

Annual pumping power requirements would add an additional average powerload to the Federal Columbia River Power System of about 18,980 megawatt-hours. In addition, water withdrawal for the project from Lake Wallula would reduce hydropower generation downstream at McNary Dam by an average estimated 1,290 megawatt-hours annually. This would create an average yearly total pumping power impact of the project of 20,270 megawatt-hours--this represents an average of 3 megawatt-hours. This power effect is considered insignificant when compared to the capacity of the Federal system.

RELATIONSHIP BETWEEN SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY--RECOMMENDED PLAN

Construction, operation, and maintenance of the project is planned for a project life of 100 years. During the short-term construction phase of the first 18 months, there would be localized and mostly temporary incidences of adverse environmental pollution such as air, noise, and water quality reductions adjacent to work sites. These would be short-term disturbances to wildlife resources and habitat, vegetation, and land use in immediate project locations. Upon completion of construction activities and with application of environmental mitigation measures, most negative impacts would be ameliorated.

The Recommended Plan has been formulated to significantly enhance anadromous fish returns to the Umatilla basin. This fishery enhancement program represents a long-term commitment of basin water supplies to meet streamflow augmentation needs. Fish passage modifications at diversion dams and fish screen improvements add to the long-term commitment of the project to develop and maintain fall and spring chinook runs and increase existing steelhead populations in the basin. Project fishery accomplishments will be a major step toward meeting Indian fishing treaty rights in the Umatilla River while assuring that non-Indian irrigation water users can continue farming. Long-term environmental quality in the basin will be dramatically benefited from project related returns of fall chinook. Large populations of sea run fish will return to the Umatilla River to reproduce naturally in its extensive expanse of spawning habitats. Hatchery fish, artificially produced and reared and released as juveniles, will also benefit by the Recommended Plan. Higher flows will allow hatchery produced chinook salmon and steelhead stocks to better distribute through the Umatilla system which will provide more harvest management options and better resource utilization. Hatchery stocks will sustain higher harvest levels and will compliment returns of wild fish.

Fishery streamflow augmentation in the fall months from McKay Reservoir will be a positive environmental amenity to the area's riverine setting. McKay Reservoir releases would raise flows in the main stem Umatilla River from the mouth of McKay Creek downstream from mid-September through mid-November. In low flow years during the months of May, June, September, and October, WEID and Cottonwood Bend pumping facilities would provide additional flow augmentation in the main stem Umatilla from Westland Diversion Dam downstream. In all, about 50 miles of the main stem Umatilla River would have higher streamflows with the project during low flow periods.

Some gains in long-term recreational fishing would be expected in McKay and Cold Springs Reservoirs as a result of higher with project storage levels during resident fish prime spawning and growth periods. A significant increase in sport fishing for salmon and steelhead in the Umatilla River would be expected once project features are operational.

Without implementation of the Recommended Plan, extensive agricultural holdings could be in jeopardy of losing their water supplies. With the project there will be substantial satisfaction of Indian treaty right obligations to provide more water for anadromous fisheries while also allowing farming operations to continue that have traditionally been detrimental to basin salmon and steelhead runs. The Recommended Plan will therefore contribute to the long-term coexistence of Umatilla basin fishery and agricultural interests.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Construction activities would be an irreversible commitment to temporary degradation of the area's noise, air, and water quality resources. Capital, labor, material, and energy commitments during construction would be irretrievably lost to other projects or uses. Additional capital, labor, material, and energy used to operate and maintain the project would preclude uses elsewhere. Right-of-way and land withdrawal requirements totaling 91 acres would be committed to serve project features.

An average of 18,980 megawatt-hours would be provided annually from the Federal Columbia River Power System for project pumping purposes. This would be a firmly committed block of reserved power that could not be used for other purposes. Project water pumped from Lake Wallula would represent an average loss of generation at McNary Dam of 1,290 megawatt-hours yearly. This pumped water would be committed in an exchange for irrigation water to improve anadromous fish migration, spawning, and rearing conditions. The commitment to fishery enhancement would mean that fish flow releases from McKay Reservoir and some Umatilla River natural flows would be required to remain in the Umatilla River system and be unavailable for downstream diversion or other consumptive uses until fishery needs are satisfied. Overall, the Recommended Plan's streamflow augmentation and fish passage improvements are considered irreversible commitments by the Federal Government to help meet Umatilla tribal fishery restoration objectives.

WEST EXTENSION IRRIGATION DISTRICT McNARY DAM DIVERSION WATER EXCHANGE OPTION

Introduction

This section discusses existing conditions in key environmental categories, conditions without the project, and environmental consequences associated with the WEID McNary Dam diversion water exchange option. A physical description of this option is provided in the Recommended Plan chapter. If constructed, this option would substitute for the Recommended Plan's WEID pump station facility.

Climate

Climatic conditions would be the same as those discussed in the Affected Environment and Environmental Consequences section of the Recommended Plan.

Surface Water Resources

Existing Conditions

McNary Lock and Dam.--McNary Dam, located on the Columbia River at river mile 292, would provide the source of water for the WEID McNary Dam diversion option. Functions of this Corps of Engineers' storage facility include power, navigation, recreation, irrigation, flood control, and fish and wildlife. McNary Dam, a run-of-the river facility, impounds Lake Wallula which stretches

about 64 miles upstream and has a reservoir surface area of 38,000 acres with an active storage capacity of 185,000 acre-feet. Since McNary Dam was completed in 1957, Columbia River flows through Lake Wallula have ranged from a minimum of 96,000 ft³/s to a maximum of 414,000 ft³/s.

The McNary Dam south shore fish ladder has two conduit pipes. One of the conduits is an 84-inch diameter pipe that provides auxiliary water for attraction flows to the entrance of the fish ladder. The other conduit is a 60-inch diameter pipe that extends to a pressure well near the base of the fish ladder. At the pressure well, this conduit is reduced to a 36-inch diameter pipe which provides the water supply to the existing McNary Wildlife Park below the dam. This 60-inch pipe has remaining capacity which could be tapped to meet the WEID water exchange need.

Terminal Ditch Company.--The existing Terminal Ditch diverts from the Umatilla River about 2 miles upstream from the Columbia River confluence. A low weir spans the Umatilla River channel at the diversion. An unlined ditch extends from the diversion to a point near the McNary Wildlife Park, a distance of about 1.8 miles. The Terminal Ditch Company normally diverts about 2.5 ft³/s from about March 15 to October 15.

Future Without Conditions

Surface water resources are not expected to change in the future.

Environmental Consequences

McNary Lock and Dam.--The McNary Dam diversion option and the Recommended Plan WEID pumping plan would exchange the same amount of water with the WEID (annual average of 9,680 acre-feet). Water exchange timing also would be the same. The McNary Dam diversion would provide water from the Columbia River and reduce the average annual flow past the McNary Lock and Dam project by 9,680 acre-feet (March-320, April-940, May-1,680, June-6,350, September-80, October-310). Over the period of record, annual diversions would range from 0 to a maximum of 24,400 acre-feet. Spring and fall streamflows in the Umatilla River below Three Mile Falls Diversion Dam would be increased accordingly.

Terminal Ditch.--The existing Terminal Ditch corridor would be used for much of the McNary diversion canal alignment. During the spring and fall when the WEID water exchange is in progress, Terminal Ditch water users would be served from the McNary Diversion canal. Over the period of record, this diversion to the Terminal Ditch would range from 0 to 679 acre-feet. During times when anadromous fish flow augmentation was not in progress (July through September 15), Terminal Ditch water users would continue to receive water from their present diversion on the Umatilla River.

Fisheries

Existing and Future Without Project Conditions.--These conditions are the same as those described for the Recommended Plan.

Environmental Consequences

Anadromous Fish.--The McNary Dam diversion has some potential advantages related to fisheries when compared to the WEID pumping plant plan. Some fishery biologists have expressed concern that operating a new, larger WEID pumping plant at the mouth of the Umatilla River could draw a portion of Umatilla River flows into the pump intake, thereby reducing the net inflow of Umatilla River water entering the John Day pool. If this were to occur, there is concern that anadromous fish migration delays could result. Biologists believe that downstream migrant juvenile anadromous fish (especially fall chinook) would be most vulnerable to delay. Adult fish upstream migration into the Umatilla River might also be delayed if there were little net inflow of Umatilla River water into John Day Reservoir pool (lack of attraction water). Other biologists believe that McNary Dam tailwater operations (2.5 miles upstream from the mouth of the Umatilla River) have greater influence on flow dynamics at the mouth of the Umatilla River than would the WEID pumping facility. The "mixing" location of Umatilla River and Columbia River water at the Umatilla River mouth is not well understood and there appears to be considerable speculation concerning this issue.

In any case, this concern would be alleviated with the McNary Dam Diversion option, since there would be no pumping at the mouth of the Umatilla River during critical fish migration periods.

Another fishery benefit of the McNary option is that Umatilla River migrant smolt would not be diverted into the Terminal Ditch during the springtime water exchange period. Even though this is a small diversion, substantial smolt losses have occurred in the past from bird predation and poor bypass conditions at the ditch's fish screen. With the McNary diversion, fewer Umatilla River smolt would enter the Terminal Ditch, resulting in improved survival.

The McNary Dam Diversion option would slightly increase flow velocity through the vertical traveling fish screens at the McNary Dam south shore adult fish ladder. These screens prevent juvenile and smolt salmon and steelhead from entering the conduit pipes that feed the auxiliary water supply system for the fishway. Some juvenile fish impingement normally occurs on the screens during downstream migration periods in the Columbia River. The Fish Passage Advisory Committee of the Columbia Fish and Wildlife Authority, which is comprised of State, Federal, and tribal fishery representatives, considered the potential effects of the small increase of flow velocity through the screen, and determined that the 10-15 percent additional velocity increase at a depth of 30-60 feet would not cause a measurable increase in juvenile fish impingement.

Resident Fish.--No change from the environmental consequences described for the Recommended Plan.

Electric Energy

Existing and Future Without Project Conditions.--No change from those conditions that were described for the Recommended Plan.

Environmental Consequences.--The total dynamic head for pumping water under the McNary Dam option would be about 40 feet less than the WEID pumping plan. The McNary option would use less electric energy during pumping plant operations, but would result in slightly more hydropower generation to be foregone at McNary Dam. Table 7-47 indicates that net power demand would be less with the McNary Dam option.

Table 7-47.--Total Power Impact

Item	CRP With Existing WEID Diversion Site (Recommended Plan)	CRP With McNary Diversion Option
	- - - - - megawatt-hours - - - - -	
Pumping power demand	18,980	18,270
Power foregone at McNary Dam	<u>1,290</u>	<u>1,550</u>
Total	20,270	19,820

Wildlife Resources

Existing Conditions.--Good riparian vegetation exists along the existing Terminal Ditch. However, the area has substantial human habitation nearby which limits wildlife uses. Wildlife most likely to be found on lands affected by the McNary option are mourning dove, pheasant, California quail, muskrat, opossum, skunk, rabbit, coyote, weasel, marten, raccoon, and ducks, along with a variety of passerine bird species. Listed Threatened and Endangered species in the area were discussed in the environmental consequences section for the Recommended Plan.

Future Without Project Conditions.--Wildlife resources are not expected to significantly change in the future, although land use changes and development could reduce overall wildlife values in the area.

Environmental Consequences.--Construction of the McNary diversion canal would affect a narrow, dense strip of riparian vegetation found along some of the existing Terminal Ditch. This vegetation would be removed during canal construction. Over 1.3 miles of riparian vegetation along the existing Terminal Ditch would be retained. The new canal would be concrete lined with a bottom width of 6 feet and 1.5:1 sideslopes. There would be a 12-foot-wide maintenance road along one side of the canal and a berm on the other side. A strip of ground 65-feet wide within the dedicated right-of-way would be disturbed with construction of the new canal.

The canal and a protective fence constructed along the canal right-of-way would block localized movement of small terrestrial wildlife species except where road bridges cross the canal.

Wildlife Mitigation Measures.--Wildlife habitat mitigation identified for the Recommended Plan would be included in the McNary Dam diversion option. In addition, disturbed areas along the McNary canal alignment would be reseeded with grass and shrub plant species where topsoil conditions permit to benefit wildlife. Existing trees and riparian vegetation would be preserved in place, where possible, during project design and construction phases. A commitment would be made to work with wildlife agencies to minimize the impacts to habitat through these programs.

Water Quality

Existing and Future Without Project Conditions.--No change from those conditions that were described for the Recommended Plan.

Environmental Consequences.--The McNary Dam diversion option would provide quality water to irrigators. Originating from the Columbia River at a 60 foot intake depth, the water would be colder with less algal growth and normally have less suspended sediments than found in the Umatilla River. Thus, WEID and Terminal Ditch Company farmers should experience less weed growth and sedimentation in ditches and canals.

A buried siphon would cross the bedrock channel of the lower Umatilla River. Installation and construction would be done during the summer months when the river channel is dry. No water quality degradation would be anticipated as a result of siphon construction or use.

Land Uses

Existing Conditions.--Between McNary Dam and the WEID canal, the McNary option water conveyance facilities would traverse about 2.5 miles of Federal, Umatilla County, City of Umatilla, and privately-owned properties. The Federal lands are administered by the Corps of Engineers and BPA. They are undeveloped, in native rangeland vegetation, and have some crossings by power transmission lines emanating from the McNary Substation. Construction is nearing completion on the new Interstate 82 interchange just east of the City of Umatilla within the immediate area. A mainline of the Union Pacific Railroad runs east and west parallel to the Columbia River and curving north-south along the Umatilla River.

Some of the existing Terminal Ditch right-of-way would be used for the new McNary diversion canal alignment. One section of the canal near the McNary Substation would traverse through a pasture irrigated from the Terminal Ditch. After passing under the Interstate, the canal would skirt the north side of the Jones-Scott gravel pit. The proposed pump station would be located between the River Road highway and the branch Union Pacific line that parallels the Umatilla River.

Most of the McNary Dam conveyance facilities would be located within Umatilla County and are within purview of the Umatilla County Comprehensive Plan and Development Ordinance. Most of the affected private properties are zoned exclusive farm use by the county except for a small sliver of land zoned as rural residential between River Road and the Umatilla River and another

parcel just south of the Terminal Ditch and east of I-82 that is zoned tourist-commercial. The pumping plant and reregulating reservoir would be located within the city limits of Umatilla on land zoned for light-industrial use. The proposed McNary canal would also cross a narrow strip within the city's incorporated area along U.S. Highway 730. All county land in the area is within the city of Umatilla urban growth boundary, which provides the city opportunity to participate in county land development decisions.

Future Without Project Conditions.--Current zoning ordinances would permit future consideration of some type of motel/restaurant complex or other commercial facility on the county parcel zoned for tourist-commercial, but no such developments are actively proposed at this time. Changes in land uses on other lands is not expected.

Environmental Consequences.--The McNary canal and pipeline sections would cross under the Union Pacific Railroad twice, Interstate 82 once, U.S. Highway 730 once, other paved roads at three locations, and three gravel road crossings. Canal and buried pipeline right-of-way would encumber an estimated 7 acres of Federal land and 10 acres of private properties. Additionally, about 1.5 acres of private property would be needed near the east bank of the Umatilla River for the pumping plant and associated facilities.

Surface land use changes would be permanent on areas encumbered by the concrete canal and pump station. Land use impacts would be temporary where the conveyance system is buried in pipelines. There would be an estimated loss of 2 acres of irrigated pasture. Lands in the immediate area of this pasture have been designated by the Soil Conservation Service as prime farmland based on slope and soil classification factors (0-5 percent slope, Adkins Fine Sand Loam).

A zoning permit from Umatilla County would be needed for construction of the canal, pipeline, and pump station facilities on private land. Construction of the McNary Dam diversion option facilities would be a compatible use on all county land areas zoned for exclusive farm use. Construction of facilities on county land zoned rural-residential and tourist-commercial would require issuance of a conditional use permit followed by a zoning permit. The conditional use permit is required where development proposals are similar to other activities permitted within the zone but may not be ordinarily compatible with the intent of the zone ordinance itself. Acquisition of the permit requires public hearing and approval by the Board of County Commissioners.

A conditional use permit would also be needed for pumping plant construction on the city of Umatilla parcel zoned light industrial. Public notice of the project would be provided and local residents allowed opportunity to express concerns before the permit would be issued by the city. Following conditional use permit approval, a zoning and building permit for the facilities would be acquired from the city.

If the McNary Dam second powerhouse project were constructed in the future, a replacement water conveyance system for the upper end of the McNary canal would need to be provided as a part of that construction program.

Vegetation

Existing Conditions.--About one half of the McNary diversion canal alignment would be through native vegetation found in the shrub-steppe plant community. This vegetative type is described in the vegetation section, existing conditions for the Recommended Plan. As discussed under the wildlife section above, a narrow strip of riparian vegetation borders both sides of the Terminal Ditch. Some of this vegetation would be impacted by the McNary diversion option. Some Russian olive and locust trees grow along the existing ditch. Associated woody shrub vegetation consists of several species of willow and wild rose. Sedge, rush, cattail, bulrushes, and a variety of riparian grasses are found along the wet ditch margin.

Future Without Project Conditions.--Vegetative conditions are not expected to change in the future.

Environmental Consequences.--Construction of the McNary Diversion canal, maintenance road and canal berm would result in some permanent vegetative changes. About 4.5 acres of shrub-steppe vegetation would be eliminated by construction of the upper half of the canal near McNary Dam, and approximately one quarter of the riparian vegetation would be eliminated where the new canal would follow the Terminal Ditch alignment. Sections from the McNary Dam fish ladder to the canal entrance and from the pump station near Umatilla River to the existing WEID canal would be in buried pipe. These pipe sections would reseed naturally.

Vegetative Mitigation Measures.--See previous discussion under wildlife mitigation measures.

Recreation

Existing, Future Without Project Conditions, and Environmental Consequences.--There would be no changes from those conditions described for the Recommended Plan.

Air Quality

Existing, Future Without Project Conditions, and Environmental Consequences.--There would be no changes from those conditions described for the Recommended Plan.

Noise

Existing and Future Without Project Conditions.--There would be no changes from those conditions described for the Recommended Plan.

Environmental Consequences.--Noise impacts would be similar to those described for the Recommended Plan. There would be a temporary and short-term increase in noise levels in construction areas. Noise from construction activities would be most noticeable by residents and businesses in Umatilla's east end. Most construction would occur and be completed in one late fall and

winter period during the nonirrigation season. Following construction, the only noise would be associated with electric motors at the pumping plant facilities located next to River Road, a main highway that runs between the City of Umatilla and Hermiston.

Noise Abatement Measures.--Consideration would be given in the design of the pumping plant to placement of soil berms and tree and shrub plantings to help muffle noise levels.

Cultural Resources

Existing Conditions.--Systematic archeological research in the Umatilla Basin began after World War II in conjunction with the construction of the John Day and McNary Dams on the Columbia River.^{1/} Accordingly, work has been concentrated within the present day reservoir pools. The major exceptions are excavations at the extensive Umatilla site (35 UM 1), which is at the extreme upper end of the John Day Reservoir and was not inundated, and the excavation of the Umatilla Bridge site at the I-82 river crossing.^{2/} The sites along the Columbia River, and on the lower reaches of major tributaries, are large habitation and fishing sites. These sites usually contain dense accumulations of cultural materials and numerous housepits. Sites away from the major water courses tend to be much smaller and are associated with seasonal hunting and plant gathering by relatively small groups of people.

No sites have been recorded on the alignment of the McNary Dam diversion option. However, on archeological site, 35 UM 67, is located immediately downstream of the proposed siphon crossing of the Umatilla River. This site is a thin surface scatter of lithic material, primarily debris from the manufacture of stone tools. Recreational activities have extensively disturbed this site. The depth of the site is not known, but apparently it is a thin, sandy deposit over basalt.^{3/}

Reclamation completed an archeological survey of the McNary Dam diversion option pipeline and canal alignment from the McNary Dam south shore fish ladder to the WEID Canal.^{4/} The portion from the fish ladder to the pumping plant site has been heavily disturbed by farming, canal and road construction, and gravel excavation activity. No cultural resources were observed, and any that may have existed in the area would have been completely destroyed. The area from the proposed pumping plant to the WEID Canal was also inspected and

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- 1/ Schalk R. F. 1980. Cultural Resource Investigations for the Second Powerhouse Project at McNary Dam, near Umatilla, Oregon. Washington Archeological Research Center, Project Report No. 105. Washington State University. Pullman.
 - 2/ Gilson L. 1987. Telephone conversation with State Archeologist, July 1987.
 - 3/ Ellis D. and A. Massey. 1979. Oregon Archeological Site Survey Form for Site 35 UM 67. On file at office of the State Historic Preservation Officer, Salem.
 - 4/ Zontek T. 1987. Cultural Resources Survey Report for the Proposed West Extension Irrigation District Water Exchange Pumping Plant. Report on file at Bureau of Reclamation, Pacific Northwest Regional Office, Boise, Idaho.

no cultural resources were observed. However, this portion of the alignment will require resurvey because the proposed facility locations were not marked in the field and dense vegetation between River Road and the Umatilla River prevented access to part of the siphon crossing location.

Future Without Conditions.--Land use changes are not expected along the McNary canal alignment.

Environmental Consequences.--Present information indicates that the McNary Dam option probably will have no effect on cultural resources. A final assessment of the impacts must, however, await a survey of that portion of the alignment from the pumping plant site to the WEID Canal. This would be done when the locations of facilities have been determined and marked in the field. The pipeline and canal alignment from the fish ladder to the pumping plant is in a heavily disturbed area that contains no evidence indicating the presence of cultural resources.

Public Health and Safety

Protective fencing would be installed along the full length of open canal sections constructed as part of the McNary option.

Some traffic disruptions are anticipated during canal and pipeline construction activities. However, pipe installation under the Union Pacific Railroad, interstate highway, and U.S. Highway 730 crossing would be coordinated with railroad and Federal and State highway officials to minimize traffic disruptions. Canal bridge construction may cause some minor traffic delays on other roads. This work would be coordinated with the Oregon State Highway Division and other Umatilla County agencies.

CONSULTATION AND COORDINATION

Information provided in the 1986 Planning Report/Draft Environmental Statement (PR/DES) regarding consultation and coordination during project planning and evaluation remains valid. Since preparation of the PR/DES, the major consultation and coordination activities have been the public review and public hearing of the document. Appendixes A, B, and C to this Planning Report/Final Environmental Statement (PR/FES) summarize review and hearing comments, present letters of comment and Reclamation's responses to those comments, and include a public distribution list.

During preparation of the PR/FES and in the process of gathering information to respond to public review and hearing comments, some additional coordination activities occurred. These are highlighted below.

PARTICIPATING AGENCIES AND PUBLIC INVOLVEMENT

Discussions were held with Bonneville Power Administration and Northwest Power Planning Council staff regarding the relationship between Columbia River Fish and Wildlife Program measures proposed for the Umatilla basin and those included in Reclamation's Umatilla Basin Project. Primary topics of discussion were related to provision of power and energy for the Reclamation project pumping plants and fishway improvements. The "Recommended Plan" section of the PR/FES addresses these topics.

The "Recommended Plan" section of the PR/FES discusses a McNary Dam water diversion as a possible option to a river pumping plant for the proposed West Extension Irrigation District water exchange program. In the process of developing information for this option, Reclamation participated in additional discussions with representatives of the Corps of Engineers, tribes, irrigation districts, City of Umatilla, and State and Federal fishery agencies. The McNary Dam diversion option is discussed in the "Recommended Plan" and "Affected Environment and Environmental Consequences" sections of the PR/FES.

Reclamation participated with the Umatilla Basin study steering committee, the tribes, irrigation districts, and others in their discussions of project construction authorization legislation.

FISH AND WILDLIFE COORDINATION ACT REPORT

A major comment received during public review of the PR/DES was that additional fishery studies were being conducted in the Umatilla River Basin by the Oregon Department of Fish and Wildlife under an agreement with Bonneville Power Administration, and that the findings of these studies were not entirely consistent with Reclamation project fishery effects data included in the PR/DES. Fishery effects information presented in the PR/DES was based on 1984 Fish and Wildlife Coordination Act Reports prepared by the U.S. Fish and Wildlife Service and the National Marine Fisheries Service.

To be responsive to these comments, Reclamation participated in extensive discussions and working sessions with representatives of the Oregon Department of Fish and Wildlife, National Marine Fisheries Service, U.S. Fish and

Wildlife Service, and Confederated Tribes of the Umatilla Indian Reservation to revise and update fish return estimates and the economic evaluation of Umatilla Basin Project fishery accomplishments for use in the PR/FES. As a result of the agreements reached in this process, the Federal fishery agencies prepared a May 26, 1987, Planning Aid Memorandum which summarizes updated benefits for the Umatilla Basin Project. This Planning Aid Memorandum is appended to this PR/FES.

Fish and Wildlife Coordination Act Report Recommendations included in the PR/DES remain valid with the understanding that these recommendations will be supplemented or otherwise modified by the U.S. Fish and Wildlife Service in subsequent PAM's as project features are added or deleted during advance planning activities. The PR/DES discussion of Endangered Species Act, Section 7 consultation, remains valid.

CULTURAL RESOURCES

Additional cultural resources activity was performed in connection with preliminary study of the McNary Dam diversion option related to the West Extension water exchange proposal. This cultural resources work is discussed in the "Affected Environment and Environmental Consequences" section of the PR/FES.

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APPENDIX A - REVIEW OF PLANNING REPORT/DRAFT ENVIRONMENTAL STATEMENT

APPENDIX A

REVIEW OF PLANNING REPORT/DRAFT ENVIRONMENTAL STATEMENT

The Planning Report/Draft Environmental Statement (PR/DES) on the Umatilla Basin Project was filed with the Environmental Protection Agency July 21, 1986, and has been circulated for review. The PR/DES was sent to the states of the Columbia River basin, interested Federal agencies, local agencies, and interested organizations and individuals for information and review. In all, the document was distributed to more than 250 agencies, organizations, and individuals (see "Distribution List"). A number of letters of comment were submitted to Reclamation as a result of the 90-day review (July 31 to October 31, 1986).

A public hearing was held on the adequacy of the draft environmental statement in Pendleton, Oregon, on September 17, 1986. Reclamation personnel were present to informally respond to questions and to provide information. About 75 people attended the hearing, of those, 26 presented testimony. In addition, 10 letters were supplied for inclusion in the hearing record. Letters of comment and a summary of the hearing testimony received as a result of the review are presented in the last section of this report (Appendix C), along with responses by the Bureau of Reclamation where applicable.

The testimony and letters of record unanimously support the fishery enhancement plan. The favorable nature of comment on the PR/DES reflects the cooperative efforts made during plan formulation when there was broad participation of local interests.



APPENDIX B - DISTRIBUTION LIST

D I S T R I B U T I O N L I S T

The July 1986 Planning Report/Draft Environmental Statement was distributed for review and comment to agencies, organizations, and individuals involved in the proposed project and other interested groups and individuals. Those entities noted with an * submitted written comments on the PR/DES, and those noted with ° will receive a copy of the Planning Report/Final Environmental Statement.

A. BY THE COMMISSIONER OF THE BUREAU OF RECLAMATION FOR REVIEW AND COMMENT

U.S. Department of the Interior

- °Bureau of Indian Affairs
- °Bureau of Land Management
- °Bureau of Mines
- °U.S. Fish and Wildlife Service
- *°Geological Survey
- °National Park Service

Other Federal Agencies

- °Advisory Council on Historic Preservation
- °Council on Environmental Quality
- °Environmental Protection Agency
- °Federal Energy Regulatory Commission
- °Department of Agriculture
- °Department of the Army
- °Department of Commerce
- °Department of Energy
- °Department of Health and Human Services
- °Department of Housing and Urban Development
- °Federal Highway Administration

B. BY THE COMMISSIONER OF THE BUREAU OF RECLAMATION FOR INFORMATION ONLY

United States Senate, Washington, D.C.

- °Honorable Mark O. Hatfield
- °Honorable Robert Packwood

United States House of Representatives, Washington, D.C.

- °Honorable Les AuCoin
- °Honorable Denny Smith
- °Honorable Robert F. Smith
- °Honorable Peter DeFazio
- °Honorable Ronald L. Wyden

C. BY THE REGIONAL DIRECTOR, PACIFIC NORTHWEST REGION, FOR REVIEW AND COMMENT

Federal Agencies

Department of Agriculture

- °Forest Supervisor, Malheur National Forest, Forest Service,
John Day, Oregon
- *°Forest Supervisor, Umatilla National Forest, Forest Service,
Pendleton, Oregon
- °District Ranger, Walla Walla District, Umatilla National
Forest, Walla Walla, Washington
- °Regional Forester, Forest Service, Portland, Oregon
- °Director, Regional Technical Service Center, Soil Conservation
Service, Portland, Oregon
- *°State Conservationist, Soil Conservation Service, Portland,
Oregon

Department of Army

- *°Division Engineer, North Pacific Division, Corps of Engineers,
Portland, Oregon
- °District Engineer, Corps of Engineers, Portland, Oregon
- °District Engineer, Corps of Engineers, Walla Walla, Washington

Department of Commerce

- °Director, Economic Development Administration, Regional Office,
Seattle, Washington
- *°Chief, Environmental Technical Services, National Marine
Fisheries Service, Portland, Oregon
- °Regional Director, National Marines Fisheries Service, Seattle,
Washington

Department of Energy

- *°Administrator, Bonneville Power Administration, Portland,
Oregon
- °Regional Director, Federal Energy Regulatory Commission,
Portland, Oregon

Department of Health and Human Services

- °Regional Director, Health and Human Services, Seattle,
Washington

Department of the Interior

- °Area Director, Bureau of Indian Affairs, Portland, Oregon
- °Superintendent, Umatilla Agency, Bureau of Indian Affairs,
Pendleton, Oregon
- °State Director, Bureau of Land Management, Portland, Oregon
- °Chief, Western Field Operations, Bureau of Mines, Spokane,
Washington
- °District Chief, Water Resources Data Center, Geological
Survey, Tacoma, Washington
- °Regional Hydrologist, Geological Survey, Menlo Park, California
- °Field Supervisor, U.S. Fish and Wildlife Service, Portland,
Oregon
- *°Regional Director, U.S. Fish and Wildlife Service, Portland,
Oregon
- *°Superintendent, Umatilla National Wildlife Refuge, Umatilla,
Oregon

C. BY THE REGIONAL DIRECTOR, PACIFIC NORTHWEST REGION, FOR REVIEW
AND COMMENT (Continued)

Federal Agencies (Continued)

- *°Regional Director, PN Region, National Park Service, Seattle, Washington
- °Regional Environmental Officer, Department of the Interior, Portland, Oregon
- Department of Transportation
 - °Administrator, Federal Highway Administration, Portland, Oregon
 - °Division Engineer, Federal Highway Administration, Salem, Oregon
- *°Environmental Protection Agency
 - °Oregon Operations Office, Portland, Oregon
- *°Regional Administrator, Region X, Seattle, Washington
- Others
 - °Advisory Council on Historic Preservation, Chief, Western Division, Project Review, Golden, Colorado

State and Local Entities

Oregon

- *°Executive Department, Salem
 - °Assistant to the Governor, Salem
 - °Commission on Indian Services, Salem
- *°Department of Fish and Wildlife, Portland
 - °Department of Environmental Quality, Portland
- *°Department of Transportation, Salem
- *°Land Conservation and Development Commission, Salem
 - °Parks and Recreation Division, Salem
 - °State Clearinghouse, Intergovernmental Relations Division, Salem
- °State Historic Preservation Officer, Salem
- °Water Resources Commission, Salem
- °Water Resources Department, Salem
- *°Oregon Department of Agriculture, Salem

Idaho

- °Director, Department of Water Resources, Statehouse, Boise

Montana

- °Administrator, Water Resources Division, Helena

Nevada

- °State Engineer, Division of Water Resources, Carson City

Washington

- °Director, Department of Ecology, Olympia

C. BY THE REGIONAL DIRECTOR, PACIFIC NORTHWEST REGION, FOR REVIEW AND COMMENT (Continued)

State and Local Entities (Continued)

Wyoming

°State Engineer, Barrett Building, Cheyenne

Counties and Cities

City Manager, Boardman, Oregon
Mayor of Adams
Mayor of Athena
Mayor of Echo
Mayor of Helix
*°Mayor of Hermiston
Mayor of Monument
*°Mayor of Pendleton
Mayor of Pilot Rock
*°Mayor of Stanfield
Mayor of Umatilla
Mayor of Weston
°Morrow County Board of Commissioners, Heppner, Oregon
Port of Morrow, Boardman, Oregon
*°Port of Umatilla, Umatilla, Oregon
°Umatilla County Board of Commissioners, Pendleton, Oregon
Umatilla County Extension Office, Pendleton, Oregon
Umatilla County Soil and Water Conservation District,
Pendleton, Oregon

Indian Tribes and Related Groups

*°Confederated Tribes of the Umatilla Indian Reservation,
Pendleton, Oregon
°Confederated Tribes and Bands of the Yakima Indian Nation,
Toppenish, Washington
Confederated Tribes of the Warm Springs Indian Reservation,
Warm Springs, Oregon
Nez Perce Tribe of Idaho, Lapwai, Idaho
*°Columbia River Intertribal Fish Commission, Portland, Oregon
Northwest Indian Fisheries Commission, Olympia, Washington

Organizations and Individuals

Organizations

*°Hadley Akins, Executive Director, Umatilla Basin Project,
Pendleton, Oregon
Association of Northwest Steelheaders, The Dalles, Oregon
Association of Oregon Counties, Salem, Oregon
Blakely Engineers, Inc., Caldwell, Idaho
*°Blue Mountain Bass Club, Pendleton, Oregon
Boise Cascade, LaGrande, Oregon

C. BY THE REGIONAL DIRECTOR, PACIFIC NORTHWEST REGION, FOR REVIEW AND COMMENT (Continued)

Organizations (Continued)

- Butter Creek Water Users, Echo, Oregon
- Central Lincoln Peoples Utility District, Newport, Oregon
- CH₂M Hill, Portland, Oregon
- *°Ed Chaney, Northwest Resources Information, Eagle, Idaho
- Columbia Basin Fish and Wildlife Council, Portland, Oregon
- Columbia Blue Mountain RC&D, Pendleton, Oregon
- Columbia River Basin Fisheries Alliance, Warm Springs, Oregon
- *°County Line Water Improvement District, Hermiston, Oregon
- *°Director, East Central Oregon Association of Counties, Pendleton, Oregon
- President, Eastern Oregon Fly Fishing and Fiction Society, Hermiston, Oregon
- Friends of the Earth, Seattle, Washington
- *°Greater Hermiston Chamber of Commerce, Hermiston, Oregon
- °Manager, Hermiston Irrigation District, Hermiston, Oregon
- Izaak Walton League, Portland, Oregon
- J. R. Simplot Company, Hermiston, Oregon
- Ken's Custom Rods, Umatilla, Oregon
- Lamb-Weston, Inc., Hermiston, Oregon
- League of Oregon Cities, Salem, Oregon
- *°League of Women Voters, Pendleton, Oregon
- McNary Association, Echo, Oregon
- *°Mill Creek Sportsman Association, Walla Walla, Washington
- Morrison-Knudsen, Inc., Boise, Idaho
- National Wildlife Federation, Portland, Oregon
- *°Northwest Power Planning Council, Portland, Oregon
- Northwest Steelhead and Salmon Council, Renton, Washington
- *°Oregon Bass Federation and Blue Mountain Bass Club, Pendleton, Oregon
- Oregon Environmental Council, Portland, Oregon
- *°Oregon Natural Resources Council, Eugene, Oregon
- Oregon Trout, Portland, Oregon
- *°Oregon Water Resources Congress, Hood river, Oregon
- *°Oregon Wheat Growers Association, Pendleton, Oregon
- Pacific Fisheries Management Council, Portland, Oregon
- Pacific Power and Light, Pendleton, Oregon
- Pacific Power and Light, Portland, Oregon
- *°Pendleton Chamber of Commerce, Pendleton, Oregon
- Pendleton Grain Growers, Pendleton, Oregon
- Pioneer-Courtenay Ditch Company, Echo, Oregon
- Prudential Insurance Company of America, Tri-Cities, Washington
- The Research Group, Corvallis, Oregon
- Sierra Club, Seattle, Washington
- °Teel Irrigation District, Pendleton, Oregon
- *°Tri-State Steelheaders, Walla Walla, Washington
- Trout Unlimited, Woodland, Washington
- Umatilla County Cattleman's Association, Pendleton, Oregon
- Umatilla County Farm Bureau, Milton-Freewater, Oregon
- *°Umatilla Electric Cooperative, Hermiston, Oregon

C. BY THE REGIONAL DIRECTOR, PACIFIC NORTHWEST REGION, FOR REVIEW AND COMMENT (Continued)

Organizations (Continued)

Union Pacific Railroad, Hermiston, Oregon
Union Pacific Railroad, Portland, Oregon
°Director, Water Resources Research Institute, Corvallis, Oregon
*°Water Watch of Oregon, Inc., Hillsboro, Oregon
°Manager, West Extension Irrigation District, Irrigon, Oregon
°Manager, Westland-Stanfield Irrigation Districts, Stanfield, Oregon
Wildlife Society, Lakeview, Oregon

Individuals

Marguerite Allman Pendleton, Oregon	Elizabeth Frenkel Corvallis, Oregon
Bill Bakke Portland, Oregon	C. J. Gilbert Pilot Rock, Oregon
*°Stuart Barclay Hermiston, Oregon	Rosemary Gladow Portland, Oregon
*°Doris Bounds Hermiston, Oregon	Gladys Goad Pendleton, Oregon
James Boyd Hermiston, Oregon	Douglas Harper Helix, Oregon
Rustin A. Brewer Hermiston, Oregon	*°Michael Henderson Hermiston, Oregon
Don Brown Echo, Oregon	Fred Hill Pendleton, Oregon
*°Don Caldwell Hermiston, Oregon	Ed Hoeft Pendleton, Oregon
Paul Cimmiyoti Pendleton, Oregon	Robert Hoeft Pilot Rock, Oregon
CzL Farms Hermiston, Oregon	Fred Hoskins Heppner, Oregon
Tex Forth Pendleton, Oregon	Robert Hoskins Ione, Oregon
Henry Kopacz Hermiston, Oregon	Cora and Harold Huckaba Camarillo, California

C. BY THE REGIONAL DIRECTOR, PACIFIC NORTHWEST REGION, FOR REVIEW AND COMMENT (Continued)

Loren Hughes LaGrande, Oregon	Herb Rudolph Pendleton, Oregon
Ray Kopacz Hermiston, Oregon	Russ St. John Hermiston, Oregon
James Loiland Athena, Oregon	Cy Sun Echo, Oregon
*°Kent Madison Echo, Oregon	Don Mills Stanfield, Oregon
Les Marks Hermiston, Oregon	Frank Mueller Hermiston, Oregon
Ethel McLaughlin Gresham, Oregon	Teuscher-Edmunds Partnership Hermiston, Oregon
Jim Gohring Hermiston, Oregon	Tom Thompson Pendleton, Oregon
*°Bill Hansell Unatilla, Oregon	Dave Umbarger Pendleton, Oregon
*°Stafford Hansell Boardman, Oregon	Lon Wadekamper Hermiston, Oregon
Deanne Mueller-Crispen Portland, Oregon	Howard Wallis Stanfield, Oregon
*°Bob O'Rourke Pendleton, Oregon	Stan Wallulis Pendleton, Oregon
Owens Ranches Pilot Rock, Oregon	James Whitaker Pilot Rock, Oregon
Tom Pick Billings, Montana	Otis Wilcox Hermiston, Oregon
Chester J. Prior Hermiston, Oregon	J. R. Woodward Hermiston, Oregon
Joe Ramos Echo, Oregon	
Pete Richards Irrigon, Oregon	
William Roesh Pendleton, Oregon	

D. BY THE REGIONAL DIRECTOR, PACIFIC NORTHWEST REGION, FOR INFORMATION ONLY

Congressional Delegation--Field Office

°Office of Senator Mark O. Hatfield, Portland, Oregon
°Office of Senator Bob Packwood, Portland, Oregon
°Office of Congressman Robert F. Smith, Medford, Oregon
°Office of Congressman Denny Smith, Salem, Oregon
°Office of Congressman Les AuCoin, Portland, Oregon
°Office of Congressman Ronald L. Wyden, Portland, Oregon
°Office of Congressman Peter DeFazio, Eugene, Oregon

State

*°Governor of Oregon, Salem, Oregon

State Legislators

°Honorable K. Jernstedt, Hood River, Oregon
*°Honorable Michael Thorn, Pendleton, Oregon
*°Honorable Chuck Norris, Helix, Oregon
°Honorable Robert A. Brogoitti, LaGrande, Oregon
°Honorable Ray French, Heppner, Oregon
°Honorable Eugene Timms, Burns, Oregon

Newspapers

Agri-Times Pendleton, Oregon	Brad Warren National Fisherman Seattle, Washington
Ann Patterson The Bend Bulletin Bend, Oregon	The Oregonian Portland, Oregon
Blue Mountain Eagle John Day, Oregon	Pendleton Record Pendleton, Oregon
Capital Press Salem, Oregon	Pilot Rock News Pilot Rock, Oregon
East Oregonian Pendleton, Oregon	Statesman-Journal Salem, Oregon
Hermiston Herald Hermiston, Oregon	Tri-City Herald Tri-Cities, Washington
Cindy Eder The LaGrande Observer LaGrande, Oregon	Valley Herald Milton-Freewater, Oregon

Radio and TV Stations

KALE Radio Tri-Cities, Washington	KOIN-TV Portland, Oregon

D. BY THE REGIONAL DIRECTOR, PACIFIC NORTHWEST REGION, FOR INFORMATION ONLY
(Continued)

Radio and TV Stations (Continued)

KATU-TV
Portland, Oregon

KONA-FM
Tri-Cities, Washington

KGW-TV
Portland, Oregon

KORD Radio
Pasco, Washington

KIMA-TV
Yakima, Washington

KOTY Radio
Kennewick, Washington

KNDU-TV
Tri-Cities, Washington

KTIX
Pendleton, Oregon

KOHU
Hermiston, Oregon

KUMA
Pendleton, Oregon

Libraries

- °Blue Mountain Community College, Pendleton, Oregon
- °Eastern Oregon State College, LaGrande, Oregon
- °Lewis and Clark College, Portland, Oregon
- °Oregon State University, Corvallis, Oregon
- °Pendleton Public Library, Pendleton, Oregon
- °Portland State Library, Portland State University, Portland, Oregon
- °State Library, Salem, Oregon

Others

- *°Luther Fitch, Research and Extension Center, Hermiston, Oregon
- °Rose Hayden, PGC, Bonneville Power Administration, Portland, Oregon
- °Gary James, Confederated Tribes of the Umatilla Indian Reservation, Pendleton, Oregon
- Brad L. Johnson, National Resources Law Institute, Portland, Oregon
- °Mike Ladd, Watermaster, Oregon Water Resources Department, Pendleton, Oregon
- °Oregon Coop. Fishery Research Unit, Department of Fish and Wildlife, Corvallis, Oregon
- °Jim Phelps, Oregon Department of Fish and Wildlife, Pendleton, Oregon
- Physical Science Department, Blue Mountain Community College, Pendleton, Oregon
- °Tom Vogel, PJS, Bonneville Power Administration, Portland, Oregon
- °U.S. Army Corps of Engineers, Walla Walla, Washington
- Randy Hjort, Oregon State University, Corvallis, Oregon
- °Bureau of Land Management, Oregon State Office, Portland, Oregon

D. BY THE REGIONAL DIRECTOR, PACIFIC NORTHWEST REGION, FOR INFORMATION ONLY
(Continued)

Others (Continued)

- °Rick Van Orden, Bonneville Power Administration, Walla Walla, Washington
- Ranney Method Western, Kennewick, Washington
- °Ron Spoon, Montana Department of Fish, Wildlife, and Parks, Hamilton, Montana
- °Curt Burley, Project Leader, Vancouver Fisheries Assistance Office, Vancouver, Washington
- Lynn Everett, Pacific Power and Light, Yakima, Washington
- *°John Preston, Oregon State Highway Department, LaGrande, Oregon
- Evelyn Casias, Saunders, Snyder, Ross, and Dixon, Denver, Colorado

APPENDIX C - COMMENTS AND RESPONSES

COMMENTS AND RESPONSES

This section summarizes testimony received at the September 17, 1986, public hearing and presents letters received as a result of the review of the July 1986 Planning Report/Draft Environmental Statement (PR/DES) along with Reclamation responses where appropriate.

HEARING TESTIMONY

About 75 people attended the September public hearing in Pendleton. Twenty-six people presented testimony during the formal hearing session, and 10 additional letters were provided for inclusion in the record. All statements presented at the hearing were in support of the project. Some offered suggestions to make the plan even more effective--responses to these statements were prepared.

Hearing speakers were:

Stafford Hansell
Umatilla Basin Project
Steering Committee
Boardman, Oregon

Morris Lafever
Manager, Umatilla National
Wildlife Refuge
U.S. Fish and Wildlife Service

Ken Hall
Chairman, Board of Trustees
Confederated Tribes, Umatilla
Reservation
Pendleton, Oregon

Larry W. Jabousek
Oregon Water Resources Department

Mike A. King
Oregon Bass Federation, and Blue
Mountain Bass Club
Pendleton, Oregon

Charles R. Norris
Umatilla Basin Groundwater
Task Force
Hermiston, Oregon

Jim Phelps
Oregon Department of Fish and
Wildlife
Pendleton, Oregon

Wesley Grilley
Oregon Wheat Growers League

Douglas W. Dompier
Columbia River Intertribal Fish
Commission
Portland, Oregon

Robert D. Weeks
Pendleton Chamber of Commerce
Pendleton, Oregon

George A. Stubbett
Administrator, Soil and Water
Division
State Department of Agriculture

Joe C. McLaughlin
Mayor of Pendleton
Pendleton, Oregon

Jerry L. Odman
Engineer, City of Pendleton
Pendleton, Oregon

Bruce J. Paulson
East-Central Oregon Association
of Counties
Pendleton, Oregon

Robert Harper
State Legislature
Helix, Oregon

Doris S. Bounds
Banker
Hermiston, Oregon

Marilyn C. Cripe
Oregon Natural Resources Council
Pendleton, Oregon

Larry F. Zalaznik
Tri-State Steelheaders
Walla Walla, Washington

Bob O'Rourke
Attorney representing Stanfield,
Westland, Hermiston, West Extension
Irrigation Districts
Pendleton, Oregon

Stuart Barclay
Oregon Trout
Hermiston, Oregon

Gordon H. Scribner
Mill Creek Sportsmen Association
Walla Walla, Washington

William, R. A. Penney
Port Manager, Port of Umatilla
Hermiston, Oregon

Michael E. Henderson
Hermiston, Oregon

Tom Simmons
Water Watch of Oregon, Inc.
Hillsboro, Oregon

Bill Hansell
Umatilla County
Pendleton, Oregon

Jerry L. Lauer
Bureau of Indian Affairs
Pendleton, Oregon

A record of the hearing session is available at the Blue Mountain Community College, Pendleton; Eastern Oregon State College, LaGrande; Lewis and Clark College, Portland; Oregon State University, Corvallis; Portland State University, Portland; Pendleton Public Library; Oregon State Library, Salem; Morrow County and Umatilla County Courthouses; and Reclamation's regional office in Boise, Idaho.

RESPONSES TO STATEMENTS AND QUESTIONS PRESENTED DURING THE PUBLIC HEARING

Ken Hall, Representing Confederated Tribes of the Umatilla Indian Reservation

Statement.--The Confederated Tribes feel that the PR/DES does not give enough emphasis in certain areas: local cost sharing, project energy cost, project economic benefits, the need for quick action, and tribal role in the project.

Bureau of Reclamation Response.--Responses to these comments are included in Reclamation's response to the tribes' written comments in the following section.

Marilyn Cripe, Presenting Letter from Tim Lillebo, Northeast Oregon Field Representative of the Oregon Natural Resources Council

Statement.--Council recommends that degraded upriver spawning areas be fully rehabilitated and be managed to enhance fisheries. Also recommends that a study be done on the upper Umatilla watershed to determine damage by roads, logging, grazing, and offer recommendations to improve the watershed and fishery habitat.

Bureau of Reclamation Response.--A January 1986 report entitled "A Comprehensive Plan for Rehabilitation of Anadromous Fish Stocks in the Umatilla Basin," prepared by the Oregon Department of Fish and Wildlife (ODFW) under contract with Bonneville Power Administration (BPA), identifies stream habitat deficiencies in the Umatilla basin and discusses restoration needs. The report establishes the basis for funding various stream habitat improvement measures under the Northwest Power Planning Council's Columbia River Basin Fish and Wildlife Program. The program has potential to provide funding for projects on private and public lands.

Mike King, Representing the Oregon Bass Federation, Blue Mountain Bass Club and Other Warm Water Anglers Who Spend Many Hours on McKay Reservoir

Statement.--Raised the following concerns:

1. Loss of habitat. We feel higher water levels longer in the summer season would cause a die-off of willows and brush. Small fish and spawning fish utilize this habitat for reproduction and survival.

Solution: Establishing a minimum pool, replacing habitat with tire reefs or other structures.

2. Trading off fishery. In an effort to move salmon and steelhead up the Umatilla River, McKay could be drained. This would wipe out one of the best warm water fisheries in the State.

Solution: Establishing a minimum pool in McKay.

3. Value of warm water fishery. The report goes to great lengths to explain the value that salmon and steelhead will have towards improving the economy of the Northwest.

We would like to see the values of warm water fisheries before and after the project. Any loss in value to this fishery needs to be allotted for the Basin Plan.

Solution: An indepth environmental impact study of warm water fishery at McKay Reservoir.

Bureau of Reclamation Response.--1. The future without and future with project water resource conditions have been revised to reflect a more recent period of basin water use--including McKay Reservoir operations. These revisions are displayed in tables in the "Recommended Plan Changes, Modifications, and Updating" section of this Planning Report/Final Environmental Statement (PR/FES). The Recommended Plan would provide for a new minimum reservoir pool of 6,780 acre-feet (10 percent of active storage). This would provide a substantial resident fishery improvement over existing conditions since McKay Reservoir has been drained in the past. Looking at revised hydrology, on average, McKay Reservoir would be at lower levels from October to April but would be higher from May through September. In combination with a minimum pool, these actions could represent an enhancement to the reservoir fishery. Simple and low cost treatments could be done around the reservoir shoreline areas to replace willow and brush if project conditions resulted in a loss of existing riparian vegetation stands.

2. A minimum pool will be established under the Recommended Plan (see "Affected Environment and Environmental Consequences" section in this PR/FES).

3. Page 7-24 (table 7-20) of the PR/DES reflects an increase of 4,050 angler-days at McKay Reservoir with the Recommended Plan. Using accepted warm water fishery angler-day values, this would provide a benefit increase of \$60,750 per year. Resident fish benefit estimates will be updated as necessary during advance planning work.

Charles Norris, Hermiston, Oregon

Statement.--On page 5-3, groundwater portion, it fails to mention that it has been declared for some 10 or 12 years that Ordnance is a critical groundwater area. It fails to mention that the Butter Creek area has been declared as a critical water area. Additionally, the governor's task force findings report was rendered on May 30, 1986.

Bureau of Reclamation Response.--The Ordnance and Butter Creek areas have been identified in the ground-water discussion and findings of the Governor's Task Force summarized in this document.

Stuart Barclay, Northeastern Oregon Director for Oregon Trout

Statement.--Potential dangers that need attention:

1. Provisions must be included in the strongest possible terms that ongoing funding for pumping will not be curtailed.

2. The Umatilla River must be closely and diligently monitored during pumping to ensure that the water which should remain in the river for fish is there in fact.

3. Also commented on riparian management in regards to the plan as an alternative to upstream impoundment; requests Bureau to include attention to riparian rehabilitation and management in its plan.

Bureau of Reclamation Response.--1. The Northwest Power Planning Council has adopted an amendment to the Columbia River Basin Fish and Wildlife Program whereby BPA would provide power or reimbursement for operation and maintenance costs associated with provision of power to Reclamation pumping plants designed to exchange Columbia River water for Umatilla River water for fishery purposes.

2. Agree. The framework for required water permits and project water regulation is discussed on pages 2-32 to 2-35 of the PR/DES. These arrangements will be formalized prior to construction.

3. Riparian habitat improvements are proposed in the Northwest Power Planning Council's Columbia River Basin Fish and Wildlife Program. These improvements would be constructed on tributary streams outside the areas affected by Reclamation's Recommended Plan.

Luther A. Fitch, Oregon State University Extension Agent, Hermiston

Statement.--Concern that the economic value and impact of agriculture in the project area are understated and underrealized.

Bureau of Reclamation Response.--Comment noted. The PR/DES adequately emphasizes the role of agriculture in the basin, and the goal to continue the irrigated agriculture in the basin reflects Reclamation's evaluation of the impacts.

LETTERS

This section includes letters received as a result of the review of the July 1986 PR/DES. Reclamation's responses to specific comments are included where appropriate.

Response Required

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11/4/86	U.S. Fish and Wildlife Service	C-22
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9/30/86	Department of Army, North Pacific Division, Corps of Engineers	C-29
10/24/86	Department of Commerce, National Ocean and Atmospheric Administration, National Marine Fisheries Service	C-36
10/30/86	Environmental Protection Agency	C-41
10/31/86	Department of Energy, Bonneville Power Administration	C-45
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United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VA. 22092

In Reply Refer To:
WGS-Mail Stop 423
DES 86/32

OCT 28 1986

Memorandum

To: Commissioner, Bureau of Reclamation,
Washington, D.C.

From: Assistant Director for Engineering Geology

Subject: Review of proposed planning report/draft environmental statement, Umatilla Basin Project, Oregon

We have reviewed the statement as requested in your memorandum of July 18.

1. The statement should address the relationship between ground water and surface water in the pertinent reaches of the river, particularly where the river may be losing water to aquifers. Available data suggest that some of the losing reaches of the river may be in the vicinity of proposed downstream passage improvements. Will the planned restoration of flow in the Umatilla River have significant effects on ground-water levels? If so, will the increased availability of streamflow make possible more efficient operation of wells and thus encourage increased pumping? We suggest that these relationships between ground water and surface water should be considered.
2. The description of the project area environment is inadequate with respect to climate. A brief climatic description of the Umatilla Basin would be valuable in interpreting the impact of various alternatives on water resources.
3. Detailed, site-specific geological and geotechnical preconstruction investigations should be performed after final site selections are made.

James F. Devine

Copy to: Office Chief, WRD, Portland, Oregon

Response

1. A study aimed at determining the specific relationship between surface and ground waters was not made. However, gains and losses have been computed based on historical river gauges and canal diversions. The remaining question is what happens to these reach gains or losses when flows are increased in some months. Reclamation believes that the stream losses may increase slightly in some reaches and would most likely cause an increase in downstream gains. Based on the magnitude of historical losses and gains, future fluctuations are expected to be minor and were not estimated in the project operation model. A return flow study underway by the State should provide a clearer picture of the ground-water and surface-water relationship.

2. A climate discussion has been added to the "Affected Environment and Environmental Consequences" section in the Planning Report/Final Environmental Statement.

3. These investigations would be made during the preconstruction phase of the project.



United States Department of the Interior

BUREAU OF INDIAN AFFAIRS

PORTLAND AREA OFFICE

POST OFFICE BOX 3789

PORTLAND, OREGON 97208

MEMORANDUM

DATE: October 30, 1986

TO: Bureau of Reclamation, Washington, D.C.
ATTENTION: Commissioner

FROM: Assistant Area Director, Program Services

SUBJECT: Review of Proposed Planning Report/Draft Environmental Statement - Umatilla Basin Project, Oregon (DES 86/32)

As requested we have reviewed the subject statement and offer the following comments. These comments are being offered on a technical assistance basis only and do not necessarily represent the position of the Secretary of the Interior.

General Comments

We recommend implementation of the Columbia River Pumping Plan as the least-cost means of substantially addressing the Federal Government's obligations under the Tribes' treaty reserved rights to fish. In addition, through continuing investigation, the project would lay the foundation for addressing other critical tribal and nontribal water needs in the basin.

There are enormous economic and political pressures inherent to water management in the Umatilla Basin that threaten to undermine the unprecedented cooperation between tribal and nontribal interests. It is imperative that the Columbia River Pumping Plan be implemented as quickly as possible to alleviate these pressures. Emphasis should be placed on early construction of the small pump complex while finalizing design of the larger pump complex and formalizing agreements and institutional arrangements for the overall project.

1. Local Cost Share

The DEIS seems to significantly understate the substantial local cost share. Approximately \$15 million of anadromous fish production and passage projects have been approved for funding by the region's ratepayers under the Columbia River Basin Fish and Wildlife Program; about \$1.7 million are in place and another \$5 million-\$6 million of projects are in final design. This investment is equivalent to approximately 40% of the total construction cost of the Columbia River Pumping Plan. Implementation of the Columbia River Pumping Plan coupled with the fish production and passage projects would create conditions suitable for attainment of the major portion of the Confederated Tribes' fishery management objectives in the Umatilla River.

2. Project Energy Costs

In calculating the cost of energy associated with the Umatilla Basin Project the final EIS should take into account: (a) the regional glut of energy for which there is no market; (b) the Pacific Northwest Electric Power Planning and Conservation Act's mandate that fish be given equitable treatment in the operation of the Federal Columbia River Power system, e.g., in the price charged for energy consumed or energy production forgone; (c) the prospect that all energy costs will be paid by the region's ratepayers through the Columbia River Basin Fish and Wildlife Program of the Northwest Power Planning Council.

The 1986 Draft Amendment Document for the Columbia River Basin Fish and Wildlife Program includes a measure (704(a)(17)) for the Bonneville Power Administration to provide power or repayment for operation and maintenance costs associated with provision of power to the Columbia River pumping facilities. The average annual cost of the power requested in the proposed amendment plus the opportunity cost of potential power revenues forgone at the average priority firm rate of 22.3 mills/kwh would represent a direct local cost share of approximately 20%-25% of the total annualized cost of the pumping facilities and appurtenances.

3. Water Exchange Agreements

The DEIS proposes that water exchanges would be consummated among the irrigation districts involved in the exchange, Oregon Department of Fish and Wildlife, Bureau of Reclamation and any others necessary. As the lead Federal Agency involved with these proposed water exchange agreements the Bureau of Reclamation must assume a more aggressive posture regarding exercise of the federal trust responsibility toward the Confederated Tribes' treaty reserved rights to water and fish. The Bureau of Reclamation must resist any tendency to view the Tribes as just another user group.

4. Tribal Role in Project Operations

The DEIS is virtually silent on the role of the Confederated Tribes in project operations. If for no other reason than that the project is being advanced to address treaty-reserved rights, the Tribes would necessarily have a major role in devising and monitoring project operational regimes.

Years of trial and error in manipulating project flows and timing of fish runs will be required to obtain optimum project results. Once a broad management framework is established, annual management regimes will be required. In years of low runoff, these annual management regimes will be critical and potentially contentious. In all cases, real-time, hands on tribal involvement will be required.

The final EIS should recognize the requirement of an operational infrastructure that includes the Bureau of Reclamation, the Confederated Tribes, Oregon Department of Fish and Wildlife, Oregon Department of Water Resources and appropriate irrigation interests. The need for project funds to support tribal involvement should be clearly provided for.

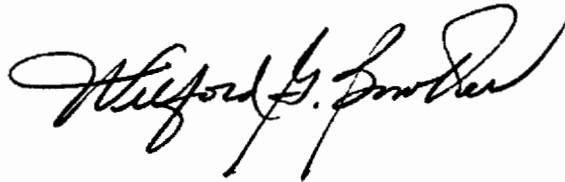
Specific Comments

5. Background and Summary page 3 paragraphs #3 and #4
It should be made explicit that while the Columbia River Pumping/Meacham Dam option was the most desirable, the Confederated Tribes, Oregon Department of Fish and Wildlife and irrigators agreed that the Columbia River Pumping Plan by itself was the pragmatic, least-cost alternative.
6. Page 5 paragraph #3
The Bureau of Reclamation must assume a more aggressive posture regarding exercise of the federal trust responsibility toward the Confederated Tribes' treaty reserved rights to water when consummating agreements for the exchange of Columbia River water for Umatilla River water to insure adequate flows for anadromous fish.
7. Page 5 paragraph #4
An operational infrastructure that includes the Bureau of Reclamation, Confederated Tribes, Oregon Department of Fish and Wildlife, Oregon Department of Water Resources and appropriate irrigation interests will be required. Project funds to support tribal involvement should be clearly provided.
8. Page 6 paragraph #2
The exercise of the Prior/Brown/Teel irrigation water permits represents the potential for serious confrontation between tribal and nontribal interests even with the construction of the Columbia River Pumping Plan. Constraints on use of these permits are absolutely necessary to avoid any reduction in improvement of anadromous fish passage associated with the project flows.
9. Page 6 paragraphs #4 and 5
The federal obligation to redress impact of a federal irrigation project on treaty-reserved rights of the Confederated Tribes should be explicitly recognized.
10. Page 7 paragraph #2
A reference to approximately \$2 million in state and other (non Bureau of Reclamation) federal expenditures in the Umatilla River Basin for fishery enhancement efforts since 1980 should be added. Also the state of Oregon has established minimum stream flows for the Umatilla River and withdrawn the river from further appropriation.
11. Page 7 paragraph #4
The 1986 Draft Amendment Document for the Columbia River Basin Fish and Wildlife Program includes a measure (704 (a) (17)) for the Bonneville Power Administration to provide power or repayment for operation and maintenance costs associated with provision of power to the pumping facilities. It is appropriate that power to run the pumps be provided to help redress damage from power generating operations of the Columbia River Power System. We do not believe Bonneville Power Administration has unlimited discretion in complying with the Fish and Wildlife Program established by the Northwest Power Council.

12. Page 8 paragraph #3
It should be made clear that the Umatilla Basin Project as proposed has two components, the construction of pumping facilities to exchange Columbia River water for Umatilla River water and further study of nonfish water needs. At some point in the future the Confederated Tribes will desire to exercise their treaty reserved right to water for out of stream purposes on the Umatilla Indian Reservation. In addition, the basin's declining ground water resources will seriously impact domestic, municipal, industrial and agricultural water supplies of the non-Indian community. Additional storage of water in the basin will very likely be needed to meet these needs.
13. Page paragraph #5
Implementation of the Columbia River Pumping Plan is the least-cost approach to addressing the Confederated Tribe's treaty reserved rights to water for fishery purposes.
14. Page 9 paragraph #6
The Umatilla Basin Groundwater Task Force Report has been provided to the Governor of Oregon. Reference to this report should be updated as appropriate.
15. Page 11 - Major Features
It is our understanding that the West Extension Irrigation Pumping Plant should be sized at 180 cfs not 100 cfs.
16. All fish passage improvements are included in the proposed five year action plan (1986 Draft Amendment Document 1504 (32.12)) under the Columbia River Basin Fish and Wildlife Program. On August 25, 1986 Administrator Jura of the Bonneville Power Administration committed to implement all Umatilla River program measures as included in the Columbia River Basin Fish and Wildlife Program. Costs for these improvements should therefore be deleted from the Umatilla Basin Project costs throughout the DEIS.
17. Page 23
The following points should be added to the list:
 1. Provides for substantial tribal and nontribal fishery related economic development;
 2. Contributes substantial off-site benefits to the region including freshwater and marine commercial and recreational fisheries;
 3. Addresses the federal government's trust responsibility to the Confederated Tribes;
18. Page 25 #9
The state of Oregon established minimum flows in accord with project goals.

19. Page 25 #10
A reference should be added to the \$15 million approved for Umatilla River fishery enhancement projects under the Columbia River Basin Fish and Wildlife Program and the commitment of the Bonneville Power Administration to implement these measures within four to five years.
20. Page 26 #1
Emphasis should be placed on early construction of the West Extension Irrigation District pumps while finalizing design of the larger pump complex and formalizing agreements for the overall project. Such action is necessary to insure that adult fish reach Three-Mile Dam.
21. Page 2-2 paragraph #3
See comments Page 6, Paragraph 2
22. Page 2-15 paragraph 2 and Table 2-8
The impact on annual operating costs of the Bonneville Power Administration providing power to the pumping facilities under the Columbia River Basin Fish and Wildlife Program (1986 Draft Amendment Document, 704 (a)(17)) needs to be discussed.
23. Page 2-16 Project Operation #1 and #2
The discussion should highlight the major cost-savings features of the Columbia River Pumping Plan. It is our understanding that the project will not pump the entire water supply for the Hermiston and Stanfield Irrigation Districts only that amount of water forgone when minimum flows are reached.
24. Page 2-29 Power Costs
See comments Page 2-15, Paragraphs 2&3
25. Page 2-29 Cost Allocation
See comments Page 6, Paragraphs 4 and 5.
26. Page 2-33 paragraph #1
Some flow shortages are forecasted above Three Mile Falls Diversion Dam that could impact migration of spring and fall chinook. The report does not explain why this could occur since the project purposes is to provide water exchanges to prevent such problems. Conditions could be compounded in low water years with increased irrigation demand. Under these conditions there should be provisions for sharing of water shortages. As it stands the irrigators would receive more water than historically available in a low water year.
27. Page 4-5
See comments page 11 - Major Features Table.
28. Page 4-6 Table 4-1
This table should be updated.

29. Page 5-5 paragraph #3
Natural production of fall chinook could be sustained through a major trapping and hauling program, if the fish reach Three-Mile Dam, or preemption of irrigation diversions during critical fish migration periods.
30. Page 7-18 #6
Delete reference to "purchase"; insert obtain and generally rewrite to include alternative actions, e.g., interim use of existing West Extension pumps etc.
31. Page 7-18 paragraph #9
This paragraph and Attachment E should be deleted in light of the commitment of Bonneville Power Administration to implement all Umatilla River measures in the Columbia River Basin Fish and Wildlife Program.
32. Page 7-18 Footnote #1
This footnote should be deleted refer to comments page 11, Major Features Table.



Response

1. Local Cost Share

Legislation to authorize the project is expected to include a provision which would recognize actions by other interests to fund construction or operation of features of the proposed project by giving them a credit against cost-sharing requirements. This should include any features of the project funded under the Pacific Northwest Electric Power Planning and Conservation Act of 1980 (Power Act). This would include costs incurred by others before a Federal construction appropriation for the project. If such legislation is approved by Congress, funding by State and local entities and the region's electrical power ratepayers for construction of facilities of the proposed project would be considered cost sharing. Legislation is also expected to recognize that the proposed project is part of a comprehensive program to restore the Umatilla basin fishery and that non-Federal entities are investing significant funds into a variety of fishery programs in the basin that are complementary to the proposed project.

2. Project Energy Costs

Project energy costs are based on values provided by Bonneville Power Administration (BPA). A rate of 22.2 mills per kilowatt-hour, the average 1986 priority firm energy rate, has been used to calculate the annual power charge to the project. Secondly, a "replacement cost" has been provided by BPA to arrive at an economic value of power used or lost as a result of project development. This value has been estimated at 33.22 mills per kilowatt-hour--the 1986 "new resource rate." These values have been used in the project economic and financial analysis.

The Northwest Power Planning Council has adopted an amendment to its Fish and Wildlife Program whereby BPA would provide power or reimbursement for power to operate the project's pumping facilities. As this occurs, BPA would assign a value to the power which could be used as a credit toward Fish and Wildlife Program objectives.

3. Reclamation and the irrigation districts are involved with existing water permits. As indicated on page 5 of the Planning Report/Draft Environmental Statement (PR/DES), it was the opinion of the State Water Resources Department that Oregon Department of Fish and Wildlife (ODFW) would be the appropriate entity to hold any new "fish" permits necessary to the proposed exchange. Representatives of the Confederated Tribes of the Umatilla Indian Reservation, irrigation districts, Water Resources Department, fishery agencies, and Reclamation would cooperatively develop specific operation and monitoring agreements to assure that project objectives are met.

4. A program is included as a feature of the project to permit project operators and fishery experts to technically evaluate project accomplishments toward meeting fishery restoration objectives and to fine tune operations within real operating constraints to maximize accomplishments. This program would be administered by Reclamation in consultation with the tribal fishery experts, ODFW, and the Federal fishery agencies. This program is expected to extend over a 12-year period and would be a project cost.

A Umatilla Basin Project oversight committee would be organized to provide a forum of communication among the project's varied water interests. The committee, made up of representatives from the affected irrigation districts, the ODFW, Confederated Tribes of the Umatilla Indian Reservation (CTUIR), the Oregon Water Resource Department watermaster office, and Reclamation, will meet as necessary to disseminate information and coordinate activities concerning operations. ODFW and the CTUIR would develop annual fish passage and flow objectives within project guidelines. These and other responsibilities and funding arrangements would be specified in project operation and maintenance agreements.

5. Page 3. See "Other Revisions" section of this Planning Report/Final Environmental Statement (PR/FES) regarding page 3 revisions.

6. See response 3 above.

7. See response 4 above.

8. The revised project operation in the Recommended Plan Changes, Modifications, and Updating section of this PR/FES incorporates the Prior/Brown/Teel permits and discusses constraints on exercise of those permits.

9. Pages 1 and 2 of the 1986 PR/DES identify the treaty reserved rights of the tribes and the Federal obligation to recognize those rights.

10. The cost-sharing discussion in the Recommended Plan Changes, Modifications, and Updating section of this PR/FES has been revised to emphasize the cooperative role being played by multiparties in funding the Umatilla fishery restoration program.

11. See response to 2.

12. Page 8 of the 1986 PR/DES addresses the need for further water development in the basin.

13. Comment noted, no response necessary.

14. See "Other Revisions" section of this PR/FES regarding page 9 revisions.

15. The proposed West Extension Irrigation District (WEID) pump is now sized at 140-ft³/s capacity. See Recommended Plan Changes, Modifications, and Updating section of this PR/FES for discussion of this facility.

16. See response to 1.

17. See "Other Revisions" section of this PR/FES regarding page 23 revisions.

18. See "Other Revisions" section of this PR/FES regarding page 25 revisions.

19. See "Other Revisions" section of this PR/FES regarding page 25 revisions.

20. See Recommended Plan Changes, Modifications, and Updating section of this PR/FES for construction schedule discussion which emphasizes early implementation of the WEID pump.

21. See response to 8 above.

22. See responses 1 and 2 above.

23. See revised project operations discussion in Recommended Plan Changes, Modifications, and Updating section of this PR/FES.

24. See responses 1 and 2 above.

25. See response to 9 above.

26. The project is not designed to meet target flows 100 percent of the time. It would be uneconomic to reach such a level. It is proposed that Stanfield Irrigation District receive an average water supply instead of an exact exchange each year, then more water would be pumped from the Columbia River in dry years and less water pumped in wet years. There is no increased irrigation demand from the Umatilla River during dry years.

27. See response to 15 above.

28. See "Other Revisions" section of this PR/FES regarding page 4-6 revisions.

29. See revised discussions on fall chinook in Affected Environment and Environmental Consequences section of this PR/FES.

30. See revised discussion on future without project conditions related to anadromous fish in Affected Environment and Environmental Consequences section of this PR/FES.

31. This information is significant in acknowledging other aspects of the overall Umatilla basin fishery restoration program and, even though subject to periodic updating, should not be retained as background.

32. Footnote retained, but revised to read: "Action 7 is presently programmed for funding under the Northwest Power Planning Council's Fish and Wildlife Program. These facilities are plan elements in the Recommended Plan. When these facilities are constructed under that program, their funding will be considered "early action" non-Federal cost-sharing contributions toward Reclamation's Umatilla Basin Project." Action 8 in the PR/DES was combined with action 7 in the PR/FES.



United States Department of the Interior

NATIONAL PARK SERVICE

Pacific Northwest Region
83 South King Street, Suite 212
Seattle, Washington 98104

IN REPLY REFER TO:

L7619(PNR-RE)
DES 86/32

OCT 31 1986

Memorandum

To: Regional Director, Pacific Northwest Region, Bureau of Reclamation,
Boise, Idaho

From: Acting Deputy Regional Director, Pacific Northwest Region

Subject: Proposed Planning Report/Draft Environmental Statement (PR/DES),
Umatilla Basin Project, Oregon

We have reviewed the subject document and have the following comments:

This PR/DES is not complete in its consideration of project impacts to cultural resources. The archeological survey work was confined to only a few of the proposed facilities. It is broken down as follows:

Recommended Plan

1. Columbia River Pump Plant: Not surveyed, apparently because four alternative locations are still being considered.
2. Columbia-Cold Springs Canal: Only 2 of 4.3 miles surveyed.
3. Cold Springs Reservoir Pump Plant: Two alternate locations and "portions" of discharge pipeline surveyed.
4. Stanfield Canal (2.1 miles of new line): Not surveyed.
5. Stanfield Relift Pump Plant and Regulating Reservoir: Not surveyed.
6. Stanfield Relift Canal (2.8 miles of new canal): Not surveyed.
7. Stanfield Relift Siphon (6,830 feet of new pipeline): Not surveyed.
8. Permanent Operating Facilities: Not discussed in cultural resource sections.

Alternative Plan

1. Operation and Maintenance Road: The PR/DES should state that the archeological survey of the North Fork of Meacham Creek covered the area of

the proposed 2 1/2-mile O&M road from the Union Pacific bridge to the Meacham Dam, if that is the case.

1. The PR/DES should discuss in more depth the rationale for eliminating so many of the Recommended Plan facilities from survey. It should also include evidence of concurrence by the State Historic Preservation Officer (SHPO) that these decisions are warranted by topography and previous research.

The PR/DES should explicitly describe the methods used in the cultural resource survey of the project area. The Deputy SHPO's October 22, 1985, letter (PR/DES, Attachment L) indicates that the description of methods in the original survey report was also vague, to the extent that the adequacy of the survey could not be judged.

The PR/DES is ambiguous as to whether the project survey work was limited to sampling only, or whether it was merely the first of two phases of survey. On the one hand, it states (p. 8-9) that the sample field survey "permitted an estimate of impacts in those areas not covered by the field survey." On the other hand, it states (p. 7-53) that "the remainder of the project area will be surveyed during advance planning." In either case, the attempt thus far to identify cultural resources and project impacts must be considered incomplete.

The PR/DES states that "the Recommended Plan would affect no cultural resources listed on or eligible for listing in the National Register of Historic Places" (pp. 7-53 and 7-93). This statement is premature, if not inappropriate, given the continued lack of information on survey methods used and the fact that a considerable amount of survey of the proposed facilities has been either eliminated or postponed. The PR/DES also states (p. 7-93) that "this determination [of no effect] is supported by a letter received from the State Historic Preservation Officer . . . (see Attachment L)." The PR/DES should make it clear, however, that the SHPO letter discusses only the non-eligibility of the sites identified from survey thus far. The letter does not discuss project effects on cultural resources, and there is no indication that its language was meant to apply to areas that have yet to be surveyed for potentially eligible cultural resources.

2. The historic period resources of the project area do not appear to have been adequately considered. This important early settlement corridor of the Oregon Trail would seem to warrant more extensive background research on whether historic structures, places, or archeological sites might be present that could be adversely affected by this project. The PR/DES should provide convincing information that such resources are not likely to exist in the project area, if this is the case.

Specific Concerns

3. 1. Columbia River Pump Plant: The PR/DES does not explain why the selection of a preferred alternative for the pump plant location could not be made and, therefore, surveyed at this time for cultural resources.

4. 2. Meacham Reservoir Alternative: What is the evidence that flooding in 1964 probably destroyed any cultural resources that may have been present along the main stem of Meacham Creek below the North Fork? If the evidence for such destruction is substantial, why is the area recommended for survey in the event this alternative is selected? The SHPO's opinion on this should be documented in the PR/DES.
3. Tie-Cutting Mill, North Fork: The PR/DES states only that this feature was apparently "in operation in the mid to late 1940s," based on associated artifacts and input from local woodcutters. The PR/DES does not state when the mill was constructed, and therefore it does not necessarily follow that the mill is ineligible for the National Register. The PR/DES should be explicit about the date of construction for this mill, which should not be difficult to document if it dates only from the 1940s.
5. 4. Hydromet gauging stations (p. 2-14): Three of these will be constructed for the project, but the PR/DES does not address whether they have been or will be surveyed for possible impacts to cultural resources.

Thank you for the opportunity to review this document.



Ronald E. Sarff

cc:
WASO-762, Environmental Compliance Division
Regional Director, Western Region
Attention: Ron Corbyn (IRAS)

Response

1. See Affected Environment and Environmental Consequences section of this Planning Report/Final Environmental Statement (PR/FES) for revisions to the discussion on existing conditions of cultural resources, rationale for not surveying selected portions of the project, and survey methods. Extensive technical coverage of these topics is not possible within the environmental statement format. A more detailed treatment can be found in the following report completed for the Umatilla Basin Project planning study: Burney, M.S. "Archeological and Historical Surveys of Selected Portions of the Umatilla Basin Project, Umatilla County, Oregon." Western Archeological Consultants, Inc. Boulder, Colorado, 1985.

The National Park Service requests evidence that the State Historic Preservation Officer concurred with our survey plans. Such concurrence is not required by law or regulation, and it was not solicited for this project. However, the SHPO was given the opportunity to comment on the survey report as required by 36 CFR 800.

2. The concern about Oregon Trail impacts is addressed in the Affected Environment and Environmental Consequences section of this PR/FES. The Oregon Trail lies outside the impact area of the project and will not be affected by the Recommended Plan.

3. The Columbia River pumping plant location was not surveyed because the Corps of Engineers objected to Reclamation's preferred siting as depicted in the Planning Report/Draft Environmental Statement (PR/DES). A new acceptable site has been identified in this PR/FES, and surveys will be done during advance planning.

4. These two sites were located in the 1986 PR/DES Alternative Plan. This PR/FES deals only with the Recommended Plan since in the hearing and public review process it was unanimously supported over the Alternative Plan. In addition, there are no modifications that could be made to the Alternative Plan that could enhance its economic viability over the Recommended Plan.

5. Hydromet gauging station locations will be sited and surveyed during advance planning. Site flexibility should make it possible to avoid any possible impacts.



United States
Department of the Interior

Fish and Wildlife Service
Lloyd 500 Building, Suite 1692
500 N.E. Multnomah Street
Portland, Oregon 97232

In Reply Refer To: Your Reference:

November 4, 1986

MEMORANDUM

To: Regional Director, Pacific Northwest Region,
U.S. Bureau of Reclamation, Boise, Idaho

From: ^{Acting} Regional Director, U.S. Fish and Wildlife Service,
Portland, Oregon

Subject: Planning Report/Draft Environmental Statement
Umatilla Basin Project, Oregon (EC 86/32)

The Fish and Wildlife Service is pleased to provide our comments on the subject Planning Report/Draft Environmental Statement for the Umatilla Basin Project, Oregon. In addition to these comments, the Fish and Wildlife Service has also commented at the public hearing on September 17, 1986, and in a memorandum from the Regional Director, Region 1, dated September 19, 1986 as part of the hearing record for the project. All of these documents constitute the Fish and Wildlife Service's input to the Planning Report/Draft Environmental Statement for this important project. Our input now is divided into general and specific comments.

General Comments

The Planning Report/Draft Environmental Statement does a good job in documenting the problems and needs in the Umatilla Basin, and the specific accomplishments of the recommended plan in meeting these needs. The recommended plan is a flow enhancement project to restore spring and fall chinook runs and improve steelhead runs in the Umatilla River. Key project features include pumping facilities on the Columbia River, use of storage capability at existing Bureau of Reclamation facilities located at McKay Creek and Cold Springs National Wildlife Refuge, and improved passage and screening facilities at several irrigation diversions.

Both ocean and freshwater recreation and commercial catch of salmon and steelhead would increase as a result of the Umatilla Basin Project. The estimated annual benefit is over \$2.2 million. Additionally, fish returning to the Umatilla Basin would help meet the treaty rights reserved by the Confederated Tribes of the

Umatilla Indians in an 1855 treaty with the Federal Government. Most importantly, this would occur while the existing consumptive water uses would continue in support of the basin's important agricultural economy. Only minor impacts to resident wildlife would occur temporarily during project construction. More detailed information on the effects of the project were furnished in a 1984 Fish and Wildlife Coordination Act Report on the Umatilla Basin Project. We are pleased to see that the Bureau of Reclamation has adopted the findings of the Fish and Wildlife Coordination Act Report and has concurred in the recommendations of that report. The Umatilla Basin Project would also promote conservation of the bald eagle and this finding has been documented in the Planning Report/Draft Environmental Statement. The Fish and Wildlife Service support for the Umatilla Basin Project assumes that a legally binding agreement will be developed which guarantees that increased flows provided by the project will remain in the Umatilla River to benefit its fishery. We also understand that the Bureau of Reclamation has accepted the recommendations contained in the Fish and Wildlife Coordination Act Report which include provisions to mitigate any impacts to refuge facilities at Cold Springs National Wildlife Refuge and to monitor and adjust project operations to meet fishery restoration goals. In addition, we understand that water pumped from the Columbia River will result in a minor decrease in hydroelectric power production, but will not adversely affect spill needed for downstream passage of fish at McNary Dam.

We recommend that the preferred plan be authorized for construction, and funding be provided for the necessary advanced planning and detailed design work needed before construction can begin. This work should begin as soon as possible because the full benefits of ongoing hatchery and habitat improvement measures of the Oregon Department of Fish and Wildlife, the Umatilla Tribes, and others can not be realized without the flows provided by the Bureau of Reclamation's project.

Specific Comments

1. Background and Plan Summary, page 4, 4th paragraph: Here and elsewhere throughout the report, fish benefits are discussed in terms of numbers of adult anadromous fish returning to the Umatilla Basin. Although these numbers are consistent with findings of the Fish and Wildlife Coordination Act Report, the Fish and Wildlife Service is preparing a Planning Aid Memorandum that will update these numbers, based primarily on results of a more recent report completed by the Oregon Department of Fish and Wildlife entitled "Comprehensive Plan for Rehabilitation of Anadromous Fish Stocks in the Umatilla Basin." That report details specific fishery accomplishments of a number of measures, including flow

enhancement with the Umatilla Basin Project. The Planning Aid Memorandum will be used by the Bureau of Reclamation as part of its verification memorandum, and will be provided prior to completion of the final Environmental Impact Statement so the new figures can be shown in the final document. These numbers are still being coordinated with the other resource agencies, but are close to those used in the Fish and Wildlife Coordination Act Report, with the total numbers exceeding those now shown in the Planning Report/Draft Environmental Statement.

2. Recommended Plan Summary, page 11: This summary states that the West Extension Irrigation District pump would be used to "possibly supplement water supplies to the district's lands during low flow summer periods." Elsewhere throughout the Planning Report/Draft Environmental Statement, it is stated that no irrigation measures are part of the preferred plan, and only with additional study would any irrigation features be planned for the future. This point should be clarified.
3. Recommended Plan, Prior/Broan/Teel Water Permits, page 2-2: The opportunity to work out a cooperative agreement for these additional permits appears good based on the willingness of all parties to work toward an agreement. However, that agreement should be based on the results of the Bureau of Reclamation's yet-to-be completed, revised hydrology study and other options not yet analyzed for providing fish flows with the project. This agreement should be developed and agreed to during advanced planning and be a part of the overall operational agreement for the project.
4. Upstream Passage Improvements at Existing Diversions, page 2-13: Stanfield Diversion Dam should be added to this section as a structure where modifications are needed to improve upstream passage of adult anadromous fish as part of the project. This was recognized as an area needing improvement in the recent Comprehensive Report completed by Oregon Department of Fish and Wildlife, and will be discussed in greater detail in the Planning Aid Memorandum being prepared by the Fish and Wildlife Service. This change should be made elsewhere throughout the Project Report/Draft Environmental Statement when discussing upstream passage problems and solutions.
5. Post-construction Monitoring Program, page 2-14: The Fish and Wildlife Service and National Marine Fisheries Service should be added as agencies that will cooperate and participate in the monitoring program.
6. Umatilla Project Irrigation District's Goals and Potential Solutions, page 4-22: It is not clear why this section is presented in the Planning Report/Draft Environmental Statement when it is clearly stated that no irrigation function has been developed as part of the recommended, or alternative plans. It is also clear

that should the plan be revised and any of these features be added, significant additional planning and coordination would be required and need to be incorporated into a revised Planning Report/Draft Environmental Statement. Unless it is anticipated that some of these features are to be added to the current preferred plan, we suggest this section be dropped from the Planning Report/Draft Environmental Statement.

7. Improvement of Delivery and Distribution Facilities, page 4-24: It is mentioned that Cold Springs National Wildlife Refuge is incompatible with the operation of the pool levels necessary for maximum efficiency of the project, however, there is no documentation of what the problem is. This is particularly interesting since it is noted that the refuge has been in place since 1909 (page 7-27). The specific problem with operation of Cold Springs National Wildlife Refuge should be documented or this should be dropped from further discussion.
8. Common Goals to All District, page 4-24: It is not clear how the districts should participate in any revenue generated by the project when power production is not a part of the project. Does this mean to say that the districts will share in the power needs of the project?
9. Evaluation of Potential Irrigation Measures, page 4-25: We question the likelihood that the addition of a pump-generator facility at the West Extension Irrigation Diversion is a promising future consideration, because of the potential conflicts with restoring anadromous fish in the basin. Again, in light of the statements about the need for additional work should any of these measures be incorporated into the recommended plan (last paragraph), why is this section even being presented in the Planning Report/Draft Environmental Statement?
10. Pump-generator, page 4-27: See comments above. This discussion should also account for possible impacts to anadromous fish with the hydropower operation.
11. Wildlife Mitigation Measures, page 7-30: The features of the project that would be located on Cold Springs National Wildlife Refuge need to be coordinated with the Fish and Wildlife Service to determine their compatibility with refuge operations in accordance with provisions of the National Wildlife Refuge Administration Act.

In summary, we believe the Planning Report/Draft Environmental Statement does a good job in detailing project accomplishments and impacts, and we concur in the recommendations and conclusions as listed on pages 25 and 26.


David F. Riley

Response

1. A comparison of fishery benefits based on data found in the U.S. Fish and Wildlife Service (FWS) 1984 Coordination Act Report and the FWS 1987 Planning Aid Memorandum (PAM) is shown in the Economic Analysis discussion in the Recommended Plan section of this Planning Report/Final Environmental Statement (PR/FES). The PAM incorporates the latest thinking on fish returns, and catch:escapement ratios. Also shown are two sensitivity analyses. The first one shows the economic impact of including coho salmon in the national economic development benefit analysis. The other shows an analysis of anadromous fish benefits (without coho) based on the latest thinking on fish returns but using different catch:escapement ratios, sport fishing, and commercial values.

2. The possibility of providing supplemental irrigation supplies to West Extension Irrigation District is not a feature of the Recommended Plan. See "Other Revisions" section of this PR/FES regarding page 11 revisions.

3. It is anticipated that the process suggested will be followed. See the revised project operation discussion in the Recommended Plan Changes, Modifications, and Updating section of this PR/FES.

4. Comment accommodated, see Recommended Plan Changes, Modifications, and Updating section of this PR/FES.

5. Comment accommodated, see Recommended Plan Changes, Modifications, and Updating section of this PR/FES.

6. The study was multipurpose in scope--as a result, it was desirable to discuss nonfish needs.

7. The 1986 Planning Report/Draft Environmental Statement (PR/DES) discussion incorporated concerns expressed by the irrigation districts during the study and represented their perception. The issue related to Cold Springs could, in part, reflect past discussions between district representatives over maintenance obligations for various facilities around Cold Springs Reservoir.

8. The statement refers to a goal of the districts that if power generation were to become a project element (which it is not), they would like to participate in the power function.

9. A pump-generator could replace the proposed West Extension pump at nominal additional cost. However, there are no present plans to add this element or others in the referenced section to the Recommended Plan. The section provides a record of opportunities that were researched and related findings.

10. Such an analysis seems unnecessary at this time since the pump-generator is not a proposed plan element.

11. We agree.



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
OFFICE OF CHARTING AND GEODETIC SERVICES
ROCKVILLE, MARYLAND 20852

SEP 17 1986

TO: BF/ECD - David Cottingham

FROM: *[Signature]* N/CG - John D. Bossler

SUBJECT: DEIS 8607.15 - Umatilla Basin Project, Oregon

The subject statement has been reviewed within the areas of Charting and Geodetic Services' (C&GS) responsibility and expertise, and in terms of the impact of the proposed action on C&GS activities and projects.

1. Geodetic control survey monuments may be located in the proposed project area. If there is any planned activity which will disturb or destroy these monuments, C&GS requires not less than 90 days' notification in advance of such activity in order to plan for their relocation. C&GS recommends that funding for this project includes the cost of any relocation required for C&GS monuments. For further information about these monuments, please contact Mr. John Spencer, Chief, National Geodetic Information Branch (N/CG17), or Cdr. Melvyn C. Grunthal, Chief, Operations Branch (N/CG16), at 6001 Executive Boulevard, Rockville, Maryland 20852.

Attachment



Response

1. Proper notification will be made before any monuments are disturbed or destroyed. Adequate costs are included in the project estimate to cover relocation of monuments.



DEPARTMENT OF THE ARMY
NORTH PACIFIC DIVISION, CORPS OF ENGINEERS
P.O. BOX 2870
PORTLAND, OREGON 97208

REPLY TO
ATTENTION OF:

September 30, 1986

Planning Division

U.S. Department of the Interior
Bureau of Reclamation
Pacific Northwest Region
Federal Building & U.S. Courthouse
Box 043-550 West Fort Street
Boise, Idaho 83724

Gentlemen:

We have reviewed your Planning Report/Draft Environmental Statement (PR/DES) on the Umatilla Basin Project. We agree the fishery would benefit from flow enhancement and have reviewed the proposal for consistency with the ... "Principles and Guidelines"... used by both of our agencies.

We concur in Attachment K that an exception to the National Economic Development benefit maximization criterion of the Principles and Guidelines will be needed since the proposed plan does not show economic justification in NED terms. Review comments are enclosed.

Sincerely,

Thomas H. Olson
D. E. Olson
for Chief, Planning Division

Enclosure

North Pacific Division
Comments on Umatilla River Basin Planning
Report and Draft EIS
September 29, 1986

1. 1. We have reviewed the subject report and find it to be inconsistent with interagency planning guidelines. Major areas of inconsistency are discussed in the following paragraphs:
2. a. Problem Identification. The major water resources problem and resulting planning objective appear to be incorrectly defined. The report correctly notes that the immediate problem is the absence of a viable fishery in the Umatilla River, however, it fails to recognize that over appropriation of water reserved for the Tribe by the treaty of 1855, for irrigation use by non-indians is the cause of the problem. It is suggested that the focus of the study should be on the issue of over-appropriation of water and analysis of the feasibility of augmenting flows for irrigation rather than mitigation for the loss of anadromous fish runs.
3. b. Without Project Condition. While the without project condition presented in the report is exceptionally vague, the analyses are based on a continuation of the status quo. This basis is completely contrary to such statements from the report as the following:
 - (1) " The Tribes have stated they will not compromise treaty reserved rights to avoid controversy..." (page 3).
 - (2) "The project is a Federal action...to insure integrity of the existing Federal Umatilla Reclamation project" (page 7).
 - (3) "...The Federal court system has upheld the treaty reserved rights of the Tribes..." (page 1-3).
 - (4) "The Federal court has confirmed the intent of treaty reserved rights. In 1980, the court held that a treaty right to fish is meaningless if most of the fish are destroyed by a hostile environment such as a dewatered stream channel" (page 2).
 - (5) "...The Tribes claim prior water rights to the Umatilla River which they have not exercised" (page 1-4).The foregoing statements strongly suggest that the without project condition would be restoration of flows and anadromous fish runs at the expense of irrigated agriculture i.e. a loss of a portion of the state-issued non-indian water rights.
4. c. Alternatives. In view of the potential without project condition described above and in view of the fact that annual project costs are in excess of 40 percent of the gross annual value of irrigated crops, an obvious alternative to the proposed project is the acquisition (or revocation) of sufficient non-indian water rights to provide flows needed to restore the anadromous fish runs. Since Umatilla River flows greatly exceed flows required for fish during 6 months of the year (Dec. thru May), on average, additional storage, either on-stream or off-stream could also be considered as an alternative.

5. d. Basis for Benefit Evaluation. We have two concerns about the basis for the benefit evaluation; first, it appears that the correct basis is the maintenance of irrigated agriculture at the present level, and second, the evaluation presented is not consistent with interagency water resources evaluation procedures. Regarding the latter, there are no provisions for the use of regional development benefits as NED benefits and, there are no provisions for using the cost of services as a benefit. Further, it is our understanding that interagency NED benefit maximization criterion requires that the recommended plan should be the alternative plan with the greatest net economic benefits consistent with protecting the nation's environment. Recommendation of a plan which does not maximize net NED benefits requires an exception as is indicated by attachment K of the subject report. However, in our view, the use of the exception as applied to the subject report is not consistent with interagency planning guidelines. Specifically the exception has been used as the basis for using regional benefits (as approximated by the cost of facilities) as a project benefit. We are not convinced that this is appropriate or acceptable.
2. In addition to the above issues, we have the following comments on the evaluation and evaluation assumptions.
6. a. Supplemental data showing project benefits and costs at current interest rates and price levels are needed to verify the stated feasibility of the project.
7. b. The current marginal cost of coal-fired base-load electrical power plants is approximately 41.9 mills per kwh rather than 33 mills per kwh as shown in the report.
8. c. A preliminary review of the estimated powerloss at the McNary project indicates that losses shown in the report are low.
9. d. Additional information is needed to verify that the increase in anadromous fish escapement shown is incremental to the without project condition. Specifically, it is stated in the report that the proposed flow enhancement and the improvements would be "...done in concert with other habitat enhancement programs already in place or underway by the Tribes, state, and Northwest Power Planning Council...". To establish the appropriate without project condition for the subject report, it is essential that the increase in escapement due to the actions of the above mentioned entities is established.
10. e. Based on monthly flow graphs (page 12, for example) it appears that both fisheries mitigation and enhancement would occur. Mitigation results by restoring flow during the critical, low-flow months to the natural flow. Enhancement occurs as flows are increased to levels higher than natural flow. Based on the bar graph on page 12, enhancement would occur during October, November, and September. In terms of responsibility, mitigation would be appropriately assigned to the irrigation project and enhancement could be assigned to Bonneville Power Administration (with their consent) as part of the mitigation required for Columbia River main-stem hydropower projects.

11. f. We concur that NED benefits should not be claimed for hatchery fish released in the Umatilla River. These fish apparently are John Day project mitigation fish which are reared in the Spring Creek and Bonneville hatcheries. Release of the fish in the Umatilla River increases the number of fish returning to that river but decreases the number of total returning fish. The total for the system is decreased because the out-migrating smolts released in the Umatilla River are required to pass three dams during their migration to the sea, thus increasing their mortality.

Response

1 and 2. The objective of the planning study was to develop a cost-effective plan to provide water for fish restoration in the Umatilla River in order to partially satisfy a reserved treaty obligation and at the same time meet irrigation water service commitments. The formulation of a plan could not be exclusively driven by an objective to maximize net national economic development benefits. This theme has been expressed in several Reclamation planning documents on the project up through the July 1986 Planning Report/Draft Environmental Statement (PR/DES), copies of which were provided to the Corps.

3. Comments regarding the without project condition imply that the analysis should have assumed a situation where the Indians would win water rights in the Umatilla River now used by the agricultural community. During the formulation process, such a scenario was evaluated and provided to local interests for consideration. There was no consensus among local groups involved in the formulation and evaluation process that such a scenario should be pursued, and on that basis, the status quo was used as the basis for analysis.

4. Water right buyout and/or land purchase was not included as an alternative in the PR/DES because it did not meet the study objective nor the acceptability criteria set forth in the Principles and Guidelines (P&G); i.e., "acceptability is the workability and viability of the alternative plan with respect to acceptance by State and local entities and the public and compatibility with existing laws, regulations, and public policies."

To use water acquired by buyout or land purchase would require a change in Oregon water law and would likely find little acceptability with the majority of present water users. On the other hand, the Recommended Plan does not involve injury to other parties from diminished return flows; it is basically compatible with existing laws, regulations, and public policies and is acceptable to prospective participants.

Economic efficiency of extensive water right buyout is questionable since the most recent analysis of a water right buyout is that it would cost at least \$55 million.

The above costs do not include the adverse impacts on the regional economy from a water right buyout. An estimated \$7 million annually in regional income would be lost as a result of the lower level of agricultural activity associated with this alternative. So, although a water right/land acquisition concept was analyzed, it was not presented in the PR/DES as an alternative plan because it does not meet the P&G tests of acceptability and efficiency nor does it meet the study objective.

Chapter 6 of the PR/DES discusses at length the evaluation of numerous on- and offstream storage sites within the basin that were evaluated during the plan formulation stage of the study.

5. The objective of the plan is to assist in meeting objectives of the Confederated Tribes of the Umatilla Indian Reservation (tribes) to restore anadromous fish runs in the Umatilla basin while continuing water service

commitments to agriculture. A cost-effective means to accomplish the objective was developed. The exception request was not a request to use regional benefits or cost of facilities approach to justify a Federal expenditure. The request was to proceed with a plan that would meet tribal goals and not be subject to the national economic development (NED) benefit maximization criteria of the P&G. In addition, the NED anadromous fish benefits in the PR/DES are limited to ocean and Columbia River fishing and do not measure the benefits to the tribes of restoring anadromous fish runs in the Umatilla basin.

The 1984 U.S. Fish and Wildlife Service's Coordination Act Report (CAR) is the basis for the anadromous fish NED benefit analysis in the PR/DES. Since the CAR was released, the Oregon Department of Fish and Wildlife (ODFW) completed and published the results of a 1986 report entitled "A Comprehensive Plan for Rehabilitation of Anadromous Fish Stocks in the Umatilla River Basin" (Oregon Comprehensive Plan). The findings in this report are that the Recommended Plan would enhance the anadromous fishery of the Umatilla basin substantially more than was shown in the CAR. In addition, ODFW and the tribes have made some long-term fish management decisions that would improve the beneficial impact of the Reclamation project.

Based on the above study findings and management decisions, the U.S. Fish and Wildlife Service in cooperation with National Marine Fisheries Service, have revised anadromous fish benefits and published them in a 1987 Planning Aid Memorandum (PAM) which is attached to this Planning Report/Final Environmental Statement (PR/FES). The PAM measures anadromous fish returning into the Umatilla River and is the basis for the NED economic analysis in this PR/FES. Therefore, all anadromous fish benefits to the tribes are accounted for in this study and an exception is no longer applicable.

The current economic analysis, based on the latest thinking about fish returns to the basin associated with the project, shows the Recommended Plan has benefits in excess of costs.

6. Interest rates and price levels have been updated in the Recommended Plan Changes, Modifications, and Updating section of this PR/FES.

7. Bonneville Power Administration (BPA) furnished the economic value of power, which includes the incremental replacement cost of power, to use in our analysis. BPA has recommended use of a marginal cost rate of 33.22 mills per kilowatt-hour for the Umatilla Basin Project.

8. The estimated power loss at the McNary project was furnished by BPA.

9. New and updated fisheries conditions information has been provided in this PR/FES. The fish returns to the Umatilla River are specifically identified by species, for the existing, future without, and future with project conditions. A comparison of the 1986 PR/DES fishery benefits and the PR/FES estimates are shown in the Economic Analysis discussion in the Recommended Plan section of this PR/FES.

10. The comment appears to assume that fishery benefits will be directly proportional to streamflow levels. This probably will not be the case but will be observed in the postconstruction fishery monitoring program. BPA should claim fishery credits to the extent they share in costs of plan elements.

11. Not all of the hatchery fish are John Day mitigation fish which are reared in the Spring Creek and Bonneville hatcheries. New summer steelhead and spring and fall chinook hatchery facilities in the Umatilla basin are scheduled to be in operation before the plan is implemented. Studies of the impact of the project on basin anadromous fish, completed since the Coordination Act Report of 1984, agree that with Recommended Plan facilities in operation and improved flow conditions that both those juvenile fish outplanted from these new hatcheries and from natural spawning will experience a higher survival rate as they move downstream to the Columbia River. They also agree that returning adult spawners will benefit from better upstream passage and flow conditions in the Umatilla River. As a result, these studies show substantial increases in fish escapement for both hatchery and natural steelhead and spring chinook. A comparison of anadromous fishery benefits, PR/DES and PR/FES, is shown in the Recommended Plan Changes, Modifications, and Updating section of this PR/FES.



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Washington, D.C. 20230

OFFICE OF THE ADMINISTRATOR

October 24, 1986

Mr. John W. Keys, III, Acting Regional Dir.
Pacific Northwest Region
Bureau of Reclamation
Attention Code 150
Box 043 - 550 West Fort Street
Boise, ID 83724

Dear Sir:

This is in reference to your draft environmental impact statement for the Umatilla River Basin, Oregon. Enclosed are comments from the National Oceanic & Atmospheric Administration.

We hope our comments will assist you. Thank you for giving us an opportunity to review the document.

Sincerely,

David Cottingham
Ecology and Conservation Division

Enclosure





**UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE**

ENVIRONMENTAL & TECHNICAL SERVICES DIVISION
847 NE 19th AVENUE, SUITE 350
PORTLAND, OREGON 97232-2279
(503) 230-5400

OCT 22 1986

F/NWR5:26

Mr. John W. Keys, III, Acting Regional Director
Pacific Northwest Region
Bureau of Reclamation
Attention Code 150
Box 043 - 550 West Fort Street
Boise, ID 83724

Dear Mr. Keys:

The National Marine Fisheries Service (NMFS) has reviewed the Planning Report/Draft Environmental Statement (PR/DES) on the Umatilla River Basin, Oregon. We have been cooperators with the Bureau of Reclamation, the other resource agencies and the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) for almost eight years in the current planning effort for the Umatilla Basin. We are pleased that this fishery restoration effort has culminated in the plan of action displayed here. Our general and specific comments on the PR/DES follow.

General Comments

In general, we find the DEIS well written and comprehensive. It became obvious early in the planning effort for the Umatilla Basin Project that the environmental, social and political climates were in a constant state of flux. The forces that affect planning and analysis constantly challenged our staffs to be equitable to the myriad Basin interests yet at the same time remain fixed on the original objective of the study: water management to benefit anadromous fish. This basic concept of water for fish has remained the moving force behind our work to restore salmon and increase steelhead numbers produced in the Umatilla River Basin. A corollary problem that the Umatilla Basin Project seeks to alleviate is inadequate passage for adult and juvenile fish. We remain committed to the idea that both improved flows and passage improvements are needed if the fish production potential of the Umatilla is to be realized.

The Fall of 1986 has brought us to the season when we expect a return of adult upriver bright fall chinook salmon to the Umatilla. We remain hopeful that fish will enter the river in good numbers this year. However, the bulk of the very large Columbia River run has passed the Umatilla at this writing on its way over nearby McNary Dam. There has been no indication of a proportionately large



run to the Umatilla River. Adult salmon have not returned in good numbers thus far in spite of channel work completed this year downstream of Three Mile Dam, and pumping to replace irrigation water. For the present, more water seems to be the missing ingredient in the timely upstream migration of fall chinook adults.

Finally, we are pleased that the Bureau has decided to address the issues surrounding the Westland boundary expansion in a separate feasibility report. This will prevent any further delay in planning and implementation of the Umatilla River Basin plan.

Specific Comments

Page 2-2, second paragraph - Natural production estimates for spring chinook should probably be revised to agree with the figure in Oregon Department of Fish and Wildlife's comprehensive plan (700 adults). Also, some increase would be noted in hatchery steelhead returns due to the operation of the preferred plan. This would total an additional 648 steelhead being credited to the project as an accomplishment of increased flow and improved passage conditions.

Page 2-25, Table 2-19 - Same comment as above.

Page 2-31, fifth paragraph, last sentence - This seems to indicate that there are no reimbursable costs to the irrigation districts. If this is so, is it correct to assume that project facilities would remain in Federal ownership?

Page 2-36, Table 2-23 - Under "Beneficial effects" a figure of \$4.85 million is assigned to the CTUIR. The source and derivation of this dollar amount should be identified.

Page 2-39, Table 2-25 - The \$4.85 million discussed above in the NED account appears in the Regional display as well. The complex table presented here has virtually no explanatory text and is very hard to understand or analyze. This information needs considerable development before it will be useful.

Page 2-28, Table 2-21 - We recommend that a range of pumping costs be displayed based on what Bonneville Power Administration (BPA) may charge the project for the power.

Page 2-31, fourth paragraph - This paragraph ends with a discussion of fishery benefits being credited to the Administrator of BPA in exchange for pumping power costs. Please explain the formula used for crediting BPA with fish benefits.

Page 7-48, sixth paragraph - In the first sentence we believe the word "decisiveness" should be "derisiveness."

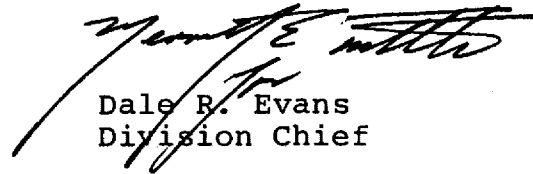
Page 7-49, seventh paragraph - We believe the statement about reservoir access is out of place in the discussion of present

project area conditions because the preferred plan does not include the reservoir on Meacham Creek.

10. Page 7-65, third paragraph - In the third sentence "implanted" should be changed to "imprinted."

Thank you for the opportunity to comment on the PR/DES.

Sincerely,



Dale R. Evans
Division Chief

cc: CTUIR
ODFW
USFWS-ES-PFO
NPPC
BPA

Response

1 and 2. Revised fishery benefits are shown in the Economic Analysis discussion in the Recommended Plan Changes, Modifications, and Updating section of this Planning Report/Final Environmental Statement (PR/FES). The benefit display is based on estimates provided in the U.S. Fish and Wildlife Service's 1984 Coordination Act Report and that agency's 1987 Planning Aid Memorandum (appended to this PR/FES). There are areas of disagreement regarding (1) inclusion of coho in the national economic development benefit analysis, (2) catch:escapement ratios, and (3) sport/commercial values for anadromous fish. Sensitivity analyses have been made to accommodate these views, and these are displayed in the Economic Analysis discussion in this PR/FES. It is hoped that consensus can be reached on these issues during advance planning studies. However, as shown in the various analyses, the Recommended Plan is economically justified no matter which set of assumptions is used.

3. Project facilities associated with the Umatilla Basin Project would remain in Federal ownership.

4. An explanation of the derivation of this benefit is found on pages 2-25 and 2-26 of the 1986 Planning Report/Draft Environmental Statement.

5. The regional economic development analysis, consisting of numerous income and employment analyses, is summarized in this table. This consists of a catch analysis of the four species of anadromous fish from the ocean to the reservation; the direct and indirect income and employment impacts of the catch on various Indian groups; and direct and indirect income and employment impacts on Indians and non-Indians resulting from project construction, purchase of construction materials, and operation of project facilities. The above impacts are also analyzed as to where they occur; i.e., on or off the reservation and whether in or out of the region.

A complete explanation of these analyses is on file in the Bureau of Reclamation's Boise, Idaho, regional office in the Regional Economic Development Appendix.

6. Electrical power costs for project pumping as used in the Recommended Plan Changes, Modifications, and Updating section of this PR/FES are consistent with project construction costs of October 1986. Pumping power rates provided by Bonneville Power Administration (BPA) do not include a range.

7. The Northwest Power Planning Council's Fish and Wildlife Program includes a measure calling on BPA to furnish pumping power to the project as a measure to mitigate adverse fish impacts resulting from development and operation of Columbia River hydroelectric power facilities. The value of power related to the project would be credited to objectives of the Northwest Power Planning Council's Fish and Wildlife Program. A formula for determining fish benefits creditable to the program would be calculated at that time.

8. We agree.

9. We agree.

10. We agree.



U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 SIXTH AVENUE
SEATTLE, WASHINGTON 98101

OCT 30 1986

REPLY TO
ATTN OF: M/S 443

John W. Keys, III
Acting Regional Director, Pacific Northwest Region
Bureau of Reclamation
Attention Code 150
Box 043
550 West Fort Street
Boise, Idaho 83724

Dear Mr. Keys:

The Environmental Protection Agency (EPA) has reviewed the Umatilla Basin Project, Oregon, Planning Report Draft Environmental Statement (DEIS) prepared by your office. Our review was conducted in accordance with the National Environmental Policy Act (NEPA) and our responsibilities under Section 309 of the Clean Air Act. The DEIS describes alternative plans to improve streamflows in the Umatilla River and improve fish passage and screen conditions at some existing irrigation diversions.

The major feature of the Recommended Plan is construction of a pumping facility on the Columbia River which would deliver water to the Umatilla Basin. This water would permit some Umatilla River water now diverted for irrigation to remain in the river for improved flow and water quality. The Alternative Plan would have a similar goal, but includes construction of a dam and reservoir on North Fork Meacham Creek. The No Action alternative is clearly documented as being unacceptable.

The Alternative Plan would address the needs in the Umatilla Basin somewhat better than the Recommended Plan. In particular, the Alternative Plan reduces the number and magnitude of instream flow shortages, includes more stream habitat improvement work, and would allow chinook salmon to exist in the upper Umatilla river and on the Umatilla Indian Reservation itself. However, the Meacham dam and reservoir is estimated to require over \$77 million to construct, resulting in an overall estimated cost (\$112 million) that is triple that of the Recommended Plan (\$37 million).

The Recommended Plan will result in significant environmental benefits. The minimum streamflows adopted by the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, the Oregon Department of Fish and Wildlife, and the affected tribes (for the mainstem Umatilla River below Pendleton) will be substantially met, and the number and magnitude of shortages significantly reduced over the present situation. Fish passage and screening improvements

1.

will help ensure that the flow improvements will result in increased numbers of returning adults. Monitoring of a fairly significant duration (12 years, or up to three generational cycles of the anadromous fish species) will be performed to identify operational modifications where needed. (We suggest that the final EIS describe the workings of this monitoring program.) These benefits will be accomplished without reducing the water historically available for irrigation purposes in the lower Umatilla Basin.

In addition to the positive substantive aspects of the Recommended Plan, the DEIS itself is a comprehensive and well-prepared document. We were particularly pleased with the acknowledgement and serious consideration given to the multiple-use problems of the basin. The thorough job of describing the policies and goals of various entities and agencies, and of the several related efforts to enhance and restore anadromous fish populations in the Columbia River Basin, should serve as a positive model for others engaged in the planning of activities that may affect these resources.

We commend the Bureau of Reclamation's efforts to reach a creative solution to a difficult set of problems.

We have rated the DEIS as LO - Lack of Objections. (An explanation of the EPA rating system for EISs is enclosed for your reference.) This rating and a summary of our comments will be published in the Federal Register.

Thank you for the opportunity to review the DEIS. If there are any questions about our comments, please contact Mr. Brian Ross of our EIS and Energy Review Section at (206) 442-8516 or FTS 399-8516.

Sincerely,



Robert S. Burd
Director, Water Division

Enclosure

cc: NMFS
USFWS
IDFW
CRITFC

SUMMARY OF THE EPA RATING SYSTEM
FOR DRAFT ENVIRONMENTAL IMPACT STATEMENTS:
DEFINITIONS AND FOLLOW-UP ACTION *

Environmental Impact of the Action

LO--Lack of Objections

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities with no more than minor changes to the proposal.

EC--Environmental Concerns

The EPA review has identified environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EO--Environmental Objections

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no-action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU--Environmentally Unsatisfactory

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEQ.

Adequacy of the Impact Statement

Category 1--Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2--Insufficient Information

The draft EIS does not contain sufficient information for EPA fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category 3--Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment

Response

1. Monitoring program specifics will be developed with fishery and tribal interests prior to construction. The program is expected to include evaluation of upstream adult and downstream juvenile fish migration progress under varied flow conditions, development of flow augmentation strategies to optimize Umatilla River fish migration, and to gather data to substantiate fish escapement.



Department of Energy

Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208

In reply refer to: PGC

OCT 31 1986

Mr. John W. Keys, III
Regional Director
Bureau of Reclamation
Box 043, 550 West Fort Street
Boise, Idaho 83724

Dear Mr. Keys:

Enclosed are our comments on your Umatilla Basin Project Planning Report/Draft Environmental Statement (PR/DES). As a part of our comments we have enclosed power cost information which you requested of us in your letter dated August 14, 1986. These discussions include: (1) the appropriate pumping power rate for use in your document's financial analysis; and (2) determination of the economic value of power for use in the national economic development evaluation. The economic value of power reflects current 1986 costs and a 8-7/8-percent discount rate. If you have questions specific to the economic value of power or require further supporting data, please call John Emery at FTS 429-3963.

If you have questions on the comments in general please contact Rose Hayden at FTS 429-5379.

Sincerely,

A handwritten signature in black ink, appearing to read "Roy B. Fox", is written over a horizontal line.

Roy B. Fox
Environmental Coordinator
Office of Power and Resources Management

Enclosure

Comments

1. FISHERY PRODUCTION NUMBERS

Of particular interest to Bonneville Power Administration (BPA) are discussions in your Umatilla Basin Project Planning Report/Draft Environmental Statement (PR/DES) on anadromous fish production estimates under present flow conditions, future-conditions-without, and future-conditions-with the Recommended Plan. We would point out that references indicating zero production of naturally produced fall and spring chinook salmon and zero artificial production of spring chinook associated with the future-condition-without the Recommended Plan are at variance with the conclusions of other plans. We also believe production estimates are too low for naturally produced steelhead and artificially produced fall chinook salmon and steelhead under the future-condition-without based on data from the fisheries agencies and Indian tribes.

BPA contracted with the Oregon Department of Fish and Wildlife in 1984 to develop A Comprehensive Plan for Rehabilitation of Anadromous Fish Stocks in the Umatilla River Basin. The Comprehensive Plan, finalized in January 1986, was developed primarily to establish artificial and natural production estimates for existing river flow conditions and improved flow conditions with implementation of the Bureau of Reclamation's (Bureau) Recommended Plan, as well as the Bureau's Alternative Plan. The Comprehensive Plan describes significant estimated increases in artificially and naturally produced anadromous fish, without flow improvement in the Umatilla River, if habitat and passage improvements are completed. Even larger estimates of anadromous fish production were described for improved river flow conditions with implementation of either of the Bureau's Plans.

2. FINANCIAL ANALYSIS

The annual cost of power estimations given throughout the document should be analyzed using a more current average annual Priority Firm (PF) rate instead of the 13.9 mills/kWh Nonfirm (NF) rate. Please find listed below our most current forecast of average PF rates in nominal year dollars for 1986-2005.

<u>Year</u>	<u>Mills/kWh</u>	<u>Year</u>	<u>Mills/kWh</u>
1986	22.2	1996	29.9
1987	22.2	1997	31.4
1988	24.3	1998	32.6
1989	24.6	1999	33.8
1990	24.7	2000	35.6
1991	25.4	2001	37.3
1992	26.1	2002	39.5
1993	26.9	2003	41.3
1994	27.5	2004	42.8
1995	28.7	2005	44.5

The 13.9 mills/kWh rate used in the PR/DES was the average 1983 NF rate. Nonfirm energy is interruptible, and not always available when needed. The appropriate year's average PF rate should be used because: (1) the assumption is made that the Bureau requests guaranteed (firm) power; (2) if the power were purchased through a local BPA preference customer (e.g., Umatilla Electric Cooperative), that preference customer would have to purchase the power from BPA at the PF rate and the customer would probably charge the Bureau a markup; and (3) if the power were purchased directly from BPA by the Bureau under the Bureau's contract, that power would also be at the PF rate.

3. ECONOMIC ANALYSIS

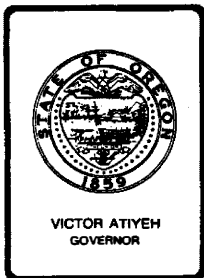
Your economic value of power which includes the incremental replacement cost of power should use a marginal cost rate of 33.22 mills/kWh (using levelized 1986 dollars) instead of the 33.39 New Resource (NR) rate. The marginal cost of power represents BPA's opportunity cost of power, i.e. how much it would cost BPA to replace the power during the planning period. This is a reasonable cost at which to value the power needed for the Umatilla Basin pumping project. The project will be long-term, and the marginal cost analysis is based on a 100-year period. Marginal costs are those costs that BPA would incur to generate electricity to meet additional capacity and energy load. In terms of planning and decisionmaking, the marginal cost method is the economically correct rate at which to value the pumping power plus the power lost downstream due to the proposed project. This method encourages power production choices that make the most efficient use of finite generating resources.

Response

1. It is correct that fish numbers used in the 1986 Planning Report/Draft Environmental Statement (PR/DES) are at variance with the most current information. The Bonneville Power Administration funded Oregon Department of Fish and Wildlife "Comprehensive Plan" study attributes a higher level of fish escapement for the future without and future with Recommended Plan conditions than depicted in the 1984 U.S. Fish and Wildlife Service Coordination Act Report which was the basis for the PR/DES economic analysis. Federal fish agencies cooperating in this planning effort recognize the Comprehensive Plan study as presently being the best source for estimating project fishery impacts on steelhead and chinook. Accordingly, the U.S. Fish and Wildlife Service and National Marine Fisheries Service have revised anadromous fish benefits and published them in a 1987 Planning Aid Memorandum (attached to this Planning Report/Final Environmental Statement (PR/FES), which is the source for the revised economic analysis in the PR/FES.

It is also correct that significant improvements in anadromous fish production result from Recommended Plan improvements in passage facilities which Bonneville Power Administration is scheduling to fund. However, for the tribes to realize the substantial anadromous fish production increases associated with an improved water supply without the flow enhancement aspects of the Recommended Plan, present irrigators of about 49,600 acres would have to yield their water supply which would have a devastating impact on the Umatilla basin economy.

2 and 3. Revised "Annual Operating Costs" and "Economic Analysis" discussions in the Recommended Plan section of this PR/FES reflect updated values.



Department of Transportation
HIGHWAY DIVISION

REGION 5 OFFICE

P. O. BOX 850 - LA GRANDE, OREGON 97850 - PHONE 963-3177

SEPTEMBER 12, 1986

Region Director
Pacific Northwest Region
Bureau of Reclamation
550 West Fort Street
Boise, Idaho 83724

Attn: Code 150, Box 043

In reviewing the Planning Report/Draft Environmental Statement (PR/DES) concerning the Umatilla Basin Project in North-Central Oregon, the following observation and suggestions are offered concerning potential impacts on Oregon state Highway Division facilities:

1. Columbia River Pumping Plant. The proposed pumping plan would involve the pumping and transporting of Columbia River water from a site east of Hat Rock State Park to Cold Springs Reservoir. This pumping scheme would require the crossing of Highway 730 and Highway 37. On page 2-7, the document indicates that a precast concrete bridge, 28 feet in width, would be constructed at the canal crossing on State Highway 27. Minimum federal design standards require at least a 32 foot structure. The document does not indicate what kind of structure is planned for the Highway 730 crossing.
2. On page 2-5, the map titled "Columbia River Pumping Complex" doesn't show Highway 37. The narrative (page 2-7 indicates a canal crossing at Highway 37, but the map shows the canal portion of the project much farther south of the projected Highway 37 crossing. Map and text are very vague in this regard. A pipe crossing may not carry the impact that a canal crossing would.

Regional Director
Pacific Northwest Region
Bureau of Reclamation
550 West Fort Street
Boise, Idaho 83724

-2-

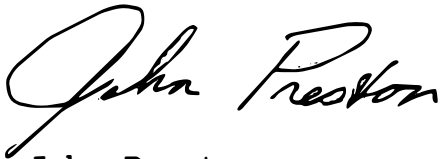
September 12, 1986

Attn: Code 150, Box 043

3. 3. Early planning cooperation between the Bureau of Reclamation and Oregon State Highway Division is strongly urged, and should be done in close association with the Highway Division's Region 5 Utility Specialist in La Grande. Highway Division construction projects are planned at least six years in advance, so early knowledge of potential construction related impacts on Highway facilities is essential.

If I can offer additional information concerning this matter, please contact me.

Sincerely,



John Preston
Region 5 Planning/Environmental Coordinator

JP/jef

Response

1. The plan includes a canal crossing of Highway 37, which would be designed to meet appropriate State and Federal design standards. Advance planning studies may change the alignment of the discharge lines, which could result in a pipe crossing instead of a canal crossing. In either case, the Department of Transportation will be consulted before final plans are developed so that final designs will meet all applicable requirements. A jacked pipe crossing was assumed for the Highway 730 crossing. Other crossing methods will be considered during final design. There is potential for additional project construction impact on Federal, State, and local road transportation if the McNary Dam diversion option is implemented as part of the West Extension Irrigation District water exchange. A discussion of this option is included in the Recommended Plan and the Affected Environment and Environmental Consequences sections of this Planning Report/Final Environmental Statement. Reclamation will coordinate any such activities with the Highway Division during advance planning studies.

2. See response 1

3. Reclamation will coordinate its activities with the Highway Division 5 utilities specialist in LaGrande, Oregon.



Department of Fish and Wildlife

506 SW MILL STREET, P.O. BOX 59, PORTLAND, OREGON 97207

Mr. Larry Vinsonhaler
Regional Planning Officer
Bureau of Reclamation
Federal Building and U.S. Courthouse
Box 043-550 West Fort Street
Boise, ID 83724

Re Preliminary Planning Report/Draft Environmental Statement, Umatilla Basin Project, Oregon

Dear Mr. Vinsonhaler:

The following comments deal with ODFW concerns regarding fisheries. The Wildlife Division will comment on wildlife concerns in a separate letter.

The Oregon Department of Fish and Wildlife strongly supports implementation of the "Recommended" Columbia River Pumping Plan as the most cost effective means of achieving fishery and tribal goals in the basin. We have the following major concerns which we would like you to address in the Final Environmental Statement.

1. The Draft Environmental Statement (DES) significantly understates project or Umatilla River benefits and National Economic Development (NED) or Columbia Basin benefits. Project benefits should be revised using updated fishery benefits listed in the 1986 tribes and fish and wildlife agencies' "Comprehensive Plan for Rehabilitation or Anadromous Fish Stocks in the Umatilla Basin" (Comprehensive Plan). These updated fishery benefits of the Comprehensive Plan are the most current and accurate estimates available of project benefits to naturally and hatchery produced salmonids in the Umatilla Basin due to increased flows and all other improvements which will be implemented under the Power Planning Council's Program. The large difference in project benefits between the DES and Comprehensive Plan is primarily in hatchery fishery benefits:

Table 1. Increased Escapement with the Recommended Plan

	<u>DES</u>	<u>Comp. Plan</u>
Fall chinook		
Natural production	10,688	10,100
Hatchery production	5,000	8,498
Spring chinook		
Natural production	100	958
Hatchery production	2,500	6,402
Summer steelhead		
Natural production	600	2,611
Hatchery production	<u>0</u>	<u>2,716</u>
TOTAL	18,888	31,285

Mr. Larry Vinsonhaler
November 6, 1986
Page 2

2. In the DES, project benefits to hatchery fall and spring chinook are footnoted "escapement indicates Columbia Basin fish that would be redistributed into the Umatilla Basin but does not represent an overall net increase to Columbia Basin runs." This is in part correct for NED benefits, however, for project benefits or benefits of the flow project to in-river Umatilla fisheries, all three species of hatchery fish including fall and spring chinook would be benefitted. Increased escapements of fall and spring chinook would result from increased downstream survival of smolts and increased upstream survival of adults to adult collection facilities on reservation land.
3. The DES also needs to emphasize (and if possible quantify) project benefits attributable to the temporal and spatial re-distribution of fall chinook within the Umatilla. Under the CRP Plan, fall chinook will be able to enter the Umatilla mid-September in a "bright" condition, which is highly desirable for Indian and non-Indian fisheries. Because of the earlier entry time, chinook will be susceptible to fisheries longer and catches will increase. Fisheries will also re-distribute from the lower river to areas throughout the Umatilla which is also desirable. And, most importantly, chinook will be able to swim naturally to collection facilities on reservation land without artificial transport which satisfies treaty rights of the tribes.
4. National Economic Development benefits should include benefits to naturally produced fish of all species and hatchery spring chinook and summer steelhead since they constitute "new" fish to the Columbia Basin. NED benefits to these species should be based on the Comprehensive Plan's escapements displayed in Table 1. NED benefits should not show additional benefits of hatchery bright fall chinook to ocean and zone 1-5 fisheries but should show benefits to zone 6 fisheries. We have reprogrammed upper river brights (225,000 yearlings and 3.0 million subyearlings annually) from Bonneville to the Umatilla River. These fish will not contribute additional fish to ocean and zone 1-5 fisheries, but because we are releasing fish at the head of zone 6 in the Umatilla River, they will contribute to zone 6 Indian fisheries as well as Umatilla fisheries as discussed above.
5. In addition, fishery economic values used in the DES are outdated. These values should be updated using recent economic values used by the fish and wildlife agencies in the Columbia Basin. This will increase the project's benefit/cost ratio to over 1:1.
6. The proposed change in water management of McKay Reservoir under the Columbia River Pumping (CRP) Plan may negatively impact the important warmwater fisheries in McKay Reservoir. We recommend conducting a more in-depth study prior to the Final Environmental Statement to fully document project impacts on reservoir fisheries. McKay Reservoir is well known for its crappie and bass fishing and is an important component of angling opportunity in NE Oregon. It is very nearly unique in Oregon in the extent and diversity of terrestrial vegetation in the drawdown zone. The vegetated drawdown zone is allowed to flourish because of suitable soils and the drawdown schedule. We feel, with considerable support in the literature, that the drawdown schedule and vegetated drawdown zone are critical elements in the reservoir's fish production.

Mr. Larry Vinsonhaler

November 6, 1986

Page 3

7. Table 7-7 (p. 7-9) of the DES shows the proposed changes in reservoir elevations through the year. Three periods need comment. Water levels during April-June would change little under the plan, with a slight increase in June water levels. This is the period of crappie and bass spawning and early rearing; the conditions proposed add stability to reservoir levels and will be beneficial.
8. July-August water levels will be higher under the plan, about 13 feet higher at the end of July and 26 feet by the end of August. Increased pool elevations will diminish the survival of established willows and reduce the development of pioneering willows and annual vegetation. Table 7-19 indicates that that change of 13 feet will inundate 100 acres of formerly exposed bottom. If that acreage is currently vegetated in mid-summer, the loss of habitat and nutrient transfer is considerable and needs a closer examination. Without going to the site and establishing approximate elevations relative to vegetation distribution, we cannot know how much cover will be lost.
9. Water level manipulations at Cold Springs do not appear to pose any particular problem or benefit to the warmwater community. The degree of modification in the drawdown curve appears to be relatively slight. If a 5000 acre-foot minimum pool is maintained as stated in the plan, minor changes in water level through the summer drawdown pale in comparison. Cold Springs has chronically suffered from complete drawdowns to meet irrigation needs, to the extreme detriment of the game fish community. A guaranteed minimum pool would be a welcome change.
10. In summary, we would like to see a more specific evaluation of the proposed July-August water levels relative to existing vegetation stands and effects on fish population. It may well be that a relatively minor adjustment to the drawdown scheme could make the benefits much more probable. The proposed water management will not hamstring the bass and crappie fishery, but resident fish anglers should not have to accept reduced production for lack of a detailed evaluation of alternatives.
11. Flows in June under the CRP Plan fall far short of targeted fishery flows. June is an important month for the upstream migration of spring chinook and for the downstream migration of juveniles of all species. Table 2-10 shows that with Columbia River Pumping, average flows at Echo would be substantially increased (134 to 223 cfs) but targeted fishery flow of 250 cfs would be achieved in only 34% of years. During drought years, flows may impede or cause delay in the upstream migration of spring chinook which would cause serious problems in natural and hatchery production programs and would require additional trucking of adults. Although we are using early-run Carson stock spring chinook in our hatchery broodstock programs, we anticipate that a substantial proportion (25%) of spring chinook will be entering in June. Low flows and concomitant high temperatures in June may reduce production and downstream survival of juveniles, notably naturally and hatchery produced fall

Mr. Larry Vinsonhaler
November 6, 1986
Page 4

chinook. Additional trucking of juveniles would be necessary which would be costly. In subsequent planning, we feel it is important to identify and discuss the constraints and flexibility in operation of the flow project to provide for additional flows in June and other critical migration periods.

Sincerely,



Harry Wagner
Chief of Fisheries

rbj

L2-8

Response

1. Anadromous fish benefits presented in the 1986 Planning Report/Draft Environmental Statement (PR/DES) are based on the U.S. Fish and Wildlife Service's (FWS) 1984 Coordination Act Report (CAR). Since the CAR was completed, additional anadromous fishery research in the basin was completed and published by Oregon Department of Fish and Wildlife (ODFW) in 1986.^{1/} Not all of the findings by ODFW were initially accepted by the Federal fishery agencies and a Planning Aid Memorandum (PAM) was prepared by FWS in 1986 which considered the ODFW study in relationship to Recommended Plan fishery accomplishments and benefits.

Because of the confusion regarding the project's impacts on anadromous fish generated by the above report, the FWS and National Marine Fisheries Service prepared a 1987 PAM to provide guidance to Reclamation in preparing this Planning Report/Final Environmental Statement (PR/FES). Both Federal agencies now agree the ODFW comprehensive plan is presently the best source for estimating project fishery impacts. There still is, however, some disagreement as to the inclusion of coho in the Recommended Plan national economic development benefit analysis, catch:escapement ratios, and sport/commercial values for anadromous fish. It is hoped that consensus can be reached on these issues during advance planning studies. Sensitivity analyses have been made to show the economic impacts from including coho, and omitting coho while changing catch:escapement ratios and fish values.

The Economic Analysis discussion in the Recommended Plan section of this PR/FES shows revised fishery benefits attributable to Recommended Plan development, and the sensitivity analysis discussed above.

2. See response 1

3. Paragraph 2, page 7-22 of the PR/DES has been revised to add emphasis to the run timing and basin distribution of fall chinook under the Recommended Plan. See Affected Environment and Environmental Consequences section of this PR/FES for discussion.

With the project, fall chinook will be able to migrate up the Umatilla River earlier and in a "bright" condition starting in mid-September. This will provide higher quality fish to Umatilla Indian and non-Indian fisheries. Earlier entry will allow chinook to be susceptible to basin fisheries management and harvest for a longer period, increasing management flexibility. Chinook will be well distributed to upriver reaches due to the earlier return and longer run period of fall chinook. Of importance to the tribal treaty rights is the fact that fish will be able to migrate upriver naturally to reservation collection facilities without the need for artificial transport.

4. See response 1

^{1/} "A Comprehensive Plan for Rehabilitation of Anadromous Fish Stocks in the Umatilla River Basin, Oregon Department of Fish and Wildlife, January 1986.

5. The fish values referenced in this comment have not been approved by the Secretary of the Interior for Reclamation planning studies. However, a sensitivity analysis reflecting those values has been included in the Economic Analysis discussion of this PR/FES.

6. An updated project operations discussion is included in the Recommended Plan section of this PR/FES. It is possible that the warm water fishery in McKay Reservoir may benefit from the new operation scenario because:

°The revised operation incorporates a minimum pool constraint that would reserve 10 percent of the reservoir's active storage space (6,780 acre-feet) for the McKay fishery. In the past, no minimum pool has been provided and the reservoir has been emptied in some years. This would carry the fishery through in low water years and help stabilize fish populations and provide an overall improvement to the warm water fishery.

°The revised McKay Reservoir operation will continue to be discussed with ODFW during advance planning. Also, effects of project operation on the McKay resident fishery would be evaluated as part of the overall 12-year fishery monitoring program for the Umatilla Basin Project.

7. No response necessary

8. See response 6

9. No response necessary

10. See response 6

11. Project operation studies show that target flows will be most difficult to meet in June. June will be an important month for adult spring chinook upstream passage and downstream migration for smolts of all species. A truck and haul effort would be of value in June to move adults trapped at Three Mile Falls Diversion Dam to a release point above Westland Diversion Dam (river-mile 28) and then to collect juveniles at the Westland trap for return to Three Miles Falls Diversion Dam. There will be opportunity to modify flow augmentation strategies through different storage release scenarios at McKay Reservoir. These decisions can be effectively made during and after the 12-year postproject fishery monitoring program. A working group comprised of fishery agencies, tribal representatives, Oregon Water Resources Department, Reclamation, and irrigation district representatives would help guide operational implementation of the Umatilla Basin Project.



OREGON INTERGOVERNMENTAL PROJECT REVIEW

State Clearinghouse
Intergovernmental Relations Division
155 Cottage Street N. E.
Salem, Oregon 97310

Phone (503)378-3732 or Toll Free in Oregon 1-800-422-600

STATE CLEARINGHOUSE REVIEW ADDENDUM

APPLICANT: BUREAU OF RECLAMATION

PROJECT TITLE: UMATILLA BASIN PROJECT OREGON

PROJECT NUMBER: OR860804-004-4

DATE: February 17, 1987

The State Clearinghouse has received additional comments from
DIVISION OF STATE LANDS

subsequent to our conclusion letter of SEPTEMBER 18, 19986.

Please see copy(ies) attached for your attention.

Additional Clearinghouse comments:

- (☒) Please consider this letter and enclosure(s) an addendum to our previous letter.
- (☐) The Clearinghouse is forwarding a copy of this letter and enclosure to the federal funding agency.

If you have questions please contact the State Clearinghouse at the above address and telephone number.

IPR #10



OREGON INTERGOVERNMENTAL PROJECT REVIEW FEB 12 1986

State Clearinghouse
Intergovernmental Relations Division
155 Cottage Street N. E.
Salem, Oregon 97310

Umatilla Co.

Phone (503)378-3732 or Toll Free in Oregon 1-800-422-3600

STATE AGENCY REVIEW

Project Number: OR 860804-004-4 Return Date: SEP 12 1986

ENVIRONMENTAL IMPACT REVIEW PROCEDURES

If you cannot respond by the above return date, please call to arrange an extension at least one week prior to the return date.

ENVIRONMENTAL IMPACT REVIEW
DRAFT STATEMENT

- () This project has no significant environmental impact.
- () The environmental impact is adequately described.
- () We suggest that the following points be considered in the preparation of a Final Environmental Impact Statement.
- () No comment.

Remarks

Removal, Filling or alteration of more than 50 cubic yards of material for the proposed project will require a permit from the Division of State Lands per ORS 541,605-541.695.

AUG - 5 1985

DIVISION OF STATE LANDS

Agency *Hendri*

By *Ken Bie*

IPR #5

Response

1. Comment accommodated. See Affected Environment and Environmental Consequences section of this Planning Report/Final Environmental Statement.

PNUCC

PACIFIC NORTHWEST UTILITIES CONFERENCE COMMITTEE

October 30, 1986

John W. Keys, III
Regional Director
Pacific Northwest Region
U.S. Bureau of Reclamation
Attention Code 150
Box 043
550 West Fort Street
Boise, Idaho 83724

Dear Mr. Keys:

This letter constitutes the comments of the Pacific Northwest Utilities Conference Committee (PNUCC) on the Bureau of Reclamation (Bureau) document Umatilla Basin Project Oregon: Planning Report--Draft Environmental Statement (DES 86-32).

PNUCC is an association of 132 investor-owned utilities, public utilities, and Bonneville Power Administration direct service industrial customers in the Northwest region. We have actively participated in and commented on the fish and wildlife issues in the Umatilla Basin and have followed this project with interest. We welcome this opportunity to provide the Bureau with our comments on this document.

In summary, PNUCC's position, which will be expanded below is that:

- a. we believe that irrigation has the major responsibility for fisheries mitigation in the Umatilla Basin. Therefore, the Bureau should seek Congressional funding for fish passage improvements at irrigation structures;
- b. we oppose BPA funding for costs of electric power for the pumping project; and
- c. we disagree with the projected fishery benefits and believe that they are founded on an uncertain basis and are overstated.

1. 1. Fish Passage Improvements

Direct fishery impacts within the Umatilla Basin are the result of irrigation development and operation and not from hydroelectric development and operation. Therefore, under the Pacific Northwest Electric Power Planning and Conservation Act (Power Act), BPA has no direct mitigation obligation in the Umatilla Basin. But funding for activities may be provided at the administrator's discretion as off-site enhancement for FCRPS impacts (Power Act Section 4(h)(3)(A)). However, such is to be in addition to, not in lieu of, other expenditures authorized or required by other entities under other agreements or laws (Power Act, Section 4(h)(10)(A)).

Since irrigation development is the major cause of declines in fish runs in the Umatilla, we believe the Bureau has responsibility to provide funding for passage improvements at irrigation facilities. BPA, under the Administrator's discretion, has already spent a considerable amount of ratepayer funds in the Umatilla and while PNUCC objects, BPA may very likely expend a considerable amount more. We believe that it is only equitable that there be some cost-sharing arrangement between BPA and the Bureau for funding of fish passage improvements at irrigation facilities. There is precedent for such an arrangement as cost-sharing among BPA, the Bureau, and other entities was achieved in funding of fish passage improvements at irrigation facilities in the Yakima Basin in Washington State. All references to BPA funding of fish passage facilities should be deleted from the Draft Environmental Statement (EIS).

2. 2. Power for Pumping

A major concern with the proposed plan is the assumption that BPA will provide free pumping power for the irrigation water exchange. This is an invalid assumption, since BPA is precluded from funding other agencies' responsibilities by Section 4(h)(10)(A) of the Power Act.

The fishery benefits derived from the proposed water exchange are designed to resolve the over-appropriation of irrigation withdrawals. Therefore, it is only appropriate that the cost of the pumping power to be a Bureau expense not a ratepayer expense. All references to ratepayer funding of power for pumping should be deleted from the Draft Environmental Statement (DES).

3. Fishery Benefits

PNUCC does not agree with the projected fishery benefits of the proposal. We believe they are overstated and that consequently the benefit-to-cost ratio of the project is overly optimistic.

The fishery benefits attributable to the proposed project are presented in Table 7-17 (p. 7-21). Apparently these numbers originated at National Marine Fisheries Service and the U.S. Fish and Wildlife Service. In 1985, the Oregon Department of Fish and Wildlife completed an evaluation of the fishery benefits of several alternative means to enhance the anadromous fishery in the Umatilla Basin (A Comprehensive Plan for Rehabilitation of Anadromous Fish Stocks in the Umatilla Basin, January 1986). The proposed Bureau project was included as an alternative in this evaluation. ODFW's numbers are summarized in the attached table (see Attachment 1) and differ somewhat from the Bureau's estimates in Table 7-17.

3. In September 1985, PNUCC provided comments to BPA On the above Comprehensive Plan (see Attachment 2). In commenting on numbers PNUCC and its consultant, Dr. Don Chapman stated that the numbers of chinook appear to be very optimistic. Fall chinook potentials were over estimated due to the assumption that spawning gravels were of higher quality than are the case. This appears to be corroborated on p. 4-19 with the reference to many stream gravels in the basin having more than 15 percent sediment coverage. We have also included a

Regional Director
U.S. Bureau of Reclamation
October 30, 1986
Page 3

publication from Oregon Department of Fish and Wildlife that discusses the sedimentation problem (see Attachment 3). Spring chinook are probably over estimated due to increased disease mortality.

4. In addition to our concerns about the potential for fish production in the Umatilla we are also concerned that there is no assurance that increased flows from the project will stay in the river. Experience with flow augmentation for fish below Painted Rocks Reservoir in Montana has indicated that increased flows lead to increased diversions with no net benefit to instream flows. While the Bureau proposes agreements with some irrigators, there is no guarantee of increased instream flows because not all holders of water rights more senior to those asserted for fish will be included in the agreements.
5. Further, even if water is assured, based on Table 7-10 the Bureau's proposal will not provide sufficient flows to meet recommended minimum June flows during 78% of the years and the end of September flows during 89% of the years. Granted that this is an improvement over current flows, however, this means that in 9 out of 10 years, fall chinook will be further delayed by low flows.

Recommendations:

PNUCC makes the following recommendations:

6.
 1. The Bureau should seek Congressional authorization for funding these projects. If the BPA Administrator chooses to use his discretionary power to provide some BPA funding, the Bureau should negotiate a cost-sharing arrangement with BPA (like the Yakima arrangement) regarding funding for fish passage improvements at irrigation diversions.
7.
 2. The Bureau should delete all references to BPA funding of pumping power and include this cost as a Bureau responsibility.
8.
 3. The Bureau should recalculate the fishery benefits of the project since the projected numbers of additional fish to be produced are overstated.

Thank you for the opportunity to comment. We hope that you find our suggestions helpful.

Sincerely,

Pamela Barrow
for Al Wright
Executive Director

TG:lk:100PP
Attachments

UMATILLA BASIN

SUMMARY OF NATURAL PRODUCTION FISHERY BENEFITS
OPTIMISTIC (HIGH) ESTIMATES*

(Number of Adults Returning to Mouth of River)

Action	Flows					
	Existing			CRP Plan		
	StS	Ch F	Ch S	StS	Ch F	Ch S
#1 No Action	682	3	41	1,169	956	214
#5 With upstream/downstream passage	1,416	973	190	1,891	9,285	546

Net Benefits	Number of Adults Returning to Mouth of River			
	StS	Ch F	Ch S	Total
Additional passage without flow (5A - 1A)	734	970	149	1,853
Additional flows without passage (1B - 1A)	487	953	173	1,613
Both flows and Passage (5B - 1A)	1,209	9,282	505	10,996
Incremental Benefits of Flow beyond passage (5B - 5A)	475	8,312	356	9,143

* Source: Comprehensive Plan for Rehabilitation of Anadromous Fish Stocks in the Umatilla River Basin. ODFW, January 1986

BUREAU OF RECLAMATION
SUMMARY OF FISHERIES BENEFITS
(Table 7-17)

	StS	Ch F	Ch S
"Natural Fish Escapement Attributable to Recommended Plan"	600	10,688	100

PNUCC

PACIFIC NORTHWEST UTILITIES CONFERENCE COMMITTEE

September 13, 1985

John Palensky - PJ
Director, Division of Fish and Wildlife
Bonneville Power Administration
P.O. Box 3621
Portland, OR 97208

The Pacific Northwest Utilities Conference Committee (PNUCC) submits this letter in response to BPA's request for comments on the Comprehensive Plan for Rehabilitation of Anadromous Fish Stocks in the Umatilla River Basin. The PNUCC Fish and Wildlife Committee and our consultant, Dr. Don Chapman, have reviewed the plan. Dr. Chapman's written comments to PNUCC are attached to this letter. Based on these reviews, PNUCC opposes BPA proceeding with full implementation of this plan at this time based on the following concerns.

The level of production of steelhead, spring chinook, and fall chinook estimated in this plan cannot possibly be achieved until sufficient water flows are provided, particularly in the lower sections of the Umatilla River. PNUCC does not support BPA funding of additional fishery projects within the Umatilla Basin until the water resource problems within the basin have been solved. Further, PNUCC is seriously concerned about BPA involvement in water resources development and particularly opposes BPA funding of any water resource enhancement aspects of the Umatilla plan. PNUCC is developing an official policy statement on BPA involvement in water resources development which will be submitted to BPA at a later date.

While PNUCC supported the use of off-site enhancement to address the fishery impacts of irrigation development in the Yakima Basin, our support was based on the following specific conditions: (1) the proposed activities were biologically sound; (2) equitable cost-sharing among interested parties was achieved; and (3) the Yakima was to be a "test case" for the enhancement provisions of the Northwest Power Act. PNUCC does not believe that these conditions can be satisfied in the Umatilla Basin because, as discussed above, there is insufficient available water and, based on Dr. Chapman's attached comments, we do not believe the habitat improvement measures will provide sufficient benefits to make the Umatilla Plan biologically sound. In addition, there is no indication of any attempt to achieve equitable cost-sharing. Further, PNUCC does not support any new major enhancement efforts until the Yakima test has been proven successful and a mechanism for crediting the use of BPA funds as off-site enhancement is established.

Any efforts to enhance the fishery in the Umatilla Basin prior to solution of the water problems should be concentrated in the lower river and limited to the artificial production and hatchery supplementation projects currently approved and funded by BPA under the Fish and Wildlife Program. Efforts to provide natural production of mainstem spawning fall chinook do not appear to be reasonable at this time. However, once adequate flows are supplied in the lower river, the feasibility of this aspect of the project might be reviewed. PNUCC suggests that any future feasibility study should include investigation of coho production as discussed on page 1 of Dr. Chapman's comments.

John Palensky
September 13, 1985
Page 2

In conclusion, PNUCC does not support any BPA funding for further projects in the Umatilla Basin until such time that the water resources problems are solved. However, BPA should encourage the parties in the Umatilla to resolve their water resources problems and should support and assist the Bureau of Reclamation in seeking the Congressional appropriations necessary for construction of the flow enhancement projects in the plan.

Sincerely,



Diana E. Snowden
Executive Director

PB:gh:142AA

Attachment

cc: Janis Chrisman, NW Power Planning Council

UMATILLA DRAFT REPORT

Detailed Comments of Dr. Don Chapman

P. ii: "Summer steelhead have been released into the Umatilla since 1981 (up to 60,500 yearlings and 67,980 subyearlings have been released annually)."

Steelhead juveniles were also released 1967-1969 in the Umatilla, a total of 722,000 fish (Draft II, BPA Stock Assessment of Col. R. Anadromous Salmonids).

P. ii: Paragraph 2 discusses past releases of fall chinook in the basin.

Since 3.54 million tules were planted in 1982, the first adults should have returned in 1984, and the majority will return in 1985. I think these recoveries will tell us whether juveniles can do well, and depart the Umatilla before summer high temperatures. Additionally, upriver bright fall yearlings that were released in 1983 should partially appear this fall. If returns in 1984 and 1985 are poor, this would be an indication that the Umatilla is not good chinook habitat. I am somewhat surprised that hatchery coho are not the preferred species here. They would leave the stream in May, would not be dependent upon freshwater summer rearing, and broodstock could be obtained easily at Three Mile trap. Even in extremely low-flow years, the hatchery fish would depart before critical conditions develop. Adult timing of Washougal coho, for example, tends to be late, so low fall flow would be less critical.

P. iii, Last Paragraph: "In the past, biologists have observed that the channel was a complete barrier to summer steelhead at flows less than 200 cfs."

I think that documentation of the last sentence is needed. I don't trust observations like this one.

P. iv, Paragraph 3: "Survival of hatchery and wild juveniles over all screened and unscreened diversions under existing flows is estimated to be 78.6-87.6 percent for summer steelhead, 22.2-80.6 percent for fall chinook, and 82.6 percent for spring chinook."

If one examines the underlying estimates on which this sentence is based, one finds very tenuous calculations without hard data.

P. 12: Last line "... because of low stream flows, adults would not be able to enter the river until November in most years. Spawning will likely occur in the main stem Umatilla during November and December. ... juveniles will migrate to the ocean the following late spring and summer (May-July) ..."

If upriver brights are used, their spawning will begin in mid-October, peak about November 12, and be over by November 25, based on Hanford Reach experience. The fry would emerge in mid-April to early May depending on incubation temperature. I expect that some would still be present as late as early July, but most would leave in June. I'd be concerned about temperatures.

P. 13: "Most steelhead adults resulting from the first large hatchery release (1982) will return during the winter of 1984/85 ..."

Results from the 1982 steelhead smolt release are now available (see last paragraph). What were they?

P. 37, Paragraph 2: "The FWS (1984) felt that passage conditions at Three Mile Dam are probably on the low end of these ranges ... The drop of fish over the dam or through the bypass may result in significant injury and mortality of juveniles."

Implies that a study of louver efficiency has been done at Three Mile. This is not true. The conjecture at the bottom of this paragraph is not supported by any observations or data.

P. 66: Table 15 lists habitat improvements proposed for the Umatilla Basin.

I have no way of evaluating whether the Umatilla tribal assessments of habitat improvements are reasonable, or whether structural changes will be hydraulically permanent. Many are not, if not based on sound hydro-geomorphology and stream sense.

P. 76: Table 19 lists costs for habitat improvement projects, including estimated annual maintenance for: holding pools - \$60 each; deflectors - \$20 each; weirs - \$20 each; and boulders - none.

I think annual maintenance will be much greater than shown for holding pools, deflectors, weirs, and boulders.

P. 77:

This page discusses in general terms the methods used to calculate fishery benefits.

It is important to compute benefits in monetary terms, so that benefits and costs can be compared. It is not satisfactory to argue that fishery benefits have considerable error associated with them, for this is equally true of the costs of fish enhancement and flow augmentation. Responsible fishery managers will want to know the B:C ratio. If a decision is made to proceed even if the B:C ratio is fractional (costs higher than benefits), it should be made with full awareness of income transfer.

P. 83:

"As shown in Table D-18, even with upstream passage improvements, survival of fall chinook to Three Mile Falls Dam would be only 60.8 percent under existing flows. However, with enhanced flows of the CRP/Meacham Dam Plan, survival... would be 89.0 percent."

Percentage survivals shown in Table D-18 are guesswork with tenuous bases. Incremental benefits associated with flow enhancement are stated as quantified but are based on very tenuous estimates. I am not criticizing an effort to quantify; merely pointing out the spongy character of the information.

P. 126:

"Available data indicate that most fall chinook juveniles will migrate from the Umatilla prior to the low flow months of summer."

I do not expect fall chinook to be gone from the Umatilla by early July. Rearing flows may be important in June and July.

P. 126, Item 2:

Spawning potential of the Umatilla was estimated by the ratio:

$$\frac{\text{Spawning potential of ChF in Umatilla River}}{\text{Total ChF spawning area}} = \frac{\text{ChF spawners in Deschutes River}}{\text{Total ChF spawning area}}$$

Deschutes is of much better general quality than the Umatilla, for both incubation and rearing. But more important, were the gravel areas in the Deschutes measured with IFIM as they were in the Umatilla? I doubt it, as Aney's work in 1967 was pre-IFIM.

P. 134:

This page and Table D-1 discusses adult upstream passage estimates for the main irrigation diversion dams.

This, and Table D-1, are guesswork without data.

P. 149: This page discusses the benefits to adult upstream passage of passage improvements and increased flows.

I suspect the cheapest form of improved passage for summer steelhead and chinook is trucking, and that the dollar benefits from water augmentation will not equal costs.

P. 154-160: These pages present the assumptions used to calculate downstream juvenile passage.

Based on some very gross assumptions.

P. 165-166: These pages discuss the estimates of adult and smolt trucking benefits.

Depends upon whether reasonable estimates of mortality at and below Three Mile Dam are made. No hard data are available.

Appendix C: This appendix presents the assumptions and calculations to estimate potential production of summer steelhead, fall chinook, spring chinook, and hatcheries.

Steelhead material on survivals look conservative and realistic in terms of production under existing conditions.

P. 124: This page discusses spawning gravel assumptions for fall chinook.

An evaluation of "good spawning gravel" in a stream as silted as the Umatilla ought to include sieving of samples to assess percentage of fines, estimates of permeability, and plants of "green" eggs in 20 or so gravel sites to assess survival. Predicting that 11,000 adults can use the Umatilla is risky business without these evaluations. IFIM uses a gravel surface "eyeball" determination that tells one nothing about intragravel conditions. Chinook are notoriously poor at distributing evenly, also. I think the numbers are too optimistic.

Perhaps ODFW has data that prove "good" gravel. If so, they should be added to Appendix C. Suspicion arises that over 10,000 falls cannot be accommodated in the Umatilla when one recalls that the escapement goal for upriver bright falls over McNary is only 40,000 fish. Is the Umatilla going to produce 25 percent as many fish as the Hanford Reach and Snake? Doesn't sound right to me.

General Notes

Water quality, especially suspended sediments, seem to be neglected in the draft. This is a stream subject to rain-on-snow events and intense rainstorms that move great amounts of silt. Mainstem spawning and rearing may or may not be marginal for fall chinook. One cannot tell from the data provided.

Fishery enhancement (p. vii in executive summary) costs \$10 million plus annual O&M of \$186,697. If we annualize the construction/capital across 30 years, we get roughly \$1 million. Additionally, at \$4.50 (includes capital and O&M) per pound for hatchery fish (about 192,900 pounds of fish, according to numbers in Table 22, page 88) one would spend about \$870,000 per year on hatchery releases. Thus, total annual enhancement costs (natural and hatchery) would be about \$2.07 million. Annualized costs should be calculated additionally for flow enhancement.

What is finally needed is for the authors of the report to refine the annual amortized cost calculations for each incremental flow enhancement alternative and to calculate catch benefits (in dollars) that will result from these expenditures. Until this is done, it is impossible to estimate whether it is all worthwhile or whether some incremental measure gives a positive benefit or not. If ratepayer representatives are to evaluate merits of various measures, this economic evaluation must be done.

I have some concerns with:

1. Suitability of the drainage for spring chinook in regard to holding pools.
2. The projected natural production of fall chinook looks too great for this drainage. Hatchery-supported fall stock may be feasible.

My answers to Pam Barrow's questions of August 6, 1985 are:

1. I have strong doubt that natural production will produce 11,000 fall chinook. I think the natural steelhead numbers are realistic. Spring chinook are very "iffy." I think hatchery production of falls and steelhead can be accomplished in the Umatilla Basin. I doubt that hatchery spring chinook production can be 10,000 fish.

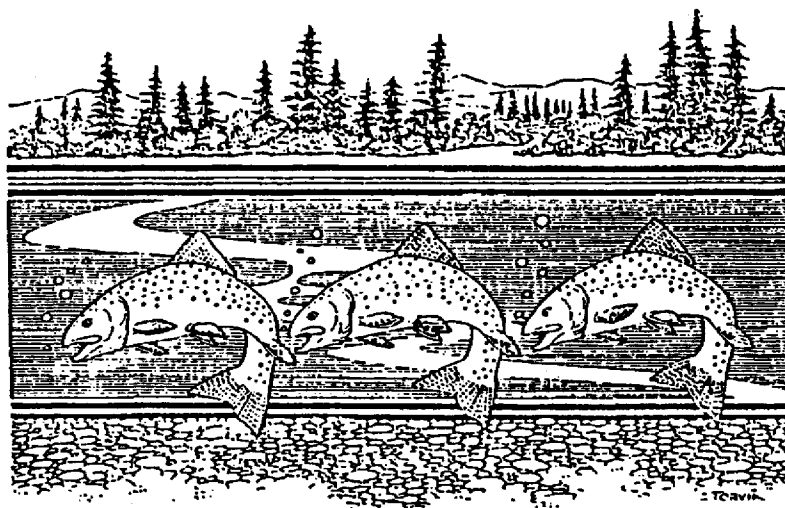
Question 1 requested an assessment of "whether the existing water in the Umatilla Basin can produce the numbers of fish (15,000) predicted by the plan."

2. The incremental benefits provided by water flow enhancement are very "spongy," based on almost no hard data.

Question 2 asked "whether the incremental benefits provided by the various additional water sources are realistic."

I have strong fear that the catch benefits of various flow enhancement measures will not equal annual costs. I think that making the best of existing flows with fishery enhancement and hatcheries may be the only reasonable alternative. If fall chinook (upriver brights) are to be a key race here, some purchase of McKay storage may be essential to get October flows high enough to pass or truck adults.

Bolded material inserted into Dr. Don Chapman's comments of August 20, 1985.



The Effects of Stream Alterations on Salmon and Trout Habitat in Oregon

Prepared by D. L. Bottom
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J. D. Rodgers

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1985

Although the research or investigation described herein has been funded wholly or in part by the U.S. Environmental Protection Agency through grant 000-217 to the Oregon Department of Environmental Quality and passed through to the Oregon Department of Fish and Wildlife, it has not been subject to the Agency's peer and administrative review and therefore does not necessarily reflect the views of the Agency, and no official endorsement should be inferred.

correlated with production of coho (Nickelson and Hafele 1978) and chinook (Bjornn et al. 1977). Structure decreases water velocities so that spawning gravels transported during higher flows are deposited. Downstream structures trap and stabilize the gravel as well as organic material, which is processed by invertebrates and cycled through the food chain.

Cover

Instream cover can take many forms: overhead cover (undercut banks, water turbulence, floating debris) and submerged cover (logs, boulders and coarse substrate, vegetation, root wads). Both cover types are used extensively by most salmonids. Instream cover provides refuge from predators, slack water areas, shade, and territorial isolation. It is difficult to determine exact cover requirements for salmonids since needs vary diurnally and seasonally and according to species and size. Submerged cover consisting of rock and rubble substrate provides refuge for newly emerged and overwintering juveniles, particularly 0-age steelhead (Reiser and Bjornn 1979). Coho juveniles and age 1+ steelhead are most frequently associated with logs and root wads and, to a lesser extent, undercut banks (Bustard and Narver 1975). Although cover is most important during juvenile rearing, spawning areas with adjacent cover may be preferred by adults (Reiser and Bjornn 1979).

Losses of Instream Habitat

Changes in channel shape and depth, gravel size and composition, streambank stability, amount of woody debris, or riffle:pool ratios directly influence stream habitat for salmonids. The following are the most significant instream habitat problems in Oregon.

Sedimentation and debris torrents

Heavy silt loads in streams are detrimental to production of salmonids. High turbidity can stop or delay adult migration and interfere with sight feeding fishes including salmonids. Prolonged exposure to abrasive suspended sediment can injure the gill surfaces. Excessive fines can cement the gravel together so that it is difficult for adults to construct redds. Fines reduce the permeability of the gravel, decreasing the flow of oxygenated water to and the removal of metabolic wastes from incubating eggs and hatched alevins (Wickett 1958; McNeil and Ahnell 1964). Fry emergence is poor in gravel imbedded with fines (Koski 1966; Moring 1975). Food production from aquatic insects declines. Siltation also decreases pool size, reducing rearing and holding area.

Sediment enters Oregon streams from surface runoff, gully erosion, and mass wasting. Soil disturbance and removal of vegetative cover related to road building and construction, farming, logging, and grazing increase erosion and the delivery of sediment to streams. ODEQ (1978) has identified general regions in Oregon where erosion potential and sediment delivery rates are high, and where sedimentation and streamside erosion create significant nonpoint pollution problems in Oregon streams and rivers. Erosion rates in the Umatilla

Plateau, for example, are among the highest in Oregon and are estimated at 1,000-2,000 tons per square mile per year. ~~The fallow system of dryland wheat farming in this and other areas exposes bare soil for extended periods and accelerates soil loss.~~ In some areas of intense row crop production, turbidity and sedimentation are chronic problems due to the return of warm, turbid irrigation water directly into streams. Such areas are frequently unsuited for salmonid production.

Most studies of the effects of sedimentation on fish production in the Northwest have focused on forest lands. In steep mountainous terrain of the region, landslides or debris avalanches are the dominant erosive process (Brown 1973; Swanson and Dyrness 1975) and can significantly affect instream habitat. Episodes of debris avalanches are most commonly associated with periods of heavy rainfall or rain-on-snow events (Ketcheson and Froehlich 1978). In the Cascades, storms of a 7-year occurrence or greater cause debris avalanches in forested areas (Swanston and Swanson 1976). In the Coast Range a large number of small mass movements are produced by large infrequent storms as well as by more frequent storms that occur every 5 to 10 years (Ketcheson and Froehlich 1978). A large number of landslides related to land management activities occurred in the Mapleton Ranger District (Siuslaw National Forest) following winter storms in 1973-74 and after a major storm in November 1975 (Gresswell et al. 1979).

The frequency of landslides and rate of erosion in Oregon forestlands vary greatly with location, slope, and soil type. Increased probability of debris avalanches has been associated with certain "high risk" land types. On the Central Oregon coast, for example, the following areas frequently experience debris avalanches:

1. Headwalls and channel depressions on slopes 60% or greater.
2. Slopes 80% or greater.
3. Sandstone outcroppings.
4. Steep, deeply cut drainage channels with bedrock bottoms (Ketcheson and Froehlich 1978).

Debris avalanches can cause debris torrents in streams. Debris torrents result from the rapid movement of water-charged soil, rock, and vegetation along stream channels. Some torrents are started by debris avalanches less than 100 yd³ but collect up to 10,000 yd³ of debris along the torrent's path. Torrents often remove most of the structure, gravel, and vegetation in their track and scour the stream channel to bedrock (Swanston and Swanson 1976). As a debris torrent loses velocity in lower gradient reaches of a stream, large quantities of rock, soil, and wood are deposited. Large debris and sediment jams can block the upstream passage of adult salmonids. The channelized character of the stream above the jam and reduced recruitment of stable structural material from adjoining logged areas can limit production in that section for many years.

Debris avalanches usually begin in upper drainage areas triggering torrents in steep, intermittent first- and second-order channels. Where these small tributaries enter larger streams at a sharp angle, debris torrents may not have the energy to turn the corner and continue downstream (Ketcheson and Froehlich 1978). Small debris torrents that entered Knowles Creek in the

Response

1. Federal funding of passage improvements at irrigation facilities is included in the Recommended Plan cost estimate in the Planning Report/Final Environmental Statement (PR/FES). However, if Bonneville Power Administration (BPA) funds and constructs these facilities under provisions of the Pacific Northwest Power Planning and Conservation Act of 1980 (Power Act), such funding could be considered as a non-Federal cost-share contribution to the Recommended Plan. BPA would credit such expenditures as an offsite enhancement benefit against its power system mitigation objectives.

2. The Northwest Power Planning Council has adopted an amendment to its Fish and Wildlife Program whereby BPA would provide power or reimbursement for power to operate the project's pumping facilities. As this occurs, BPA would assign a value to the power which could be used as a credit toward Fish and Wildlife Program objectives.

3. Dr. Chapman's comment on the Oregon Department of Fish and Wildlife's (ODFW) Comprehensive Plan estimate of Umatilla River fall chinook escapement plus the ODFW response to his concern are quoted below. Fishery resource studies done in the Umatilla basin conclude that the Umatilla River has significant potential for fall chinook natural production. During the fall of 1986, fall chinook brights were observed spawning in the lower river under existing flow and habitat conditions for the first time since the turn of the century. These were returning adults from hatchery reintroductions begun in 1983.

Chapman comment: "An evaluation of 'good spawning gravel' in a stream as silted as the Umatilla ought to include sieving of samples to assess percentage of fines, estimates of permeability, and plants of 'green' eggs in 20 or so gravel sites to assess survival. Predicting that 11,000 adults can use the Umatilla is risky business without these evaluations. Instream flow incremental methodology uses a gravel surface 'eyeball' determination that tells one nothing about intragravel conditions. Chinook are notoriously poor at distributing evenly, also. I think the numbers are too optimistic. . . . Suspicion arises that over 10,000 falls cannot be accommodated in the Umatilla when one recalls that the escapement goal for upriver brights over McNary is only 40,000 adults."

ODFW response:^{1/} "There is no evidence to support the claim that siltation will limit production of fall chinook in the Umatilla. Spawning areas of fall chinook in the Umatilla are located in the upper watershed above agricultural lands (85 percent is located above Pendleton). Siltation is a problem in Alaska where spawning gravel can become 'cemented' by coarse sediment but this is not a problem in Oregon streams. The finer sediment deposited on spawning beds in the Umatilla will not inhibit emergence of fry or cause significant reduction of oxygen to eggs. Spawning adults will also clean redds of this loose silt."

^{1/} From "A Comprehensive Plan for Rehabilitation of Anadromous Fish Stocks in the Umatilla River Basin," Oregon Department of Fish and Wildlife, January 1986

"The escapement goal at McNary (40,000) is a management objective which has nothing to do with production potential above McNary. Incidentally, escapement of upriver brights over McNary last year was over 100,000. We feel the 10-11,000 naturally spawning fall chinook estimate for the Umatilla are realistic."

4. The framework for required water permits and project water regulation was discussed on pages 2-32 to 2-35 of the 1986 Planning Report/Draft Environmental Statement (PR/DES). These arrangements will be formalized prior to construction. The Oregon Water Resources Department testified at the PR/DES public hearing in Pendleton that: "The Department is committed to ensuring the instream benefits would be maintained in the Umatilla River to its mouth." A high degree of cooperation is expected through a project operational infrastructure (working group) including Reclamation, tribes, State and Federal fishery agencies, Oregon Water Resources Department, and irrigation water users to aid in monitoring and refining project operations following implementation.

5. A revised project operation summary has been prepared. This new operation study is included in the Recommended Plan Changes, Modifications, and Updating section of this PR/FES. The new analysis results in increased ability of the project to meet target flows.

6. Reclamation agrees that this is a desirable procedure.

7. See response 2

8. A sensitivity analysis has been prepared comparing fishery benefits using data found in the U.S. Fish and Wildlife Service's 1984 Coordination Act Report and the 1987 Planning Aid Memorandum (PAM) prepared by that agency for Reclamation's use in preparing this PR/FES. The analysis also shows the economic impact of including coho salmon in the benefit analysis, and an analysis of anadromous fish benefits (without coho) based on PAM fish returns but using different catch to escapement ratios and fish values. These comparisons are shown in the Economic Analysis discussion in the Recommended Plan section of this PR/FES.



General Council
and
Board of Trustees

CONFEDERATED TRIBES
of the
Umatilla Indian Reservation

P.O. Box 638

PENDLETON, OREGON 97801

Area Code (503) Phone 276-3165

John R. Keys
Regional Director
Attention Code 150
Bureau of Reclamation
Box 043, 550 West Fort
Boise, Idaho 83724

October 31, 1986

Dear Mr. Keys:

Following are the comments of the Confederated Tribes of the Umatilla Indian Reservation on the Umatilla Basin Project Planning Report - Draft Environmental Statement. These comments supplement and extend comments provided at the September 17, 1986 public hearing in Pendleton, Oregon.

General Comments:

The proposed Umatilla Basin Project is the remaining link in a chain of local, state, regional and federal actions required to substantially address the Confederated Tribes' treaty-reserved rights to fish and the attendant social, economic and cultural values that stem from this basic natural resource.

Unlike in many tribal-nontribal water use conflicts elsewhere in the Nation, in the Umatilla Basin we are fortunate to have water in abundance. The Columbia River, fourth largest river in North America flows past our doorstep at an average daily rate of approximately 180,000 cubic feet per second. An annual average of approximately 330,000 acre feet of water per year flows unused out of the Umatilla Basin.

The Umatilla Basin Project's water exchange pumping plan is the least cost-means of putting that water to work to meet treaty-reserved rights while preserving the important nontribal agricultural economy of the Umatilla River Basin. The local cost-share exceeds 30%. But the treaty-reserved rights and the Federal trust obligation transcend economic considerations.

We commend the Bureau for the years of effort required to develop the water exchange pumping plan. It is imperative the final environmental statement convey to the Commissioner of Reclamation, to the rest of the Administration and to the Congress the need now for quick action to implement and the high risk of tribal-nontribal conflict without such action.

The Bureau has stated that the cooperation between competing water interests in the Umatilla River Basin is unprecedented in its West-wide experience. But the stakes - people's livelihoods and ways of life - are high. Consequently,

TREATY JUNE 9, 1855 ♦ CAYUSE, UMATILLA AND WALLAWALLA TRIBES

so is the underlying tension. Every additional month of uncertainty adds to the enormous and growing economic and political pressures that threaten to undermine the present tenuous cooperation between tribal and nontribal interests.

Specific Comments:

1. Page 3, para 3 & 4 - It should be made explicit that a large storage project was the preferred option with the highest benefits. The Meacham storage/Columbia River pumping option was considered more pragmatic, but, finally the tribes, Oregon Department of Fish and Wildlife and irrigators agreed the CRP plan was the most pragmatic, least-cost alternative.
2. Page 4, para 2 - An operational infrastructure that includes BR, the Confederated Tribes, Oregon Department of Fish and Wildlife, Oregon Department of Water Resources, and appropriate irrigation interests will be required.

If for no other reason than that the project is being advanced to address treaty-reserved rights, the Confederated Tribes would necessarily have a major role in devising and monitoring project operational regimes. There are other reasons.

Years of trial and error in manipulating project flows and timing of fish runs will be required to obtain optimum project results. Once a broad management framework is established, annual management regimes will be required. In years of low runoff, these annual management regimes will be critical and potentially contentious. In all cases, real-time, hands-on tribal involvement will be required.

The final ES should recognize the requirement of an operational infrastructure that includes BR, the Confederated Tribes, Oregon Department of Fish and Wildlife, Oregon Department of Water Resources, and appropriate irrigation interests. Project funds to support involvement of these parties should be anticipated and clearly provided for.

3. Page 6, para 2 - The potential effects of the Teel/Prior/Brown permits need to be clarified, updated and stated in a more positive way, i.e., available mitigating measures.
4. Page 6, para 4 & 5 - Update economic values to include benefits of hatchery fish of all species and to account for more recent fish value data.
5. The federal courts repeatedly have ruled that treaty-reserved rights may not be ignored on the basis of economic inconvenience to others. The least-cost approach to resolving the conflict between treaty rights to fish and the federal irrigation project in the Umatilla River Basin is appropriate. Throughout the planning process the tribes have stated that the traditional National Economic Development Account analysis is not an appropriate tool for evaluating a project designed to meet treaty obligations. But if the national economic development account analysis is to be displayed, it should be accurate.
6. For several years the Confederated Tribes have requested that project benefits to all species, i.e., steelhead, spring and

fall chinook and coho, in the numbers planned by the state and tribes and including hatchery fish, be included in the project economic analysis. The Bureau has been persuaded otherwise by agencies with no legal authority or responsibility for the kind or number of fish released in the basin. And yet all the fish production planned by the state and tribes will be in place by 1988.

7. In addition, the tribes have long argued the water exchange project will result in a net increase in national economic development account benefits for hatchery fish already being reared elsewhere and reprogrammed for release in the Umatilla River Basin. The contrasting view, which the Bureau has adopted, requires belief that enhanced instream flows will selectively improve survival of naturally-produced fish but not of hatchery fish. In addition, this view does not account for additional national economic development account benefits from increasing the percentage of the harvestable fish actually harvested, and increased benefits resulting from redistribution of more of the harvest into comparatively higher value nontribal recreational and tribal subsistence and ceremonial fisheries.
8. The final environmental statement economic analysis and resulting benefit/cost ratio should include all species in the numbers specified by the tribes and state and should include all benefits to hatchery fish as noted above.
9. The final environmental statement should explicitly recognize the federal obligation to redress impact of federal irrigation project on treaty-reserved rights.
10. Page 7, para 2 - Add reference to approximately \$2 million in state and other (non BR) federal expenditures in the basin since 1980. Reference donation of land and water sources for fish facilities, withdrawal of river from appropriation and minimum stream flows. State explicitly the total local-cost share as a percentage of total project cost. At least reference potential energy opportunity cost and actual withdrawal from appropriation and minimum streamflow opportunity costs.
11. Page 7, para 4 - This has been formally proposed. The rationale should be stated, i.e., appropriate that power to run pumps be provided to help redress damage from power generating operations of Federal Columbia River Power System.
12. Delete last sentence which, among other things, implies unlimited BPA discretion in complying with the Fish and Wildlife Program established by the Northwest Power Council. An implication not supported by the Act or recent court decisions.
13. Page 8, para 3 - Make clear that project has two components, CRP construction and further study of nonfish water needs. The CRP needs to be clearly isolated from future storage development, etc.
14. Page 8, para 5 - Emphasize least-cost.
15. Page 8, para 6 - Delete.

16. Page 9, para 1-4 - Delete.
17. Page 9, para 6 - See page 8, para 3 comments.
18. Page 11, table - The WEID pump is sized at 100 cfs. It should be sized at 140-180 cfs.

It should be noted these fish passage improvements have been approved for funding in the Columbia River Basin Fish and Wildlife Program.

19. Page 12, footnote 1 - The DES does not properly account for the net increase in hatchery fish and in hatchery fish economic values (through redistribution among fisheries with varying economic value) attributable to the CRP. See Page 6, para 4 and 5 comments.

20. Page 13 - Ibid.

This table should include display of local cost share, in hand and proposed, including the opportunity cost of energy forgone, and opportunity cost of withdrawing river from appropriation and establishing minimum stream flows.

21. Page 17 - Presentation of alternative plan is confusing. Should be made clear it is not an alternative under consideration.

22. Page 23 - Add to list:

1. Addresses treaty-reserved rights to fish and the Federal Government's trust responsibility;

2. Accomplishes 1 in the least-cost manner;

3. Provides for substantial tribal and nontribal fishery-related economic development;

4. Has a favorable benefit/cost ratio (using appropriate hatchery fish benefits and updated values for all fish);

5. Local cost share is >30%;

6. Contributes substantial off-site benefits to region, including freshwater and marine commercial and recreational fisheries;

7. Is a nonconsumptive, water exchange project;

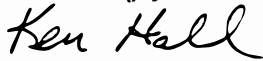
23. Page 25, para 9 - Add that state established minimum flows in accord with project goals.

24. Page 25, para 10 - Add reference to \$15 million approved for funding. Add separate para highlighting local cost share.

25. Page 26, para 1 - Insert statement of opportunity and need for early action on WEID pump.
26. Page 2-2, para 3 - Restate much more positively to reflect physical limitations, options available to mitigate impacts, etc.
27. Page 2-15, Table 2-8 - Power costs do not appear to account for glut of energy for which there is no market in the region. Or for the Pacific Northwest Electric Power Planning and Conservation Act of 1980's mandate that fish be accorded equitable treatment which presumably applies to pricing and to inclusion of replacement cost of forgone fish production.
28. Page 2-16, para 6 & 7 - This discussion should highlight major cost-savings features of CRP, e.g., fact that will not pump entire supply, only when minimum flows are reached, channel modifications, the fact that conservation and shaping of fish runs and flows are expected to reduce pumping requirements, etc.
29. Page 2-20, para 1-5 - Too negative; restate to account for run timing, ability to collect and transport, shape flows, devise passage/harvest scenarios to fit flows, etc.
30. Page 2-24, para 1 - Provide comparative figures for perspective. E.g., percentage of total production of federal system, equivalent demands such as pleasure boat lockage at main-stem Columbia River dams, etc.
31. Page 2-24-26-27 - Reevaluate benefits including hatchery fish and using new fish values. See Page 6, para 4 and 5 comments.
32. Page 2-29, para 2 & 3 - Provide more perspective on power costs. (See proposed power amendment.)
33. Page 2-29 - Insert new subhead detailing local cost-share.
34. Page 2-29, para 6 - Make explicit reference to Federal obligation to redress impact of Federal irrigation project on treaty-reserved rights.
35. Page 2-31, para 7 - Provide list in appendix or give examples representative of the wide range of supporters.
36. Page 4-5, para 4 - Precede with new paragraph detailing Umatilla River's geopolitical significance and high priority given by state, federal and tribal fishery interests.
37. Page 4-5, para 4 - More detail, including approval of \$15 million expenditure of complementary ratepayer expenditures which constitutes major local cost share.
38. Page 4-5, para 5 - This is a tribal/UDFW program. All projects are in Fish and Wildlife Program.
39. Page 4-6, Table 4-1 - Update table.

40. Page 4-7, para 5 - UDFW has given Umatilla River top priority state-wide.
41. Page 5-5, para 3 - Qualify to say that sustained natural production would be limited without a) a major trapping and hauling program, or b) preempting irrigation diversions during critical fish migration periods.
42. Page 7-15, para 1 - Update to reflect current situation. Point out that some available stocks' peak migration would be before passage flows were preempted by irrigation. Late arriving fish could be harvested below Three-Mile or captured and transported in facilities being built expressly for that purpose. Late migrating juveniles could be captured at Westland Diversion and transported.
43. Page 7-17, para 1 - Update; add spring chinook and coho, delete NMFS reference. Insert tribal/UDFW statement.
44. Page 7-18, para 3 - Delete reference to "purchase;" insert obtain and generally rewrite to include alternative actions, e.g., interim pumping, etc.
45. Page 7-18, para 9 - Delete paragraph and Attachment E.
46. Page 7-18, footnote 1 - Delete.
47. Page 7-19, para 1 & 2 - Rewrite; update.
48. As a final comment, the Confederated Tribes concur with the recommendation of the Oregon Trail Tourism Council for modest interpretative facilities to explain and commemorate the historic tribal-nontribal effort to restore an important natural resource that plays such an important role in the economies and cultures of the Pacific Northwest.

Sincerely,



Ken Hall
Chairman, Board of Trustees

Response

1. See "Other Revisions" section of this 1986 Planning Report/Final Environmental Statement (PR/FES) regarding revisions to page 3, last paragraph of the Planning Report/Draft Environmental Statement (PR/DES), which reads: "The tribes, Oregon Department of Fish and Wildlife (ODFW), and irrigators opted for the Columbia River Pumping Plan as the Recommended Plan."

2. A program is included as a feature of the project to permit project operators and fishery experts to technically evaluate project accomplishments toward meeting fishery restoration objectives and to fine tune operations within real operating constraints to maximize accomplishments. This program would be administered by Reclamation in consultation with the tribal fishery experts, ODFW, and the Federal fishery agencies. This program is expected to extend over a 12-year period and would be a project cost.

A Umatilla Basin Project oversight committee would be organized to provide a forum of communication among the project's varied water interests. The committee, made up of representatives from the affected irrigation districts, the ODFW, CTUIR, the OWRD watermaster office, and Reclamation, will meet as necessary to disseminate information and coordinate activities concerning operations. ODFW and the CTUIR will develop annual fish passage and flow objectives within project guidelines. These and other responsibilities and funding arrangements would be specified in project operation and maintenance agreements.

3. See revised Project Operations discussion in Recommended Plan Changes, Modifications, and Updating section of this PR/FES.

4.,5.,6.,7.,8.,9. The U.S. Fish and Wildlife Service's (FWS) 1984 Coordination Act Report (CAR) was the basis for the fishery benefit analysis in the 1986 PR/DES. Reclamation has prepared a comparison of fishery benefits based on the CAR with benefits provided by the FWS and National Marine Fisheries Service in a 1986 Planning Aid Memorandum (PAM) for use by Reclamation in preparing its PR/FES. This comparison is shown in the Economic Analysis discussion of the Recommended Plan section of this PR/FES. A sensitivity analysis has also been made showing the economic impact of including coho salmon in the benefit analysis, and another one which shows anadromous fish benefits (without coho) based on PAM fish returns but using different catch to escapement ratios and fish values. The fish values used in the last analysis have not been approved by the Secretary of the Interior for use in Reclamation planning studies. Should new values be approved by the Secretary, they will be used by Reclamation in advance planning studies.

10. Reference is made to \$1.7 million in non-Federal expenditures on page 7 of the PR/DES. See "Other Revisions" section of this PR/FES in regard to PR/DES page 7 revisions. The following statement has been added: "In addition, other non-Federal participation includes donation of land and water resources for fish facilities, withdrawal of the Umatilla River from appropriation, and establishment of minimum streamflows."

11. See "Other Revisions" section of this PR/FES regarding page 7 revisions.

12. See response 11

13. When the second and third paragraphs are read, the distinction between the Columbia River pumping construction and future studies appears to be clearly stated.

14. See "Other Revisions" section of this PR/FES regarding page 8 revisions.

15. Page 8, fifth full paragraph. The paragraph is retained with a revision of the first sentence to read: "Subsequent to completion of plan formulation, irrigation district representatives and others expressed interest in the possibility of including irrigation as a function of the plan." This should eliminate any confusion that irrigation is a plan function. See "Other Revisions" section of this PR/FES regarding page 8 revisions.

16. A review of multipurpose needs and development opportunities in the Matilla basin was an objective of the study. Therefore, a description of irrigation opportunities and actions taken in regard to these opportunities seems appropriate.

17. See "Other Revisions" section of this PR/FES regarding page 9 revisions.

18. Capacity has been increased to 140 ft³/s.

19. See responses to 4 and 9

20. Credit for current and past expenditures by non-Federal entities to enhance anadromous fish in the basin has been proposed as part of project authorization. Because it is still only a proposal, these expenditures have been included in the footnotes for the repayment portion of table 2-29. An updated analysis of the impact of non-Federal expenditures will be prepared when legislation is passed.

The cost of energy related to project pumping would be assumed by ratepayers served by Bonneville Power Administration (BPA) and would be a cost to the region.

The cost of downstream power generation losses serves as a proxy for the opportunity cost associated with water withdrawn for project use.

21. A statement is included in this PR/FES that all commenters on the 1986 PR/DES supported the Recommended Plan and that the Alternative Plan is not being considered as a development option. Therefore, updating or other revisions of the Alternative Plan discussion in the PR/DES was not warranted.

22. See "Other Revisions" section of this PR/FES for page 23 additions.

It is not appropriate to reference a different benefit-cost ratio as suggested since the updated fish values have not been approved by the Secretary of the Interior for use in project analysis.

23. See "Other Revisions" section of PR/FES for revisions to page 25.
24. See "Other Revisions" section of PR/FES regarding page 25 revisions.
25. See "Other Revisions" section of PR/FES regarding additions to conclusion 6.
26. See Recommended Plan Changes, Modifications, and Updating section of this PR/FES for revised project operation including the Prior/Brown/Teel permits.
27. Costs for project pumping power are based on values furnished by BPA. These costs are based on long-range medium load growth forecasts.
28. See "Other Revisions" section of this PR/FES regarding revision to page 4 which reads: "Also, results of the monitoring program could possibly generate a savings in pumping requirements."
29. See Recommended Plan Changes, Modifications, and Updating section of this PR/FES which includes a revised discussion of fishery accomplishments. This section has been revised to reflect your concern.
30. Current guidelines for economic analysis do not make provision for this kind of analysis. This comment would be more appropriate for hearing testimony for project authorization.
31. See responses 4 and 9 above
32. In the revised economic analysis for this PR/FES, costs for project pumping power are based on values furnished by BPA; i.e., 22.2 mills per kilowatt-hour, which is the priority firm rate. Even if the legislation authorizing the project provided for a preferential rate of 2.5-4.0 mills per kilowatt-hour, the economic evaluation would have to use the economic cost to replace power used/foregone by the project, currently 33.22 mills. As mentioned before, this is the cost based on the medium load growth scenario and considers time of occurrence in arriving at a present worth value. See Recommended Plan Changes, Modifications, and Updating section of this PR/FES.
33. See response 20
34. See Recommended Plan Changes, Modifications, and Updating section of this PR/FES for revised discussion on the project economic and financial analysis.
35. See Appendix C
- 36 and 37. Revision considered unnecessary
38. See "Other Revisions" section of this PR/FES for revisions to page 4-5.
39. Schedule has been updated. See "Other Revisions" section of this PR/FES regarding revisions to page 4-6.

40. See "Other Revisions" section of this PR/FES regarding revision to page 4-7.

41. See "Affected Environment and Environmental Consequences" section of this PR/FES regarding the possibility of fall chinook natural production with a trap and haul program.

42. Comment accommodated. See "Affected Environment and Environmental Consequences" section of this PR/FES

43. Comment accommodated. See "Affected Environment and Environmental Consequences" section of this PR/FES

44. See "Affected Environment and Environmental Consequences" section of this PR/FES

45. See revised paragraph in the "Affected Environment and Environmental Consequences" section of this PR/FES

46. See footnote revision in the "Affected Environment and Environmental Consequences" section of this PR/FES

47. See "Affected Environment and Environmental Consequences" section of this PR/FES for discussion on future without fisheries conditions

48. No response necessary

UMATILLA BASIN PROJECT PUBLIC HEARING

Pendleton, Oregon

on

September 17, 1986

Red Lion--Indian Hills

DRAFT ENVIRONMENTAL STATEMENT

7:00 P.M.

IF YOU WOULD LIKE TO RECEIVE A COPY OF THE PLANNING REPORT/DRAFT ENVIRONMENTAL STATEMENT AND/OR PROVIDE COMMENTS FOR THE HEARING RECORD, PLEASE FILL OUT THIS SHEET AND LEAVE IT AT THE RECEPTION TABLE ON YOUR WAY OUT, OR MAIL IT BY _____, SEPTEMBER 30, 1986, TO:

BUREAU OF RECLAMATION (ATTENTION: 150)
BOX 043 - 550 WEST FORT STREET
BOISE, IDAHO 83724

☐ I would like to receive a copy of the Planning Report/Draft Environmental Statement.

Name: Don Caldwell

Address: 15 Westview Drive
Hermiston, OR 97838

☒ Please include the following in the Hearing Record.

COMMENTS: The following questions were ones that I had after the draft

1. EIS public hearing. (1) In the EIS I did not see were the debris problem at three
mile dam would have any effective way to clean up debris from the dam after the
2. new proposal was build. (2) Another question was the hydro-plant that is being
built on the Umatilla River. I did not see anything in the EIS that addressed
3. the effective of this on the restoration of the salmon & steelhead run. (3) I
questioned the increased number of fishing days or hours at Cold Springs mainly
because of the limited access to the water when the reservoir is full. This is
based on my families experience of trying to find a spot along the bank when
crappie fishing is excellent.

(Continue on reverse side, if you wish)

Name:

Address:

Don Caldwell

15 Westview Drive

Hermiston, OR 97838

Response

1. Fish passage improvement construction began at Three Mile Falls Diversion Dam in May 1987. All construction is to be finished by the fall of 1988. Funding for a contractor to annually remove accumulated debris on the dam is specifically provided for in the operations, maintenance, and replacement agreement of the new fish passage facilities.

2. Reference is made to the Jim Boyd project near river-mile 10. Prior to construction approval, fish and wildlife agencies and Umatilla Indian tribal representatives specified minimum flow requirements past this project that were determined appropriate under present conditions and assuming future conditions with Reclamation's Recommended Plan in place. Oregon Department of Fish and Wildlife will monitor the effectiveness of these minimum flows in providing passage.

3. Reclamation's Recommended Plan would improve resident fish production in Cold Springs Reservoir due to higher pool elevations in the late spring through fall period. This would equate to an increase in angler-days. Bank fishing access can be difficult during springtime high water flooding of thick riparian vegetation; however, boat access should be good.

Letters--No Response Necessary

Page

Federal Agencies

8/20/86	U.S. Department of Agriculture, Soil Conservation Service	C-91
9/17/86	U.S. Department of Agriculture, Forest Service, Umatilla National Forest	C-92

State Agencies

7/30/86	Department of Transportation, Highway Division	C-93
8/11/86	Department of Land Conservation and Development	C-94
9/16/86	Executive Department	C-95
9/22/86	Oregon State Senator Mike Thorne	C-96
9/24/86	Oregon Department of Agriculture	C-98

Organizations

8/27/86	Blue Mountain Community College	C-99
9/3/86	Pendleton Chamber of Commerce	C-100
9/8/86	Greater Hermiston Chamber of Commerce	C-101
9/15/86	League of Women Voters of Umatilla County	C-102
9/19/86	Tri-State Steelheaders	C-103
9/29/86	County Line Water Improvement District, Tyler Hansell, President	C-105
10/27/86	Oregon Water Resources Congress	C-106
10/30/86	Northwest Power Planning Council	C-107



United States
Department of
Agriculture

Soil
Conservation
Service

1220 S. W. Third Avenue
Room 1640
Portland, Oregon 97204

August 20, 1986

Mr. C. Dale Duvall, Commissioner
United States Department of the Interior
Bureau of Reclamation
Washington, D.C. 20240

SUBJECT: 734

Dear Mr. Duvall:

This Umatilla Basin Project Draft Environmental Impact Statement has been well prepared and all environmental concerns have been adequately considered.

Thank you for the opportunity to review this document.

JACK P. KANALZ
State Conservationist

cc:

James B. Newman, Director, ECS Div., SCS, Washington, D.C.

C-91



The Soil Conservation Service
is an agency of the
United States Department of Agriculture



402641 3157



United States
Department of
Agriculture

Forest
Service

Umatilla
National
Forest

2517 S.W. Hailey Ave.
Pendleton, OR 97801

File No. 2630

Date: September 17, 1986

Regional Director
Pacific Northwest Region
Bureau of Reclamation
Attn: Code 150
Box 043, 550 West Fort Street
Boise, ID 83724

Dear Sir:

The Umatilla National Forest's comments on the Bureau of Reclamation's Planning Report-Draft Environmental Statement for the Umatilla Basin Project are as follows:

The Umatilla National Forest supports the Bureau of Reclamation's efforts to restore salmon and increase steelhead populations in the Umatilla Basin.

The Forest is maintaining water quality and riparian vegetation at a high level in the Umatilla Basin in anticipation of adult spring chinook salmon once again returning to the Umatilla Basin and the Umatilla Forest.

Implementation of the Umatilla Basin Project is necessary in order to take full advantage of the present anadromous fish habitat in the basin. The benefits of future habitat improvement projects will be further increased by this project. The Umatilla National Forest plans to complete habitat improvement projects in cooperation with Bonneville Power Administration in the Umatilla Basin during the next five years totaling approximately \$500,000.

If you have any questions or need further information, please contact Bill Krantz at (503) 276-3811 Ext. 414.

Sincerely,

James A. Lawrence
JAMES A. LAWRENCE
Forest Supervisor





Department of Transportation

HIGHWAY DIVISION

TRANSPORTATION BUILDING, SALEM, OREGON 97310

In Reply Refer to
File No.:

ENV 3

July 30, 1986

Regional Director, Pacific N.W. Region
Bureau of Reclamation
Attention Code 150
Box 043
550 West Fort Street
Boise, Idaho 83724

We have received your Planning Report-Draft Environmental Statement on The Umatilla Basin Project. Having no special expertise in the areas of proposed work, and seeing no apparent impact potential on the State Highway System, we have no comment.

We do thank you, however, for the opportunity to comment.

Sincerely,

Cam Gilmour, Manager
Environmental Section
Oregon State Highway Division
324 Capitol Street NE
Salem, OR 97310

og

cc: Bob Hector



Department of Land Conservation and Development

1175 COURT STREET N.E., SALEM, OREGON 97310-0590 PHONE: (503) 378-4926

August 11, 1986

Regional Director
Pacific Northwest Region
Bureau of Reclamation
Attention Code 150, Box 043
550 West Fort Street
Boise, Idaho 83724

Dear Sir:

The Department has reviewed the Planning Report/Draft Environmental Statement (PR/DES) on the Umatilla Project in north-central Oregon. The Department has also contacted the affected local governments in the area. Our review indicates that the draft document is consistent with the comprehensive plans of the affected counties. The Department supports the recommended alternative.

Thank you for the opportunity to review the draft documents. Please keep us informed as the project progresses.

Sincerely,

James F. Ross
Director

JFR:kj
0333FPS/3B

cc: Brent Lake



Executive Department

155 COTTAGE STREET NE., SALEM, OREGON 97310

September 16, 1986

John R. Woodworth
Bureau of Reclamation
Box 043
Boise, ID 83724

SUBJECT: Umatilla Basin Project Oregon
PNRS #: OR860804-004-4

Thank you for submitting your draft Environmental Impact Statement for State of Oregon review and comment.

Your draft was referred to the appropriate state agencies for review. The Department of Land Conservation and Development offered the enclosed comments, which should be addressed in preparation of the final Environmental Impact Statement.

We will expect to receive copies of the final statement as required by Council of Environmental Quality Guidelines.

Sincerely,

INTERGOVERNMENTAL RELATIONS DIVISION

Dolores Streeter
Clearinghouse Coordinator

DS:bjm
Enclosure

MIKE THORNE
UMATILLA, UNION AND WALLOWA COUNTIES



REPLY TO ADDRESS INDICATED:

- ☐ Senate Chamber
Salem, Oregon 97310
- ☒ Holdman Route, Box 505
Pendleton, Oregon 97801

OREGON STATE SENATE
SALEM, OREGON
97310

September 22, 1986

Regional Director
Pacific Northwest Region
Bureau of Reclamation
Box 043, 550 West Fort Street
Boise, Idaho 83724

RE: CODE 150

Dear Director:

I have been very much interested in the progress of the Umatilla Basin Project and participated as a member of the Oregon Legislature in providing funding for an ad hoc group that has been working closely with the various interest groups in an attempt to secure funding for the project. The project has taken, in its conception, a giant step forward in dealing with the competing uses for water in the Umatilla Basin.

I can't think of a more positive step than the one that is being proposed which brings various conflicting interest groups together to support a common project which will provide benefits to all and without the potential of a protracted court procedure which renders no one any significant benefit.

At a time when people tend to migrate to the court system to mitigate their differences, forward-thinking people in the Umatilla Basin area have brought together tribal interests, agricultural interests, tourism interests, fishing interests, and many other water user activities to propose a common course with a common solution which through the process of compromise will be of maximum benefit for many years to come.

As a member of the Oregon Legislature and a representative of Northeast Oregon, I strongly support the actions taken to date and would be more than happy to meet with you or discuss further any questions you might have.

Regional Director
September 22, 1986
Page 2

Thank you again for your interest and support in this very important project.

Sincerely,



Mike Thorne
Oregon State Senator

MT:kr

cc: Hadley Akins, Umatilla Basin Project
Confederated Tribes of the Umatilla
Tony Barnhart, ECOAC



Oregon Department of Agriculture

635 CAPITOL STREET NE, SALEM, OREGON 97310-0110

September 24, 1986

John W. Keys, III, Regional Director
Pacific Northwest Region
Bureau of Reclamation
Attn: Code 150
Box 043, 550 W. Fort St.
BOISE ID 83724

Dear Mr. Keys:

After reviewing the information provided, it is my opinion that the Umatilla Basin Project plans for the development of a fish enhancement project to help restore salmon runs and increase steelhead runs in the Umatilla Basin, meet the needs for all the water users within the basin.

Conflicts between in-stream and out-of-stream water users have been minimized and agriculture interests will continue to be served through the proposed Bureau of Reclamation plan.

The plan assures that irrigation will not be disrupted and that irrigators would not lose their water rights, which are so vital to maintaining a strong agricultural base in the Umatilla River Basin. I also encourage that future irrigation needs in the basin be considered. With this assurance from the Bureau of Reclamation, I then can fully support the plan as testified by George Stubbart, Soil and Water Conservation Division Administrator, at the hearing in Pendleton on September 17, 1986.

Sincerely,

Leonard Kunzman
Director
(503) 373-4152

ceL4T



August 27, 1986

Regional Director
Pacific Northwest Region
Bureau of Reclamation
Attn: Code 150
Box 043, 550 West Fort Street
Boise, Idaho 83724

Re: Letter of Support of Umatilla Basin Project

As Chairman of the Tourist/Convention Council for the Pendleton Chamber of Commerce, I have had an opportunity to review information on the Umatilla Basin Project. The activities included in the Umatilla Basin Project seem to be a logical way to resolve a long-standing problem.

The Tourist/Convention Council has an interest in seeing this problem resolved in a manner that is satisfactory both to region irrigators and the Confederated Tribes of the Umatilla Indian Reservation. A great deal of money and effort have already been expended to improve fish rearing facilities and more improvements are planned. These efforts, however, will be wasted unless there is an increase in the stream flow.

The Tourist/Convention Council is extremely interested in the improved fishing opportunities, as those improvements would support our efforts to bring more tourism to this area. It is also important, however, that the Agri-Business economy be maintained as the health and vitality of this area is important if the area is to remain a viable tourist attraction.

The Tourist/Convention Council is on record as supporting activities that create resources necessary for the promotion of tourism. We believe this project fits that objective and we therefore strongly support funding of the Umatilla Basin Project.

Sincerely,

Ronald L. Daniels

Ronald L. Daniels, Chairman
Pendleton Chamber of Commerce
Tourist/Convention Council

tt

Serving Morrow and Umatilla Counties

2411 N.W. Carden

P.O. Box 100

Pendleton, Oregon 97801

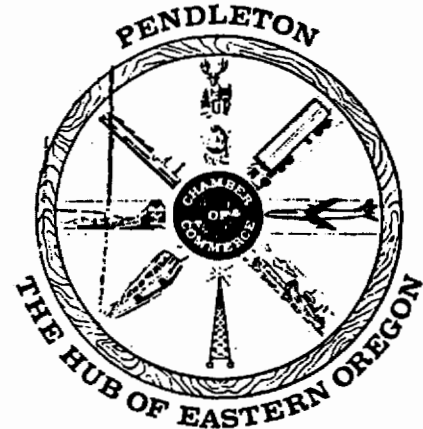
(503)276-1260

PENDLETON CHAMBER OF COMMERCE

25 S.E. Dorion • P.O. Box 1446 • Pendleton, Oregon 97801

Telephone (503) 276-7411

Toll Free In Oregon 1-800-452-9403 Toll Free Outside Oregon 1-800-547-8911



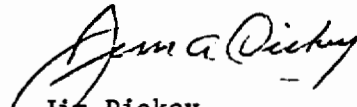
September 3, 1986

Regional Director
Pacific Northwest Region
Bureau of Reclamation
Attn: Code 150
Box 043, 550 West Fort Street
Boise, ID 83724

RE: Umatilla River Basin Project

On this date the Pendleton Chamber of Commerce Board of Directors voted unanimously to support funding of the Umatilla River Basin Project. This high priority project was initiated and nurtured by the Agriculture/Forestry Council of the Chamber. The positive impact it will have on agriculture, livestock, fish and game, as well as tourism is enormous. We have been the catalyst that has pulled all of the interested parties together, who have spent a tremendous amount of time and talent to bring this project to fruition. We wholeheartedly support its' funding and will appreciate your efforts to help bring this undertaking to a successful conclusion.

Respectfully,


Jim Dickey
President

JD:HAB:sjn

cc: Board of Directors

CHAMBER OF COMMERCE

Phone (503) 567-6151

P.O. Box 185 Hermiston, Oregon 97838

September 8, 1986

Bureau of Reclamation
Regional Office (Attention: 150)
Box 043 - 550 West Fort Street
Boise, Idaho 83724

Gentlemen:

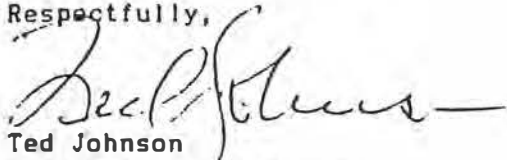
Because the solutions to enhanced water flows and fish runs in the Umatilla River are very complex and highly technical, we have used your "Planning Report-Draft Environmental Statement" as a basis for our strong support for the "recommended plan." As President of the Greater Hermiston Chamber of Commerce, I have been asked to represent this support to you.

Our reasons for lending our strong support to this plan are:

1. The increased water flow control & fish passage should eventually enhance the lower river's use by sportsmen and tourists, both economically important to the lower Umatilla area.
2. The stabilized source of irrigation water will be vital to our area and should improve the irrigation potential for the thousands of acres directly involved in the plan;
3. With the increasing interest in truck-garden (small tract) farming of row-crop vegetables in our area, uniform irrigation water supplies will be ever more critical in mid to late summer. This plan should insure season-long water supplies for these small tracts. Direct pumping from the Columbia River is in most cases neither economical nor practical for this large number of growers.
4. A stable, "normal" flow of water in the lower Umatilla River should add greatly to its attractiveness as a potential park and rest-stop location. Such facilities are vital to our area which we believe will continue to grow and develop.
5. If the Treaty rights can be met and satisfied in this plan, we believe that the plan should be developed. We have no desire to see protracted litigation over water rights if viable, affordable alternatives exist. It seems that the recommended plan is such an alternative.

Thank you for this opportunity to appear before you and submit this letter for your records.

Respectfully,


Ted Johnson
President

C-101



LEAGUE OF WOMEN VOTERS OF UMATILLA COUNTY
1010 N.W. 13th Pl.
Pendleton, Oregon 97801

September 15, 1986

United States Department of the Interior
Bureau of Reclamation
Pacific Northwest Region (Attention 150)
Federal Building and U.S. Courthouse
Box 043-550 West Fort Street
Boise, Idaho 83724

Re: Draft Environmental Impact Statement, Umatilla Basin Project

Sirs:

The League of Women Voters of Umatilla County supports the Umatilla Basin Project as presented in the Draft Environmental Impact Statement. We believe that all users of the Umatilla River should share in its benefits. We have backed legislation establishing minimum streamflow in Oregon rivers to improve fish runs. We are interested in conserving Columbia River water. We believe the Umatilla Basin Project plan answers these concerns.

The League of Women Voters urges the adoption of the impact statement.

Sincerely,

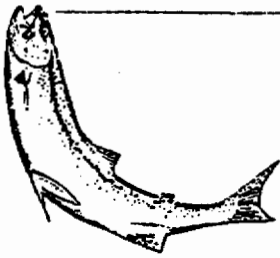


Susan Starlund Woodward
president, L.W. V. of
Umatilla County

TRI-STATE STEELHEADERS

A CONSERVATION ORGANIZATION

P.O. Box 1375 — Walla Walla, Washington 99362



September 19, 1986

Regional Director
Pacific Northwest Region
Bureau of Reclamation
Box 043, 550 W. Fort Street
Boise, ID 83704

Dear Sir:

Tri-State Steelheaders is a steelhead conservation organization of six hundred members. Based in Walla Walla, Washington, we are forty-eight miles north of Pendleton and the Umatilla River.

We believe that the Umatilla River Project is of cultural, genetic and economic importance to our region. Through the full funding of this project, the local Associated Tribes will again be able to enjoy their "usual and accustomed" fishing grounds which are an integral part of their heritage. The project will mitigate a unique strain of fish that have evolved with the northwest ecology and will provide a source of economic benefit to the regional economy from both tourist dollars and the ability to provide diversification to a region presently dependent on agriculture.

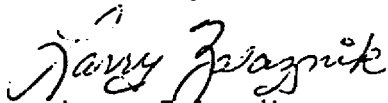
The Umatilla River and the Walla Walla River are comparable streams in that they carry year-around flows through rich agricultural areas. These rivers differ in that the Umatilla Project has provided a means to mitigate the fishery, dovetailing with the goals of the Northwest Power Planning Council, provide for Indian interests and prevent costly litigation by the Associated Tribes of the Umatilla all without hurting the one hundred million dollar agricultural economy of the Umatilla Basin.

With the deficit reduction goals of Congress and the American people, all funding for new water projects are under intense scrutiny. This is one project that should be completed as anticipated benefits to all parties involved will far outweigh costs.

Regional Director
Pacific Northwest Region
Bureau of Reclamation
September 19, 1986
Page -2-

Our compliments to the Bureau of Reclamation for an informative and far reaching document with the Umatilla Basin Draft Environmental Statement.

Sincerely,

A handwritten signature in cursive script, appearing to read "Larry Zelaznik".

Larry Zelaznik
President
Tri-State Steelheaders

LZ/pw

Sept 29, 1986

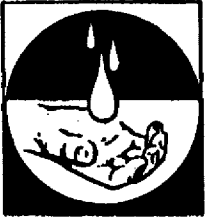
Dear Mr. Keys,

As president of the "County Line
Water Improvement District" I would
like to comment on the Planning Report/
Draft Environmental Statement of the
Onatilla Basin Project.

We give our full support to
this PR/DS. Wish that an upstream
dam could be built. But we feel
this study was well done and well
written.

Thanks so much for doing good job.

Tyler S. Hansell / President of
County Line Water Improvement Dist.



OREGON WATER RESOURCES CONGRESS

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Promoting the development, control, conservation, preservation and utilization of land and water resources of the State of Oregon since 1912

October 27, 1986

John W. Keys, III
Regional Director
U. S. Bureau of Reclamation
Box 043-550 West Fort Street
Boise, Idaho 83724

Dear Director Keys:

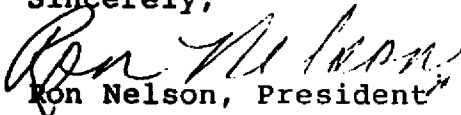
We wish to acknowledge our support, as the state association representing irrigation districts, of the proposed Umatilla Basin Plan. At our Annual Membership Meeting held in Ashland on October 8, 1986, the membership supported a resolution on behalf of the basin plan by unanimous acclamation.

We commend your agency in bringing together all of the necessary parties to effect the agreement. It is extremely gratifying to see a coalition including irrigation districts, Indian tribes and other interests mutually supporting a project of this significance.

There appears to be an identified problem in implementing the plan regarding state water rights. Manager William Porfily of the Stanfield/Westland Irrigation Districts has shared those concerns with our Association. We will be working with Bill and others within the basin in an attempt to reconcile state administration in a compatible manner. If a solution cannot be implemented administratively, perhaps OWRC can promote the necessary legislative changes that may be required.

Please feel free to contact me or Jan Boettcher, our Executive Secretary at the office as indicated above, for any assistance we can provide.

Sincerely,


Ron Nelson, President

JB

cc: William Porfily
Stanfield/Westland Irrigation Districts

ROBERT (BOB) SAXVIK
Chairman
Idaho
W. Larry Mills
Idaho
Morris L. Brusett
Montana
Gerald Mueller
Montana

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Washington
Robert B. Duncan
Oregon
Donald W. Godard
Oregon

October 30, 1986

John Keys, III, Regional Director
Bureau of Reclamation, Pacific Northwest Region
Attention Code: 150
Federal Building and U.S. Courthouse
Box 043-550 West Fort Street
Boise, Idaho 83724

Dear Mr. Keys:

Thank you for sending the Planning Report/ Draft Environmental Statement, Umatilla Basin Project (statement number 86-32, filing date July 21, 1986). The Council staff submits the following comments.

Through the Council's Columbia River Basin Fish and Wildlife Program, the region's hydropower ratepayers are making a substantial investment to rehabilitate salmon and steelhead in the Umatilla basin and elsewhere. The Council's program includes habitat and passage improvements, acclimation and rearing facilities, and a steelhead hatchery in the Umatilla basin. The flow enhancements represented by the Bureau's recommended plan could approximately double the fishery benefits of these actions, according to the Comprehensive Plan for Rehabilitation of Anadromous Fish Stocks in the Umatilla River Basin developed by the Oregon Department of Fish and Wildlife.

The Bureau's Draft Environmental Statement, at page 7, states:

Some project supporters have suggested that the power [to operate project pumping facilities] be supplied as an element of the Northwest Power Planning Council's Fish and Wildlife Program... Provision of pumping power for the project is not an element of the Council's current Fish and Wildlife Program, and program amendment would be required.

Such a program amendment is proposed in the Council's 1986 Draft Amendment Document, in draft section 704(a)(17). The proposed amendment reads:

Bonneville shall provide power or repayment for operation and maintenance costs associated with provision of power to Bureau of

Reclamation pumping plants designed to exchange Columbia River water for Umatilla River water. The Bureau of Reclamation must obtain consent from all affected water users and regulators and provide assurance that the pumping operations will result in specified flows for salmon and steelhead in the Umatilla Basin at levels which the fish and wildlife agencies and tribes agree are suitable for low, average, and above average water conditions. The Bureau of Reclamation shall fund state and tribal fish and wildlife agency monitoring and evaluation studies to determine the biological effectiveness of this measure.

In addition, the Draft Amendment Document five-year action plan, which specifies measures to be implemented by 1992, proposes Bonneville/Bureau actions to:

Provide power or repay operating and maintenance costs associated with the implementation of a water exchange to improve instream flows in the Umatilla River to levels specified by fish and wildlife agencies and tribes, as specified in section 704(a)(17). Monitor and evaluate results. (Draft section 1504, Action Item 34.01)

The Council is taking comment on these proposed Umatilla pumping power amendments through December 15, 1986. It already has received oral and written comment from several parties, some of them opposing the proposed amendments and others (including the Bureau of Reclamation) supporting them, in some cases with modifications.

Written comments and supporting documents were submitted by the Confederated Tribes of the Umatilla Indian Reservation (Attachment 1). These comments strongly support the proposed amendments with the following modifications: 1) For measure 704(a)(17), the Umatilla Tribe proposes changes which would clarify that the Oregon Department of Fish and Wildlife and the Umatilla Tribes (not the Bureau, Bonneville, other tribes or other fish and wildlife agencies) have the responsibility for deciding how the exchanged water is to be used. 2) For Action Item 34.01, the Umatilla Tribe proposes language that would specify that power be provided beginning in spring 1987. This power would be used for existing private pumps, for which the Bureau has use agreements, until the Bureau pumping plants are completed. The Umatilla Tribe also submitted oral comments at the October 8 hearing on the Draft Amendment Document in Portland. (See Attachment 2, pages 148-163).

Comments in support of the proposed amendments also were provided at the October 8 hearing by the Columbia Basin Fish and Wildlife Council (Attachment 2, page 9) and Oregon Trout (Attachment 2, page 125). John Palensky, Director, Division of Fish and Wildlife, Bonneville Power Administration, expressed concern about the proposed amendments, but did not elaborate the nature of his concerns (Attachment 2, page 108). The most substantial comments in opposition to the proposed amendments were provided by Al Wright of the Pacific Northwest Utilities Conference Committee. (See Attachment 2, pages 45 through 70).

The Council will review comments on the proposed amendments December 1986 through February 1987. It expects to take final action in mid-February.

You may wish to incorporate the above information in your deliberations on the final environmental statement. If you or your staff have questions, please direct them to Willa Nehlsen of the Council staff.

Sincerely,

A handwritten signature in black ink, reading "Edward Sheets". The signature is fluid and cursive, with the first name "Edward" and last name "Sheets" clearly distinguishable.

Edward Sheets.
Executive Director

Attachments.



ATTACHMENTS

BACKGROUND AND PLAN SUMMARY

(Reprinted from July 1986 Planning Report/Draft Environmental Statement)

BACKGROUND

This Planning Report/Draft Environmental Statement discusses the proposed Umatilla Basin Project in northeastern Oregon. Implementation of the Recommended Plan would help satisfy objectives of the Confederated Tribes of the Umatilla Indian Reservation (tribes) to restore salmon and steelhead runs in the Umatilla River to desirable levels. Inadequate streamflows and insufficient fish passage and protective screens at irrigation diversions have contributed to depletion of a once viable fishery, and the proposed project would help correct these deficiencies. Restoration of the fishery would be of major cultural and economic importance to the tribes, and other Indian and non-Indian fisheries would benefit.

The Federal Umatilla Reclamation project, developed early this century, diverts water from the Umatilla River for irrigation, and these diversions deplete streamflows needed for fish migration, spawning, and rearing. The recommended development would supplement the basin water supply by pumping from the nearby Columbia River. Streamflow objectives for fishery restoration could be met, and a water supply would continue to be available for irrigation.

The Indian and non-Indian communities have cooperated in the development of the proposed project and see its implementation as a major step toward overcoming water supply conflicts that trouble the basin. The project would substantially enhance the economic, environmental, and social well-being of basin citizens.

The investigation was authorized by the Feasibility Studies Act of 1966 (Public Law 89-561). At the urging of the tribes, Oregon Department of Fish and Wildlife, and others, Congress directed the Bureau of Reclamation (Reclamation) to orient its study toward a plan that would enhance the basin fishery and help resolve water conflicts. The Planning Report/Draft Environmental Statement sets forth the proposed plan of development. Procedures outlined in the March 10, 1983, "Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies" have been accommodated, and the environmental statement has been prepared to comply with the National Environmental Policy Act of 1969 (Public Law 91-190). In addition, the document is being used to receive public review and comment in compliance with Executive Order 11988 "Floodplain Management" and Executive Order 11990 "Protection of Wetlands." The document also discusses consultations under section 7 of the Endangered Species Act.

Several Federal and State agencies, the tribes, fishery agencies, irrigation districts, and a citizens' steering committee provided assistance to the planning effort. The proposed development compliments objectives of the Northwest Power Planning Council's Fish and Wildlife Program which was formulated in response to the Pacific Northwest Electric Power Planning and Conservation Act of 1980 (Public Law 96-501).

The fishery need addressed by the recommended development is treaty related. Traditionally, the tribes had a viable hunting and fishing lifestyle based on seasonal migration over vast areas to take advantage of salmon and steelhead runs, wildlife migrations, and other food sources. When the tribes entered into a treaty with the United States in 1855, they ceded vast land areas upon which their livelihood depended and settled within a reservation. In recognition, the treaty included provisions to protect fishing and hunting within the reservation and at "usual and accustomed" places outside the reservation and to assist in development of a viable reservation economy.

Resource development in the basin, including construction of the Federal Umatilla Reclamation project, has adversely affected habitat once available to salmon and steelhead. These developments, and dam construction on the Columbia River, have reduced Umatilla River fish runs to a mere fraction of what they once were, and many of the "usual and accustomed" Indian fisheries throughout the Columbia River basin have been depleted.

Several tribes have sought restitution in the courts for lost lands and fisheries. Treaty reserved rights have been acknowledged by the U.S. Supreme Court (United States v. Winans 198 U.S. 371, 1905) when it held that a treaty is not a grant of rights to the Indians but a grant of rights from them--a reservation of those not granted. Further, Federal courts have held that the tribes generally have an implied right by virtue of their treaties to an amount of water sufficient to fulfill the purposes for which their reservations were created (Winters v. United States 207 U.S. 564, 1908 and subsequent reaffirmations). As perceived by the tribes, these purposes are to provide a resource base upon which to build in perpetuity a socially, economically, and culturally rewarding life for tribal members and the reservation community as a whole.

The Federal court has confirmed the intent of treaty reserved rights. In 1980, the court held that a treaty right to fish is meaningless if most of the fish are destroyed by a hostile environment such as a dewatered stream channel. The court emphasized that the states, Federal Government, and others have the obligation to refrain from degrading habitat to the extent that tribes would be deprived of moderate living needs. The court further held that environmental conditions essential to anadromous fish runs include access and an adequate supply of good quality water (United States v. Washington, Phase II, 506 F Supp. 187, W.D. Wash. 1980). In the neighboring Yakima River basin, home of the Yakima Indian Nation and location of the Federal Yakima Reclamation project, the Federal court directed Reclamation to provide water needed for fish flows and egg survival from the project reservoirs.

The Umatilla tribes have stated two goals. First, they desire a permanent and sufficient quantity and quality of water to restore and maintain salmon and steelhead runs at optimally productive levels. Secondly, they want to exercise at some future time the treaty reserved right to an amount of water sufficient to fulfill the fundamental purposes of the reservation. This second need is not currently quantified, but the recommended development does not foreclose other water project opportunities in the basin.

The basin is an important agricultural area with over 50,000 irrigated acres. Most of this acreage occurs within the Federal Umatilla reclamation project. The project, with McKay and Cold Springs Reservoirs and other facilities, serves the Hermiston, West Extension, Stanfield, and Westland Irrigation Districts. There are over 800 farm units in the project, and gross crop value is about \$8 million annually. The United States has contractual commitments to supply irrigation water to these districts. Agriculture plays the major role in the economies of Pendleton, Hermiston, Stanfield, and the other communities that make up this most populous area of eastern Oregon.

Under present conditions, there is insufficient water in the Umatilla River to meet fishery and irrigation needs. The conflict between fish life cycle needs and depleted streamflows and passage problems presents a real potential for confrontation between irrigators and the tribes. The basin's streamflows are heavily appropriated, and the ground-water resource is in serious decline. In the absence of a water development project, the tribes have no opportunity to improve streamflow conditions without serious conflict with non-Indian water users and may feel compelled to begin litigation to acquire additional water. Basin interests have adopted a cooperative approach to resolving the problem, but the tribes have stated they will not compromise treaty reserved rights to avoid controversy should the cooperative endeavor fail. Irrigators see a threat to their agricultural operations and livelihood. A Federal commitment to a project to supplement basin water supplies would remove the threat of confrontation and litigation for the foreseeable future. This would do much to stabilize the basin economy as well as generate an atmosphere of well-being among Indian and other basin residents.

Several alternative development possibilities were evaluated in cooperation with others prior to selecting the recommended development. These evaluations are displayed at the end of the "Plan Formulation and Evaluation" chapter. Two of the plan concepts considered in formulation were selected for detailed evaluation--Columbia River pumping and North Fork Meacham Creek storage. Plans incorporating these concepts are presented in detail in the Planning Report/Draft Environmental Statement. These plans are the (1) Columbia River pumping plan which has been selected as the Recommended Plan and (2) Columbia River pumping-North Fork Meacham Creek storage plan which is discussed as an alternative development possibility.

Columbia River pumping combined with North Fork Meacham Creek storage would provide the highest level of fishery benefits. However, this plan is costly. The recommended Columbia River pumping combined with fish passage and screen improvements at several irrigation diversions is the least costly of any of the alternatives considered and would yield the major portion of fishery benefits. Much of the streamflow enhancement needed for migration, spawning, and rearing would occur with the pumping plan, and this is a "first priority" or critically needed action. Flow enhancement done in concert with other habitat enhancement programs already in place or underway by the tribes, State, and Northwest Power Planning Council is essential to accomplishing basin fishery restoration objectives. In implementing the council's Fish and Wildlife Program, Bonneville Power Administration has funded construction of fish rearing/holding facilities and passage improvements and has contracted for various Umatilla River fishery research and engineering design efforts related to other potential fish facilities.

Under the Recommended Plan, an annual average of about 38,000 acre-feet of water would be pumped from the nearby Columbia River into existing irrigation storage and distribution facilities. This would permit some Umatilla River water now diverted or stored for irrigation to remain in the river to improve flow conditions for fish. Federal commitments to supply irrigation water could be met.

Structural features include a major pumping plant on the Columbia River, a relift pumping station, and water carriage facilities. Smaller pumping facilities would be installed in the vicinity of the Umatilla River mouth to further improve flows in the lower reach of the river downstream of existing Three Mile Falls Diversion Dam. In addition to the pumping features, improvements would be made to fish passage and screen facilities at several existing irrigation diversions, and a seasonal fish barrier would be installed at the mouth of McKay Creek. A postconstruction monitoring program would provide data to help project managers "fine tune" operations to maximize benefits.

The water supply needed for fishery restoration is expressed in cubic feet per second of streamflow at critical periods of the year and in critical stream reaches. Recommended minimum flows in the 50 miles of the lower Umatilla River where the project would be of benefit are 300 cubic feet per second from October 1 through November 15 and 250 cubic feet per second from November 16 through June 30 and September 16 to 30. Flow recommendations for these time periods are identical to the minimum flow program established for the Umatilla River by the Oregon Water Resources Department in 1985. These flow levels would greatly contribute to realization of desirable levels of steelhead, fall chinook, and spring chinook escapement (mature fish that survive harvest and mortality and return to their spawning grounds).

Fishery agencies report that the level of flow accomplishment and passage and screen improvements provided by the Recommended Plan would make restoration of natural fall and spring chinook salmon runs possible and improve steelhead runs. In addition, the hatchery-based fishery that is being instituted by the tribes would benefit. Estimates are that natural spawning returns of nearly 11,000 fall chinook, 100 spring chinook, and 600 steelhead would be realized. Hatchery-based spawning returns would increase by 5,000 fall chinook and 2,500 spring chinook. An estimated average of 58,000 fish would be available each year for harvest by Indian and non-Indian fisheries.

Project implementation would meet much of the tribes' fishery restoration goal for the Umatilla River. In addition to the economic and cultural benefits to the Umatilla tribes, the salmon and steelhead produced by the project would benefit Indians affected by fishery conditions in the 146-mile reach of the main stem Columbia River between Bonneville and McNary Dams. Presently, the Yakima, Nez Perce, and Warm Springs Indians, along with the Umatilla tribes, compete for a very limited supply of fish in the Columbia River. With the project, more fish would be available for harvest in this area. The non-Indian commercial and sport fisheries in the Columbia and Umatilla Rivers and Pacific Ocean would also benefit.

Coordinated operation of new and existing project facilities would be required. The general operational concept would be to modify present Umatilla River diversion patterns of the Hermiston, Stanfield, and West Extension Irrigation Districts when necessary to meet instream flow requirements and replace these diversions by pumping from the Columbia River. Operational changes at existing McKay and Cold Springs Reservoirs have been reviewed by the U.S. Fish and Wildlife Service, and no adverse impacts to the national wildlife refuge values of these water bodies would occur.

Prior to initiation of construction of a Federal Reclamation project, it is Reclamation's policy to file application for and receive from the appropriate State water resource regulatory agency permits for the utilization of water to be provided by the project. Further, any necessary contracts and agreements pertaining to the use of, payment for, and operation of project water supplies and facilities must be consummated prior to construction.

Reclamation would coordinate with the Oregon Water Resources Department, irrigation districts, and others to obtain the necessary permits and exchange agreements. Review of the project proposal by local interests suggests that obtaining the necessary permits, rights, and agreements needed to exchange Columbia River water for Umatilla River natural flow and storage in McKay Reservoir for purposes of flow enhancement in the Umatilla River would not be protested. The Oregon Water Resources Department has informally suggested that the Oregon Department of Fish and Wildlife sponsor the application for the necessary permits and rights. The Department of Fish and Wildlife would then enter into appropriate, binding agreements with the affected irrigation districts and the United States to implement the water exchange. These agreements would specify the quantity of water, limitations, scheduling, and other pertinent aspects of the exchange. A similar procedure would be followed in regard to the small pumping facilities planned for the West Extension Irrigation District exchange at Three Mile Falls Diversion Dam. The congressional act enabling construction of the project would direct the Secretary of the Interior to obtain the necessary permits and rights in accordance with State water law and to enter into the appropriate exchange agreements with the affected parties prior to construction.

A structured program of postconstruction flow monitoring and regulation would be put in place in cooperation with the Oregon Water Resources Department. The program would be responsive to requirements of the congressional construction authorization, water permits and rights obtained in accordance with State water law, and binding agreements regarding water exchanges. The program would be formulated during advance planning and would be a cooperative effort of the irrigation districts, the tribes, State and Federal fishery agencies, the Oregon Water Resources Department, and Reclamation. The Oregon Water Resources Department, through its regulatory authorities and responsibilities, would monitor and regulate project related flows in accordance with the permits, rights, and agreements applicable to the project. Flow studies, additional gauging stations, Hydromet installations, and other technical support determined necessary by the Oregon Water Resources Department for the regulation program would be provided as part of project preconstruction and construction activities. Onsite water regulation services would be provided through the department's watermaster division office in Umatilla. Aspects of the program would be covered in a memorandum of understanding between the two agencies.

Flow enhancement has not been a specific water management or regulation objective in the Umatilla River basin in the past. Congressional authorization for the project; a basis for project operation in State water law; experience of the Oregon Water Resources Department in regulation programs involving instream flows; and the desire by the tribes, fishery agencies, irrigation districts, Reclamation, and others to improve flow conditions would make it possible to establish an effective, long-term regulatory and monitoring program.

Three irrigation water permits issued by the Oregon Water Resources Department are not included in the Recommended Plan water supply evaluation because they are not being fully exercised. The permits are commonly referred to as the Prior/Brown/Teel permits. A preliminary evaluation of the effects of exercise of these permits on present Umatilla River flows and flow accomplishments of the Recommended Plan is discussed in Attachment M. The evaluation shows that if the permits were fully exercised, an already critical existing flow condition would be worsened, and flow accomplishments of the Recommended Plan would be reduced. However, there appears to be opportunity for a cooperative agreement on the part of the permit holders, Oregon Water Resources Department, and other necessary parties which could constrain permit use to minimize effects on project flow accomplishments.

Recommended Plan construction would cost about \$37 million. Annual operation, maintenance, replacement, and power wheeling costs are estimated at \$317,000. In addition, the annual cost of pumping power for the project and power loss at McNary Dam is estimated at \$379,000. There is opportunity to phase develop the project. Construction of the small West Extension pumping facilities would be an effective first-phase development and would substantially benefit fishery restoration in the lower reach of the Umatilla River below Three Mile Falls Diversion Dam.

Project evaluation guidelines require formulation of a plan that maximizes national economic development benefits. The Recommended Plan would produce substantial national economic development benefits. However, it is the project's potential for addressing reserved treaty fishing rights and maintaining the integrity of the Federal Reclamation project that are overriding values. To properly account for these values, the Assistant Secretary of the Interior in 1984 endorsed an exception to the national economic development benefit maximization criterion.

Annual monetary benefits that would be produced by the project are estimated to total about \$7.5 million annually. The largest portion (\$4.9 million) represents the value to the tribes stemming from restored fish runs and the associated social, cultural, and subsistence benefits. In addition to these benefits, traditional national economic development benefits of \$2.2 million would be generated from improved sport and commercial fisheries in the Umatilla and Columbia Rivers and Pacific Ocean, and about \$0.4 million would be realized from resident fish enhancement and use of unemployed Indian labor during project construction.

On a typical Reclamation project, investment and annual operating costs are allocated to the various project functions, and the allocation provides a basis for determining repayment requirements. However, an allocation of costs for the Umatilla Basin Project is not necessary. The costs of the

present study and any historical and archeological salvage costs during construction are nonreimbursable under law. The project is a Federal action to assist in the restoration of salmon and steelhead runs in the Umatilla River and to insure integrity of the existing Federal Umatilla Reclamation project. Because of these objectives and the widespread community of beneficiaries related to this action, it is proposed that project investment and annual operating costs be nonreimbursable Federal costs.

The recommended development is part of a comprehensive program to restore the Umatilla River basin anadromous fishery. Substantial non-Federal funding commitments are being made to this comprehensive basin restoration program under the Pacific Northwest Electric Power Planning and Conservation Act of 1980 and programs of the State of Oregon and other entities. The tribes have been instrumental in designing a multifaceted fishery restoration program and in obtaining cost sharing for its implementation. The program sets a goal of establishing natural spawning returns of 12,000 fall chinook, 1,000 spring chinook, and 5,000 steelhead and an additional 10,000 hatchery-produced fall chinook, 10,000 hatchery spring chinook, and 5,400 hatchery steelhead. A number of fishery improvement facilities for the basin have been approved or are under consideration for non-Federal funding under the Northwest Power Planning Council's Fish and Wildlife Program. These facilities represent a potential investment of \$15 million, with funding provided by the region's electric power ratepayers through the Bonneville Power Administration. Substantial investments have also been made by the Oregon Department of Fish and Wildlife. To date, \$1.7 million of non-Federal funds have been expended, and additional projects costing about \$5 million are in the final design stages. The fish passage and screen facilities included in Reclamation's Recommended Plan have potential for funding under the council's Fish and Wildlife Program. Construction of these facilities under the Fish and Wildlife Program would be a further commitment of non-Federal funding to meet objectives of the comprehensive basin fishery restoration program.

It is proposed that electric power to operate project pumping facilities be provided from the Federal Columbia River Power System with a reservation of a block of power specifically included in the Umatilla Basin Project construction authorization. The power supply cost would be a nonreimbursable annual Federal obligation, and rates to Pacific Northwest Federal power users may increase proportionately to repay the costs of the Federal Columbia River Power System.

Some project supporters have suggested that the power be supplied as an element of the Northwest Power Planning Council's Fish and Wildlife Program under authorities of the Pacific Northwest Electric Power Planning and Conservation Act of 1980. Provision of pumping power for the project is not an element of the council's current Fish and Wildlife Program, and program amendment would be required. If this were to occur, Bonneville Power Administration would, under this concept, consider furnishing the power under the 1980 act, and the administrator would receive credit for fishery benefits.

Irrigation districts involved in the exchange of water for fishery enhancement would not have an additional repayment obligation and would continue to fulfill their existing contracts for repayment of construction and annual operating costs associated with McKay and Cold Springs storage and

maintain their existing distribution systems. Annual operating costs on newly constructed project facilities would be a project responsibility, and there would be no charge to the districts.

The quality of the environment overall would be protected and enhanced with project implementation. Unavoidable adverse effects would be limited to short-term localized impacts during the construction period.

Even though the Recommended Plan of development would be effective in meeting fishery restoration goals, there are other water needs that will have to be addressed at a future time. Among these are the basin's declining ground-water resource (which could seriously impact domestic, municipal, industrial, and agricultural water supplies) and the need to meet multipurpose water needs on the Umatilla Indian Reservation. These needs are expected to become critical in time, and because of their complexity, formulation of a plan to address them should be undertaken.

Future water resource development in the basin will likely include storage. The present planning effort has evaluated potential storage sites in the basin. Among the most favorable of these are the Meacham site on North Fork Meacham Creek in the basin's headwaters and the Patawa site on Patawa Creek near Pendleton. The Meacham storage facility would improve headwater flows and produce some additional fishery benefits. The Patawa site would be a larger reservoir and could meet multiple water needs. Patawa would be an offstream reservoir, and Umatilla River floodflows would be diverted into the reservoir during winter and spring for storage and release later during periods of water demand. A future study effort would quantify the remaining water needs, work with prospective water users to reach an equitable allocation of water, and identify an acceptable project repayment program. Because of the importance of storage in the basin's future water management program, the best storage sites should be protected by local government and other basin interests.

In summary, Recommended Plan implementation would assist the tribes and non-Indian water users to resolve their water-related conflicts. Future basin water resource development options would not be precluded. The plan is a cost-effective approach to addressing the tribes' reserved treaty rights for fishery and insuring the integrity of the Federal Umatilla reclamation project. It has major cultural, social, and environmental values and substantial national economic development benefits. Plan implementation is important to other fishery restoration programs in the basin since the success of these programs would be significantly enhanced with the water supply made available by the Reclamation project.

Subsequent to completion of plan formulation, irrigation district representatives and others expressed interest in the possibility of expanding the irrigation function of the plan. The districts are primarily interested in improvement of their water supply and distribution systems. If an irrigation measure is added to the plan during advance planning, Reclamation would accomplish the necessary engineering design and cost estimating, land resource suitability studies, economic and financial analyses, and environmental evaluations to assure that Federal criteria for project justification are met, repayment commitments obtained, and requirements of the National Environmental Policy Act and Fish and Wildlife Coordination Act are satisfied.

Prudential Insurance Company and water users in the Teel and Butter Creek areas expressed interest in exploring the possibility of forming a private irrigation district and financing an addition to the Recommended Plan. Reclamation discussed the potential cost of the cooperative program with the groups, and on the basis of preliminary costs, the irrigation interests have decided to explore other options to meet their water needs.

Reclamation is cognizant of other water resource programs that have some relationship to the Recommended Plan. One proposal is of particular interest. The Westland Irrigation District has proposed to revise its boundaries and expand the acreage of land receiving irrigation water through its facilities by about 21,600 acres. This expanded acreage consists of about 13,200 acres of the Teel Irrigation District, 3,400 acres of the County Line Improvement District, and 5,000 acres of other lands.

A major feature of the Westland Irrigation District proposal is for expansion area landowners to fund construction of improvements in Westland Irrigation District irrigation facilities with the objective of saving a substantial amount of water now lost through waste. Estimates are that annual water savings would be in the magnitude of 9,000 acre-feet. In return for funding the improvements, the landowners would obtain the use of this saved water to meet a part of their irrigation needs.

Conceptually, the Westland Irrigation District proposal is attractive in its water saving aspect. Reclamation considered incorporating a description of the project and its potential effects on the Recommended Plan in this Planning Report/Draft Environmental Statement, made a preliminary evaluation of the proposal, and solicited comments from interested parties. The Oregon Water Resources Department in commenting stated that the transfer of saved water could not be accomplished as originally proposed. Because of the need to address other critical streamflow and irrigation issues in the basin without delay, further discussion of the Westland Irrigation District expansion proposal and evaluation of its potential effects on the Recommended Plan are not being incorporated into the current Planning Report/Draft Environmental Statement. Other options for accomplishing irrigation district objectives are being discussed among the involved parties. Any future proposal to proceed with the expansion project within authorities of Oregon Water Law would be evaluated by Reclamation and other interested parties in relationship to the Recommended Plan or any other project to which the expansion may have a relationship.

As work on the Recommended Plan progresses, Reclamation will coordinate its activities with the Oregon Water Resources Commission and Water Resources Department in regard to the State's minimum perennial streamflow program and critical ground-water area management program.

In 1985, the Governor of Oregon appointed a task force to review and report on means of reversing the decline of the basin's ground-water resource. The task force will report on its findings in 1986. Basin water supply studies done by Reclamation and others in recent years recognize that the Recommended Plan proposed for early implementation addresses only part of the area's water needs. Principal basin interests have stated that conjunctive use of ground water and new storage will be necessary to resolve the ground-water crisis and maintain an adequate water supply for basin water uses.

PLAN SUMMARY

The following summaries provide information on the features and accomplishments and economic, environmental, and social effects of the Recommended Plan and Alternative Plan.

Recommended Plan Summary

Description

The Recommended Plan is a fishery enhancement plan to restore salmon runs and to enhance steelhead runs in the Umatilla basin. The plan's major feature is that of improving streamflows by "importing" water from the neighboring Columbia River (see Recommended Plan Facilities Map).

The principal feature includes a program wherein water would be pumped from the Columbia into existing Cold Springs Reservoir for distribution to irrigators. Use of this "imported" water by irrigators would permit Umatilla River water which is now diverted or stored for irrigation use to remain in the Umatilla River to improve flow conditions in the lower basin. Structural features include a major pumping plant on the Columbia River (Lake Wallula), a relift pumping station, and carriage facilities. A new West Extension Irrigation District pump would be constructed near the mouth of the Umatilla River to provide fish flow improvements from Three Mile Falls Diversion Dam downstream and possibly supplement water supplies to the district's lands during low flow summer periods.

In addition to the pumping features, the plan proposes improvements to fish passage facilities and installation of protective screens at some existing irrigation diversions and a fish barrier at the mouth of McKay Creek. A significant plan feature is a postconstruction monitoring program which would test the effectiveness of flow improvements and other measures in meeting fishery enhancement objectives. This monitoring program, now expected to extend over a 12-year period, would aid project operators and fishery experts in adjusting operations or proposing additional measures to meet fishery restoration goals.

Major Features

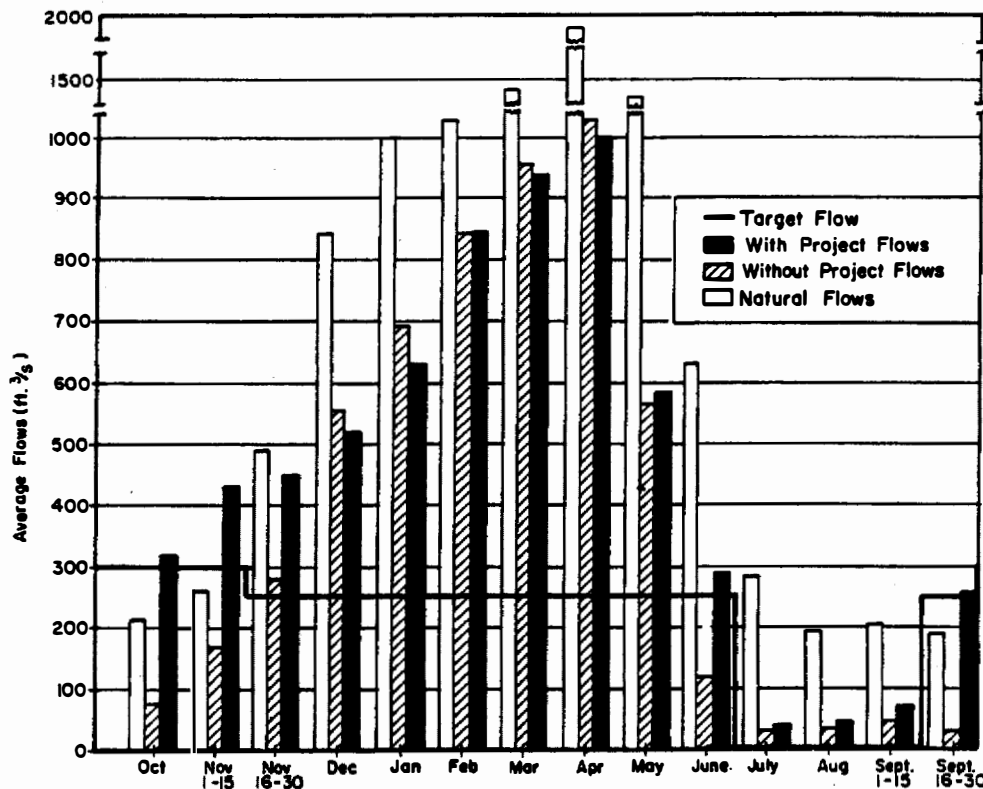
Columbia River pumping plant	
Discharge capacity	220 ft ³ /s
Total lift	333 feet
Horsepower	10,000
Average annual pumping	38,250 acre-feet
Cold Springs Reservoir pumping plant	
Discharge capacity	150 ft ³ /s
Total lift	132 feet
Horsepower	3,200
Average annual pumping	24,100 acre-feet
Stanfield Relift pumping plant	
Discharge capacity	46 ft ³ /s
Total lift	40 feet
Horsepower	305
Average annual pumping	7,400 acre-feet
Discharge lines, canals, and pipelines	12 miles
West Extension Irrigation District pumping plant	
Discharge capacity	100 ft ³ /s
Total lift	150 feet
Horsepower	2,400
Fish passage improvements	Structural modifications at Maxwell, Feed Canal, and Westland Diversion Dams and replacing fish screens at several diversion canals

Recommended Plan Summary

Accomplishments

Anadromous fishery

The fishery available to the tribes has been degraded, primarily through water resource developments, to the extent that salmon runs have been eliminated and steelhead runs greatly diminished. The tribes state that for treaty reserved fishery rights to be realized, water must be made available to restore and maintain the salmon and steelhead runs which were once present. Improved streamflow is the basic fishery restoration need, and recommended flow levels have been expressed in ft³/s of flow in the Umatilla River. The following graph compares project target flows to "with project flows," "without project flows," and natural flows before irrigation diversions for the Umatilla River near Umatilla. Flows represent average flow conditions for the period 1935-78.



The contribution of the Recommended Plan in (1) meeting a significant part of the recommended flows for the Umatilla River and (2) providing improved passage facilities and protective screens makes restoration of natural runs of fall and spring chinook salmon possible and improves existing steelhead runs. In addition to reestablishment of natural runs, the hatchery-based fishery that is being instituted by the tribes would benefit from project-related streamflow enhancement and passage improvements. Estimates of increased escapement of salmon and steelhead attributable to this plan are shown in the following tabulation. Escapement refers to adult fish that survive to return to their originating area to spawn.

Species	Future without Project	Increased Escapement with Recommended Plan
Fall chinook		
Natural production	0	10,688 ^{1/}
Hatchery production	2,500	5,000 ^{1/}
Spring chinook		
Natural production	0	100 ^{1/}
Hatchery production	0	2,500 ^{1/}
Steelhead		
Natural production	2,000	600
Hatchery production	4,000	0

^{1/} Identified by Bureau of Reclamation. Hatchery escapement indicates Columbia Basin fish that would be redistributed into the Umatilla basin but does not represent an overall net increase to Columbia Basin runs.

Irrigation

The proposed action would help to remove the conflict between irrigation and fishery interests--irrigation districts would continue to receive a dependable water supply. Subsequent to selection of the Recommended Plan, the irrigation districts expressed renewed interest in improvement of their water supply and distribution systems and expansion of their land base. Reclamation will continue to explore the possibilities for accommodating the districts' needs.

Recommended Plan Summary

Effects			
National economic development			
Costs	Amount	Benefits	Amount
Total project costs	\$37,000,000	Value in meeting Indians' treaty reserved rights through restoration of salmon and improvement of steelhead runs and the associated social, cultural, and subsistence benefits to the Umatilla Indians is considered to be equal to the difference between NED anadromous fish benefits and NED costs	
Interest during construction	3,433,000		
Annual equivalent project costs	\$ 3,093,300		
Annual operation, maintenance, and power wheeling	316,900		
Power (economic value)	911,100		
Total annual equivalent cost	\$ 4,321,300	Confederated Tribes of the Umatilla Indian Reservation	\$4,850,900
		Anadromous fish	2,242,700
		Resident fish	79,500
		Unemployed labor	310,000
		Total annual benefits	\$7,483,100

Environmental quality				
Environmental Factors	Present Quantity	Future without Quantity	Recommended Plan	
			Quantity ^{1/}	Significance ^{2/}
Fall chinook (natural escapement)	0	0	10,688 (+10,688)	+++
Steelhead (natural escapement)	1,000	2,000	2,600 (+600)	+
Spring chinook (natural escapement)	0	0	100	+
Anadromous fish distribution (subjective estimate on utilization of main stem Umatilla River reaches) ^{3/}	3	3	(+100) 8	++
Irrigated cropland losses (acres)	0	0 ^{3/}	(+5) 130	-
Total environmental quality effect ^{5/}			(-130)	+++

1/ Net changes compared to future without condition shown in parentheses

2/ - = minor adverse, -- = moderate adverse, --- = highly adverse, + = minor beneficial, ++ = moderate beneficial, +++ = highly beneficial, and 0 = no difference

3/ Does not include 53,700 acres of irrigated cropland with a water supply at risk without the project

4/ Range 0 (no distribution) - 10 (distribution covers entire basin)

5/ Comparison is to future without

Regional economic development

Item	Region 1 ^{1/}			Region 2 ^{2/}	Region 3 ^{3/}	Rest of Nation	Total
	Umatilla Tribes	Other Tribes	Rest of Region 1				
	dollars	dollars	dollars				
Benefits							
National economic development							
Anadromous fish	1,037,900	58,300	0	1,146,500	0	0	2,242,700
Resident fish	0	0	79,500	0	0	0	79,500
Umatilla tribes	4,850,900	0	0	0	0	0	4,850,900
Unemployed labor	310,000	0	0	0	0	0	310,000
Subtotal	6,198,800	58,300	79,500	1,146,500	0	0	7,483,100
Regional economic development							
Implementation	310,000	0	286,000	0	0	-596,000	0
Transfers	-6,000 ^{4/}	0	0	0	0	0	0
Indirect and direct	672,400	0	1,583,600	0	0	-2,250,000	0
Subtotal	976,400	0	1,869,600	0	0	-2,846,000	0
Total							7,483,100
Costs							
Construction	0	0	0	0	0	-2,805,700	2,805,700
Interest during construction	0	0	0	0	0	-287,600	287,600
Operation, maintenance, replacement, and power	0	0	0	0	-1,228,000	0	1,228,000
Total	0	0	0	0	-1,228,000	-3,093,300	4,321,300

1/ Region 1 is identified as Bureau of Economic Analysis Economic Area 156, Guideline 5, consisting of Umatilla, Morrow, Gilliam, Wheeler, Grant, Baker, and Union Counties in Oregon and five counties of south-central and southeast Washington.

2/ Region 2 = the area outside of Columbia River Zone 6 and Umatilla basin, including the area from northern California to Alaska and the Columbia River from its mouth to Bonneville Dam

3/ Region 3 = the area served by Bonneville Power Administration and utilities which buy power from Bonneville Power Administration

4/ Unemployed benefits not paid

Recommended Plan Summary

Effects (continued)							
Regional economic development (continued)							
Species	Catch Location	Fish Catch				Difference	
		Future without Project		With Recommended Plan		Indian	Non-Indian
		Indian	Non-Indian	Indian	Non-Indian		
Fall chinook	Ocean	0	18,000	0	43,651	0	25,651
	Zones 1-5	0	2,400	0	5,820	0	3,420
	Zone 6	3,650	0	5,820	0	2,170	0
	Umatilla River	3,400	510	14,442	3,519	16,542	3,009
	Total					18,712	32,080
	Percent					37	63
Spring chinook	Ocean	0	1,875	0	1,950	0	75
	Zones 1-5	0	1,125	0	1,170	0	45
	Zone 6	1,625	0	1,170	0	-455	0
	Umatilla River	0	0	4,132	1,378	4,132	1,378
	Total					3,677	1,498
	Percent					71	29
Summer steelhead	Ocean	0	0	0	0	0	0
	Zones 1-5	0	2,400	0	2,640	0	240
	Zone 6	1,920	0	2,112	0	192	0
	Umatilla River	5,590	5,590	5,974	5,974	384	384
	Total					576	624
	Percent					48	52

Time Period	Construction-related Employment				Geographic Occurrence		
	Contractor	Federal	Onsite Work Force	Indirect and Induced	Total	Umatilla Tribes	Rest of Region
Construction year							Rest of Nation
1	86	31	117	253	370	58	300
2	45	16	61	130	191	29	156
							12
							6
Project life	Direct Employment				Total		
	Anadromous Fish	Resident Fish	Operation and Maintenance	Indirect and Induced			
	9 ^{1/}	0	4	48	61	18 ^{2/}	43
							0

1/ Direct commercial Indian fishing and tribal jobs supported by fishing income

2/ Commercial Indian fishing jobs

Social well-being

Social Factors	Indian Account--Impacts and Effects
Maintenance of traditional culture	More fish available for ceremony/subsistence Stabilization of traditional family roles Extended family strengthened Support for traditional lifestyle
Community	Immigration back to reservation Development of new spirit of confidence and well-being
Self-esteem	Winning battle for fish and water leads to improvements in self-esteem New feelings of ability to control their own destiny, increased self-respect from practicing cultural heritage and additional respect of the non-Indian community
Economics	Development of fish-oriented resource base Additional employment Income from commercial and sport fishery Economic benefit from subsistence fish
Environment	Valued improvements in streamflows
Salmon	Development of highly valued salmon runs in the Umatilla River Meeting most of the tribes' fall chinook salmon objectives Meeting a portion of spring chinook objectives
Steelhead and trout	Steelhead production would increase by about 10 percent
Conflict/competition	Potential for Indian/non-Indian water use conflict greatly reduced Competition with other tribes reduced

Recommended Plan Summary

Effects (continued)	
Social well-being (continued)	
Social Factors	Non-Indian Account--Impacts and Effects
Local sport fisheries	Section of Umatilla River available for salmon fishing increased from 3 to 51 miles Size of anadromous fish catch increased by about 80 percent in the Umatilla River Establishment of a large salmon sport fishery
Irrigation	Continued irrigation at present level out of the Umatilla River is virtually assured, maintaining production of crops valued at about \$8 million annually
Small tracts lifestyle	Threat to small tracts lifestyle of nearly 2,500 families removed
Financial security	Threat of devastating losses in property values to nearly 10,000 people living on land that would be affected from potential litigation directed at Umatilla River irrigators would be reduced
Local economics	The possibility of litigation that threatens part of the agricultural base of the economy would be removed, preserving about 1,200 jobs Preserve the existing tax base and associated tax revenues New sport fishery provides strong economic stimulus
Conflict/competition	Potential for Indian/non-Indian water use conflict greatly reduced

Alternative Plan Summary

Description

The Alternative Plan is a fishery enhancement plan to restore salmon runs and to enhance steelhead runs in the Umatilla River basin. The plan's major feature is that of improving streamflows by "importing" water from the neighboring Columbia River and developing headwaters storage to capture excess winter and spring runoff (see Alternative Plan Facilities map).

This plan includes all features of the Recommended Plan associated with the Columbia River pumping complex except the West Extension Irrigation District pump and, in addition, a dam on North Fork Meacham Creek and a stream fish habitat improvement program on North Fork and Meacham Creeks. Improvements to fish passage facilities and installation of fish screens at some irrigation diversion dams and the postconstruction fishery monitoring program would be the same as for the Recommended Plan.

Major Features

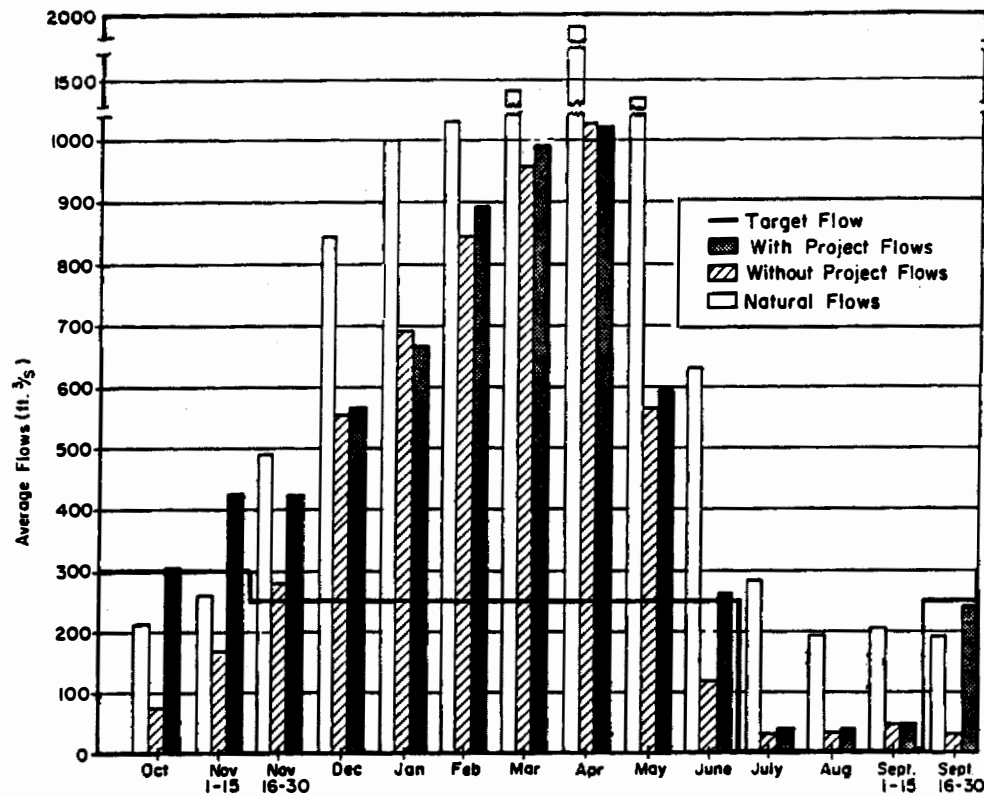
Columbia River pumping plant	
Discharge capacity	220 ft ³ /s
Total lift	333 feet
Horsepower	10,000
Average annual pumping	38,250 acre-feet
Cold Springs Reservoir pumping plant	
Discharge capacity	150 ft ³ /s
Total lift	132 feet
Horsepower	3,200
Average annual pumping	24,100 acre-feet
Stanfield Relift pumping plant	
Discharge capacity	46 ft ³ /s
Total lift	40 feet
Horsepower	305
Average annual pumping	7,400 acre-feet
Discharge lines, canals, and pipelines	12 miles
Meacham dam and reservoir	
Dam	
Type of dam	Roller compacted concrete
Structure (height of maximum section)	320 feet
Crest length	1,320 feet
Volume of concrete	1,000,000 cubic yards
Maximum spillway discharge	56,700 ft ³ /s
Geology--seismicity	Acceptable
Reservoir	
Capacity at normal water surface elevation 2983	27,000 acre-feet
Active conservation capacity	24,300 acre-feet
Minimum pool and dead storage	2,700 acre-feet
Surface area	264 acres at elevation 2983
Sedimentation	Minor
Land acquisition required	
Reservoir	
Public (national forest)	1,100 acres
Private	60 acres
Operation and maintenance road (private)	15 acres
Stream habitat improvement measures	
Fencing	To be accomplished along
Boulder placement	a 12.5-mile stream reach
Pool construction	below Meacham dam
Vegetation planting	
Fish passage improvements	Structural modifications at Maxwell, Feed Canal, and Westland Diversion Dams and replacing fish screens at several diversion canals

Alternative Plan Summary

Accomplishments

Anadromous fishery

Flow objectives for the Umatilla River are the same as in the Recommended Plan. The following graph compares project target flows to "with project flows," "without project flows," and natural flows before irrigation diversions for the Umatilla River near Umatilla. Flows represent average flow conditions for the period 1935-78.



The Alternative Plan would also provide anadromous fish flow enhancement in Meacham Creek July 1 through October 31 from Meacham reservoir. Minimum flow needs of 40 ft³/s at the mouth of Meacham Creek during these months would be met most of the time.

The contribution of the Alternative Plan in (1) meeting a significant part of the recommended flows for the Umatilla River; (2) meeting minimum flow needs in Meacham Creek; and (3) providing improved passage facilities, protective screens, and stream rehabilitation would make restoration of natural runs of fall and spring chinook salmon possible and significantly improve existing steelhead runs. In addition to reestablishment of natural runs, the hatchery-based fishery that is being instituted by the tribes would benefit from project-related streamflow enhancement and passage improvements. Estimates of increased escapement of salmon and steelhead attributable to this plan are shown in the following tabulation. Escapement refers to adult fish that survive to return to their originating area to spawn.

Species	Future without Project	Increased Escapement with Alternative Plan
Fall chinook		
Natural production	0	11,314 ^{1/}
Hatchery production	2,500	5,000 ^{1/}
Spring chinook		
Natural production	0	700
Hatchery production	0	2,500 ^{1/}
Steelhead		
Natural production	2,000	3,382
Hatchery production	4,000	0

^{1/} Identified by Bureau of Reclamation. Hatchery escapement indicates Columbia Basin fish that would be redistributed into the Umatilla basin and does not represent a net increase to the Columbia Basin.

Irrigation

Irrigation in the Alternative Plan would be the same as in the Recommended Plan.

Alternative Plan Summary

effects			
National economic development			
Costs	Amount	Benefits	Amount
Total project costs	\$112,600,000	Value in meeting Indians' treaty reserved rights through restoration of salmon and improvement of steelhead runs and the associated social, cultural, and subsistence benefits to the Umatilla Indians is considered to be equal to the difference between NED anadromous fish benefits and NED costs.	
Interest during construction	23,021,000		
Annual equivalent project costs	\$ 10,862,700		
Annual operation, maintenance, and replacements	295,600		
Power (economic value)	849,300		
Total annual equivalent cost	\$ 12,007,600	Confederated Tribes of the Umatilla Indian Reservation	\$ 8,211,300
		Anadromous fish	3,796,300
		Resident fish	82,800
		Unemployed labor	658,000
		Total annual benefits	\$12,748,400

Environmental quality

Environmental Factors	Present Quantity	Future without Quantity	Recommended Plan	
			Quantity ^{1/}	Significance ^{2/}
Fall chinook (natural escapement)	0	0	11,314 (+11,314)	+++
Steelhead (natural escapement)	1,000	2,000	5,382 (+3,382)	+++
Spring chinook (natural escapement)	0	0	700	++
Anadromous fish distribution (subjective estimate on utilization of main stem Umatilla River reaches) ^{4/}	3	3	9 (+6)	+++
Big game migration (subjective estimate with 10 = pristine condition)	9	8	7 (-1)	-
Irrigated cropland losses (acres)	0	0 ^{3/}	130 (-130)	-
Total environmental quality effect ^{5/}				+++

1/ Net changes compared to future without condition shown in parentheses

2/ - = minor adverse, -- = moderate adverse, --- = highly adverse, + = minor beneficial, ++ = moderate beneficial, +++ = highly beneficial, and 0 = no difference

3/ Does not include 53,700 acres of irrigated cropland with a water supply at risk without the project

4/ Range 0 (no distribution) - 10 (fish distribution in entire basin)

5/ Comparison is to future without

Regional economic development

Item	Region 1 ^{1/}				Region 2 ^{2/}	Region 3 ^{3/}	Rest of Nation	Total
	Umatilla Tribes	Other Tribes	Rest of Region 1					
	dollars	dollars	dollars	dollars	dollars	dollars	dollars	dollars
Benefits								
National economic development								
Anadromous fish	1,235,300	125,900	0	2,435,100	0	0	0	3,796,300
Resident fish	0	0	82,800	0	0	0	0	82,800
Unemployed labor	658,000	0	0	0	0	0	0	658,000
Umatilla tribes	8,156,000	0	0	0	0	0	0	8,156,000
Subtotal	10,049,300	125,900	82,800	2,435,100	0	0	0	12,693,100
Regional economic development								
Implementation	658,000 ^{2/}	0	2,609,000	0	0	0	-3,267,000	0
Transfers	-29,000 ^{2/}	0	0	0	0	0	29,000	0
Indirect and direct	768,000	0	4,512,000	0	0	0	-5,280,000	0
Subtotal	1,397,000	0	7,121,000	0	0	0	-8,518,000	0
Total								12,693,100
Costs								
Construction	0	0	0	0	0	0	-8,934,100	8,934,100
Interest during construction	0	0	0	0	0	0	-1,928,600	1,928,600
Operation, maintenance, replacement, and power	0	0	0	0	-1,144,900	0	0	1,144,900
Total	0	0	0	0	-1,144,900	-10,862,700		12,007,600

1/ Region 1 is defined as Bureau of Economic Analysis Economic Area 156, Guideline 5, consisting of Umatilla, Morrow, Gilliam, Wheeler, Grant, Baker, and Union Counties in Oregon and five counties of south-central and southeast Washington.

2/ Region 2 = the area outside of Columbia River Zone 6 and Umatilla basin, including the area from northern California to Alaska and the Columbia River from its mouth to Bonneville Dam

3/ Region 3 = the area served by Bonneville Power Administration and utilities which buy power from Bonneville Power Administration

4/ Unemployment benefits not paid

Alternative Plan Summary

Effects (continued)

Regional economic development (continued)

Species	Catch Location	Fish Catch				Difference	
		Future without Project		With Alternative Plan		Indian	Non-Indian
		Indian	Non-Indian	Indian	Non-Indian		
Fall chinook	Ocean	0	18,000	0	45,154	0	27,154
	Zones 1-5	0	2,400	0	6,020	0	3,620
	Zone 6	3,650	0	6,020	0	2,370	0
	Umatilla River	3,400	510	20,453	3,609	17,053	3,099
	Total Percent					19,423	33,873
						36	64
Spring chinook	Ocean	0	1,875	0	2,400	0	525
	Zones 1-5	0	1,125	0	1,440	0	315
	Zone 6	1,625	0	1,440	0	-185	0
	Umatilla River	0	0	4,740	1,580	4,740	1,580
	Total Percent					4,550	2,420
						65	35
Summer steelhead	Ocean	0	0	0	0	0	0
	Zones 1-5	0	2,400	0	3,753	0	1,353
	Zone 6	1,920	0	3,002	0	1,082	0
	Umatilla River	5,590	5,590	7,755	7,754	2,165	2,164
	Total Percent					3,247	3,517
						48	52

Time Period	Construction-related Employment				Geographic Occurrence			
	Contractor	Federal	Onsite Work Force	Indirect and Induced	Total	Umatilla Tribes	Rest of Region	Rest of Nation
Construction year								
1	236	43	279	448	727	91	608	28
2	637	74	711	841	1,552	97	1,384	71
3	381	37	418	437	855	97	716	42
4	139	14	153	162	315	87	213	15
Project life	Direct Employment				Total			
	Anadromous Fish	Resident Fish	Operation and Maintenance	Indirect and Induced				
	9 ^{1/}	0	4	56	69	20 ^{2/}	49	0

1/ Direct commercial Indian fishing and tribal jobs supported by fishing income

2/ Commercial Indian fishing jobs

Social well-being

Social Factors	Indian Account--Impacts and Effects
Maintenance of traditional culture	More fish available for ceremony/subsistence Stabilization of traditional family roles Extended family strengthened Support for traditional lifestyle
Community	Immigration back to reservation Development of new spirit of confidence and well-being
Self-esteem	Winning battle for fish and water leads to improvements in self-esteem New feelings of ability to control their own destiny, increased self-respect from practicing cultural heritage and additional respect of the non-Indian community
Economics	Development of fish-oriented resource base Additional employment Income from commercial and sport fishery Economic benefit from subsistence fish
Environment	Valued improvements in streamflows and riparian areas
Salmon	Development of highly valued salmon runs in the Umatilla River Meeting most of the tribes' fall chinook salmon objectives Meeting a significant portion of spring chinook objectives
Steelhead and trout	Steelhead production would increase by about 50 percent
Conflict/competition	Potential for Indian/non-Indian water use conflict greatly reduced Competition with other tribes reduced

Alternative Plan Summary

Effects (continued)Social well-being (continued)

Social Factors	Non-Indian Account--Impacts and Effects
Local sport fisheries	Section of Umatilla River available for salmon fishing increased from 3 to 79 miles Size of anadromous fish catch doubled in the Umatilla River Establishment of a very large salmon sport fishery
Irrigation	Continued irrigation at present level out of the Umatilla River is virtually assured, maintaining production of crops valued at about \$8,000,000 annually
Small tracts lifestyle	Threat to small tracts lifestyle of nearly 2,500 families removed
Financial security	Threat of devastating losses in property values to nearly 10,000 people living on land that would be affected from potential litigation directed at Umatilla River irrigators would be reduced
Local economics	The possibility of litigation that threatens part of the agricultural base of the economy would be removed, preserving about 1,200 jobs Preserve the existing tax base and associated tax revenues New sport fishery provides strong economic stimulus
Conflict/competition	Potential for Indian/non-Indian water use conflict greatly reduced

Recommended Plan Summary

Description

The Recommended Plan is a fishery enhancement plan to restore salmon runs and to enhance steelhead runs in the Umatilla basin. The plan's major feature is that of improving streamflows by "importing" water from the neighboring Columbia River (see Recommended Plan Facilities Map).

The principal feature includes a program wherein water would be pumped from the Columbia into existing Cold Springs Reservoir for distribution to irrigators. Use of this "imported" water by irrigators would permit Umatilla River water which is now diverted or stored for irrigation use to remain in the Umatilla River to improve flow conditions in the lower basin. Structural features include a major pumping plant on the Columbia River (Lake Wallula), a relift pumping station, and carriage facilities. A new West Extension Irrigation District pump would be constructed near the mouth of the Umatilla River to provide fish flow improvements from Three Mile Falls Diversion Dam downstream and possibly supplement water supplies to the district's lands during low flow summer periods.

In addition to the pumping features, the plan proposes improvements to fish passage facilities and installation of protective screens at some existing irrigation diversions and a fish barrier at the mouth of McKay Creek. A significant plan feature is a postconstruction monitoring program which would test the effectiveness of flow improvements and other measures in meeting fishery enhancement objectives. This monitoring program, now expected to extend over a 12-year period, would aid project operators and fishery experts in adjusting operations or proposing additional measures to meet fishery restoration goals.

Major Features

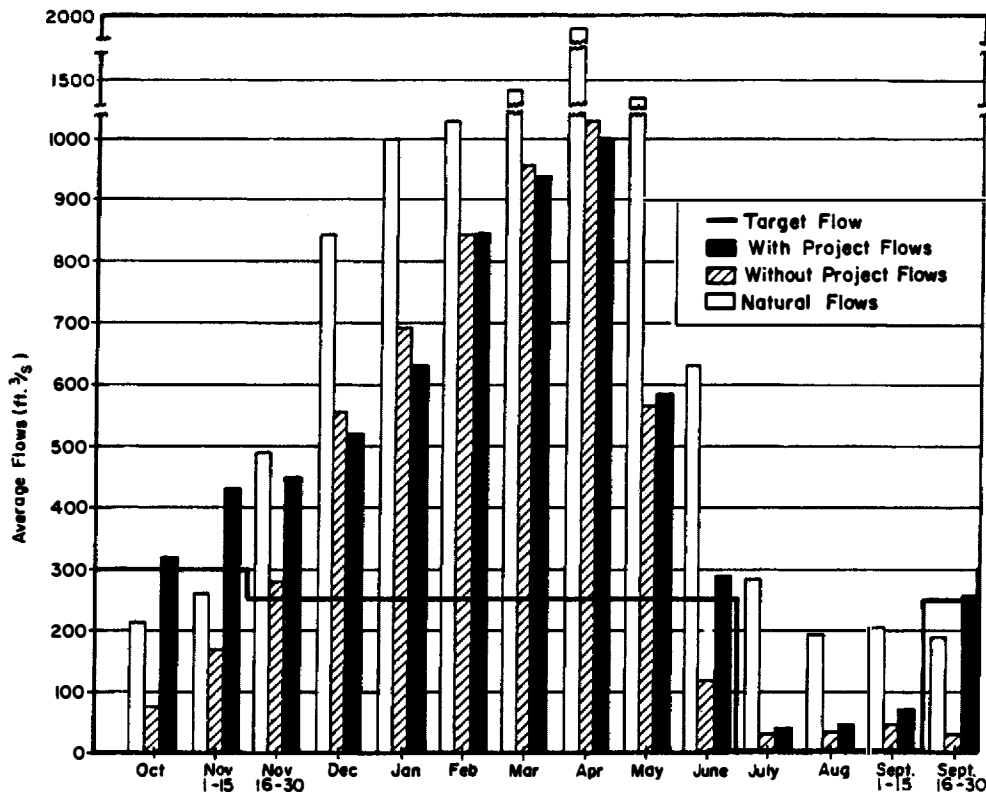
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Discharge capacity	220 ft ³ /s
Total lift	333 feet
Horsepower	10,000
Average annual pumping	38,250 acre-feet
Cold Springs Reservoir pumping plant	
Discharge capacity	150 ft ³ /s
Total lift	132 feet
Horsepower	3,200
Average annual pumping	24,100 acre-feet
Stanfield Relift pumping plant	
Discharge capacity	46 ft ³ /s
Total lift	40 feet
Horsepower	305
Average annual pumping	7,400 acre-feet
Discharge lines, canals, and pipelines	12 miles
West Extension Irrigation District pumping plant	
Discharge capacity	100 ft ³ /s
Total lift	150 feet
Horsepower	2,400
Fish passage improvements	Structural modifications at Maxwell, Feed Canal, and Westland Diversion Dams and replacing fish screens at several diversion canals

Recommended Plan Summary

Accomplishments

Anadromous fishery

The fishery available to the tribes has been degraded, primarily through water resource developments, to the extent that salmon runs have been eliminated and steelhead runs greatly diminished. The tribes state that for treaty reserved fishery rights to be realized, water must be made available to restore and maintain the salmon and steelhead runs which were once present. Improved streamflow is the basic fishery restoration need, and recommended flow levels have been expressed in ft³/s of flow in the Umatilla River. The following graph compares project target flows to "with project flows," "without project flows," and natural flows before irrigation diversions for the Umatilla River near Umatilla. Flows represent average flow conditions for the period 1935-78.



The contribution of the Recommended Plan in (1) meeting a significant part of the recommended flows for the Umatilla River and (2) providing improved passage facilities and protective screens makes restoration of natural runs of fall and spring chinook salmon possible and improves existing steelhead runs. In addition to reestablishment of natural runs, the hatchery-based fishery that is being instituted by the tribes would benefit from project-related streamflow enhancement and passage improvements. Estimates of increased escapement of salmon and steelhead attributable to this plan are shown in the following tabulation. Escapement refers to adult fish that survive to return to their originating area to spawn.

Species	Future without Project	Increased Escapement with Recommended Plan
Fall chinook		
Natural production	0	10,688 ^{1/}
Hatchery production	2,500	5,000 ^{1/}
Spring chinook		
Natural production	0	100 ^{1/}
Hatchery production	0	2,500 ^{1/}
Steelhead		
Natural production	2,000	600
Hatchery production	4,000	0

^{1/} Identified by Bureau of Reclamation. Hatchery escapement indicates Columbia Basin fish that would be redistributed into the Umatilla basin but does not represent an overall net increase to Columbia Basin runs.

Irrigation

The proposed action would help to remove the conflict between irrigation and fishery interests--irrigation districts would continue to receive a dependable water supply. Subsequent to selection of the Recommended Plan, the irrigation districts expressed renewed interest in improvement of their water supply and distribution systems and expansion of their land base. Reclamation will continue to explore the possibilities for accommodating the districts' needs.

Recommended Plan Summary

Effects			
National economic development			
Costs	Amount	Benefits	Amount
Total project costs	\$37,000,000	Value in meeting Indians' treaty reserved rights through restoration of salmon and improvement of steelhead runs and the associated social, cultural, and subsistence benefits to the Umatilla Indians is considered to be equal to the difference between NED anadromous fish benefits and NED costs	
Interest during construction	3,433,000		
Annual equivalent project costs	\$ 3,093,300		
Annual operation, maintenance, and power wheeling	316,900		
Power (economic value)	911,100		
Total annual equivalent cost	\$ 4,321,300	Confederated Tribes of the Umatilla Indian Reservation	\$4,850,900
		Anadromous fish	2,242,700
		Resident fish	79,500
		Unemployed labor	310,000
		Total annual benefits	\$7,483,100

Environmental quality				
Environmental Factors	Present Quantity	Future without Quantity	Recommended Plan	
			Quantity ^{1/}	Significance ^{2/}
Fall chinook (natural escapement)	0	0	10,688 (+10,688)	+++
Steelhead (natural escapement)	1,000	2,000	2,600 (+600)	+
Spring chinook (natural escapement)	0	0	100	+
Anadromous fish distribution (subjective estimate on utilization of main stem Umatilla River reaches) ^{3/}	3	3	(+100)	++
Irrigated cropland losses (acres)	0	0 ^{3/}	(+5)	-
Total environmental quality effect ^{5/}			130 (-130)	+++

1/ Net changes compared to future without condition shown in parentheses

2/ - = minor adverse, -- = moderate adverse, --- = highly adverse, + = minor beneficial, ++ = moderate beneficial, +++ = highly beneficial, and 0 = no difference

3/ Does not include 53,700 acres of irrigated cropland with a water supply at risk without the project

4/ Range 0 (no distribution) - 10 (distribution covers entire basin)

5/ Comparison is to future without

Regional economic development

Item	Region 1 ^{1/}			Region 2 ^{2/} dollars	Region 3 ^{3/} dollars	Rest of Nation dollars	Total dollars
	Umatilla Tribes dollars	Other Tribes dollars	Rest of Region 1 dollars				
Benefits							
National economic development							
Anadromous fish	1,037,900	58,300	0	1,146,500	0	0	2,242,700
Resident fish	0	0	79,500	0	0	0	79,500
Umatilla tribes	4,850,900	0	0	0	0	0	4,850,900
Unemployed labor	310,000	0	0	0	0	0	310,000
Subtotal	6,198,800	58,300	79,500	1,146,500	0	0	7,483,100
Regional economic development							
Implementation	310,000 ^{4/}	0	286,000	0	0	-596,000	0
Transfers	-6,000	0	0	0	0	0	0
Indirect and direct	672,400	0	1,583,600	0	0	-2,250,000	0
Subtotal	976,400	0	1,869,600	0	0	-2,846,000	0
Total							7,483,100
Costs							
Construction	0	0	0	0	0	-2,805,700	2,805,700
Interest during construction	0	0	0	0	0	-287,600	287,600
Operation, maintenance, replacement, and power	0	0	0	0	-1,228,000	0	1,228,000
Total	0	0	0	0	-1,228,000	-3,093,300	4,321,300

1/ Region 1 is identified as Bureau of Economic Analysis Economic Area 156, Guideline 5, consisting of Umatilla, Morrow, Gilliam, Wheeler, Grant, Baker, and Union Counties in Oregon and five counties of south-central and southeast Washington.

2/ Region 2 = the area outside of Columbia River Zone 6 and Umatilla basin, including the area from northern California to Alaska and the Columbia River from its mouth to Bonneville Dam

3/ Region 3 = the area served by Bonneville Power Administration and utilities which buy power from Bonneville Power Administration

4/ Unemployed benefits not paid

Recommended Plan Summary

Effects (continued)

Regional economic development (continued)

Species	Catch Location	Fish Catch				Difference	
		Future without Project		With Recommended Plan		Indian	Non-Indian
		Indian	Non-Indian	Indian	Non-Indian		
Fall chinook:	Ocean	0	18,000	0	43,651	0	25,651
	Zones 1-5	0	2,400	0	5,820	0	3,420
	Zone 6	3,650	0	5,820	0	2,170	0
	Umatilla River	3,400	510	14,442	3,519	16,542	3,009
	Total					18,712	32,080
	Percent					37	63
Spring chinook	Ocean	0	1,875	0	1,950	0	75
	Zones 1-5	0	1,125	0	1,170	0	45
	Zone 6	1,625	0	1,170	0	-455	0
	Umatilla River	0	0	4,132	1,378	4,132	1,378
	Total					3,677	1,498
	Percent					71	29
Summer steelhead	Ocean	0	0	0	0	0	0
	Zones 1-5	0	2,400	0	2,640	0	240
	Zone 6	1,920	0	2,112	0	192	0
	Umatilla River	5,590	5,590	5,974	5,974	384	384
	Total					576	624
	Percent					48	52

Time Period	Construction-related Employment				Total	Geographic Occurrence		
	Contractor	Federal	Onsite Work Force	Indirect and Induced		Umatilla Tribes	Rest of Region	Rest of Nation
Construction year								
1	86	31	117	253	370	58	300	12
2	45	16	61	130	191	29	156	6
Project life	Direct Employment				Total			
	Anadromous Fish	Resident Fish	Operation and Maintenance	Indirect and Induced				
	91/	0	4	48	61	182/	43	0

1/ Direct commercial Indian fishing and tribal jobs supported by fishing income

2/ Commercial Indian fishing jobs

Social well-being

Social Factors	Indian Account--Impacts and Effects
Maintenance of traditional culture	More fish available for ceremony/subsistence Stabilization of traditional family roles Extended family strengthened Support for traditional lifestyle
Community	Immigration back to reservation Development of new spirit of confidence and well-being
Self-esteem	Winning battle for fish and water leads to improvements in self-esteem New feelings of ability to control their own destiny. Increased self-respect from practicing cultural heritage and additional respect of the non-Indian community
Economics	Development of fish-oriented resource base Additional employment Income from commercial and sport fishery Economic benefit from subsistence fish
Environment	Valued improvements in streamflows
Salmon	Development of highly valued salmon runs in the Umatilla River Meeting most of the tribes' fall chinook salmon objectives Meeting a portion of spring chinook objectives
Steelhead and trout	Steelhead production would increase by about 10 percent
Conflict/competition	Potential for Indian/non-Indian water use conflict greatly reduced Competition with other tribes reduced

Recommended Plan Summary

Effects (continued)	
Social well-being (continued)	
Social Factors	Non-Indian Account--Impacts and Effects
Local sport fisheries	Section of Unatilla River available for salmon fishing increased from 3 to 51 miles Size of anadromous fish catch increased by about 80 percent in the Unatilla River Establishment of a large salmon sport fishery
Irrigation	Continued irrigation at present level out of the Unatilla River is virtually assured, maintaining production of crops valued at about \$8 million annually
Small tracts lifestyle	Threat to small tracts lifestyle of nearly 2,500 families removed
Financial security	Threat of devastating losses in property values to nearly 10,000 people living on land that would be affected from potential litigation directed at Unatilla River irrigators would be reduced
Local economics	The possibility of litigation that threatens part of the agricultural base of the economy would be removed, preserving about 1,200 jobs Preserve the existing tax base and associated tax revenues New sport fishery provides strong economic stimulus
Conflict/competition	Potential for Indian/non-Indian water use conflict greatly reduced

Alternative Plan Summary

Description

The Alternative Plan is a fishery enhancement plan to restore salmon runs and to enhance steelhead runs in the Umatilla River basin. The plan's major feature is that of improving streamflows by "importing" water from the neighboring Columbia River and developing headwaters storage to capture excess winter and spring runoff (see Alternative Plan Facilities map).

This plan includes all features of the Recommended Plan associated with the Columbia River pumping complex except the West Extension Irrigation District pump and, in addition, a dam on North Fork Meacham Creek and a stream fish habitat improvement program on North Fork and Meacham Creeks. Improvements to fish passage facilities and installation of fish screens at some irrigation diversion dams and the postconstruction fishery monitoring program would be the same as for the Recommended Plan.

Major Features

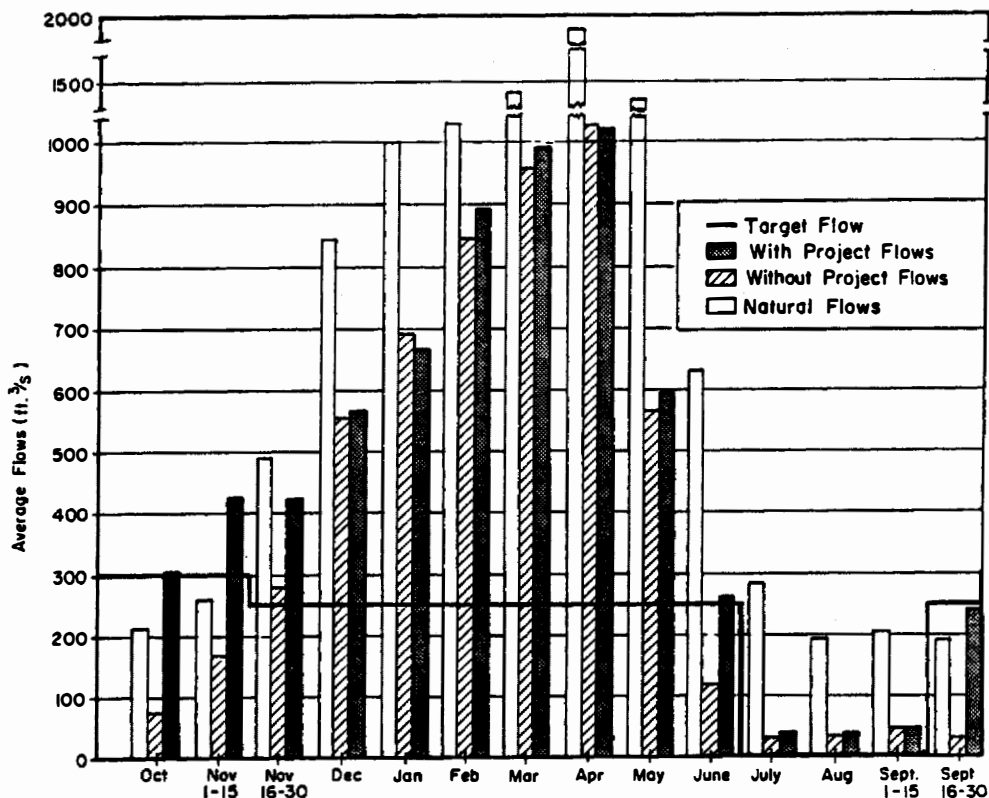
Columbia River pumping plant	
Discharge capacity	220 ft ³ /s
Total lift	333 feet
Horsepower	10,000
Average annual pumping	38,250 acre-feet
Cold Springs Reservoir pumping plant	
Discharge capacity	150 ft ³ /s
Total lift	132 feet
Horsepower	3,200
Average annual pumping	24,100 acre-feet
Stanfield Relift pumping plant	
Discharge capacity	46 ft ³ /s
Total lift	40 feet
Horsepower	305
Average annual pumping	7,400 acre-feet
Discharge lines, canals, and pipelines	12 miles
Meacham dam and reservoir	
Dam	
Type of dam	Roller compacted concrete
Structure (height of maximum section)	320 feet
Crest length	1,320 feet
Volume of concrete	1,000,000 cubic yards
Maximum spillway discharge	56,700 ft ³ /s
Geology--seismicity	Acceptable
Reservoir	
Capacity at normal water surface elevation 2983	27,000 acre-feet
Active conservation capacity	24,300 acre-feet
Minimum pool and dead storage	2,700 acre-feet
Surface area	264 acres at elevation 2983
Sedimentation	Minor
Land acquisition required	
Reservoir	
Public (national forest)	1,100 acres
Private	60 acres
Operation and maintenance road (private)	15 acres
Stream habitat improvement measures	
Fencing	To be accomplished along
Boulder placement	a 12.5-mile stream reach
Pool construction	below Meacham dam
Vegetation planting	
Fish passage improvements	Structural modifications at Maxwell, Feed Canal, and Westland Diversion Dams and replacing fish screens at several diversion canals

Alternative Plan Summary

Accomplishments

Anadromous Fishery

Flow objectives for the Umatilla River are the same as in the Recommended Plan. The following graph compares project target flows to "with project flows," "without project flows," and natural flows before irrigation diversions for the Umatilla River near Umatilla. Flows represent average flow conditions for the period 1935-78.



The Alternative Plan would also provide anadromous fish flow enhancement in Meacham Creek July 1 through October 31 from Meacham reservoir. Minimum flow needs of 40 ft³/s at the mouth of Meacham Creek during these months would be met most of the time.

The contribution of the Alternative Plan in (1) meeting a significant part of the recommended flows for the Umatilla River; (2) meeting minimum flow needs in Meacham Creek; and (3) providing improved passage facilities, protective screens, and stream rehabilitation would make restoration of natural runs of fall and spring chinook salmon possible and significantly improve existing steelhead runs. In addition to reestablishment of natural runs, the hatchery-based fishery that is being instituted by the tribes would benefit from project-related streamflow enhancement and passage improvements. Estimates of increased escapement of salmon and steelhead attributable to this plan are shown in the following tabulation. Escapement refers to adult fish that survive to return to their originating area to spawn.

Species	Future without Project	Increased Escapement with Alternative Plan
Fall chinook		
Natural production	0	11,314 ^{1/}
Hatchery production	2,500	5,000 ^{1/}
Spring chinook		
Natural production	0	700 ^{1/}
Hatchery production	0	2,500 ^{1/}
Steelhead		
Natural production	2,000	3,382
Hatchery production	4,000	0

^{1/} Identified by Bureau of Reclamation. Hatchery escapement indicates Columbia Basin fish that would be redistributed into the Umatilla basin and does not represent a net increase to the Columbia Basin.

Irrigation

Irrigation in the Alternative Plan would be the same as in the Recommended Plan.

Alternative Plan Summary

Effects			
National economic development			
Costs	Amount	Benefits	Amount
Total project costs	\$112,600,000	Value in meeting Indians' treaty reserved rights through restoration of salmon and improvement of steelhead runs and the associated social, cultural, and subsistence benefits to the Umatilla Indians is considered to be equal to the difference between NED anadromous fish benefits and NED costs.	
Interest during construction	23,021,000		
Annual equivalent project costs	\$ 10,862,700		
Annual operation, maintenance, and replacements	295,600		
Power (economic value)	849,300		
Total annual equivalent cost	\$ 12,007,600	Confederated Tribes of the Umatilla Indian Reservation	\$ 8,211,300
		Anadromous fish	3,796,300
		Resident fish	82,800
		Unemployed labor	658,000
		Total annual benefits	\$12,748,400

Environmental quality

Environmental Factors	Present Quantity	Future without Quantity	Recommended Plan	
			Quantity ^{1/}	Significance ^{2/}
Fall chinook (natural escapement)	0	0	11,314 (+11,314)	+++
Steelhead (natural escapement)	1,000	2,000	5,382 (+3,382)	+++
Spring chinook (natural escapement)	0	0	700	++
Anadromous fish distribution (subjective estimate on utilization of main stem Umatilla River reaches)	3	3	9 (+6)	+++
Big game migration (subjective estimate with 10 = pristine condition)	9	8	7 (-1)	-
Irrigated cropland losses (acres)	0	0 ^{3/}	130 (-130)	-
Total environmental quality effect ^{5/}				+++

1/ Net changes compared to future without condition shown in parentheses

2/ - = minor adverse, -- = moderate adverse, --- = highly adverse, + = minor beneficial, ++ = moderate beneficial, +++ = highly beneficial, and 0 = no difference

3/ Does not include 53,700 acres of irrigated cropland with a water supply at risk without the project

4/ Range 0 (no distribution) - 10 (fish distribution in entire basin)

5/ Comparison is to future without

Regional economic development

Item	Region 1 ^{1/}			Region 2 ^{2/}	Region 3 ^{3/}	Rest of Nation	Total
	Umatilla Tribes	Other Tribes	Rest of Region 1				
	dollars	dollars	dollars	dollars	dollars	dollars	dollars
Benefits							
National economic development							
Anadromous fish	1,235,300	125,900	0	2,435,100	0	0	3,796,300
Resident fish	0	0	82,800	0	0	0	82,800
Unemployed labor	658,000	0	0	0	0	0	658,000
Umatilla tribes	8,156,000	0	0	0	0	0	8,156,000
Subtotal	10,049,300	125,900	82,800	2,435,100	0	0	12,693,100
Regional economic development							
Implementation	658,000 ^{4/}	0	2,609,000	0	0	-3,267,000	0
Transfers	-29,000 ^{4/}	0	0	0	0	29,000	0
Indirect and direct	768,000	0	4,512,000	0	0	-5,280,000	0
Subtotal	1,397,000	0	7,121,000	0	0	-8,518,000	0
Total							12,693,100
Costs							
Construction	0	0	0	0	0	-8,934,100	8,934,100
Interest during construction	0	0	0	0	0	-1,928,600	1,928,600
Operation, maintenance, replacement, and power	0	0	0	0	-1,144,900	0	1,144,900
Total	0	0	0	0	-1,144,900	-10,862,700	12,007,600

1/ Region 1 is defined as Bureau of Economic Analysis Economic Area 156, Guideline 5, consisting of Umatilla, Morrow, Gilliam, Wheeler, Grant, Baker, and Union Counties in Oregon and five counties of south-central and southeast Washington.

2/ Region 2 = the area outside of Columbia River Zone 6 and Umatilla basin, including the area from northern California to Alaska and the Columbia River from its mouth to Bonneville Dam

3/ Region 3 = the area served by Bonneville Power Administration and utilities which buy power from Bonneville Power Administration

4/ Unemployment benefits not paid

Alternative Plan Summary

Effects (continued)

Regional economic development (continued)

Species	Catch Location	Fish Catch				Difference	
		Future without Project		With Alternative Plan		Indian	Non-Indian
		Indian	Non-Indian	Indian	Non-Indian		
Fall chinook	Ocean	0	18,000	0	45,154	0	27,154
	Zones 1-5	0	2,400	0	6,020	0	3,620
	Zone 6	3,650	0	6,020	0	2,370	0
	Umatilla River	3,400	510	20,453	3,609	17,053	3,099
	Total					19,423	33,873
	Percent					36	64
Spring chinook	Ocean	0	1,875	0	2,400	0	525
	Zones 1-5	0	1,125	0	1,440	0	315
	Zone 6	1,625	0	1,440	0	-185	0
	Umatilla River	0	0	4,740	1,580	4,740	1,580
	Total					4,550	2,420
	Percent					65	35
Summer steelhead	Ocean	0	0	0	0	0	0
	Zones 1-5	0	2,400	0	3,753	0	1,353
	Zone 6	1,920	0	3,002	0	1,082	0
	Umatilla River	5,590	5,590	7,755	7,754	2,165	2,164
	Total					3,247	3,517
	Percent					48	52

Time Period	Construction-related Employment				Total	Geographic Occurrence		
	Contractor	Federal	Onsite Work Force	Indirect and Induced		Umatilla Tribes	Rest of Region	Rest of Nation
Construction year								
1	236	43	279	448	727	91	608	28
2	637	74	711	841	1,552	97	1,384	71
3	381	37	418	437	855	97	716	42
4	139	14	153	162	315	87	213	15
Project life	Direct Employment				Total	20 ^{2/}	49	0
	Anadromous Fish	Resident Fish	Operation and Maintenance	Indirect and Induced				
	9 ^{1/}	0	4	56	69			

1/ Direct commercial Indian fishing and tribal jobs supported by fishing income

2/ Commercial Indian fishing jobs

Social well-being

Social Factors	Indian Account--Impacts and Effects
Maintenance of traditional culture	More fish available for ceremony/subsistence Stabilization of traditional family roles Extended family strengthened Support for traditional lifestyle
Community	Immigration back to reservation Development of new spirit of confidence and well-being
Self-esteem	Winning battle for fish and water leads to improvements in self-esteem New feelings of ability to control their own destiny, increased self-respect from practicing cultural heritage and additional respect of the non-Indian community
Economics	Development of fish-oriented resource base Additional employment Income from commercial and sport fishery Economic benefit from subsistence fish
Environment	Valued improvements in streamflows and riparian areas
Salmon	Development of highly valued salmon runs in the Umatilla River Meeting most of the tribes' fall chinook salmon objectives Meeting a significant portion of spring chinook objectives
Steelhead and trout	Steelhead production would increase by about 50 percent
Conflict/competition	Potential for Indian/non-Indian water use conflict greatly reduced Competition with other tribes reduced

Alternative Plan Summary

Effects (continued)

Social well-being (continued)

Social Factors	Non-Indian Account--Impacts and Effects
Local sport fisheries	Section of Umatilla River available for salmon fishing increased from 3 to 79 miles Size of anadromous fish catch doubled in the Umatilla River Establishment of a very large salmon sport fishery
Irrigation	Continued irrigation at present level out of the Umatilla River is virtually assured, maintaining production of crops valued at about \$8,000,000 annually
Small tracts lifestyle	Threat to small tracts lifestyle of nearly 2,500 families removed
Financial security	Threat of devastating losses in property values to nearly 10,000 people living on land that would be affected from potential litigation directed at Umatilla River irrigators would be reduced
Local economics	The possibility of litigation that threatens part of the agricultural base of the economy would be removed, preserving about 1,200 jobs Preserve the existing tax base and associated tax revenues New sport fishery provides strong economic stimulus
Conflict/competition	Potential for Indian/non-Indian water use conflict greatly reduced



United States Department of the Interior

BUREAU OF RECLAMATION
OREGON RECLAMATION OFFICE
SUITE 305, EQUITABLE CENTER
530 CENTER STREET NE
SALEM, OREGON 97301

October 30, 1985

IN REPLY
REFER TO:

123.-

Memorandum

To: Regional Planning Officer, Boise, Idaho

From: Acting Oregon Reclamation Representative, Salem, Oregon

Subject: Meeting with Corps of Engineers, Columbia River Pumping Plant Site, Umatilla Basin Project, Oregon

The subject meeting took place at McNary Dam on October 16, 1985, with the following people attending:

<u>Name</u>	<u>Title</u>	<u>Location</u>
Ray Satterwhite	Acting Oregon Reclamation Representative, USBR	Salem
R. Dennis Hudson	Head, Planning Engineering Section, USBR	Boise
Darrel Sunday	Resource Manager, COE	McNary
Debra Fryberger	Park Ranger, COE	McNary
Jimmie Brown	Outdoor Recreation Planner, COE	Walla Walla
Bob Carter	Project Manager, COE	McNary
Gary E. Steinbach	Civil Engineer, USBR	Boise

The purpose of the meeting was to select a site for the proposed Columbia River Pumping Plant, the major feature of the Umatilla Basin Project plan.

The previously selected site, located at the Corps' Sand Station Recreation facility, was unacceptable to the Corps because of its impact on the recreation site.

Four potential sites have been identified for the Columbia River Pumping Plant as shown on the attached sketch map. Site "A" is the previously selected site located at Sand Station Recreation facility. Site "C" is located a few hundred feet upstream from the Sand Station Recreation facility on a small piece of land between Highway 395 and Lake Wallula. Site "B" is located on a larger piece of land about one-quarter of a mile downstream from the Sand Station Recreation facility. Site "E" is located about one-half mile upstream from Sand Station Recreation facility on a site with a sandy beach. Cost information and comments made during the meeting on the respective sites are summarized in the following tabulation.

<u>Site</u>	<u>Estimated Development Cost^{1/}</u>	<u>USBR Comments</u>	<u>COE Comments</u>
A	\$11,630,000	used in studies because mapping and geology already available	not acceptable it is a developed recreation site
B	12,900,000	acceptable, good rock foundation	least impact on recreation
C	11,700,000	not preferred, too small and close to highway	unstable sand area
E	NA	acceptable	prefer to develop for recreation

After discussion of the available sites, it was agreed by representatives of the Corps of Engineers and Bureau of Reclamation that site "B" is the best site for the pumping plant. It has a rock foundation, the water depth increases rapidly just out from the bank, and it would be acceptable from a recreation standpoint. However, a part of the site and considerable adjoining land is owned in trust by Lewis and Clark College. The college intends to develop the land in a vineyard and condominium complex. The Corps of Engineers gave us an enlarged color photo which shows site "B" and the Lewis and Clark College property quite clearly.

^{1/} Field cost of pumping plant discharge line and power facilities (Jan. 1984 price level).

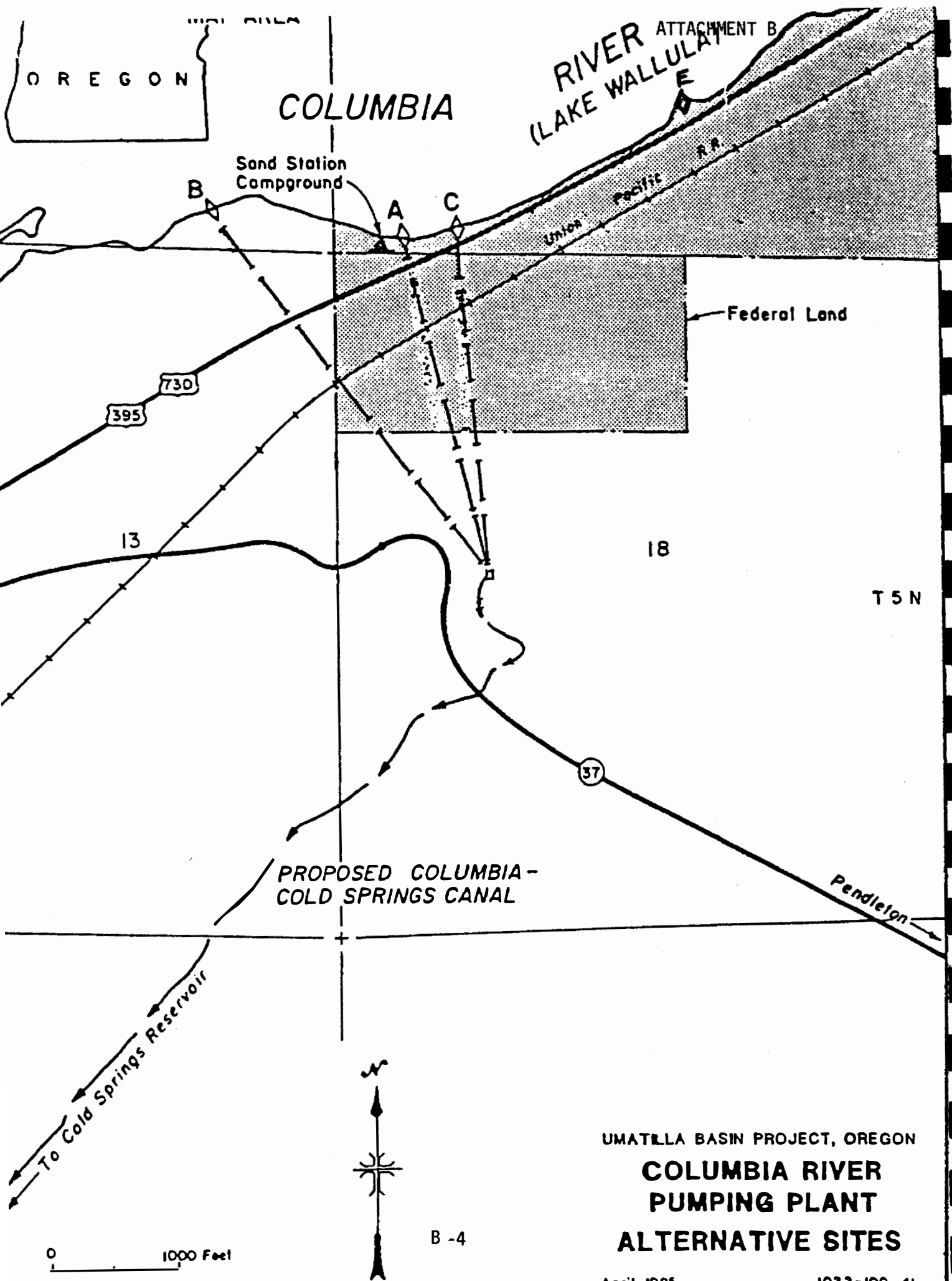
The group then drove out to Sand Station Recreation area and walked in to site "B". There are several potential locations for a pumping plant in the site "B" area. In February 1985, a site was selected near the upstream extent of the rock outcropping. A site further downstream now appears more favorable. The topography is more desirable and would be suitable for a conventional echelon pumping plant. Access might be provided from the old railroad right-of-way to the west. Also, this furthest downstream site would be more desirable from the Corps of Engineers standpoint.

We agreed to document these conclusions in a memorandum and provide the Corps of Engineers with a copy. It was also agreed that Ray Satterwhite would meet with Chancellor Glenn Gregg of Lewis and Clark College to determine what impacts this site would have on the planned development.



Enclosures

cc: w/encl. PN-212, Jimmie Brown Corps of Engineers



JUNE 9, 1986

ECHO, OREGON
JUNE 9, 1986

BUREAU OF RECLAMATION:

I CHESTER J. PRIOR hereby agree to the following limitation on the water right permits listed in Table 1.

1. Total diversion under these four permits will be limited to a maximum of 100 cubic feet per second at any given time.

TABLE 1

NAME	PERMIT NO.	AMOUNT(c.f.s.)	USE	USE PERIOD
Teel	25920	60	Irrigation	Irrigation Season
Teel	25924	30	Irrigation	Irrigation Season
Prior	48450	88	Irrigation	Nov.15 - June 15
Brown	48968	50	Irrigation	Nov.15 - June 15

Sincerely,



CHESTER J. PRIOR
STAR ROUTE
ECHO, OREGON 97826



LIST OF PREPARERS

This planning report/environmental statement was prepared by the Bureau of Reclamation's Pacific Northwest Regional Office in Boise, Idaho. A list of persons who participated to a significant extent in preparing the document follows:

<u>Name</u>	<u>Qualifications</u>	<u>Participation</u>
D. Duncan	B.S., Industrial Administration; M.S., Ph.D., Sociology; Reclamation, 10 years	Public involvement coordination and social assessment studies
J. Esch	B.S., Fishery Science; Fishery Biologist, Forest Service, 1 year; National Marine Fisheries Service, 7 years	Anadromous fish studies, fish and wildlife, and Coordination Act Report
R. Garst	B.S., Fisheries Science; Fish and Wildlife Biologist, U.S. Fish and Wildlife Service, 13 years	Fish and Wildlife Coordination Act Report
E. Griswold	B.S., Geography, M.S., Forest Management; Outdoor Recreation Planner, Reclamation, 9 years	Recreation planning information
P. Harrison	B.E.S., Engr. Science; Chief, Water Resources Branch, regional office, Reclamation, 31 years	Hydrology studies coordination and supervision
R. Hudson	B.S., Civil Engineer; Chief Engineering Branch, Regional Office, Reclamation, 24 years	Engineering studies supervision
C. Jensen	B.S., Park and Recreation Administration; Outdoor Recreation Planner, Peace Corps, 3 years; Reclamation, 5 years	Recreation analysis
D. Justus	B.A., Economics; Chief, Economics Branch, Regional Office, Reclamation, 25 years	Economic and financial analysis and social studies supervision
C. Laythe	B.A., B.S., M.S., Natural Resources; Technical Publi- cations Writer/Editor, Reclamation, 25 years	Planning report and environmental statement preparation

<u>Name</u>	<u>Qualifications</u>	<u>Participation</u>
J. McCluskey	B.S., Range Management; Forest Environmental Coordinator, Umatilla National Forest, Forest Service, 34 years	Interagency coordination and resource information
R. Prange	B.S., Natural Resource Management; Environmental Specialist, Bureau of Land Management, 10 years; Reclamation, 7 years	Environmental studies and environmental impact statement
R. Riley	B.A., M.A., History and Park Management; National Park Service, 4 years; Chief, Reports Branch, Regional Office, Reclamation, 22 years	Planning report/environmental statement
L. Robison	B.S., Agricultural Economics; Agricultural Economist, Reclamation, 33 years	Economic and financial analysis
D. Smith	B.S., Agricultural Economics; Economist, Reclamation, 23 years	Regional economic development analysis
G. Steinbach	B.S., Civil Engineering; P.E.; Civil Engineer, Barton, Stoddard, Milhollin, and Lupton, 1 year; Civil Engineer, Bureau of Reclamation, 20 years	Engineering studies
J. Todd	B.S., Civil Engineering; Civil Engineer, Reclamation, 8 years	Engineering studies
L. Wuttke	B.S., Civil engineering; Hydraulic Engineer, Reclamation, 6 years	Hydrologic studies
D. Zimmer	B.S., Fish and Wildlife, M.S. and Ph.D., Limnology; Limnologist, Reclamation, 10 years	Water quality studies and limnology data for reservoir operations
T. Zontek	B.A., Anthropology, M.A., Interdisciplinary studies; Archeologist, Reclamation, 8 years	Cultural resources studies

ENVIRONMENTAL COMMITMENTS

Environmental commitments are actions that Reclamation would take, in the event the project is implemented, to protect values identified through the environmental statement process.

Commitments are discussed as to their timing; i.e., those actions that would be taken prior to construction, during construction, and after the project is in operation.

RECOMMENDED PLAN
(Columbia River Pumping Plan)FisheriesConstruction

Install improved fish screens to fall chinook criteria for downstream migrant anadromous fish in Feed, Furnish, Westland, and Maxwell Canals

Construct adult fish passage improvements at Stanfield, Feed Canal, Westland, and Maxwell Diversion Dams

Construct an anadromous fish adult fish barrier at the mouth of McKay Creek

Construct an upgraded juvenile trap facility at Westland Diversion Dam to be operated as part of the Oregon Department of Fish and Wildlife and Umatilla Tribal trap and transport program.

Implement required screening of the intakes at the Columbia River, West Extension, and Cottonwood Bend pumping plants to protect against impingement of juvenile fish and, in the case of the Columbia River pump, protect against introduction of undesirable fish into Cold Springs Reservoir

Operation

Reclamation would fund a postconstruction monitoring program to aid in "fine tuning" project operations to maximize anadromous fishery enhancement objectives and allow evaluation of resident fishery trends in McKay Reservoir.

Observe the McKay Reservoir resident fishery as part of the postconstruction monitoring program to determine if any significant negative effects result from project operation.

Maintain a minimum pool of 6,800 acre-feet in McKay Reservoir and 3,800 acre-feet in Cold Springs Reservoir.

Provide flow augmentation to the extent possible in the main stem Umatilla River from McKay Creek downstream to the mouth of minimum flows of 250 ft³/s from September 16 to September 30, 300 ft³/s from October 1 to November 15, and 250 ft³/s from November 16 to June 30.

Wildlife

Preconstruction

Reclamation would coordinate with the Umatilla National Wildlife Refuge to develop a plan for canal and powerline alignments crossing land within the Cold Springs National Wildlife Refuge to minimize impacts to habitat and wildlife and assure compatibility with the National Wildlife Refuge Administration Act. Powerlines would be designed in accordance with design criteria provided in the publication, "Suggested Practices for Raptor Protection on Powerlines, the State of the Art in 1981," Raptor Research Report No. 4, Raptor Research Foundation, Inc., 1981. Measures would be developed to provide for appropriate fencing, cattle guards, or gates to control grazing and public access in the area.

Construction

Revegetation on nonagricultural lands disturbed by construction activities for canals, pipelines, and pump stations would be done where such action would be beneficial. Topsoil would be stockpiled and reapplied following construction. These areas would be reseeded with plant species beneficial for wildlife food and cover. Species to be planted, seeding mixture, and rates would be determined jointly by the Oregon Department of Fish and Wildlife, U.S. Fish and Wildlife Service, and Bureau of Reclamation during advance planning. In addition to grass and forbs, and where possible, shrubs and small trees would be planted within the right-of-way strip that could be supported without artificial watering. Such areas would generally be natural drainages or depressions that capture more moisture than surrounding terrain.

Operation

An operational constraint has been developed for Cold Springs Reservoir to insure that water elevations would be no higher than 610 feet elevation (mean sea level) after July 30. This would protect the integrity of the shoreline woodland/riparian vegetation by assuring that the bottom would dry out to allow new sprouting and invasion of annual and perennial plants.

Water Quality

Preconstruction

Before discharging any wastewater or other pollutants, contractors would obtain permits to discharge pollutants as required under the National Pollutant Discharge Elimination System, established under Public Laws 92-500 and 95-217. Before discharging any dredged or fill materials into navigable waters, a permit must be issued by the Corps of Engineers to discharge such materials as provided in section 404 of the Clean Water Act of 1977, Public Law 95-217. Construction of the Columbia River and West Extension Irrigation District pumping plants would require a section 10 permit under the Rivers and Harbors Act of 1899.

Construction

Contractors would comply with State and Federal laws and regulations regarding the control and abatement of water pollution. All waste materials and sewage resulting from construction activities or project constructed features would be disposed of as specified by State and Federal health and pollution control regulations. Construction activities would be performed by methods that would protect against entrance or accidental spillage of solid matter, contaminants, debris, and other objectionable pollutants and wastes into streams, flowing or dry watercourses, and underground water sources.

Dewatering work for structure foundations or earthwork operations adjacent to or encroaching on streams or watercourses would be conducted in a manner to prevent muddy water and eroded materials from entering the streams or watercourses by construction of intercepting ditches, bypass channels, barriers, settling ponds, or by other approved means. Excavated materials or other construction materials would not be stockpiled or deposited near or on streambanks or other watercourse perimeters where they can be washed away by high water or storm runoff or can in any way encroach upon the actual watercourse itself.

Wastewaters from aggregate processing, concrete batching, or other construction operations would not enter streams, watercourses, or other surface waters without the use of such turbidity control methods as settling ponds, gravel filter entrapment dikes, approved flocculating processes that are not harmful to fish, recirculation systems for washing of aggregates, or other approved methods. Any such wastewater discharged into surface water would be essentially free of settleable material.

Vegetation

Construction

Nonagricultural lands disturbed by construction activities and not permanently occupied by project facilities, access roads, etc., would be reseeded where determined beneficial to encourage return of vegetative cover. Much of this effort would be oriented toward mitigation of lost wildlife habitat.

Existing Recreation Uses

The environmental commitments associated with the Sand Station Campground, as discussed in the Planning Report/Draft Environmental Statement, are no longer pertinent since the Columbia River pumping plant would not be constructed at that location.

Air Quality

Construction

Construction specifications would require the contractor to comply with applicable Federal, State, and local air quality standards and emission limitations adopted in accordance with or effective under the provisions of the Clean Air Act (Public Law 91-604) as amended by the Clean Air Amendments of 1977 (Public Law 95-95).

During construction, the contractor would be required to use such methods and devices as are reasonably available to control, prevent, and otherwise minimize atmospheric emissions or discharges of atmospheric contaminants. Equipment and vehicles that show excessive emissions of exhaust gases due to poor engine adjustments or other inefficient operating conditions would not be operated until corrective repairs or adjustments were made.

The emission of excessive dust into the air would not be permitted during the manufacture, handling, and storage of concrete aggregates, and the contractor would be required to use such methods and equipment as are necessary for collection, disposal, or prevention of dust during these operations. Rubbish, trash, and other combustible materials (except cleared trees, etc.) would be disposed of in an approved sanitary landfill. Cleared vegetation would be allowed to dry and be burned onsite.

Under Oregon Administrative Rules for fugitive emission standards (ORS 340-81-050 through 060), the contractor would be expected to carry out measures to reduce the dust nuisance and to prevent dust which has originated from his operations, from damaging dwellings, or causing a nuisance to persons. This may include the periodic wetting of exposed soils.

Noise

Construction

Construction specifications would require contractors to comply with Federal, State, and local regulations concerning the control of noise levels. This would include the proper installation and maintenance of muffling devices on equipment.

West Extension Irrigation District McNary Dam Diversion Water Exchange Option

If the McNary Dam diversion option is constructed to meet the WEID water exchange need, all Recommended Plan environmental commitments would be applicable. Additionally, in consideration of wildlife habitat values, existing trees and riparian vegetation found along the Terminal Ditch would be preserved in place, to the extent possible, during project construction.



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Portland Field Office
727 NE 24th Avenue
Portland, OR 97232

May 26, 1987

MEMORANDUM

To : Regional Planning Officer, Pacific N. W. Region
U. S. Bureau of Reclamation
Boise, Idaho

From : Field Supervisor, Portland Field Office, USFWS
Portland, Oregon

Subject: Summary of Anadromous Fish Benefits, Umatilla Basin Flow
Enhancement Project, OR

This is our Planning Aid Memorandum (PAM) as required in the Fiscal Year 1987 Scope-of-Work for the subject project. It was requested in your letter of April 1, 1987 (copy attached) to Mr. Merritt Tuttle, National Marine Fisheries Service (NMFS) and received as a copy to our office on April 6, 1987. It is our understanding that the anadromous fish benefits provided herein will be the basis for the economic evaluation of project accomplishments in the Final Environmental Impact Statement (FEIS). It should be noted that these benefit estimates supersede similar data in the reports, plans, and memorandums discussed below.

Fishery data for this project have been provided in various forms over a period of several years, including: 1) a Fish and Wildlife Coordination Act Report (FWS, 1984) with an anadromous fish section prepared by the National Marine Fisheries Service (NMFS, 1984); 2) the Umatilla Basin Comprehensive Plan (ODFW, 1986); 3) a memorandum describing fishery benefits (NMFS, 2-26-1987 - copy attached); 4) a memorandum outlining adult and juvenile losses (Chaney, 3-15-1987 - copy attached), and 5) a memorandum outlining losses and benefits (Boyce, 3-3-1987 - copy attached). A number of agency meetings were also held to discuss the fishery analysis.

During the above process a number of data changes occurred, and as the study neared completion, it became obvious that anadromous fish benefits needed to be updated and finalized. To this end the subject was discussed in-depth in meetings and correspondence between the Oregon Department of Fish and Wildlife (ODFW), National Marine Fisheries Service (NMFS), U.S. Bureau of Reclamation (BR), U.S. Fish and Wildlife Service (FWS), and the Confederated Tribes of the Umatilla Indian Reservation (CTUIR). Several conclusions were

reached during this process: 1) NMFS will respond directly to the points raised in your letter dated April 1, 1987 to them; 2) it was agreed that the Umatilla Basin Comprehensive Plan (CP) (ODFW, 1986) would be used for analysis of the project; and 3) specific assumptions about measures to be included in the future without the project condition were agreed to (BR letter to FWS, Jan. 28, 1987).

At an April 9, 1987 meeting in Portland, Oregon the agency representatives listed below agreed upon the latest estimate of fishery accomplishments with the subject project.

<u>Name</u>	<u>Agency</u>
Ron Garst	U.S. Fish & Wildlife Service
Jim Esch	National Marine Fisheries Service
Richard Prange	U.S. Bureau of Reclamation
Dave Duncan	U.S. Bureau of Reclamation
Dave Smith	U.S. Bureau of Reclamation
Ron Boyce	Oregon Department of Fish & Wildlife
Ed Chaney	Umatilla Basin Project Coordinator, Confederated Tribes of Umatilla Indian Reservation

The analysis in this PAM includes one significant change from data provided by NMFS in its letter to you dated February 26, 1987. Specifically, the number of adult fish returns (Table 1) reflect a 50 percent reduction without the project. The basis for this reduction was detailed in a memorandum from Mr. Ed Chaney (March 15, 1987) to agency representatives which included the following explanation:

"This 50 percent reduction is designed to capture losses associated with limited ability to collect downstream migrants; direct mortalities of juveniles associated with existing primitive collection facilities; direct mortalities and reduced survival of remaining fish due to transportation and release of juveniles; direct mortalities at passage facilities and reduced survival of remaining juveniles; direct and delayed mortalities of adults attempting to enter the Umatilla River; direct and delayed mortalities of fish collected and transported from 3-Mile Dam; loss of natural production due to less than full seeding of available habitats due to poor distribution associated with delay and with trauma of collection and transportation."

Using the numbers of adults returning to the Umatilla River, (Table 1) and the procedures described by Boyce (April 3, 1987), it is possible to depict benefits to the ocean and Columbia River catch, and inriver harvest levels. Table 2 summarizes the adult return numbers and assumptions used to calculate the National Economic Development (NED) benefits with the project.

Table 1. Natural and Hatchery Production Fish Accomplishments for the Umatilla Basin Project, Oregon (In Terms of Adult Returns into the Umatilla River) 1/

CONDITIONS	SPECIES			
	<u>StS</u>	<u>ChF</u>	<u>ChS</u>	
<u>Natural Production:</u>				
Future w/o BR Project	1,482	2,602	301	
Future w/ BR Project	<u>3,404</u>	<u>11,217</u>	<u>1,162</u>	
Net Gain	1,922	8,615	861	
<u>Hatchery Production</u>	<u>StS</u>	<u>ChF</u>	<u>ChS</u>	<u>Co</u>
Future w/o BR Project	2,189	2,247	2,398	4,950
Future w/ BR Project	<u>5,027</u>	<u>9,810</u>	<u>9,235</u>	<u>6,600</u>
Net Gain	2,838	7,563	6,837	1,650

1/ Figures are from Tables IV and VI of "A Comprehensive Plan for Rehabilitation of Anadromous Fish Stocks in the Umatilla Basin" (ODFW, 1986) with modifications in the future without conditions as discussed by Chaney (March 15, 1987) and Boyce (April 3, 1987).

Table 2. Adult Returns Used to Calculate Benefits to Ocean, Columbia River, and Inriver Harvest Levels with the Proposed Umatilla Basin Project, Oregon 1/

CONDITIONS	SPECIES			
	<u>StS</u>	<u>ChF</u>	<u>ChS</u>	
<u>Natural Production:</u>				
Escapement w/o BR project	1,482	2,602	301	
Adult needs for maximum smolt production	<u>1,881</u>	<u>10,890</u>	<u>582</u>	
Escapement shortages w/o project 2/	-399	-8,288	-281	
Net escapement w/ BR project	<u>1,922</u>	<u>8,615</u>	<u>861</u>	
Harvestable surplus 3/	1,523	327	580	
<u>Hatchery Production:</u>	<u>StS</u>	<u>ChF</u>	<u>ChS</u>	<u>Co</u>
Returns w/o BR project	2,189	2,247	2,398	4,950
Brood stock needs	<u>100</u>	<u>1,813</u>	<u>1,059</u>	<u>0</u>
Surplus w/o project	2,089	434	1,339	4,950
Net return w/ BR project 4/	2,838	7,563	6,837	1,650

- 1/ Figures are from Table 1 (PAM) or Table 3 of Boyce (April 3, 1987) and represent conditions as described in the CP (ODFW, 1986).
- 2/ These figures are the natural production escapement shortages for fully seeded habitat without the project, and thus represent the gain in spawning fish that would occur with additional escapement with the project. They should be used to calculate ocean and Columbia River harvestable fish based on appropriate catch/escapement ratios.
- 3/ These figures represent returns in excess of escapement needs for maximum smolt production and are available for inriver harvest.
- 4/ These figures are net returns with the project in excess of brood stock needs for hatchery fish, and represent fish available for inriver harvest. They should be used to calculate ocean and Columbia River harvestable fish with appropriate catch/escapement ratios.

It is our understanding that actual dollar values will be calculated by the BR using the methodology as provided in the CAR (NMFS, 1984). This procedure involves determining the distribution between commercial and recreational harvest for each species, and the average size and value of a commercially harvested fish, and average angler-day effort and value for a recreational harvested fish (Meyer, 1982). Some basic assumptions developed in utilizing this procedure, as discussed at the April 9 meeting, are as follows:

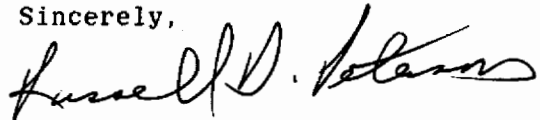
- 1) adult returns of naturally produced fish used to calculate benefits with the project, would be the gain in spawning fish (escapement) needed to have fully seeded habitat;
- 2) additional adult returns beyond the need for fully seeded habitat or brood stock needs (hatchery produced fish) would be available for inriver harvest;
- 3) inriver (Umatilla) harvest allocation should be 100 percent commercial take for salmon and 100 percent recreational catch for steelhead (Esch, personal communication);
- 4) to count in the NED analysis, all hatchery produced fish are from the expanded Umatilla River Hatchery or the proposed new regional northeastern Oregon hatchery planned under the Northwest Power Act, and not reprogrammed fish from outside the basin;
- 5) catch to escapement ratios are 4:1 for fall chinook and coho and 2:1 for spring chinook and summer steelhead;
- 6) values for allocation of commercial and recreational catch, size of fish, value per fish or angler-day, and number of angler-days per catch will be from the CAR for chinook and steelhead; and
- 7) if coho are used at all in the analysis (see 4 above), then BR will develop the appropriate allocation, size, and unit value figures based on further discussion with ODFW, the Tribe, and other data from existing coho fisheries that might apply.

In summary, the figures in Tables 1 and 2 depict significant benefits to anadromous fish with the Umatilla Basin Flow Enhancement Project. In addition to the important habitat improvements for spawning and rearing and the improved passage conditions that will occur with the project, returning anadromous fish also represent significant numbers of fish that will be harvested in the ocean and the Columbia and Umatilla Rivers. Accordingly, the economic analysis should show substantial NED benefits with the project. In addition to the economic values there are substantial social well-being values to restoring anadromous fish runs in the Umatilla River, particularly to the Umatilla Indians and their treaty fishing rights.

It is important at this stage in the planning process that the resource agencies have agreed on the basic set of assumptions supporting the estimate of benefits that the BR will use as final figures in the FEIS. Where any major differences still exist between this analysis and those in the past, we recommend that the BR do a sensitivity analysis to focus on the reasons for these differences and identify which assumptions are making the biggest (if any) change in the results.

If you have any questions, please contact Ron Garst at 503-231-6179 (FTS 429-6179).

Sincerely,



Russell D. Peterson
Field Supervisor

Attachments

cc:
NMFS (Esch)
ODFW (Boyce)
ODFW, Pendleton (Phelps)
CTUIR, Pendleton (James)
Ed Chaney
CRITFC
BPA

REFERENCES

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