



**US Army Corps  
of Engineers®**  
Walla Walla District

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# Report of the Secretary of the Army on Civil Works Activities For Fiscal Year 2011



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



# WALLA WALLA, WA, DISTRICT

The U.S. Army Corps of Engineers (Corps), Walla Walla District (District) consists of all Corps activities in the Columbia River drainage and tributaries thereto between the head of McNary Reservoir (Lake Wallula) (river mile 345.4) and Umatilla Bridge (river mile 290.5) below McNary Lock and Dam (McNary), except the Yakima River Basin above Van Giesen Street Bridge (river mile 8.4) near Richland, WA. The primary tributary drainage area is the Snake River, which 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 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. (See Table 30-E, Inspection of Completed Flood Control Projects.)

The FY costs were \$447,730. Total costs through September 30, 2011, were \$4,728,860.

### 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, there are 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 further upstream. The project resumes 1.5 miles immediately upstream of the bridge and continues to 3.5 miles below the bridge, for a total of 10 miles. In addition, a series of federally and non-federally 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 the 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 Water Resources Development Act (WRDA) of 1986, PL 99-662, authorized the Secretary of the Army to assume responsibility for operation and maintenance of the "Federal Levees" and additions and modifications thereto. It states, "the project for Jackson Hole ... is modified to provide that the operation and maintenance of the project ... shall be the responsibility of the Secretary: Provided, that the ... sponsors shall pay the initial \$35,000 in cash or materials ... plus inflation ...."

The WRDA 1996 (PL 104-303) amended PL 99-662 by including in-kind services and adding "... the Secretary may enter into agreements with the non-Federal sponsor permitting the non-Federal sponsor to perform operation and maintenance for the project on a cost-reimbursable basis."

Since 1978, \$360,831,000 (cumulative nominal \$) in potential flood damages have been prevented by the levees. Potential damages prevented by the Jackson Hole levees in FY11 were \$4,800,000.

**Operations during FY.** Teton County, under their Local Cooperative Agreement, worked with the Corps assessing levee maintenance requirements and developing project work plans. From May to July, the Walla Walla District contracted for the repair of 9,566 feet of damaged levees, using 22,635 tons of riprap and 3,999 cubic yards of fill material. Using

the 5-year supply contract for the purchase of revetment rock, 3,200 tons of rock were delivered to the main project stockpile.

The FY costs were \$1,336,911. (See Table 30-A, Cost and Financial Statement.)

The WRDA 2000 (PL 106-541) authorized the Upper Snake River Restoration Project. Congress added new start funding in FY03 and FY04. 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 restores 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, 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 FY05, continues to perform as designed by protecting the island habitat during spring 2011 runoff conditions. Inspection of the completed construction at site 9 found that the previously damaged eco-fences were severely damaged during the spring runoff in 2011, leaving about two-thirds of the site 9 area at risk of further river erosion should the channel continue to move toward the left bank. The sponsor was notified of the inspection results, but does not have funding in the current budget to address this issue. The sponsor submitted a letter of interest to proceed with a bank protection feature in site 10 to protect a mature cottonwood site from further erosion. The sponsor is working on a third party agreement whereby the landowners would provide the sponsor's cost share and future maintenance requirements.

The FY11 construction costs were \$7,659. (See Table 30-A, Cost and Financial Statement.)

#### 4. LITTLE WOOD RIVER, ID

**Location.** This project is located in the City of Gooding, ID, along approximately 1 mile of the Little Wood River canal, which runs east to west directly through the city. (See Table 30-B, Authorizing Legislation.)

**Existing project.** This project was originally constructed under the emergency conservation work program established under legislation enacted

March 31, 1933. Subsequently, the project was reauthorized under Section 3057, WRDA 2007, and directs "... the Secretary to rehabilitate the Gooding Channel project for the purposes of flood control and ecosystem restoration if the Secretary determines that such rehabilitation is not required as a result of improper operation and maintenance of the project by the non-Federal interest and that the rehabilitation and ecosystem restoration is feasible ...."

**Local Cooperation.** Provided by the City of Gooding, ID.

**Operations during FY.** Continued work on decision document, which includes required feasibility study and environmental compliance. Also executed feasibility cost sharing agreement.

The FY11 construction costs were \$64,850. Total project costs through September 30, 2011, were \$74,614. (See Table 30-A, Cost and Financial Statement.)

#### 5. LUCKY PEAK LAKE, ID

**Location.** Approximately 10 miles southeast of the city of Boise, ID, on the Boise River. (See Table 30-B Authorizing Legislation.)

**Existing project.** Lucky Peak Dam is a rolled earthfill dam, 250 feet above the streambed and 1,700 feet long at the crest. The lake behind the dam is 12 miles long with 45 miles of shoreline and provides total storage at an upper operating lake level of 306,000 acre-feet. The project provides flood control, irrigation, recreation, and fish and wildlife benefits.

Construction of the existing project was initiated in November 1949 and completed in June 1961. Since 1961, \$1,895,765,000 (cumulative nominal \$) in potential flood damages has been prevented by the project. During FY11 Lucky Peak Dam prevented \$276,746,000 in potential flood damages.

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 WRDA 1976. In FY78, 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.

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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. It was modified on October 9, 1980, and again 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 in 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 FY90.

Recreation facilities at Lucky Peak Lake consist of 20 day-use/picnic areas, 4 boat launch ramps, and 3 swimming areas. The FY visitation to Lucky Peak Lake was 789,810.

**Local cooperation.** None required.

**Operations during FY.** Normal operation and maintenance of the dam structures and recreation areas continued.

- Completed wire rope installation.
- Completed 90 percent design review for electrical upgrade.

The FY costs were \$2,638,470. (See Table 30-A, Cost and Financial Statement.)

**American Recovery and Reinvestment Act (ARRA):** There are no costs for ARRA in FY11. Total ARRA costs were \$158,449. (See Table 30-A, Cost and Financial Statement.)

### 6. 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, Authorizing Legislation.)

**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 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, \$71,179,000 (cumulative nominal \$) in potential flood damages have been prevented by the combined storage and channel operation. During FY11, potential flood damages of \$1,963,000 were prevented by the Mill Creek project.

Rehabilitation of the existing project was initiated in FY78 and completed in FY79. 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 296,728.

**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.

- Diversion dam upgrade construction is substantially complete and in-service.
- Completed contract for debris and sediment removal.
- Toe drain construction contract complete, installed, and fully operational.
- Anchors/concrete docking construction completed.
- Office building replacement contract awarded.
- Completed design of prototype fish passage weirs.
- Initiated design of diversion works fish ladder.

The FY costs were \$3,497,424. (See Table 30-A, Cost and Financial Statement.)

**ARRA:** The following improvements were accomplished during FY11:

- Closed out construction contract for road paving repairs.

The ARRA FY11 costs were \$776. Total ARRA costs were \$160,788. (See Table 30-A, Cost and Financial Statement.)

**Dam Safety Action Classification (DSAC).** Upon completion of the Mill Creek Storage Dam Issue Evaluation Study (IES) in August 2011, the DSAC rating for the Mill Creek Storage Dam was upgraded to DSAC III “High Priority” (Conditionally Unsafe) from a DSAC II “Urgent” (Unsafe or Potentially Unsafe). The storage dam IES focused on that feature only and did not study the impacts of the diversion dam structure. The diversion dam remains classified as a DSAC II and an IES is planned with a date to be determined. When the diversion dam IES is conducted, it will analyze Mill Creek as a system.

**DSAC Operations during FY:** The following improvements were accomplished during FY11:

- Completed contract for the storage dam seepage and stability analysis.
- Completed the storage dam IES.

The FY11 construction costs were \$354,280. (See Table 30-A, Cost and Financial Statement.) Total project costs are \$1,669,815.

## 7. SCHEDULING FLOOD CONTROL RESERVOIR OPERATIONS

Functional regulation of non-Corps projects is accomplished as authorized under Section 7, Flood Control Act of 1944, and coordinated with the Bureau of Reclamation for Jackson, Palisades, Ririe, Little Wood, Arrowrock, Anderson Ranch, and Malheur River Basin.

Flood control operations at Jackson Lake, Palisades, Ririe, Little Wood, Boise River Reservoirs, and the Malheur River Reservoirs are in accordance with formal agreements with the Bureau of Reclamation. Flood control regulation for Brownlee Reservoir was accomplished under flood control regulation provisions in the Federal Power Commission license to Idaho Power Company.

The FY costs associated with flood control operation of non-Corps and Corps-owned projects was \$542,868.

## 8. TRIBAL PARTNERSHIP PROGRAM

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

**Existing project.** Section 203 of the WRDA 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 would focus on improving and preserving natural and cultural resources located in the watershed associated with the Fort Hall Bottoms reach of the Snake River (Snake River Bottoms). The Snake River Bottoms is considered the largest reach of intact, forested floodplain in the western United States and is home to sensitive threatened and endangered species. The area also possesses significant cultural resources and meaning for the Tribes. The study would develop a watershed plan that assesses current resource conditions and identifies goals and strategies for environmental restoration, water quality improvement, reducing user conflicts, stabilizing streambanks, preserving species listed under the Endangered Species Act and protecting cultural resources.

**Local cooperation.** Preparation of the 905(b) reconnaissance report is 100 percent federally funded. The Shoshone Bannock Tribes of Fort Hall have been participating in the development of this study.

**Operations during FY.** The 905(b) reconnaissance report was updated to reflect current information. The FY construction costs were \$15,344. Total costs through September 30, 2011, were \$119,687. (See Table 30-A, Cost and Financial Statement.)

## 9. FLOOD CONTROL ACTIVITIES UNDER SPECIAL AUTHORIZATION

**Flood control activities pursuant to Section 205, PL 858, 80th Congress, as amended:** The FY costs were \$33,247 for one project and coordination account: Coppei Creek, \$18,433; and coordination account, \$14,814.

**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 \$91,170 for one project and coordination account: Twin Bridges, \$86,132; and coordination account, \$5,038.

**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 Federal costs this FY.

## **Multiple-Purpose Projects, Including Power**

### **10. COLUMBIA RIVER FISH MITIGATION PROGRAM (WALLA WALLA PROJECTS), OR, WA, AND ID**

**Location.** This project is located at Ice Harbor Lock and Dam (Ice Harbor), Lower Monumental Lock and Dam (Lower Monumental), Little Goose Lock and Dam (Little Goose), and Lower Granite Lock and Dam (Lower Granite) on the lower Snake River in the state of Washington, and McNary Lock and Dam (McNary) on the Columbia River in the states of Oregon and Washington. (See Table 30-B, Authorizing Legislation.)

**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 Tribal 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 FY89 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. A mitigation study to determine the overall scope of

the fish mitigation facilities for these Columbia and lower Snake River dams was added to the President's FY91 budget.

The plan of improvement includes the following facilities: (1) Ice Harbor: screens, new gantry crane, collection bypass facility, intake gate raise, spillway deflectors, surface bypass, and fish ladder temperature control; (2) 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, outfall relocation, and surface bypass; (3) 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: 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, spillway PIT-Tag detection system, and fallout fences; and (5) McNary: gantry crane, screens, hold/load facility, gate raise modifications, maintenance facility, fish ladder exits, adult/juvenile collection channel stoplogs, juvenile fish facility, outfall relocation, surface bypass, and gantry crane modifications.

In response to the 1995 Endangered Species Act, Section 7, Consultation Biological Opinion (BiOp), 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. More recently the 2008 NMFS BiOp for the Federal Columbia River Power System (FCRPS), the 2008 Columbia River Fish Accords, the 2009 Adaptive Management Implementation Plan, and the 2010 NMFS Supplemental FCRPS BiOp address additional mitigation measures required at these projects. Using an adaptive management policy as additional biological data is collected, the configuration changes identified within these studies, opinions, and agreements continue to be implemented.

As of spring 2009, permanent or interim surface bypass technology was installed at all of the



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District's Snake River dams and at McNary. These structures are focused on improving juvenile fish surface passage for endangered and threatened salmon migrating past all Corps hydroelectric projects. These structures were deployed using an aggressive, nontraditional approach to development that involved fast-track design, construction, testing, and evaluation. Based on post-construction biological evaluations conducted to date, these structures have proven to be successful in reducing passage delay and increasing dam passage survival.

The fully funded Federal project cost is estimated at \$955,000,000 for District projects.

**Local cooperation.** None required.

**Operations during FY.** The following studies and improvements were accomplished during FY11:

- Completed design and awarded construction contracts for juvenile bypass outfall relocations at both the McNary and Lower Monumental dams. Relocated outfalls are expected to increase juvenile dam survival by improving egress and reducing fish predation by piscivorous birds and fish at the outfall site.
- Completed design and awarded construction contracts to modify adult fish ladders at Ice Harbor and Lower Monumental that will improve conditions for adult lamprey passage. Additionally, hydraulic modeling was continued to develop an improved fish ladder entrance at McNary south shore that will provide easier entrance conditions for lamprey, without impacting adult salmon.
- Continued preliminary design for improvements to the Lower Granite juvenile bypass/holding and loading facilities. Existing facilities were the first to be constructed on the Snake River and have many features that currently do not meet criteria for juvenile salmon passage. Design efforts focused on developing a prototype collection channel overflow weir system to replace existing orifices and identifying phase I improvements between the gate wells through the separator. This system is anticipated to reduce stress, delay, and injury to migrating juveniles and reduce stress and injury to downstream migrating steelhead kelts.
- Continued evaluations and provided feedback of contractor-submitted Ice Harbor turbine runner models for the Unit 2 replacement design process. The collaborative design process is expected to result in a more fish-friendly turbine in terms of juvenile fish survival without sacrificing power efficiency.
- Continued the system-wide spillway evaluation study to determine impacts of increased spill frequency and duration on Columbia and lower Snake River dams. These impacts are a result of voluntary spill operations that aid juvenile fish passage. The study continued to focus on the reliability and risk of failure of spillway appurtenances due to increased spill operations.
- Continued studies evaluating impacts of avian predation on salmon smolt from the Columbia and Snake Rivers. This included monitoring the Caspian tern colony on Crescent Island, determining stock-specific predation rates on juvenile salmonids, surveying and monitoring for new or existing tern and cormorant colonies in the mid-Columbia River, and PIT-Tag recovery from avian islands. Research provided an estimate of relative magnitude of impacts among multiple avian predators in the mid-Columbia River and will be used to prepare an analysis of alternative management actions.
- Continued research to evaluate Pacific adult lamprey passage success through the adult fish ladders at McNary and Ice Harbor.
- Continued a study to estimate the survival of fall Chinook salmon in the Columbia and Snake River system. This research will assist in developing system-wide operations that will maximize survival of fall Chinook salmon throughout the fish passage season.
- Initiated efforts to conduct juvenile survival performance standard evaluation biological testing at McNary, Lower Monumental, and Little Goose. Performance standard evaluations will be conducted for the first time in FY12. The FCRPS BiOp requires two successful evaluations validating that the dam survival

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spring and summer migrant goals of 96 and 93 percent, respectively, are being met. If met, additional configuration actions at these projects may not be necessary.

The FY construction costs were \$15,725,716. Total project costs through September 30, 2011, were \$700,299,236. (See Table 30-A, Cost and Financial Statement.)

### 11. DWORSHAK DAM AND RESERVOIR, ID

**Location.** This dam is on the North Fork of the Clearwater River, 1.9 miles above its junction with the Clearwater River, about 5 miles west of Orofino, ID, and 35 miles east of Lewiston, ID. (See Table 30-B, Authorizing Legislation.)

**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 53.6-mile-long 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 are effective for both local and regional flood control and for at-site and downstream power generation). The project's 30,935 acres of land and 17,090 acres of water provide habitat for elk, deer, and other wildlife. The dam structure is about 3,287 feet long and 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 FY78. However, environmental and economic studies on additional generating units were curtailed due to public opposition. Unit 4 is undeveloped. Units 5 and 6 were de-authorized in FY90, and Unit 4 was de-authorized in FY95. 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 (cumulative nominal \$) in potential flood damages. Regulation at Dworshak Dam prevented \$76,436,000

in potential flood damages on the Columbia River. Power generation through September 2011 was 67.99 billion kW hours.

At Dworshak Reservoir, recreation facilities consist of 12 day-use/picnic areas, 6 camp areas, 6 boat launches, and 2 swimming areas. The Dworshak Information Center provides a regional overview of Corps' efforts in the Clearwater River Basin. Total visitation to Dworshak Reservoir for the FY was 116,137.

**Local cooperation.** None required.

**Operations during FY.** Operation and Maintenance: Management of wildlife habitat continued on project lands to provide winter browse for elk and deer. During the FY, 2.34 billion kW hours of electrical power were generated by the three generating units.

- Completed final power system analysis report on arc flash hazards for Dworshak National Fish Hatchery; provided labeling and recommendations to reduce category hazards.
- Completed inventory and condition assessment for the Dworshak Fish Hatchery Rehabilitation Plan.
- Excavator purchased.
- Completed materials procurement for Fish Hatchery nitrogen degassing tower.

The FY costs were \$11,241,215. (See Table 30-A, Cost and Financial Statement.)

**ARRA:** The following improvements were accomplished in FY11:

- Completed design for Dworshak Fish Hatchery effluent system upgrade.

ARRA FY11 costs were \$873,533. Total ARRA costs were \$2,600,177. (See Table 30-A, Cost and Financial Statement.)

**Dam Safety Action Classification (DSAC).** Dworshak Dam was classified as a DSAC II "Urgent" (Unsafe or Potentially Unsafe) because of concerns with internal, external, and structural stability, spillway structural capacity, and foundation seepage and piping. The USACE Headquarters Senior Oversight Group will reevaluate the

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Dworshak DSAC rating in 2012 based on the IES drafted in FY11.

**DSAC Operations during FY.** The following activities were accomplished during FY11:

- Completed draft IES and presented it for Quality Control and Consistency review.
- Completed AE task order inspection of spillway gates.
- Completed physical work associated with the instrumentation installation contract.

The FY11 construction costs were \$930,658. (See Table 30-A, Cost and Financial Statement.) Total project costs are \$2,308,042.

**ARRA for DSAC:** The following improvements were accomplished in FY11:

- Completed physical work associated with instrumentation installation contract.
- Completed AE task order for waterstop study.

The ARRA FY11 construction costs were \$2,180,218. Total ARRA costs were \$3,495,573. (See Table 30-A, Cost and Financial Statement.)

### 12. 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, Authorizing Legislation.)

**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 437 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 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 2011 was 101.85 billion kW hours.

Recreation areas on Lake Sacajawea include 11 day-use/picnic areas, 4 camping areas, 7 areas with boat launching, and 4 swimming areas. The project includes 32 miles of the Northwest Discovery Water Trail. The Ice Harbor Information Center provides a regional overview of Corps' efforts in the Snake River Basin. Total visitation on Lake Sacajawea for the FY was 444,441.

**Local cooperation.** None required.

**Operations during FY.** Operation and Maintenance: During the FY, 2.49 billion kW hours of electrical power were generated by the six generating units. Traffic through the navigation lock consisted of grains, petroleum products, fertilizer, wood products, and miscellaneous cargo that amounted to 2,337,900 tons during calendar year 2011.

- Completed design, and purchased supplies and materials for downstream gate cable replacement; ready for installation during FY12 navigation lock outage.
- Completed replacement/upgrade of south shore switch gear for Wellhouse 1.
- Completed upgrade of Big Flat Habitat Management Unit (HMU) electrical system.
- Completed navigation lock lateral repair.

The FY costs were \$11,274,746. (See Table 30-A, Cost and Financial Statement.)

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**ARRA:** The following improvements were accomplished during FY11.

- Completed Charbonneau Park Potable Water System contract work in FY10; FY11 costs reflect close of contract and completion of project.

The ARRA FY11 costs were \$23,598. Total ARRA costs are \$3,732,091. (See Table 30-A, Cost and Financial Statement.)

### 13. 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 northeast of Walla Walla, WA, and 50 miles northwest of Lewiston, ID. (See Table 30 B, Authorizing Legislation.)

**Existing project.** The project includes a dam, powerplant, navigation lock, fish ladder, and appurtenant facilities. The project provides 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. The project was placed in operation in 1970 and completed in 1976. Construction of additional generating units began in 1974 and was completed in

1984. Power generation through September 2011 was 99.93 billion kW hours.

Lake Bryan provides seven day-use/picnic areas, five campgrounds, five boat-launching areas, and two swimming areas. The project includes 39 miles of the Northwest Discovery Water Trail. Total FY visitation to Lake Bryan was 214,094.

**Local cooperation.** None required.

**Operations during FY.** Operation and Maintenance: During the FY, 2.90 billion kW hours of electrical power were generated by the six generating units. Traffic through the navigation lock consisted of grains, petroleum products, fertilizer, wood products, and miscellaneous cargo that amounted to 1,783,800 tons during calendar year 2011.

- Contracted and received supplies and materials for repair of culvert Tainter Valve 3 push rod.
- Completed fabrication and delivery of supplies for miter gate pintles.
- Awarded and completed construction contract; placed in service side fish entrance closures.

The FY costs were \$7,808,481. (See Table 30-A, Cost and Financial Statement.)

**ARRA:** The following improvements were accomplished during FY11:

- Completed (100 percent progress) contract to upgrade heating, ventilation, and air conditioning (HVAC) system in visitors center.

The ARRA FY11 costs were \$12,837. Total ARRA costs were \$812,975. (See Table 30-A, Cost and Financial Statement.)

### 14. 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, Authorizing Legislation.)

**Existing project.** The project includes a dam, powerplant, navigation lock, fish ladder, appurtenant

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facilities, and 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 a single-lift type with clear plan dimensions of 86 by 674 feet and a 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 2011 was 91.21 billion kW hours. Approximately \$32,951,000 (cumulative nominal \$) in potential flood damages have been prevented since the levees became functional.

Lower Granite Lake offers visitors 16 day-use/picnic areas, 6 sites with camping, 12 boat launch ramps, and 4 swimming areas. The project includes 45 miles of the Northwest Discovery Water Trail. Total recreation visitation to Lower Granite Lake for the FY was 1,735,101.

**Local cooperation.** None required.

**Operations during FY.** Operation and Maintenance: During the FY, 3.17 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 that amounted to 1,041,700 tons during calendar year 2011.

- Completed repair of navigation lock upstream gate.
- Completed rehabilitation/upgrade of UPS5 workboat engines and transmissions.

The FY costs were \$17,491,442. (See Table 30-A, Cost and Financial Statement.)

**ARRA:** The following improvements were accomplished in FY11:

- Completed second contract for road paving repairs.
- Completed contract for a storage building in the north yard.
- Completed contract to upgrade HVAC system in visitors center.

The ARRA FY11 costs were \$42,342. Total ARRA costs were \$2,894,036. (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' Columbia and Snake 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 removable spillway weir (RSW) was tested at Lower Granite. A second RSW was tested at Ice Harbor in 2005 (fish are not collected here for transport), and a third RSW was tested at Lower Monumental during the 2008 fish passage season. During the 2007 season, two temporary spillway weirs (TSW) were tested in Spillbays 20 and 22 at McNary. Testing continued at McNary during the 2008 season after the TSW in Spillbay 22 was moved to Spillbay 19. Further tests followed in 2009 with TSWs placed in Spillbays 4 and 20 early in the season and Spillbays 19 and 20 late in the season. TSWs continued to operate in Spillbays 19

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and 20 during the 2010 and 2011 seasons. In 2009, TSW operations started in Spillbay 1 at Little Goose. A low crest TSW is utilized early in the season and a high crest TSW is utilized later in the season. In 2011, the Little Goose TSW was operated from April 3 through September 1, initially in the low crest configuration with a switch to high crest configuration on July 26.

The 2011 juvenile fish transport season was marked by much higher than normal river flows in the Snake and Columbia Rivers. The three Snake River transport projects operated under regionally coordinated, court-approved operations, including daily spill from April 3 through August 31, with transportation of juvenile fish collected. Spill at McNary took place from April 10 through August 31. During the court-ordered spill period, emphasis was placed on a mix of fish transportation and in-river migration.

In 2011, the start of juvenile fish transport operations by barge was staggered and commenced May 2 at Lower Granite followed by Little Goose on May 6, Lower Monumental on May 9 and McNary on July 21. This practice allows early season fish to migrate in-river. Barge operations were suspended from May 23 through 28 due to a navigation lock outage at The Dalles Dam and extreme high river flow conditions. Truck operations began August 16 and continued until October 1 at Lower Monumental, October 31 at Little Goose, and November 1 at Lower Granite. Juvenile fish collection at Lower Granite in 2011 was 6,310,606 as compared with 3,645,277 in 2010 and 6,593,661 in 2009. A total of 2,429,798 fish were bypassed back to the river in 2011, and 3,874,873 were transported. At Little Goose, a total of 3,384,386 juvenile salmon and steelhead were collected in 2011, as compared with 2,870,791 collected in 2010 and 5,182,190 in 2009. A total of 347,521 fish were bypassed back to the river in 2011, and 3,030,558 fish were transported. At Lower Monumental, 1,582,909 juvenile salmon and steelhead were collected in 2011, as compared with 1,065,007 in 2010 and 1,182,585 in 2009. A total of 207,024 fish were bypassed from Lower Monumental in 2011, and 1,371,215 were transported.

At McNary, normal operations are to bypass fish in the spring until early to mid-July when collection and every-other-day transport of summer migrants begin by barge. This held true in 2011 as collection for transport operations began as scheduled on July 21, as compared to July 16 in 2010. Due to high river water temperatures and the increased potential for fish stress, fish were trucked on alternate non-barge days from August 3 through August 15. Routine truck operations began August 17 and ceased

on September 30. Trucking operations were suspended from September 10 through 17 as fish were bypassed to the tailrace as large amounts of forebay debris entering the facility made fish transport unfeasible. A total of 3,944,343 juvenile salmon and steelhead were collected in 2011, as compared with 4,331,732 in 2010 and 3,784,658 in 2009. Approximately 2,424,768 of the fish collected were bypassed back to the river to meet fishery agency requirements in 2011. A total of 1,473,211 juvenile fish were transported from McNary in 2011, as compared with 447,252 transported in 2010 and 448,833 transported in 2009.

A grand total of 15,222,244 juvenile salmon and steelhead were collected at all projects in 2011, compared to 11,912,807 in 2010 and 16,743,094 in 2009. A total of 9,749,857 fish were transported in 2011, 64 percent of those collected, compared with 64 percent in 2010. Of the fish transported, 9,308,289 were transported by barge (95.5 percent) and 441,568 were trucked (4.5 percent).

### 15. 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, Authorizing Legislation.)

**Existing project.** The project includes a dam, powerplant, navigation lock, two fish ladders, and appurtenant facilities. The project provides 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 (Lake 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.

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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 began in 1975 and was completed in 1981. Power generation through September 2011 was 113.08 billion kW hours.

Lake West offers seven day-use/picnic areas, five areas offering camping, five boat launch areas, and one designated swimming beach. The project includes 28 miles of the Northwest Discovery Trail. Total visitation on Lake West for the FY was 94,927.

**Local cooperation.** None required.

**Operations during FY.** Operation and Maintenance: During the FY, 3.38 billion kW hours of electrical power were generated by the six generating units. Traffic through the navigation lock consisted of grains, petroleum products, fertilizer, wood products, and miscellaneous cargo that amounted to 2,031,600 tons during calendar year 2011.

- Completed repair of navigation lock upstream gate.
- Completed Phase 2 of concrete wall repairs for navigation lock Monolith 15.

The FY costs were \$9,541,649. (See Table 30-A, Cost and Financial Statement.)

**ARRA:** The following improvements were accomplished during FY11:

- Physically completed navigation lock gate replacement contract in the amount of \$12.8 million.
- Completed procurement and delivery for new hoist gear boxes.

The ARRA FY11 costs were \$7,436,781. Total ARRA costs were \$15,405,439. (See Table 30-A, Cost and Financial Statement.)

### 16. 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, Authorizing Legislation.)

**Existing project.** The project consists of a series of fish hatcheries, wildlife development areas, and purchased 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 have been approved to include hatcheries, satellites, off-project wildlife lands, and site selection. A final Environmental Impact Statement was filed with the Council on Environmental Quality on November 2, 1977. The Dworshak National Fish Hatchery Expansion and the 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 FY04 for Big Canyon and Pittsburg Landing. Captain John Rapids was transferred in FY10. Fencing is complete at all wildlife development areas. Off-project land acquisition is 100 percent complete. Habitat development continues at many of these sites. The WRDA 2007 amended the plan for woody riparian habitat to include aquatic restoration. Development has been initiated to compensate for habitat losses resulting from the inundation of habitat. This will result in creation of new riparian and aquatic habitat areas. Construction was completed at Hells Gate HMU and a construction contract awarded for Skookum HMU in FY11. The compensation project is contingent on appropriations and is currently scheduled for completion in FY18.

**Local Cooperation.** None required.

**Operations during FY.** Estimated Federal cost for the project is \$261,000,000. The FY construction costs were \$1,079,053. Total project costs through September 30, 2011, were \$240,847,783. (See Table 30-A, Cost and Financial Statement.)

### 17. 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, Authorizing Legislation.)

**Existing project.** The project includes a dam, powerplant, navigation lock, two fish ladders,

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appurtenant facilities, and a system of levees and pumping plants. The project provides 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. The project was placed in operation in 1953 and completed in 1982. Power generation through September 2011 was 354.82 billion kW hours.

Recreation areas on Lake Wallula include 19 day-use/picnic areas, 4 campgrounds, 14 boat launching ramps, and 9 swimming areas. The project includes 45 miles of the Northwest Discovery Water Trail. The Pacific Salmon Visitor Information Center at McNary, which is staffed by park rangers, provides a regional overview of Corps efforts in support of salmon recovery. Total visitation on Lake Wallula for the FY was 4,164,841.

**Local cooperation.** None required.

**Operations during FY.** Operation and Maintenance: During the FY, 5.87 billion kW hours of electrical power were generated by the 14 generating units. Traffic through the navigation lock consisted of grains, petroleum products, fertilizer, wood products, and miscellaneous cargo that amounted to 5,087,000 tons during calendar year 2011.

- Completed upgrade of upstream and downstream derrick cranes.
- Completed structural modifications to downstream navigation lock stoplogs to meet current safety codes.

- Completed rehabilitation of fish powerhouse stoplog.
- Completed armor angle and trash racks contracts.
- Completed repair of traveling screen of Oregon-side fish ladder.
- Procured personnel lift.
- Completed procurement and installation of spillway control upgrade.
- Replaced Wellhouse 2 & 3 transformers.
- Purchased replacement front-end loader.

The FY costs were \$17,908,149. (See Table 30-A, Cost and Financial Statement.)

**ARRA:** The following improvements were accomplished during FY11:

- Completed rehabilitation and load testing for two navigation lock cranes.
- Completed spillway gate rehabilitation repair.

The ARRA FY11 costs were \$905,016. Total ARRA costs were \$2,520,660. (See Table 30-A, Cost and Financial Statement.)

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

**Location.** This project is on the Snake River, downstream from Johnson Bar Landing, at 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, Authorizing Legislation.)

**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



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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 Granite Lake; Lower Monumental, Lake West; and open river improvement, Lewiston to Johnson Bar Landing. Each of the four locks and dams is described in an individual section, and cost and financial data for the entire project are shown on tables 30-A and 30-D.

Ice Harbor, Little Goose, Lower Granite, and Lower Monumental 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 has reached the Lewiston, ID, and Clarkston, WA, area since the lake behind Lower Granite was filled in February 1975.

**Operations during FY.** See individual sections for Ice Harbor, Little Goose, Lower Granite, and Lower Monumental. On the Snake River from Lewiston, ID, to Johnson Bar Landing, reconnaissance and condition surveys were conducted, and survey markers were maintained. (Also see Table 30-D, Snake River Downstream from Johnson Bar Landing, OR, WA, and ID.)

### 19. 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 WRDA 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 FY11:

- Continued design of Eastern Interceptor Project with the City of Ammon, ID. This project is also tied to Eastern Idaho Regional Wastewater System's Oxbow plant.
- Continued design of Soda Springs, ID, wastewater treatment facility.
- Completed construction of Newdale, ID, drinking water system.
- Continued design of City of Filer, ID, wastewater collection and treatment facility.

The FY11 construction costs were \$2,958,436. (See Table 30-A, Cost and Financial Statement.)

**ARRA:** The following improvements were accomplishments during FY11:

- Completed construction of wastewater treatment facility for City of Bliss, ID.
- Completed construction of wastewater treatment facility for City of Greenleaf, ID.
- Completed design of wastewater collection for City of Buhl, ID.
- Completed second phase design on wastewater treatment facility for City of Lava Hot Springs, ID.

The ARRA FY11 costs were \$1,788,410. Total ARRA costs were \$6,848,662. (See Table 30-A, Cost and Financial Statement.)

### 20. ENVIRONMENTAL ACTIVITIES UNDER SPECIAL AUTHORIZATION

**Project modification for the improvement of the environment (Section 1135(b), PL 99-662, as amended):** The FY costs were \$1,142,651 for five environmental restoration projects and coordination account, including: (1) Bennington Lake Diversion

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Dam, WA (\$431,404) (applies to the Mill Creek Diversion Dam); (2) Boise River at Eagle Island, ID (\$373,615); (3) Portneuf River (\$29,415); (4) Two Rivers, WA (\$169,311); (5) Walla Walla River, WA (\$124,084); and coordination account (\$14,822). The Portneuf project was a new Section 1135 start.

**Operations during FY. ARRA:** There were no ARRA costs in FY11. Total project costs are \$32,412.

**Project modification for Aquatic Ecosystem Restoration (Section 206, PL 104-303, as amended):** The FY costs were \$364,775 for continuation of four aquatic ecosystem restoration projects and coordination account, including: (1) Ladd Marsh, OR (\$7,432); (2) Paradise Creek, ID (\$9,957); (3) Salmon River, ID (\$77,608); (4) Twin Falls, ID (\$254,872); and coordination account (\$14,907).

**Operations during FY. ARRA:** The following improvements were accomplished during FY11:

- Completed construction Paradise Creek, ID.
- Completed construction Camp Creek, OR.

The ARRA FY11 costs were \$1,312,345. Total ARRA costs were \$4,211,892.

**Project modification for regional sediment management (Section 204, PL 102-560, as amended):** The FY costs were \$34,099 for one sediment management project: (1) Snake River, ID (\$34,099).

**Investigations**

**21. 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 \$67,369, which included: Flood Plain Management Services (\$14,750); Technical Services (\$39,594); Quick Responses (\$4,983); and Special Studies (\$8,042).

**Operations during FY. ARRA:** There were no ARRA costs during FY11. Total project costs are \$24,960.

**22. PRECONSTRUCTION, ENGINEERING, AND DESIGN**

None.

**23. SURVEYS**

The total FY11 costs for surveys were \$381,554, including Boise River (\$38,593); special studies (Walla Walla River Watershed [\$101,241]); miscellaneous activities (special investigations, FERC licensing activities, North American Waterfowl Management Plan, and Interagency Water Resource Development [\$30,752]); coordination with other Federal agencies (\$6,040); and Planning Assistance to States (\$204,929).

**Operations during FY. ARRA:** There were no ARRA costs for this FY. Total ARRA costs were \$150,000.

**Other Activities**

**24. SHORELINE PROTECTION**

Beach Erosion Control project activities pursuant to Section 103, PL 874, 87th Congress, as amended (preauthorization): The FY costs were \$19,979 for Section 103 coordination.

**25. CATASTROPHIC DISASTER PREPAREDNESS**

This program is authorized under PL 93-228. Costs are shown below.

Continuity of Operations (510)	\$9,607
National Preparedness Planning (520)	0
Emergency Operations Center Support (530)	0
Catastrophic Disaster Training and Exercise (560)	0
Total Catastrophic Disaster Preparedness Program	\$9,607

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**26. FLOOD CONTROL AND COASTAL EMERGENCIES (FCCE)**

Costs for flood control work under authorized emergency flood control activities, flood fighting, PL 84-99, are shown below.

Disaster Preparedness (100)	\$421,969
Emergency Operations (200)	350,622
Rehabilitation and Inspection Program (300)	84,023
Drought Assistance (400)	0
Advance Measures (500)	0
Hazard Mitigation (600)	<u>38,179</u>
Total FCCE	\$894,793

**27. GENERAL REGULATORY**

General Regulatory costs are shown below.

Permit Evaluation (100)	\$1,711,193
Enforcement (200)	96,604
Studies (300)	0
Environmental Impact Statement (500)	0
Administrative Appeals (600)	0
Compliance – Authorized Activities (800)	<u>61,269</u>
Total Regulatory	\$1,869,066

**Operations during FY. ARRA (Permit):**

There are no costs in FY11. Permit work was completed in FY10.

**ARRA (Studies):** The District has completed new work on the cumulative impact study (CIS) for impacts from activities authorized by Regional General Permit 27 on Lake Pend Oreille, ID. The CIS focuses on the impacts of near shore structures (e.g., piers, docks, and pilings) on bull trout, Kokanee, and other fish species. The following improvements were accomplished during FY11:

- Conducted pre-work coordination meeting to establish sample sites for research and study plan.
- Conducted 50 percent progress review meeting to evaluate effectiveness of fish sampling and overwater structure evaluations.
- Completed data collection including numbers of fish present, fish diets, and fish habitat use.

The ARRA FY11 costs were \$146,710 including: (1) Permits (\$0) and (2) Studies (\$146,710). Total ARRA costs were \$475,341.

REPORT OF THE SECRETARY OF THE ARMY ON CIVIL WORKS ACTIVITIES FOR FY 2011

**TABLE 30-A COST AND FINANCIAL STATEMENT**

See Section In Text	Project	Funding	FY 08 (\$)	FY 09 (\$)	FY 10 (\$)	FY 11(\$)	Total Cost 30-Sep-11 (\$)
3	Jackson Hole, WY	New Work					
		Approp.	445,000	-	-	(112,439)	3,603,631
		Cost	34,560	24,945	-	7,659	3,338,234
		Maint.					
		Approp.	307,000	1,046,940	824,670	1,212,979	17,458,749 <sup>1/</sup>
		Cost	765,429	617,102	1,243,029	1,336,911	17,074,897 <sup>2/</sup>
		(Contributed funds) Maint.					
		Contrib.	-	-	-	-	378,798
Cost	-	-	-	-	378,798		
4	Little Wood, ID	New Work					
		Approp.			100,000	49,896	149,896
		Cost			9,765	64,850	74,614
5	Lucky Peak Lake, ID	New Work					
		Approp.	-	-	-	-	19,652,081
		Cost	-	-	-	-	19,652,081
		Maint.					
		Approp.	1,551,000	1,638,560	2,455,110	2,647,908	45,380,778
		Cost	1,618,050	1,663,087	1,990,005	2,638,470	44,752,192
		Maint. ARRA					
		Approp.		169,000	(10,551)	-	158,449
		Cost		67,813	90,636	-	158,449
		(Contributed funds) Maint.					
Contrib.			30,000	-	30,000		
Cost			30,000	-	30,000		
6	Mill Creek, WA	New Work					
		Approp.	100,000	1,280,000	1,000,000	(382,968)	4,255,527
		Cost	45,746	589,677	680,112	354,280	3,928,310
		Maint.					
		Approp.	1,424,000	2,716,760	3,503,488	3,969,965	38,254,023 <sup>3/</sup>
		Cost	1,327,221	1,432,852	2,709,921	3,497,424	35,517,032 <sup>4/</sup>
		Maint. ARRA					
		Approp.		90,000	71,441	(653)	160,788
		Cost		2,541	157,472	776	160,788
		Rehab					
Approp.	-	-	-	-	17,714,102		
Cost	-	-	-	-	17,714,102		
8	Tribal Partnership Program	New Work					
		Approp.	-	-	-	(11,561)	121,439
		Cost	11,137	2,346	2,335	15,344	119,687
10	Columbia River Fish Mitigation Program, OR, WA, and ID	New Work					
		Approp.	34,220,000	27,436,000	15,900,000	45,645,186	737,275,186
Cost	32,643,221	33,986,278	17,184,695	15,725,716	700,299,236		

WALLA WALLA, WA, DISTRICT

**TABLE 30-A Continued COST AND FINANCIAL STATEMENT**

See Section In Text	Project	Funding	FY 08 (\$)	FY 09 (\$)	FY 10 (\$)	FY 11(\$)	Total Cost 30-Sep-11 (\$)
11	Dworshak Dam and Reservoir, ID	New Work					
		Approp.	200,000	640,000	1,000,000	501,000	329,823,196
		Cost	140,690	504,555	732,138	930,658	329,790,238
		New Work ARRA					
		Approp.		2,000,000	1,548,708	24,473	3,573,181
		Cost		13,640	1,301,715	2,180,218	3,495,573
		Maint.					
		Approp.	13,735,876	10,272,950	10,318,041	10,898,737	274,762,699 <sup>5/</sup>
		Cost	11,529,632	11,405,241	12,223,260	11,241,215	273,614,596 <sup>6/</sup>
		Maint. ARRA					
		Approp.		2,375,000	204,951	20,226	2,600,177
		Cost		146,036	1,580,607	873,533	2,600,177
(Contributed funds)	Maint.						
	Contrib.			9,798	-	9,798	
	Cost			-	9,798	9,798	
12	Ice Harbor Lock and Dam, WA	New Work					
		Approp.	-	-	-	-	210,249,757
		Cost	-	-	-	-	210,249,757
		Maint.					
		Approp.	8,524,415	9,989,820	10,467,210	10,136,087	268,453,674
		Cost	9,071,540	9,449,744	9,771,619	11,274,746	267,228,915
		Maint. ARRA					
		Approp.		3,734,000	14,500	(16,409)	3,732,091
Cost		217,909	3,490,583	23,598	3,732,091		
13	Little Goose Lock and Dam, WA	New Work					
		Approp.	-	-	-	-	262,632,022
		Cost	-	-	-	-	262,632,022
		Maint.					
		Approp.	5,804,387	7,762,180	6,480,924	7,265,406	189,434,665
		Cost	7,597,822	7,376,034	6,071,825	7,808,481	188,413,622
		Maint. ARRA					
		Approp.		1,507,000	(684,500)	(434)	822,066
Cost		109,356	690,782	12,837	812,975		
14	Lower Granite Lock and Dam, WA	New Work					
		Approp.	-	-	-	-	400,080,315
		Cost	-	-	-	-	400,080,315
		Maint.					
		Approp.	11,579,668	13,718,640	15,856,119	14,976,171	291,754,587
		Cost	11,390,555	12,639,863	12,826,227	17,491,442	287,102,693
		Maint. ARRA					
		Approp.		3,336,000	(390,441)	(40,348)	2,905,211
Cost		261,275	2,590,419	42,342	2,894,036		

REPORT OF THE SECRETARY OF THE ARMY ON CIVIL WORKS ACTIVITIES FOR FY 2011

TABLE 30-A Continued		COST AND FINANCIAL STATEMENT					Total Cost
See Section In Text	Project	Funding	FY 08 (\$)	FY 09 (\$)	FY 10 (\$)	FY 11(\$)	30-Sep-11 (\$)
15	Lower Monumental Lock and Dam, WA	New Work					
		Approp.	-	-	-	-	238,612,732
		Cost	-	-	-	-	238,612,732
		Maint.					
		Approp.	8,776,940	9,589,170	7,504,066	9,697,921	215,617,366
		Cost	9,863,616	7,848,856	9,206,795	9,541,649	214,284,690
16	Lower Snake River Fish and Wildlife Compensation Plan WA, OR, and ID (Contributed funds)	New Work					
		Approp.	375,000	1,435,000	1,417,000	1,496,891	242,599,891
		Cost	580,421	359,501	1,516,701	1,079,053	240,847,783
		Contrib.	-	-	-	-	223,965
		Cost	-	-	-	-	223,965
		17	McNary Lock and Dam, Lake Wallula, OR and WA (Contributed funds)	New Work			
Approp.	-			-	-	-	375,214,469
Cost	-			-	-	-	375,214,469
Maint.							
Approp.	13,534,382			14,793,392	17,502,145	17,777,335	468,786,642
Cost	15,580,251			14,597,071	15,943,609	17,908,149	465,600,373
19	Rural Idaho, ID, Environmental Infrastructure and Resource Protection and Development Program	New Work					
		Approp.	3,814,000	4,350,000	3,288,000	69,855	21,253,755
		Cost	5,579,516	4,530,962	2,430,864	2,958,436	20,355,045
		New Work ARRA					
		Approp.		8,447,500	292,500	(42,498)	8,697,502
		Cost		-	5,060,251	1,788,410	6,848,662

End Notes:

- <sup>1/</sup> Includes \$750,000 under Category-Class-Subclass cod 70C, Continuing Resolution Authority (CRA) Supplemental funds.
- <sup>2/</sup> Includes \$749,790 under Category-Class-Subclass cod 70C, CRA Supplemental funds.
- <sup>3/</sup> Includes \$377,000 under Category-Class-Subclass cod 70C, CRA Supplemental funds.
- <sup>4/</sup> Includes \$375,276 under Category-Class-Subclass cod 70C, CRA Supplemental funds.
- <sup>5/</sup> Includes \$2,100,000 under Category-Class-Subclass cod 70B, War Supplemental funds.
- <sup>6/</sup> Includes \$2,100,000 under Category-Class-Subclass cod 70B, War Supplemental funds.

WALLA WALLA, WA, DISTRICT

**TABLE 30-B**

**AUTHORIZING LEGISLATION**

<b>See Section In Text</b>	<b>Date Authorizing Act</b>	<b>Project and Work Authorized</b>	<b>Documents</b>
4	Nov 8, 2007	<b>LITTLE WOOD RIVER, ID</b> Rehabilitate the Gooding Channel project for flood control and ecosystem restoration.	Sec. 3057, PL 110-114
5	Jul 24, 1946	<b>LUCKY PEAK LAKE, ID</b> Dam for flood control, irrigation, and recreation.	PL 79-526, Chief of Engineers Report, dated May 13, 1946. PL 94-587
	Oct 22, 1976	Second outlet for stream flow maintenance. De-authorized in 1990.	
	Dec 22, 1944 as amended	Construction, operation, and maintenance of recreation facilities.	Sec. 4, Flood Control Act of 1944
6	Jul 28, 1938 as amended Aug 18, 1941	<b>MILL CREEK, WALLA WALLA, WA</b> 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.
10	Jul 19, 1988	<b>COLUMBIA RIVER FISH MITIGATION PROGRAM</b> Design, test, and construct fish bypass facilities at Lower Monumental, Ice Harbor, Little Goose, Lower Granite, and McNary Locks and Dams.	PL 100-371
11	Jul 3, 1958	<b>DWORSHAK DAM AND RESERVOIR, ID</b> Preparation of detailed plans.	S. Doc. 51, 84th Cong., 1st Session PL 88-96 PL 87-874
	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 FY90. Unit 4 was de-authorized in FY95.	
12	Mar 2, 1945	<b>ICE HARBOR LOCK AND DAM, LAKE SACAJAWEA, WA</b> 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
13	Mar 2, 1945	<b>LITTLE GOOSE LOCK AND DAM, LAKE BRYAN, WA</b> 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 PL 91-638
	Dec 31, 1970	Designation of reservoir as Lake Bryan.	
14	Mar 2, 1945	<b>LOWER GRANITE LOCK AND DAM, LOWER GRANITE LAKE, WA</b> 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

REPORT OF THE SECRETARY OF THE ARMY ON CIVIL WORKS ACTIVITIES FOR FY 2011

<b>TABLE 30-B (Continued)</b>		<b>AUTHORIZING LEGISLATION</b>	
<b>See Section In Text</b>	<b>Date Authorizing Act</b>	<b>Project and Work Authorized</b>	<b>Documents</b>
15		<b>LOWER MONUMENTAL LOCK AND DAM, LAKE HERBERT G. WEST, WA</b>	
	Mar 2, 1945	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
16		<b>LOWER SNAKE RIVER FISH AND WILDLIFE COMPENSATION PLAN, WA, OR, AND ID</b>	
	Oct 22, 1976 as amended	Fish hatcheries and replacement of wildlife habitat.	PL 94-587
	Nov 17, 1986	Changes to land acquisition authority.	H.R. 6 PL 99-662
17		<b>McNARY LOCK AND DAM, LAKE WALLULA, OR AND WA</b>	
	Mar 2, 1945	Lock and dam for navigation, power, recreation, and 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
	Nov 17, 1986	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
18		<b>SNAKE RIVER TO JOHNSON BAR, OR, WA, AND ID</b>	
	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



WALLA WALLA, WA, DISTRICT

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

**Project**

Dworshak Dam and Reservoir, ID (see Section 11 of text)	<b>SPILLWAY DAM</b>		
	Type of Construction	Concrete Gravity	
	Completed	September 1974	
	Maximum Capacity	150,500 cfs <sup>d/</sup>	
	Crest Elevation	1,545 ft <sup>2/</sup>	
	Control Gates:		
	Type	Tainter	
	Size, Width by Height	50 by 56.4 ft	
	Number	2	
	<b>POWERPLANT</b>		
	Length	428 ft	
	Generating Units:		
	Number Installed	3	
	Rating, Each	2 @ 90,000 kW <sup>2/</sup>	
		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	
	<b>IMPOUNDMENT</b>		
	Elevations:		
	Normal Operating Range	1,600 to 1,445 ft	
	Maximum	1,605 ft	
	Flood Control Storage	2,000,000 ac-ft <sup>d/</sup>	
	Lake Length	53.6 mi <sup>3/</sup>	
	Lake Water Surface Area at Elevation 1,600	17,090 ac <sup>6/</sup>	
	Length of Shoreline	175 mi	
	Ice Harbor Lock and Dam, WA (see Section 12 of Text)	<b>NAVIGATION LOCK</b>	
		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
		<b>SPILLWAY DAM</b>	
		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**

Ice Harbor Lock and Dam, WA Continued

**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 13 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**

Little Goose Lock and Dam, WA Continued	<b>IMPOUNDMENT</b>	
	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 14 of text)	<b>NAVIGATION LOCK</b>	
	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
	<b>SPILLWAY DAM</b>	
	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
	<b>POWERPLANT</b>	
	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
	<b>IMPOUNDMENT</b>	
	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 15 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 17 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

WALLA WALLA, WA, DISTRICT

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

<b>Project</b>		
McNary Lock and Dam, OR Continued	<b>SPILLWAY DAM</b>	
	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
	<b>POWERPLANT</b>	
	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
	<b>IMPOUNDMENT</b>	
	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

- <sup>1/</sup> cubic feet per second
- <sup>2/</sup> feet
- <sup>3/</sup> kilowatt
- <sup>4/</sup> acre-feet
- <sup>5/</sup> miles
- <sup>6/</sup> acres

REPORT OF THE SECRETARY OF THE ARMY ON CIVIL WORKS ACTIVITIES FOR FY 2011

<b>SNAKE RIVER DOWNSTREAM FROM JOHNSON BAR LANDING, OR, WA, AND ID (SEE SECTION 18 OF TEXT)</b>							
<b>TABLE 30-D</b>	<b>Estimated Cost (Corps of Engineers Funds Only)</b>	<b>New Work to September 30, 2010 Approp.</b>	<b>Cost</b>	<b>Maintenance to September 30, 2010 Approp.</b>	<b>Cost</b>	<b>Percent Compl.</b>	<b>Constr. Started</b>
<b>Project</b>							
<b>Ice Harbor Lock and Dam</b>							
Initial Project Code 710 Rec	\$374,617,095	\$172,587,480	\$172,587,480	\$272,185,764	\$270,961,005	118	FY 56
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	90,759,412	90,759,412	0	0	103	FY 91
<b>Totals</b>	<b>500,364,372</b>	<b>301,009,169</b>	<b>301,009,169</b>	<b>272,185,764</b>	<b>270,961,005</b>	<b>114</b>	
<b>Little Goose Lock and Dam</b>							
Initial Project	342,480,476	201,690,215	201,690,215	190,256,730	189,226,597	114	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	75,413,461	75,413,461	0	0	88	FY 89
<b>Totals</b>	<b>488,930,283</b>	<b>338,045,483</b>	<b>338,045,483</b>	<b>190,256,730</b>	<b>189,226,597</b>	<b>108</b>	
<b>Lower Granite Lock and Dam</b>							
Initial Project Code 710 Rec	555,186,593	353,803,981	353,803,981	294,659,798	289,996,729	116	FY 65
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	40,187,955	40,187,955	0	0	69	FY 88
<b>Totals</b>	<b>660,082,927</b>	<b>440,268,270</b>	<b>440,268,270</b>	<b>294,659,798</b>	<b>289,996,729</b>	<b>111</b>	
<b>Lower Monumental Lock and Dam</b>							
Initial Project	339,994,773	186,951,361	186,951,361	231,025,374	229,690,129	123	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	84,133,503	84,133,503	0	0	93	FY 90
<b>Totals</b>	<b>481,790,144</b>	<b>322,746,235</b>	<b>322,746,235</b>	<b>231,025,374</b>	<b>229,690,129</b>	<b>115</b>	
<b>Open River Lewiston To Johnson Bar Landing</b>							
	34,613	34,613	34,613	401,583	401,583		
<b>Open River Pasco to Lewiston</b>							
	0	0	0	4,350	4,350		
<b>Totals Existing Project</b>	<b>2,131,202,339</b>	<b>1,402,103,771</b>	<b>1,402,103,771</b>	<b>988,533,599</b>	<b>980,280,393</b>	<b>112</b>	
<b>Previous Projects Pasco to Lewiston</b>							
	400,150	400,150	400,150	186,570	186,570		
<b>Totals Authorized Project</b>	<b>\$2,131,602,489</b>	<b>\$1,402,503,921</b>	<b>\$1,402,503,921</b>	<b>\$988,720,169</b>	<b>\$980,466,963</b>		

WALLA WALLA, WA, DISTRICT

**INSPECTION OF COMPLETED FLOOD CONTROL PROJECTS  
(SEE SECTION 2 OF TEXT)**

**Table 30-E**

<b>Location</b>	<b>Project Name</b>	<b>Appropriation</b>	<b>Date Inspected</b>
<b><u>IDAHO</u></b>			
<b>Blackfoot River</b>	Blackfoot #1 System P	ICW ID	Aug-11
	Blackfoot #1 System Q	ICW ID	Aug-11
<b>Burnt River</b>	Huntington	ICW ID	Sep-11
<b>Clearwater River</b>	Cottonwood Church	ICW ID	Aug-11
	Culdesac	ICW ID	Aug-11
	Kooskia MF	ICW ID	Aug-11
	Kooskia SF	ICW ID	Aug-11
	Nez Perce	ICW ID	Aug-11
	Orofino	ICW ID	Aug-11
	Slickpoo (St. Joseph)	ICW ID	Aug-11
<b>Little Wood River</b>	Gooding Diversion	ICW ID	Sep-11
<b>Payette River</b>	Emmett Sewage Lagoon	ICW ID	Aug-11
<b>Potlatch River</b>	Bear Creek	ICW ID	Aug-11
	Kendrick	ICW ID	Aug-11
<b>Salmon River</b>	Tomanovich (City Segment)	ICW ID	Aug-11
	Tomanovich (County Segment)	ICW ID	Aug-11
<b>Snake River</b>	Heise Bridge	ICW ID	Aug-11
	Heise-Roberts - P	ICW ID	Aug-11
	Heise-Roberts - Q	ICW ID	Aug-11
	Heise-Roberts - R	ICW ID	Aug-11
	Lyman Creek - P	ICW ID	Aug-11
	Lyman Creek - Q	ICW ID	Aug-11
<b><u>OREGON</u></b>			
<b>Malheur River</b>	Vale Sewage Lagoon	ICW OR	Aug-11
	Vale Unit - P	ICW OR	Aug-11
	Vale Unit - Q	ICW OR	Aug-11
	Vale Unit - R	ICW OR	Aug-11
<b>Snake River</b>	Annex	ICW OR	Sep-11
<b>Wallowa</b>	Weaver Bridge	ICW OR	Aug-11

**INSPECTION OF COMPLETED LOCAL PROTECTION PROJECTS**  
**(SEE SECTION 2 OF TEXT)**

**Table 30-E Continued**

<b>Location</b>	<b>Project Name</b>	<b>Appropriation</b>	<b>Date Inspected</b>
<b><u>WASHINGTON</u></b>			
<b>Columbia River</b>	Ezquatzel Coulee	ICW WA	Jul-11
	Ezquatzel Coulee Side Drainage	ICW WA	Jul-11
	Zintel Canyon	ICW WA	Sep-11
<b>Palouse River</b>	Colfax #1	ICW WA	Aug-11
	Colfax #2	ICW WA	Aug-11
<b>Touchet River</b>	Dayton - P	ICW WA	Aug-11
	Dayton - Q	ICW WA	Aug-11
	Waitsburg	ICW WA	Jul-11
<b>Tucannon River</b>	Camp Wooten	ICW WA	Aug-11
	Pomeroy #1	ICW WA	Aug-11
	Pomeroy #2	ICW WA	Aug-11
<b>Walla Walla River</b>	Mill Creek - P	ICW WA	Sep-11
	Mill Creek - Q	ICW WA	Sep-11
	Mill Creek Levee Extension	ICW WA	Aug-11
<b>Yakima River</b>	West Richland	ICW WA	Jul-11
<b><u>WYOMING</u></b>			
<b>Snake River</b>	Site 9 Grade Control Structure	ICEP WY	May-11