



US Army Corps
of Engineers®
Walla Walla District

Report of the Secretary of the Army on Civil Works Activities for Fiscal Year 2006



Lower Snake River Fish and Wildlife Compensation Plan
Woody Riparian Initiative Project Rice Bar Habitat Management Unit
Garfield County, Washington

Department of the Army Corps of Engineers
Extract Report of Walla Walla District

WALLA WALLA, WA, DISTRICT

This U.S. Army Corps of Engineers (Corps), Walla Walla District (District), consists of all Columbia River drainage and tributaries thereto between the head of the McNary Reservoir (Lake Wallula) (river mile 345.4) and Umatilla Bridge (river mile 290.5) below McNary Lock and Dam,

except the Yakima River Basin above the Van Giesen Street Bridge (river mile 8.4) near Richland, WA. The primary tributary drainage area is the Snake River that includes more than 107,000 square miles in six states: Washington, Oregon, Idaho, Wyoming, and small portions of Nevada and Utah.

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Flood Control

1. COLUMBIA RIVER BASIN, LOCAL FLOOD PROTECTION PROJECTS

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

Existing project. The Flood Control Act of 1950 approved a general comprehensive plan for the Columbia River Basin for flood control and other purposes based on plans in H. Doc. 531, 81st Congress, 2nd Session, and authorized \$75 million to be appropriated for partial accomplishment of certain projects. From that authorization, an amount (not to exceed \$15 million) was allotted for construction of local flood protection works throughout the Columbia River Basin, subject to conditions that all work undertaken pursuant to authorization would be economically justified prior to construction, and local cooperation specified in the Flood Control Act of 1936, as amended, should be required.

Local cooperation. Section 3, Flood Control Act of June 22, 1936, applies.

Operations during the fiscal year (FY). No projects were de-authorized.

2. INSPECTION OF COMPLETED FLOOD CONTROL PROJECTS

Federal law requires local interests to maintain and operate completed local protection projects in accordance with regulations prescribed by the Secretary of the Army. Inspections were made to determine the extent of compliance and advise local interests, as necessary, of measures required to correct deficiencies.

The FY costs were \$62,831. Total costs through September 30, 2006, were \$3,327,170.

3. JACKSON HOLE, WY

Location. This project is located on the banks of the Snake River, Teton County, west of Jackson, WY.

Existing project. On the Snake River, approximately 23.5 miles of Federally-constructed levees consisting of the following: (1) On the right

bank: a series of levees, off-set levees, and bank protection structures, all with full riprap protection from 10 miles upstream of the Jackson-Wilson Bridge to 3.5 miles below the bridge for a total of 13.5 miles; and (2) On the left bank: a series of Federally-constructed levees and bank protection structures, all with full riprap protection, extending from 10 miles upstream of the Jackson-Wilson Bridge to 5 miles upstream. The project resumes 1.5 miles immediately upstream of the same bridge and continues to 3.5 miles below the bridge for a total of 10 miles. In addition, a series of Federal and non-Federal constructed levees, with a total length of approximately 5 miles, most having some or full riprap protection, are interspersed along both banks of the Snake River from Highway 26 Bridge to 4 miles downstream of the Jackson-Wilson Bridge.

The project also includes riprap-protected levees on the left and right banks of the Gros Ventre River. The left bank levee begins 1.5 miles west of Cattlemen's Bridge and extends 0.5 mile east of the same bridge. The right bank levee begins 0.5 mile west of Cattlemen's Bridge and extends 0.3 mile east of the same bridge.

The Project is authorized by Public Law (PL) 81-516, Flood Control Act of 1950, for flood control protection by channel improvements consisting of channel rectification, levees, and revetments along the Snake River in the vicinity of Wilson, WY. The PL 104-303 modified the original PL 81-516 to ensure the operation, maintenance, modifications, and additions to the project become Federal responsibility.

Local cooperation. Non-Federal sponsors pay the initial \$35,000 in cash or materials of any such costs expended in any 1 year, plus inflation as of the date of enactment of the Water Resources Development Act of 1986.

Since 1978, \$127,414,000 (adjusted to October 2006 price index) in potential flood damages has been prevented by the levees.

Operations during FY. Teton County, under their Local Cooperative Agreement, worked with the Corps performing levee maintenance. The FY costs were \$239,206. (See table 30-A, Cost and Financial Statement.)

The Water Resources Development Act of 2000 authorized the Upper Snake River Restoration Project. Congress added new start funding to the FY

03 budget. The project is located in and along a 22-mile stretch of the Upper Snake River near Jackson, WY, in Teton County. It is partially in and adjacent to Grand Teton National Park, the National Elk Refuge, and in close proximity to Yellowstone National Park. The project will restore fish and wildlife habitat that was lost as a result of construction, operation, and maintenance of levees constructed by Federal and non-Federal interests. Restoration measures include eco-fences, channel capacity excavation, spur dikes, anchored rootwads, rock grade control, and secondary channels, off-channel, and channel stabilization pools. The project has a 14-year phased construction schedule and includes continuing construction, adaptive management, and monitoring to provide implementation flexibility. The rock grade structure, a separable element of Site 9 completed in FY 05, performed as designed by protecting the island habitat during spring 2006 runoff conditions. There were no FY 06 Construction General costs. (See table 30-A, Cost and Financial Statement.)

4. LUCKY PEAK LAKE, ID

Location. This project is located on the Boise River in southwestern Idaho about 10 miles southeast of the city of Boise, ID. (See table 30-B for Authorizing Legislation of projects in the District.)

Existing project. The project includes a rolled earthfill dam about 250 feet above the streambed and 1,700 feet long at the crest, with a lake providing a total storage at upper operating lake level of 306,000 acre-feet. The project provides for flood control, irrigation, and recreation.

Construction of the existing project was initiated in November 1949 and completed in June 1961. Since 1961, \$1,026,764 (adjusted to October 2006 price index) in potential flood damages has been prevented by the project.

During a detailed study of outlet capacity and potential for adding hydropower to the existing project, a need for an auxiliary outlet became apparent. Construction of an auxiliary outlet was authorized in the Water Resource Development Act of 1976. In FY 78, an *Interim Feasibility Report on Modification of Lucky Peak Dam and Lake* (power facilities) was submitted to the Board of Engineers for Rivers and Harbors and approved. States, agencies, and the Chief of Engineers commented on the report to the Secretary of the Army. The report

was forwarded to the Office of Management and Budget in February 1982.

A license to construct and operate power facilities at the project was issued by the Federal Energy Regulatory Commission (FERC) (Project #2832) to the Boise Project Board of Control on June 10, 1980, and modified on October 9, 1980, and in 1982. Construction of the auxiliary outlet facility began in May 1984 and was completed in August 1986. Construction of modifications to the existing outlet tunnel and powerhouse excavation began in August 1986 and was completed January 1987. Powerhouse general contract construction began in April 1986. The project was completed and dedicated on October 7, 1988. Power on-line for all units was initiated on August 18, 1988. A Federally authorized second outlet was de-authorized in FY 90.

Recreation facilities at Lucky Peak Lake consist of 20 picnic/day-use areas, 4 boat launch ramps, and 3 swimming areas. The FY visitation to Lucky Peak Lake was 1,114,121.

Local cooperation. None required.

Operations during FY. Operation and Maintenance: Normal operation and maintenance, which included the dam structures and recreation areas, continued. The FY costs were \$2,105,109. (See table 30-A, Cost and Financial Statement.)

5. MILL CREEK, BENNINGTON LAKE, WA

Location. This project is located in and upstream from Walla Walla, WA, on Mill Creek, a tributary of the Walla Walla River. (See table 30-B for Authorizing Legislation of projects in the District.)

Existing project. The project includes an off-stream earthfill storage dam, about 125 feet above the streambed and 3,200 feet long at the crest, two concrete-lined outlet channels, an earthfill diversion dam, and diversion structures. The project provides for flood control and recreation. Authorizing legislation to provide a channel through the city of Walla Walla was added to the project in 1941. Recreation was added to the project purposes through the Federal Water Project Recreation Act of 1965.

Construction of the dam and appurtenant works was completed in 1942. Paving of the channel

through the city of Walla Walla was completed in 1966. Since 1942, \$62,128,000 (adjusted to October 2006 price index) in potential flood damages has been prevented by the combined storage and channel operation.

Rehabilitation of the existing project was initiated in FY 78 and completed in FY 79. The plan of rehabilitation included action to correct the seepage and internal erosion that has occurred during each subsequent filling of the reservoir. A cutoff wall was constructed but did not alleviate the seepage problem, thus requiring limited flood control use of the project. The seepage and internal erosion create a high vulnerability for dam failure.

Mill Creek/Bennington Lake offers visitors three day-use/picnic areas and one boat launch ramp. Visitation to Mill Creek/Bennington Lake for the FY was 260,250.

Local cooperation. None required.

Operations during FY. Operation and Maintenance: Normal operation and maintenance continued, which included regulation of water control structures and care of recreation areas. The FY costs were \$1,263,181. (See table 30-A, Cost and Financial Statement.)

6. SCHEDULING FLOOD CONTROL RESERVOIR OPERATIONS

Functional regulation of non-Corps projects was accomplished under several authorities. Regulation was accomplished as authorized under Section 7, Flood Control Act of 1944, and coordinated with the Bureau of Reclamation for Palisades, Little Wood, and Anderson Ranch Reservoirs, ID; and Bully Creek, Warm Springs, Agency Valley, and Mason Reservoirs, OR.

Flood control operations at Jackson Lake, WY, Arrowrock Reservoir and Lake Lowell, ID, were in accordance with formal agreements with the Bureau of Reclamation. Flood control regulation was accomplished under informal agreements for the Owyhee Reservoir, OR, and American Falls, Magic, Mackay, Cascade, and Deadwood Reservoirs, ID. Brownlee and Oxbow Reservoirs, OR, and Hells Canyon Reservoir, OR and ID, provided flood control regulation in accordance with provisions of the Federal Power Commission license to Idaho Power Company. The FY costs were \$381,483.

7. TRIBAL PARTNERSHIP PROGRAM

Location. The Shoshone Bannock Tribes of Fort Hall Reservation and study area is located just northwest of Pocatello, ID in the southeastern corner of Idaho.

Existing project. Section 203 of the Water Resource Development Act of 2000, Tribal Partnership Program, authorized the Corps to undertake a reconnaissance phase study to determine if there is a Federal (Corps) interest in participating in a cost shared feasibility phase study with the Shoshone Bannock Tribes of Fort Hall. This study is to determine if there is Federal interest in providing, collecting, and evaluating critical data and information relevant to protecting ecologically and culturally sensitive areas in the Fort Hall "Bottoms" and adjacent lands. It would evaluate alternatives that would restore lost environmental qualities of the original ecosystems; develop and analyze key risk reduction actions that would reduce the impacts of floods and flood damage in both developed tribal lands and culturally sensitive lands. The study would assess methods and alternatives that would improve water quality and quantity; identify areas on and directly adjacent to the reservation where erosion control would improve, protect, and enhance riparian/wetlands areas, total maximum daily loads (TMDLs), *etc.*; and developing comprehensive environmental and floodplain solutions for a "natural" river corridor improvements to Fort Hall "Bottoms: watershed and adjacent lands.

Local cooperation. The 905b study is 100 percent Federal. The Shoshone Bannock Tribes of Fort Hall have been participating in the development of this study.

Operations during FY. A draft of the 905b study has been developed and is under internal review. The FY costs were \$38,402. Total costs through September 30, 2006, were \$66,001.

8. FLOOD CONTROL ACTIVITIES UNDER SPECIAL AUTHORIZATION

Flood control activities pursuant to Section 205, PL 858, 80th Congress, as amended:

The FY costs were \$5,400 for Section 205 coordination. There were no new flood control activities.

Emergency flood control activities-repair, flood fighting, and rescue work (PL 99, 84th Congress, and antecedent legislation): There were no Federal costs this FY.

Emergency bank protection (Section 14, Flood Control Act of 1946, PL 526, 70th Congress): The FY costs were \$15,000 for Section 14 Coordination.

Snagging and clearing of navigable streams and tributaries in interest of flood control (Section 208, Flood Control Act of 1954, PL 780, 83rd Congress): There were no FY costs for Section 208 Coordination.

Multiple-Purpose Projects, Including Power

9. COLUMBIA RIVER FISH MITIGATION PROGRAM (WALLA WALLA PROJECTS), OR, WA, AND ID

Location. This project is located at Ice Harbor, Lower Monumental, Little Goose, and Lower Granite Locks and Dams on the lower Snake River in the State of Washington and McNary Lock and Dam on the Columbia River in the states of Oregon and Washington. (See table 30-B for Authorizing Legislation of projects in the District.)

Existing project. The eight Corps hydroelectric projects on the Columbia and lower Snake Rivers have been identified as a major contributing factor in causing mortality to downstream migrating juvenile salmon and steelhead. Without adequate bypass facilities to guide these juvenile fish away from the power turbines at the dams, mortalities incurred through project passage severely impact the commercial, recreational, and Indian fisheries. The Corps has recognized the need to reduce juvenile fish mortality and has undertaken bypass measures that include mechanized fish bypass systems with barge and truck transportation. Spill as an additional bypass route over the spillways has been used to divert fish from entering turbine units, but it is a significant adverse economic factor due to lost power revenues. Congress passed, and the President signed, the FY 89 Energy and Water Development Appropriation Act (PL 100-371), which mandated the expenditure of funds for the

design, testing, and construction of new or improved fish bypass facilities for the Columbia River fish mitigation projects. Completion of bypass and transportation facilities will significantly increase the survival of migrating downstream juvenile fish. The mitigation study will determine the overall scope of the fish mitigation facilities for these Columbia and lower Snake River dams. The mitigation study project was added to the President's FY 91 budget.

The plan of improvement includes the following facilities: (1) Ice Harbor Lock and Dam (Ice Harbor): screens, new gantry crane, collection bypass facility, intake gate raise, spillway deflectors, surface bypass, and fish ladder temperature control; (2) Lower Monumental Lock and Dam (Lower Monumental): hold/load and collection bypass facility, screens, passive integrated transponder tag (PIT-Tag) facility, barge load facility modifications, barges, gate raise modifications, gantry crane, fish ladder temperature control, and surface bypass; (3) Little Goose Lock and Dam (Little Goose): screens, gantry crane modification, collection bypass facility, outfall pipe, fish ladder temperature control, fallout fences, gate raise, deck screen modifications, PIT-Tag facility, and surface bypass; (4) Lower Granite Lock and Dam (Lower Granite) : juvenile fish facility, gantry crane, gate raise, outfall pipe, fish barges, screens, additional moorage facility, fish slot closures, juvenile fish facility improvements, barge exit modifications, deck screen modifications, fish ladder temperature control, surface bypass, PIT-Tag facility, and fallout fences; and (5) McNary Lock and Dam (McNary): gantry crane, screens, hold/load facility, gate raise modifications, tilted weirs fish ladder, maintenance facility, fish ladder exits, hold/load facility, adult/juvenile collection channel stoplogs, juvenile fish facility, surface bypass, and gantry crane modifications.

In response to the 1995 *Endangered Species Act, Section 7 Consultation Biological Opinion* issued by the National Marine Fisheries Service (NMFS), the District conducted a feasibility study (Lower Snake River Juvenile Salmon Migration Feasibility Study) to evaluate salmon migration problems on the lower Snake River. The objective of the study was to improve salmon migration conditions through the four Corps-operated dams and reservoirs on the lower Snake River. The study focused on how these dams could be changed to improve survival and recovery prospects for Snake River salmon stocks under the Endangered Species Act. The total completed cost of the study was \$31.1 million.

The District is currently managing a surface bypass and collection technology development effort that focuses on improving juvenile fish passage for endangered and threatened salmon migration past all Corps hydroelectric projects on the Columbia and lower Snake Rivers. It is an aggressive, nontraditional approach to prototype development that involves fast-track design, construction, testing, and evaluation.

The fully funded Federal project cost is estimated at \$682,700,000 for District projects.

Local cooperation. None required.

Operations during FY. The following improvements and studies were accomplished during FY 06:

- Completed construction of the north shore fish ladder antennas at McNary. Improvement will better account for the adult fish migrating through the ladder.
- Completed construction of the Lower Granite transition pool weir modifications. The prototype system will be evaluated to determine if modifications benefit migrating adults. If results are positive, similar modifications to adult ladders could be applied at other Snake River projects.
- Completed fifth-year prototype testing of a stand-alone removable spillway weir (RSW) at Lower Granite in conjunction with a modified behavioral guidance structure (BGS) for spring operations. For summer operations, RSW performance with respect to the passage of fall chinook was collected for the second consecutive year.
- Second year post-construction biological testing was conducted at Ice Harbor to evaluate the efficiency of the RSW during both the spring and summer.
- Completed the design and awarded a construction contract for the Lower Monumental RSW. The RSW is scheduled to be installed for spring operation by mid April 2007.
- Completed design of the McNary Temporary Spillway Weir (TSW). The

TSW is a prototype surface passage weir that can be constructed quickly and economically. The TSW will be deployed in the spring of 2007 and provide the opportunity to evaluate the influence of a surface passage route on the spillway and aid designers in developing permanent surface passage alternatives.

- Continued preliminary engineering design for surface passage alternative at Little Goose and McNary.
- Several mitigation analysis studies continued throughout FY 06, including the Turbine Survival Study and Fish Ladder Transition Pool Evaluation. Many multi-year research studies were also conducted, including Delayed Mortality Evaluation, Temperature Impacts on Adults, and Estuary PIT Tag Recovery.
- Conducted Juvenile Salmon Survival and Passage Efficiency Studies at Lower Monumental, Little Goose, and McNary. These studies estimate the survival and passage efficiency of juvenile fish through the various passage routes. The data is used to inform decisions on configuration improvements.
- Completed modifications to the extended submerged bar screens at Lower Granite.
- Continued the McNary forebay temperature evaluation to alleviate or minimize water temperature gradients that develop in the forebay during the summer months.
- Continued preliminary design for improvements to the Lower Granite juvenile bypass/holding and loading facilities. The existing facilities were the first to be constructed on the Snake River and have many features that do not meet current criteria for the passage of juvenile salmon.
- Completed design of the Lower Monumental juvenile PIT tag monitoring facilities on the main transportation flume. The new system will be installed prior to the 2007 fish passage season and will

improve detection of migrating PIT-tagged juveniles.

- Initiated the system wide spillway evaluation to determine the impacts of increased spill frequency and duration resulting from voluntary spill operations that aid juvenile fish passage on Lower Snake and Columbia River dams.

The FY costs were \$33,419,273. Total project costs are \$554,388,812. (See table 30-A, Cost and Financial Statement.)

10. DWORSHAK DAM AND RESERVOIR, ID

Location. The dam is on the North Fork of the Clearwater River, 1.9 miles above its junction with the Clearwater River, near Orofino, ID, and about 35 miles east of Lewiston, ID. (See table 30-B for Authorizing Legislation of projects in the District.)

Existing project. The project includes a dam, powerplant, public parks, and appurtenant facilities. The project provides for flood control, navigation, hydroelectric power generation, recreation, and area redevelopment. The reservoir has a normal operating range between the elevations of 1,600 and 1,445 mean sea level (msl). The reservoir has a gross storage capacity of 3,468,000 acre-feet (2 million acre-feet of which are effective for both local and regional flood control and for at-site and downstream power generation). In addition, the reservoir, which extends 59 miles into rugged and relatively inaccessible timberland, provided cost-effective transportation for moving marketable logs. The reservoir provides habitat for elk, deer, and other wildlife. The dam structure is about 3,287 feet long and about 717 feet above the streambed. Fish passage is not feasible due to the height of the dam. A hatchery has been built below the dam to assure continuance of anadromous fish runs. The powerhouse has two 90,000-kilowatt (kW) and one 220,000-kW generating units in operation for a capacity of 400,000 kW. Provisions had been made for three additional 220,000-kW generating units for an ultimate installed capacity of 1,060,000 kW.

A reconnaissance report justifying the feasibility and cost benefits for the addition of a fourth 200,000-kW generating unit was completed in FY 78. However, environmental and economic studies on additional generating units have been curtailed due to public opposition. Unit 4 is

undeveloped. Units 5 and 6 were de-authorized in FY 90, and Unit 4 was de-authorized in FY 95. Principal project data are set forth in table 30-C.

Construction of the project began in July 1966. It was placed in operation in 1972 and completed in 1986. Since the project became operational in June 1972, it has prevented about \$2,836,000 (adjusted to October 2006 price index) in potential flood damages. Power generation through September 2006 was 56.83 billion kW hours.

At Dworshak Reservoir, recreation facilities consist of 12 day-use/picnic areas, six camp areas, six boats launches, and two swim areas. Total visitation to Dworshak Reservoir for the FY was 134,573.

Local cooperation. None required.

Operations during FY. Operation and Maintenance: Management of wildlife habitat browse continued on project lands to provide winter browse for elk and deer. During the FY, 2.0 billion kW hours of electrical power was generated by the three generating units. The FY costs were \$8,751,310. (See table 30-A, Cost and Financial Statement.)

11. ICE HARBOR LOCK AND DAM, LAKE SACAJAWEA, WA

Location. This dam is located on the Snake River, 9.7 miles above the river mouth at the head of Lake Wallula (McNary Reservoir), and 12 miles east of Pasco, WA. (See table 30-B for Authorizing Legislation of projects in the District.)

Existing project. The project includes a dam, powerplant, navigation lock, two fish ladders, recreation areas, and appurtenant facilities. The project provides navigation, hydroelectric power generation, recreation, and incidental irrigation. The reservoir has a normal operating range between elevations 440 and 435 msl. Lake Sacajawea extends upstream about 31.9 miles and provides slack water to Lower Monumental. The dam structure is approximately 2,822 feet long and approximately 130 feet above the streambed. The fish passage facilities include two fish ladders. The powerhouse has three 90,000-kW units and three 111,000-kW generating units in operation for a capacity of 603,000 kW.

The spillway dam is 590 feet long, and the overflow crest at elevation 391 msl is surmounted by 10 tainter gates, 50 feet wide and 52.9 feet high, that provide the capacity to pass a design flood of 850,000 cubic feet per second (cfs). The deck is at elevation 453 msl and provides a service road and track for a gantry crane. The navigation lock is a single-lift type with clear plan dimensions of 86 by 675 feet and a 16-foot minimum depth over the sills. A navigation channel 250 feet wide, 14 feet deep, and 41.6 miles long is provided from the mouth of the Snake River to the dam and from the dam to Lower Monumental. Principal data are set forth in table 30-C.

Construction of the original project began in December 1955. It was placed in operation in 1961 and completed in 1971. Construction of the additional generating units was started in 1971 and completed in 1981. Power generation through September 2006 was 92.82 billion kW hours.

Recreation areas on Lake Sacajawea include 11 picnic/day-use sites, four camping areas, seven areas with boat launching, and four swimming areas. Total visitation on Lake Sacajawea for the FY was 331,467.

Local cooperation. None required.

Operations during FY. Operation and Maintenance: During the FY, 2.2 billion kW hours of electrical power was generated by the six generating units. Traffic through the navigation lock consisted of grains, petroleum products, fertilizer, wood products, and miscellaneous cargo and amounted to 3,094,700 tons during calendar year 2006. The FY costs were \$7,700,743. (See table 30-A, Cost and Financial Statement.)

12. LITTLE GOOSE LOCK AND DAM, LAKE BRYAN, WA

Location. The dam is 70.3 miles above the mouth of the Snake River and at the head of Lake Herbert G. West (Lower Monumental Reservoir), about 40 miles northerly of Walla Walla, WA, and 50 miles westerly of Lewiston, ID. (See table 30-B for Authorizing Legislation of projects in the District.)

Existing project. The project includes a dam, powerplant, navigation lock, fish ladder, and appurtenant facilities. The project provides for

navigation, hydroelectric power generation, recreation, and incidental irrigation. The reservoir has a normal operating range between elevations 638 and 633 msl. Lake Bryan extends upstream about 37.2 miles and provides slack water to Lower Granite. The dam structure is 2,655 feet long and approximately 165 feet above the streambed. Fish passage facilities include one ladder with entrances on both shores and a fish channel through the spillway, which connects to the powerhouse fish collection system and south shore ladder. The powerhouse has six 135,000-kW generating units in operation for a capacity of 810,000 kW. The spillway dam is 512 feet long, and the overflow crest at elevation 581 msl is surmounted by eight tainter gates, 50 feet wide and 60 feet high, that provide the capacity to pass a design flood of 850,000 cfs. The navigation lock is a single-lift type with clear plan dimensions of 86 by 668 feet and a 15-foot minimum depth over the sills. A navigation channel 250 feet wide, 14 feet deep, and 37.2 miles long is provided from the dam to Lower Granite. Relocations along the lake included 32 miles of Camas Prairie Railroad, 6.8 miles of county roads, 2.2 miles of state highways, and the Central Ferry Bridge. Principal project data are set forth in table 30-C.

Construction of the original project began in 1963. It was placed in operation in 1970 and completed in 1976. Construction of additional generating units started in 1974 and was completed in 1984. Power generation through September 2006 was 89.02 billion kW hours.

Lake Bryan provides seven day-use sites, five campgrounds, five boat-launching areas, and two swimming areas. Total FY visitation was 186,340 for Lake Bryan.

Local cooperation. None required.

Operations during FY. Operation and Maintenance: During the FY, 2.6 billion kW hours of electrical power was generated by the six generating units. Traffic through the navigation lock consisted of grains, petroleum products, fertilizer, wood products, and miscellaneous cargo and amounted to 2,475,200 tons during calendar year 2006. The FY costs were \$5,839,669. (See table 30-A, Cost and Financial Statement.)

13. LOWER GRANITE LOCK AND DAM, LOWER GRANITE LAKE, WA

Location. This dam is at river mile 107.5 on the Snake River at the head of Lake Bryan (Little Goose Reservoir) and about 33 miles downstream from Lewiston, ID. (See table 30-B for Authorizing Legislation of projects in the District.)

Existing project. The project includes a dam, powerplant, navigation lock, fish ladder, appurtenant facilities, and includes approximately 8 miles of slack water levees along the Snake and Clearwater Rivers at Lewiston, ID. The project provides for slack water navigation, hydroelectric power generation, recreation, and incidental irrigation. The reservoir has a normal operating range between elevations 738 and 733 msl in Lewiston, ID, and Clarkston, WA. Lower Granite Lake extends upstream approximately 38 miles and provides slack water to the confluence of the Snake and Clearwater Rivers. The dam structure is approximately 3,200 feet long and approximately 146 feet above the streambed. Fish passage facilities include one ladder with entrances on both shores with a fish channel through the spillway that connects to the powerhouse fish collection system and south shore ladder. The powerhouse has six 135,000-kW generating units in operation for a capacity of 810,000 kW. The spillway dam is 512 feet long, and the overflow crest at elevation 681 msl is surmounted by eight tainter gates, 50 feet wide and 60 feet high, which provide the capacity to pass a design flood of 850,000 cfs. The navigation lock is single-lift type with clear plan dimensions of 86 by 674 feet and 15-foot minimum depth over the sills. A navigation channel 250 feet wide, 14 feet deep, and 39.3 miles long is provided from the dam to the confluence of the Snake and Clearwater Rivers. Principal data are set forth in table 30-C.

Construction of the original project started in July 1965. It was placed in operation in 1975 and completed in 1984. Construction of additional generating units was started in 1974 and completed in 1979. Power generation through September 2006 was 80.04 billion kW hours. Approximately \$25,418,000 (adjusted to October 2006 price index) in potential flood damages has been prevented since the levees became functional.

Lower Granite Lake offers visitors 16 day-use/picnic sites, 6 sites with camping, 12 boat launch ramps, and 4 swimming areas. Total recreation visitation to Lower Granite Lake for the FY was 1,635,326.

Local cooperation. None required.

Operations during FY. Operation and Maintenance: During the FY, 2.5 billion kW hours of electrical power was generated by the six generating units. Traffic through the navigation lock consisted of grains, petroleum products, fertilizer, wood products, and miscellaneous cargo and amounted to 1,445,600 tons during calendar year 2006. The FY costs were \$13,250,126. (See table 30-A, Cost and Financial Statement.)

Juvenile Fish Transportation Program. As the first collector dam on the Snake River, Lower Granite is a primary component of the Juvenile Fish Transportation Program. Transport began in the late 1960s as a research program on how to bypass juvenile salmon and steelhead around dams and reservoirs of the Corps' Snake and Columbia River dams. Transport became an operational program in 1981 with collection and transport from Lower Granite, Little Goose, and McNary. Transport was expanded in 1993 to include Lower Monumental. Development and improvement of collection and bypass systems continued with a new collection system completed at McNary in 1994; a new bypass system completed at Ice Harbor in 1996; and extended-length submersible bar screens installed at Lower Granite, Little Goose, and McNary in 1996 and 1997. In 2003, a new RSW was tested at Lower Granite. A second RSW was tested at Ice Harbor in 2005 (a non-collector dam in 2006).

The 2006 juvenile fish transport season was marked by slightly above average river flows, higher than river conditions noted in 2004 and 2005. The three Snake River transport projects operated under regionally coordinated, court-approved operations including daily spill from April 1 through August 31, with transportation of juvenile fish collected. Except for the first 3 days in April, spill at McNary also took place from April 1 through August 31. During the court ordered spill period, emphasis was placed on a mix of fish transportation in-river migration.

Juvenile fish collection at Lower Granite was 5,797,384 compared with 13,030,967 in 2005 and 11,787,539 in 2004. A total of 817,070 fish were bypassed back to the river in 2006 and 4,969,749 were transported. At Little Goose, a total of 7,253,631 juvenile salmon and steelhead were collected in 2006, compared to 6,730,667 collected in 2005. A total of 964,141 fish were bypassed back to the river in 2006, compared to 1,086,103 fish in 2005. A total of 6,278,189 juvenile fish were transported from Little Goose in 2006. At Lower

Monumental, 2,314,392 juvenile salmon and steelhead were collected, compared to 1,491,718 in 2005. A total of 74,659 fish were bypassed from Lower Monumental in 2006, compared to 312,602 in 2005. A total of 2,237,373 juvenile fish were transported from Lower Monumental in 2006.

At McNary, normal operations are to bypass fish in the spring until approximately mid-June when collection and transport of summer migrants begin. This was true in 2006 as no fish were transported until July 7. In 2005, some marked fish were transported during the spring for research purposes. A total of 3,463,338 juvenile salmon and steelhead were collected in 2006, compared to 5,187,123 in 2005. Approximately 2,448,514 of the fish collected were bypassed back to the river to meet fishery agency requirements. A total of 1,005,373 juvenile fish were transported from McNary, notably lower than the 2,927,613 transported in 2005.

A grand total of 18,828,745 juvenile salmon and steelhead were collected at all projects in 2006, compared to 26,440,475 in 2005. A total of 14,490,684 fish were transported in 2006, 77.0 percent of those collected. Of the fish transported, 14,466,385 were transported by barge (99.8 percent) and 24,299 were trucked (0.2 percent).

14. LOWER MONUMENTAL LOCK AND DAM, LAKE HERBERT G. WEST, WA

Location. This dam is on the Snake River at the head of Lake Sacajawea (Ice Harbor Reservoir), about 45 miles northeast of Pasco, WA, and 41.6 miles above the river mouth. (See table 30-B for Authorizing Legislation of projects in the District.)

Existing project. The project includes a dam, powerplant, navigation lock, two fish ladders, and appurtenant facilities. The project provides for navigation, hydroelectric power generation, recreation, and incidental irrigation. The reservoir has a normal operating range between elevations 540 and 537 msl. Lake Herbert G. West extends upstream approximately 28.7 miles and provides slack water to Little Goose. The dam structure is approximately 3,791 feet long and approximately 135 feet above the streambed. The fish passage facilities include two fish ladders, one at each end of the dam. The powerhouse has six 135,000-kW generating units in operation for a capacity of 810,000 kW. The spillway dam is 572 feet long, and the overflow crest

at elevation 483 msl is surmounted by eight tainter gates, 50 feet wide and 60 feet high, that provide capacity to pass a design flood of 850,000 cfs. The deck is at elevation 553 msl and provides a service road and track for a gantry crane. The navigation lock is a single-lift type with clear plan dimensions of 86 by 666 feet and a 15-foot minimum depth of the sills. A navigation channel 250 feet wide, 14 feet deep, and 28.1 miles long is provided from the dam to Little Goose. Relocations along the lake included railroads and highways. Principal data are set forth in table 30-C.

Construction of the original project started in June 1961. It was placed in operation in 1969 and completed in 1976. Construction of the additional generating units started in 1975 and was completed in 1981. Power generation through September 2006 was 103.95 billion kW hours.

Lake West offers seven day-use areas, five areas offering camping, five boat launch areas, and one designated swimming beach. Total visitation on Lake West for the FY was 144,184.

Local cooperation. None required.

Operations during FY. Operation and Maintenance: During the FY, 2.7 billion kW hours of electrical power was generated by the six generating units. Traffic through the navigation lock consisted of grains, petroleum products, fertilizer, wood products, and miscellaneous cargo and amounted to 2,677,500 tons during calendar year 2006. The FY costs were \$7,869,170. (See table 30-A, Cost and Financial Statement.)

15. LOWER SNAKE RIVER FISH AND WILDLIFE COMPENSATION PLAN, WA, OR, AND ID

Location. This project is at various locations within the Columbia and Snake River drainages in the states of Idaho, Oregon, and Washington. (See table 30-B for Authorizing Legislation of projects in the District.)

Existing project. The project consists of a series of fish hatcheries, wildlife development areas, and purchase of off-site project lands for fishing and hunting access and further habitat development. The project will compensate for loss of wildlife habitat and anadromous and resident fisheries due to impacts from the construction of four multipurpose dams and

reservoirs on the lower Snake River (Ice Harbor, Lower Monumental, Little Goose, and Lower Granite).

The real estate design memorandum and feature design memorandums on all hatcheries and satellites, the off-project wildlife lands, and the site selection report have all been approved. A final Environmental Impact Statement was filed with the Council on Environmental Quality on November 2, 1977. The Dworshak National Fish Hatchery Expansion, Irrigon, Hagerman, Lyons Ferry, Lookingglass, McCall, Sawtooth, Magic Valley, and Clearwater hatcheries (including their respective satellite facilities) are all in operation. Transfer actions were completed in FY 04 for Big Canyon and Pittsburg Landing. Captain John Rapids is scheduled to be completed by the end of FY 07. Fencing is complete at all wildlife development areas. Off-project land acquisition is 100-percent complete. Habitat development continues at many of these sites. A plan for woody riparian habitat development has been initiated to compensate for habitat losses resulting from the inundation of habitat. This will result in the creation of new riparian habitat areas. The compensation project is contingent on appropriations and is currently scheduled for completion in FY 18.

Estimated Federal cost for the project is \$261,000,000. The FY costs were 899,247. Total project costs are \$236,777,771. (See table 30-a, Cost and Financial Statement)

Local Cooperation. None required.

16. McNARY LOCK AND DAM, LAKE WALLULA, OR AND WA

Location. This dam is on the Columbia River, 292 miles above the mouth, near Umatilla, OR, and 3 miles above the mouth of the Umatilla River. (See table 30-B for Authorizing Legislation of projects in the District.)

Existing project. The project includes a dam, powerplant, navigation lock, two fish ladders, appurtenant facilities, and a system of levees and pumping plants. The project provides for slack water navigation, hydroelectric power generation, recreation, and incidental irrigation. The reservoir has a normal operating range between elevations 340 and 335 msl. Lake Wallula extends upstream approximately 64 miles and provides slack water to

Ice Harbor. The dam structure is 7,365 feet long and approximately 183 feet above the streambed. Fish passage facilities include two fish ladders. The powerhouse has fourteen 70,000-kW generating units in operation for a capacity of 980,000 kW. The spillway dam is 1,310 feet long, and the overflow crest is at elevation 291 msl and is surmounted by 22 vertical lift gates, 50 feet wide and 51 feet high, which provide the capacity to pass a design flood of 2.2 million cfs. The navigation lock is a single-lift type with clear plan dimensions of 86 by 683 feet and a 15-foot minimum depth over the sills. A navigation channel (250 feet wide, 14 feet deep, and 32 miles long) is provided from the dam to the mouth of the Snake River. Relocations along the lake included railroad bridges over the Columbia and Snake Rivers in order to eliminate hazards to navigation. Principal project data are set forth in table 30-C.

Construction began in May 1947. It was placed in operation in 1953 and was completed in 1982. Power generation through September 2006 was 328.7 billion kW hours.

Local cooperation. None required.

Operations during FY. Operation and Maintenance: During the FY, 5.7 billion kW hours of electrical power was generated by the 14 generating units. Traffic through the navigation lock consisted of grains, petroleum products, fertilizer, wood products, and miscellaneous cargo and amounted to 6,341,200 tons during calendar year 2006. The FY costs were \$14,612,871. (See table 30-A, Cost and Financial Statement.)

Recreation areas on Lake Wallula include 19 sites offering day use or picnicking, five campgrounds, 14 boat launching ramps, and nine swimming areas. The Pacific Salmon Visitor Information Center at McNary, staffed by park rangers, provides a regional overview of Corps efforts in salmon recovery issues. Total visitation on Lake Wallula for the FY was 3,925,678.

17. SNAKE RIVER DOWNSTREAM FROM JOHNSON BAR LANDING, OR, WA, AND ID

Location. This project is on the Snake River, downstream from Johnson Bar Landing, river mile 230. The Snake River, which is the largest tributary of the Columbia River, rises in Yellowstone National

Park in western Wyoming, flows generally in a westerly direction for approximately 1,000 miles, and empties into the Columbia River, near Pasco, WA, 324 miles from the Pacific Ocean. (See table 30-B for Authorizing Legislation of projects in the District.)

Existing project. The River and Harbor Act of 1945 authorized construction of dams, as necessary, for power, incidental irrigation, and open channel improvements for purposes of providing slack water navigation and irrigation between the mouth of the Snake River and Lewiston, ID. That authorization modified previous authorizations only for the portion of improvement below Lewiston, ID. Acts of June 13, 1902, and August 30, 1935, as they pertain to open river improvement from Lewiston, ID, to Johnson Bar Landing, remain part of the existing project.

Improvements included in existing projects are Ice Harbor, Lake Sacajawea; Little Goose, Lake Bryan; Lower Granite; Lower Monumental, Lake Herbert G. West; and open-river improvement, Lewiston to Johnson Bar Landing. Each of the four locks and dams is described in an individual report, and cost and financial data for the entire project are shown on tables 30-A and D.

Ice Harbor, Lower Monumental, Little Goose, and Lower Granite are in full operation.

Local cooperation. None required.

Terminal facilities. On the Snake River from the mouth to Johnson Bar Landing, there are 18 privately owned barge terminals in use for shipping grain, petroleum products, fertilizers, wood products, cement, and other general cargo. There are also 5 marinas and 28 small-boat launching ramps, all open to the public. The facilities serve slack water navigation to river mile 140, the site of Lewiston, ID. That slack water reaches the Lewiston, ID, and Clarkston, WA, area since the lake behind Lower Granite was filled in February 1975.

Operations during FY. See individual reports for Ice Harbor, Lower Monumental, Little Goose, and Lower Granite. On the Snake River from Lewiston, ID, to Johnson Bar Landing, reconnaissance and condition surveys were conducted and survey markers were maintained.

18. RURAL IDAHO, ID, ENVIRONMENTAL INFRASTRUCTURE AND RESOURCE PROTECTION AND DEVELOPMENT PROGRAM

Location. Projects are at various locations within the state of Idaho.

Existing project. The primary objective of this program is to provide design and construction assistance to non-Federal interests for carrying out water related environmental infrastructure and resource protection and development projects. Projects may include wastewater treatment and related facilities, water supply and related facilities, environmental restoration, and surface water resource protection and development. Projects are authorized under Section 595 of the Water Resources Development Act of 1999, PL 106-53, as amended.

Local cooperation. Local sponsors are responsible for 25 percent of costs associated with the projects.

Operations during FY. The following improvements were accomplished in FY 06:

- Wastewater treatment plant design for the City of Emmett
- Developed and executed participation and cooperation agreement (PCA) Amendment #2 for the continuation of sewer line improvements for the City of Burley
- Completion of wastewater treatment plant redesign for the City of Rupert
- Developed and executed a design and construction PCA and the initiation of design for the Shelley Regional Wastewater Treatment and Collection System
- Developed and executed in the design and construction PCA and the initiation of design for the City of Donnelly sewer collection System infiltration and inflow repairs and surface water protection
- Developed and executed the design PCA for City of Driggs facility plan design and the completion of that design.

The FY 06 costs were \$875,291. (See table 30-A, Cost and Financial Statement.)

19. ENVIRONMENTAL ACTIVITIES

Project modification for the improvement of the environment (Section 1135(b), PL 99-662, as amended): The FY costs were \$134,506 for continuation of four environmental restoration projects and coordination funds including: (1) Coordination Account (\$3,600); (2) Walla Walla River, OR (\$66,798); (3) City of Richland Ecosystem Restoration (\$6,922); and (4) Bennington Lake Diversion Dam, WA (\$57,185). There were no new section 1135 projects.

Project modification for Aquatic Ecosystem Restoration (Section 206, PL 104-303, as amended): The FY costs were \$1,008,724 for continuation of six aquatic ecosystem restoration projects and coordination account, including: (1) Coordination Account (\$3,400); (2) Ladd Marsh, OR (\$378,365); (3) Salmon River, ID (\$11,793); (4) Indian Creek Ecosystem Restoration, ID (\$401,012); (5) Camp Creek, OR (\$73,314); and (6) Paradise Creek, ID (\$140,841).

General Investigations

20. COLLECTION AND STUDY OF BASIC DATA

During the FY, flood hazard data for a number of locations in the District were collected and analyzed. Flood information was provided to several Federal agencies; the states of Idaho, Oregon, and Washington; various cities and counties in those states, and some private organizations.

Total cost of collection and study of basic data during the FY was \$93,309, which included: Flood Plain Management Services (\$9,359); Technical Services (\$42,825); Quick Responses (\$5,126); and Special Studies (\$36,000).

21. PRECONSTRUCTION, ENGINEERING, AND DESIGN

None.

22. SURVEYS

Little Wood River. Lack of sponsor.

The total FY 06 costs for surveys were \$567,318, including Boise River (\$11,846); special studies [Walla Walla River Watershed (\$373,945)]; Miscellaneous Activities [Special Investigations, FERC Licensing Activities, North American Waterfowl Management Plan, and Interagency Water Resource Development (\$97,934)]; Coordination with other Federal Agencies (\$8,234); and Planning Assistance to States (\$75,359).

Other Activities

23. CATASTROPHIC DISASTER PREPAREDNESS

PL 93-228

Continuity of Operations (510)	\$	0
National Preparedness Planning (520)		1,016
Emergency Operations Center Support (530)		6,353
Catastrophic Disaster Training and Exercise (560)		0
Total Catastrophic Disaster Preparedness Program	\$	7,369

24. FLOOD CONTROL AND COASTAL EMERGENCIES (FCCE)

Flood Control work under Authorization Emergency Flood Control Activities, Flood Fighting. PL 84-99

Disaster Preparedness (100)	\$	386,270
Emergency Operations (200)		224,265
Rehabilitation and Inspection Program (300)		91,795
Drought Assistance (400)		0
Advance Measures (500)		0
Hazard Mitigation (600)		0
Total FCCE	\$	702,329

25. GENERAL REGULATORY

Permit Evaluation (100)	\$	1,087,263
Enforcement (200)		146,426
Studies (300)		0
Environmental Impact Statement (500)		0
Administrative Appeals (600)		0
Compliance – Authorized Activities (800)		<u>58,152</u>
Total Regulatory	\$	1,291,841

WALLA WALLA, WA, DISTRICT

TABLE 30-A COST AND FINANCIAL STATEMENT

See Section In Text	Project	Funding	FY 03 (\$)	FY 04 (\$)	FY 05 (\$)	FY 06 (\$)	Total Cost to 30-Sep-06 (\$)
3.	Jackson Hole, WY	New Work					
		Approp.	33,000	76,000	637,000	-	3,271,070
		Cost	33,000	75,000	638,000	-	3,271,070
		Maint.					
		Approp.	700,000	420,933	255,100	875,000	13,217,160
		Cost	655,267	335,979	330,775	239,206	12,527,337
	(Contributed funds)	Maint.					
		Contrib.	-	-	-	-	378,798
		Cost	-	-	-	-	378,798
4.	Lucky Peak Lake, ID	New Work					
		Approp.	-	-	-	-	19,652,081
		Cost	-	-	-	-	19,652,081
		Maint.					
		Approp.	1,540,826	1,596,328	2,700,800	1,543,720	35,344,200
		Cost	1,571,213	1,572,487	2,024,084	2,105,109	35,105,087
5.	Mill Creek, WA	New Work					
		Approp.	-	-	-	-	2,258,495
		Cost	-	-	-	-	2,258,495
		Maint.					
		Approp.	1,093,000	798,352	1,257,000	917,000	25,441,810
		Cost	1,078,734	794,416	836,523	1,263,181	25,349,275
		Rehab					
		Approp.	-	-	-	-	17,714,102
		Cost	-	-	-	-	17,714,102
7.	Tribal Partnership Program	New Work					
		Approp.	-	-	133,000	-	133,000
		Cost	-	-	27,599	38,402	66,001
		Maint.					
		Approp.	-	-	-	-	-
		Cost	-	-	-	-	-
9.	Columbia River Fish Mitigation Program,	New Work					
		Approp.	21,094,457	25,490,000	39,100,000	45,070,000	569,074,000

REPORT OF THE SECRETARY OF THE ARMY ON CIVIL WORKS ACTIVITIES FOR FY 06

TABLE 30-A COST AND FINANCIAL STATEMENT

See Section In Text	Project	Funding	FY 03 (\$)	FY 04 (\$)	FY 05 (\$)	FY 06 (\$)	Total Cost to 30-Sep-06 (\$)
10.	OR, WA, and ID Dworshak Dam and Reservoir, ID	Cost	21,339,347	25,488,956	36,080,539	33,419,273	554,388,812
		New Work					
		Approp.	-	-	-	-	327,482,196
		Cost	-	-	-	-	327,482,196
		Maint.					
		Approp.	10,553,006	8,225,299	9,144,089	10,618,201	219,586,948
11.	Ice Harbor Lock and Dam, WA	Cost	11,080,909	10,239,516	8,421,941	8,751,310	216,914,018
		New Work					
		Approp.	-	-	-	-	210,249,757
		Cost	-	-	-	-	210,249,757
		Maint.					
		Approp.	11,808,101	8,200,227	9,208,513	9,562,802	220,984,393
12.	Little Goose Lock and Dam, WA	Cost	11,268,235	8,726,044	8,674,176	7,700,743	218,404,534
		New Work					
		Approp.	-	-	-	-	262,632,022
		Cost	-	-	-	-	262,632,022
		Maint.					
		Approp.	8,450,437	5,738,585	6,232,405	6,890,289	154,099,378
13.	Lower Granite Lock and Dam, WA	Cost	8,260,804	5,978,700	5,792,860	5,839,669	152,422,790
		New Work					
		Approp.	-	-	-	-	400,080,315
		Cost	-	-	-	-	400,080,315
		Maint.					
		Approp.	12,888,666	8,396,622	9,601,213	14,012,075	225,725,837
14.	Lower Monumental Lock and Dam, WA	Cost	12,148,272	8,554,949	9,385,610	13,250,126	224,018,348
		New Work					
		Approp.	-	-	-	-	238,612,732
		Cost	-	-	-	-	238,612,732
		Maint.					
		Approp.	11,432,459	7,034,642	9,177,702	8,546,230	171,099,197
15.	Lower Snake River Fish and Wildlife	Cost	11,557,794	7,402,506	8,849,851	7,869,170	169,762,433
		New Work					
		Approp.	1,250,543	1,539,000	1,337,000	668,000	237,026,000

WALLA WALLA, WA, DISTRICT

TABLE 30-A COST AND FINANCIAL STATEMENT

See Section In Text	Project	Funding	FY 03 (\$)	FY 04 (\$)	FY 05 (\$)	FY 06 (\$)	Total Cost to 30-Sep-06 (\$)
	Compensation Plan WA, OR, and ID (Contributed funds)	Cost New Work Contrib. Cost	1,267,395 - -	1,511,000 - -	885,524 - -	899,247 - -	236,777,771 223,965 223,965
16.	McNary Lock and Dam, Lake Wallula, OR and WA	New Work Approp. Cost Maint.	- - -	- - -	- - -	- - -	375,214,469 375,214,469
	(Contributed funds)	Approp. Cost Maint.	22,344,583 19,748,971 -	14,446,807 17,342,655 -	16,410,555 15,800,378 -	17,295,783 14,612,871 -	389,539,898 385,842,268 43,707
		Contrib. Cost	- -	- -	- -	- -	43,707 43,707
18.	Rural Idaho, ID, Environmental Infrastructure and Resource Protection and Development Program	New Work Approp. Cost Maint.	- - -	809,900 778,201 -	1,565,000 1,463,746 -	4,157,000 875,291 -	6,531,900 3,117,238 -
		Approp. Cost	- -	- -	- -	- -	- -

WALLA WALLA, WA, DISTRICT

TABLE 30-B AUTHORIZING LEGISLATION

See Section In Text	Date Authorizing Act	Project and Work Authorized	Documents
4.	Jul 24, 1946	LUCKY PEAK LAKE, ID Dam for flood control, irrigation, and recreation.	PL 79-526, Chief of Engineers Report, dated May 13, 1946.
	Oct 22, 1976 Dec 22, 1944 as amended	Second outlet for stream flow maintenance. De-authorized in 1990. Construction, operation, and maintenance of recreation facilities.	PL 94-587 Sec. 4, Flood Control Act of 1944
5.	Jul 28, 1938 as amended Aug 18, 1941	MILL CREEK, WALLA WALLA, WA Off-stream storage project upstream from Walla Walla. Channel improvement through Walla Walla; concrete-lined channel.	H. Doc. 578, 75th Cong., 3rd Session H. Doc. 719, 76th Cong. Sec 377, PL 77-228, Cong. 3rd Session
	Oct 31, 1992	Redesignation of reservoir to the Virgil B. Bennington Lake.	Sec. 118 PL 102-580 102nd Cong.
9.	Jul 19, 1988	COLUMBIA RIVER FISH MITIGATION PROGRAM Design, test, and construct fish bypass facilities at Lower Monumental, Ice Harbor, Little Goose, Lower Granite, and McNary Locks and Dams.	PL 100-371
10.	Jul 3, 1958	DWORSHAK DAM AND RESERVOIR, ID Preparation of detailed plans.	S. Doc. 51, 84th Cong., 1st Session
	Aug 15, 1963 Oct 23, 1962	Redesignation of project as Dworshak Dam and Reservoir. Dworshak Dam added Units 4, 5, and 6, Idaho. Units 5 and 6 were de-authorized in FY 1990. Unit 4 was de-authorized in FY 95.	PL 88-96 PL 87-874
11.	Mar 2, 1945	ICE HARBOR LOCK AND DAM, LAKE SACAJAWEA, WA Unit 1 of 4, Lower Snake River Project. Lock and dam for navigation, power, recreation, and incidental irrigation.	H. Doc. 704, 75th Cong., 3rd Session
	Dec 22, 1944 as amended	Construction, operation, and maintenance of recreation facilities.	Sec. 4, Flood Control Act of 1944
12.	Mar 2, 1945	LITTLE GOOSE LOCK AND DAM, LAKE BRYAN, WA Unit 3 of 4, Lower Snake River Project. Lock and dam for navigation, power, recreation, and incidental irrigation.	H. Doc. 704, 75th Cong., 3rd Session
	Dec 31, 1970	Designation of reservoir as Lake Bryan.	PL 91-638
13.	Mar 2, 1945	LOWER GRANITE LOCK AND DAM, LOWER GRANITE LAKE, WA Unit 4 of 4, Lower Snake River Project. Lock and dam for navigation, power, recreation, and incidental irrigation.	H. Doc. 704, 75th Cong., 3rd Session
14.	Mar 2, 1945	LOWER MONUMENTAL LOCK AND DAM, LAKE HERBERT G. WEST, WA Unit 2 of 4, Lower Snake River Project. Lock and dam for navigation, power, recreation, and incidental irrigation.	H. Doc. 704, 75th Cong., 3rd Session
	May 25, 1978	Designation of reservoir as Lake Herbert G. West.	PL 95-285

REPORT OF THE SECRETARY OF THE ARMY ON CIVIL WORKS ACTIVITIES FOR FY 06

TABLE 30-B (Continued)

AUTHORIZING LEGISLATION

See Section In Text	Date Authorizing Act	Project and Work Authorized	Documents
15.		LOWER SNAKE RIVER FISH AND WILDLIFE COMPENSATION PLAN, WA, OR, AND ID	
	Oct 22, 1976 as amended Nov 17, 1986	Fish hatcheries and replacement of wildlife habitat.	PL 94-587
		Changes to land acquisition authority.	H.R. 6 PL 99-662
16.		McNARY LOCK AND DAM, LAKE WALLULA, OR AND WA	
	Mar 2, 1945	Lock and dam for navigation, power, recreation, and irrigation.	H. Doc. 704, 75th Cong., 3rd Session
	Dec 22, 1944 as amended Nov 17, 1986	Construction, operation, and maintenance of recreation facilities.	Sec. 4, Flood Control Act of 1944
		Construction, operation, and maintenance of a second powerhouse. McNary Lock and Dam Second Powerhouse automatically de- authorized on Nov 16, 1991.	H.R. 6, PL 99-662 Sec. 1001, PL 99-362
17.		SNAKE RIVER TO JOHNSON BAR, OR, WA, AND ID	
	Jun 13, 1902	Open-river navigation Riparian to Pittsburg Landing.	H. Doc. 127, 56th Cong, 2nd Session
	Jun 25, 1910	Mouth to Riparian.	H. Doc. 411, 55th Cong, 2nd Session
	Aug 30, 1935	Pittsburg Landing to Johnson Bar.	Rivers and Harbors Committee, Doc. 25, 72nd Cong, 1st Session
	Mar 2, 1945	Supersedes previous legislation, mouth to Lewiston, ID, only. See Ice Harbor, Lower Monumental, Little Goose, and Lower Granite Locks and Dams.	H. Doc. 704, 75th Cong., 2nd Session

**TABLE 30-C PRINCIPAL DATA CONCERNING NAVIGATION LOCK,
SPILLWAY DAM, POWERPLANT, AND IMPOUNDMENT**

Project		
Dworshak Dam and Reservoir, ID (see Section 10 of text)	SPILLWAY DAM	
	Type of Construction	Concrete Gravity
	Completed	September 1974
	Maximum Capacity	150,500 cfs ¹
	Crest Elevation	1,545 ft ²
	Control Gates:	
	Type	Tainter
	Size, Width by Height	50 by 56.4 ft
	Number	2
	POWERPLANT	
	Length	428 ft
	Generating Units:	
	Number Installed	3
	Rating, Each	2 @ 90,000 kW ³ 1 @ 220,000 kW
	Total Capacity Installed	400,000 kW
	Space for Additional	3
	Rating, Each	3 @ 220,000 kW
	Total Potential Capacity	1,060,000 kW
	Maximum Structural Height	717 ft
	First Power-On-Line	March 1973
	IMPOUNDMENT	
	Elevations:	
	Normal Operating Range	1,600 to 1,445 ft
	Maximum	1,605 ft
	Flood Control Storage	2,000,000 ac-ft ⁴
	Lake Length	53.6 mi ⁵
Lake Water Surface Area at Elevation 1,600	17,090 ac ⁶	
Length of Shoreline	175 mi	
Ice Harbor Lock and Dam, WA (see Section 11 of Text)	NAVIGATION LOCK	
	Clear Width	86 ft
	Clear Length	675 ft
	Lift:	
	Minimum	97 ft
	Average	100 ft
	Maximum	105 ft
	Minimum Water Depth Over Sills	16 ft
	Open to Navigation	May 1962
	SPILLWAY DAM	
	Type of Construction	Concrete Gravity
	Completed	January 1962
	Maximum Capacity	850,000 cfs
	Crest Elevation	391 ft
Control Gates:		
Type	Tainter	
Size, Width by Height	50 by 52.9 ft	
Number	10	

**PRINCIPAL DATA CONCERNING NAVIGATION LOCK,
TABLE 30-C (Continued) SPILLWAY DAM, POWERPLANT, AND IMPOUNDMENT**

Project		
	POWERPLANT	
	Length	671 ft
	Generating Units:	
	Number Installed	6
	Rating, Each	3 @ 90,000 kW 3 @ 111,000 kW
	Total Capacity Installed	603,000 kW
	Maximum Structural Height	226 ft
	First Power-On-Line	December 1961
	IMPOUNDMENT	
	Elevations:	
	Normal Operating Range	440 to 437 ft
	Maximum	446 ft
	Lake Length	31.9 mi
	Lake Water Surface Area at Elevation 440	8,375 ac
	Navigation Channel, Depth by Width	14 by 250 ft
	Length of Shoreline	80 mi
Little Goose Lock and Dam, WA (see Section 12 of text)	NAVIGATION LOCK	
	Clear Width	86 ft
	Clear Length	668 ft
	Lift:	
	Minimum	93 ft
	Average	98 ft
	Maximum	101 ft
	Minimum Water Depth Over Sills	15 ft
	Opened to Navigation	May 1970
	SPILLWAY DAM	
	Type of Construction	Concrete Gravity
	Completed	January 1970
	Maximum Capacity	850,000 cfs
	Crest Elevation	581 ft
	Control Gates:	
	Type	Tainter
	Size, Width by Height	50 by 60 ft
	Number	8
	POWERPLANT	
	Length	656 ft
	Width	243 ft
	Generating Units:	
	Number Installed	6
	Rating, Each	135,000 kW
	Total Capacity Installed	810,000 kW
	Maximum Structural Height	226 ft
	First Power-On-Line	March 1970

WALLA WALLA, WA, DISTRICT

**PRINCIPAL DATA CONCERNING NAVIGATION LOCK,
TABLE 30-C (Continued) SPILLWAY DAM, POWERPLANT, AND IMPOUNDMENT**

Project		
	IMPOUNDMENT	
	Elevations:	
	Normal Operating Range	638 to 633 ft
	Maximum	646.5 ft
	Lake Length	37.2 mi
	Lake Water Surface Area at Elevation 738	10,025 ac
	Navigation Channel, Depth by Width	14 by 250 ft
	Length of Shoreline	92 mi
Lower Granite Lock and Dam, WA (see Section 13 of text)	NAVIGATION LOCK	
	Clear Width	86 ft
	Clear Length	674 ft
	Lift:	
	Minimum	95 ft
	Average	100 ft
	Maximum	105 ft
	Minimum Water Depth Over Sills	15 ft
	Opened to Navigation	May 1975
	SPILLWAY DAM	
	Type of Construction	Concrete Gravity
	Completed	February 1975
	Maximum Capacity	850,000 cfs
	Crest Elevation	681 ft
	Control Gates:	
	Type	Tainter
	Size, Width by Height	50 by 60 ft
	Number	8
	POWERPLANT	
	Length	656 ft
	Width	243 ft
	Generating Units:	
	Number Installed	6
	Rating, Each	135,000 kW
	Total Capacity Installed	810,000 kW
	Maximum Structural Height	228 ft
	First Power-On-Line	April 1975
	IMPOUNDMENT	
	Elevations:	
	Normal Operation Range	738 to 733 ft
	Maximum	746.5 ft
	Lake Length	39.3 mi
	Lake Water Surface Area at Elevation 738	8,900 ac
	Navigation Channel, Depth by Width	14 by 250 ft
	Length of Shoreline	91 mi

**PRINCIPAL DATA CONCERNING NAVIGATION LOCK,
TABLE 30-C (Continued) SPILLWAY DAM, POWERPLANT, AND IMPOUNDMENT**

Project		
Lower Monumental Lock and Dam, WA (see Section 14 of text)	NAVIGATION LOCK	
	Clear Width	86 ft
	Clear Length	666 ft
	Lift:	
	Minimum	97 ft
	Average	98 ft
	Maximum	103 ft
	Minimum Water Depth Over Sills	15 ft
	Opened to Navigation	April 1969
	 SPILLWAY DAM	
	Type of Construction	Concrete Gravity
	Completed	March 1969
	Maximum Capacity	850,000 cfs
	Crest Elevation	483 ft
	Control Gates:	
	Type	Tainter
	Size, Width by Height	50 by 60 ft
	Number	8
	 POWERPLANT	
	Length	656 ft
	Width	243 ft
	Generating Units:	
	Number Installed	6
	Rating, Each	135,000 kW
	Total Capacity Installed	810,000 kW
	Maximum Structural Height	242 ft
	First Power-On-Line	May 1969
 IMPOUNDMENT		
Elevations:		
Normal Operating Range	540 to 537 ft	
Maximum	548 ft	
Lake Length	28.7 mi	
Lake Water Surface Area at Elevation 540	6,590 ac	
Navigation Channel, Depth by Width	14 by 250 ft	
Length of Shoreline	78 mi	
McNary Lock and Dam, OR and WA (see Section 16 of text)	NAVIGATION LOCK	
	Clear Width	86 ft
	Clear Length	683 ft
	Lift:	
	Minimum	67 ft
	Average	75 ft
	Maximum	83 ft
	Minimum Water Depth Over Sills	15 ft
	Open to Navigation	November 1953

**PRINCIPAL DATA CONCERNING NAVIGATION LOCK,
TABLE 30-C (Continued) SPILLWAY DAM, POWERPLANT, AND IMPOUNDMENT**

Project	
SPILLWAY DAM	
Type of Construction	Concrete Gravity
Completed	October 1953
Maximum Capacity	2,200,000 cfs
Crest Elevation	291 ft
Control Gates:	
Type	Vertical Lift
Size, Width by Height	50 by 51 ft
Number	22
POWERPLANT	
Length	1,348 ft
Generating Units:	
Number Installed	14
Rating, Each	70,000 kW
Total Capacity Installed	980,000 kW
Maximum Structural Height	220 ft
First Power-On-Line	November 1953
IMPOUNDMENT	
Elevations:	
Normal Operating Range	340 to 335 ft
Maximum	356.5 ft
Lake Length	64 mi
Lake Water Surface Area at Elevation 340	38,800 ac
Navigation Channel, Depth by Width	14 by 250 ft
Length of Shoreline	242 mi

¹ cubic feet per second

² feet

³ kilowatt

⁴ acre-feet

⁵ miles

⁶ acres

WALLA WALLA, WA, DISTRICT

**SNAKE RIVER DOWNSTREAM FROM
JOHNSON BAR LANDING, OR, WA, AND ID
(SEE SECTION 17 OF TEXT)**

TABLE 30-D

Project	Estimated Cost (Corps of Engineers Funds Only)	New Work to September 30, 2006 Approp.	Cost	Maintenance to September 30, 2006 Approp.	Cost	Percent Completed	Constr. Started
Ice Harbor Lock and Dam							
Initial Project	\$374,617,095	\$172,587,480	\$172,587,480	\$220,984,393	\$218,404,534	104	FY 56
Code 710 Rec Facilities	914,256	914,256	914,256	0	0	100	FY 57
Power Units 4-6	36,748,021	36,748,021	36,748,021	0	0	100	FY 71
Fish Bypass Program	88,085,000	80,349,737	80,349,737	0	0	91	FY 91
Totals	500,364,372	290,599,494	290,599,494	220,984,393	218,404,534	102	
Little Goose Lock and Dam							
Initial Project	342,480,476	201,690,215	201,690,215	154,099,378	152,422,790	109	FY 63
Power Units 4-6	60,941,807	60,941,807	60,941,807	0	0	100	FY 74
Fish Bypass Program	85,508,000	45,671,855	45,671,855	0	0	53	FY 89
Totals	488,930,283	308,303,877	308,303,877	154,099,378	152,422,790	94	
Lower Granite Lock and Dam							
Initial Project	555,186,593	353,803,981	353,803,981	225,725,837	224,018,348	104	FY 65
Code 710 Rec Facilities	63,800	63,800	63,800	0	0	100	FY 84
Power Units 4-6	46,212,534	46,212,534	46,212,534	0	0	100	FY 74
Fish Bypass Program	58,620,000	36,299,338	36,299,338	0	0	62	FY 88
Totals	660,082,927	436,379,653	436,379,653	225,725,837	224,018,348	100	
Lower Monumental Lock and Dam							
Initial Project	339,994,773	186,951,361	186,951,361	171,099,197	169,762,433	105	FY 61
Power Units 4-6	51,661,371	51,661,371	51,661,371	0	0	100	FY 75
Fish Bypass Program	90,134,000	44,529,259	44,529,259	0	0	49	FY 90
Totals	481,790,144	283,141,991	283,141,991	171,099,197	169,762,433	94	

**SNAKE RIVER DOWNSTREAM FROM
JOHNSON BAR LANDING, OR, WA, AND ID
(SEE SECTION 17 OF TEXT)**

TABLE 30-D

Project	Estimated Cost (Corps of Engineers Funds Only)	New Work to September 30, 2006 Approp.	Cost	Maintenance to September 30, 2006 Approp.	Cost	Percent Completed	Constr. Started
Open River Lewiston to Johnson Bar Landing	34,613	34,613	34,613	401,583	401,583		
Open River Pasco to Lewiston	0	0	0	4,350	4,350		
Totals Existing Project	2,131,202,339	1,318,459,628	1,318,459,628	772,314,738	765,014,038	98	
Previous Projects Pasco to Lewiston	400,150	400,150	400,150	186,570	186,570		
Totals Authorized Project	\$2,131,602,489	\$1,318,859,778	\$1,318,859,778	\$772,501,308	\$765,200,608		