Seattle District
9 September 1957

UPPER COLUMBIA RIVER BASIN, WASHINGTON

BEN FRANKLIN PROJECT

This project pertains to a dam located to develop power from the head between the upper limits of the McNary Pool and the foot of Priest Rapids Dam. In the review of House Document 531, published in 1950, two possible locations for such a dam were studied at sites identified as Ringold and North Richland. The possibility of constructing a dam in this general location is again being studied in connection with the current review study. Preliminary investigations are being made for a dam at Mile 348, approximately eight miles upstream from Richland. The present study indicates that extensive foundation investigation will probably be necessary to develop a satisfactory site. Recently, the Washington Public Power Supply System indicated they plan to file an application with the Federal Power Commission for a preliminary permit to study a dam in this reach of the river; which dam has been given the name of Ben Franklin Dam.

When a permit is granted to the Washington Public Power Supply System, the Corps of Engineers will defer further investigation pertaining to construction of this dam. However, the Corps, operating in cooperation with the Federal Power Commission, will take steps to plan construction of navigation facilities at this project, which are in conformance with the over-all plan for navigation on the Upper Columbia River.

The dam presently being studied would create a pool to approximately the foot of Priest Rapids Dam. The feasible height of operating pool together with other pertinent relocation problems are now under study in cooperation with the Atomic Energy Commission in regard to effect of the project on the Hanford Works. Pertinent project data are:

Reservoir	-	Area, 22,000 acres at full pool elevation 395 Minimum pool elevation, 390 Usable storage, 105,000 acre-feet
Spillway	-	Type, concrete-ogge - Capacity, 1,400,000 c.f.s.
Dam	-	Type, rock and earth-fill Height, (foundation to crest) 110 Crest length, 15,000 feet (including powerhouse and spillway) Crest elevation, 410
Power Plant	-	Initial installation 12 units @ 39,000 kw. = 468,000 kw. Ultimate " 15 units @ 39,000 kw. = 585,000 kw.

Ben Franklin Project (Cont'd)

Head - For flow of 70,000 second-feet = 52 feet
" " " 640,000 " " = 28 "
(approximately 1948 flood flow)

Estimated construction cost: $150,000,000 1/

1/ This is based on very preliminary studies and the assumption of satisfactory foundation conditions and is exclusive of flowage costs.

The project would be operated as a run-of-river plant with daily pondage storage operation. Under present system conditions an average of approximately 300,000 kw. of power would be developed at-site. The project would be a key factor in providing a 14-foot navigation channel on the Upper Columbia, in lieu of the 9-foot channel which otherwise might be constructed.

A detailed study has not been made of the effect of the project on the Columbia River fishery, but it has been assumed that fish passage facilities equal to those on other Upper Columbia River dams would be provided. The project pool largely falls within restricted areas of the Hanford Works, and therefore, any recreational development would be extremely limited.

Bureau of Reclamation
Sept 1957

GARDEN VALLEY

The Garden Valley Division of the Snake River Project, in the Payette River Basin of west central Idaho, includes the Upper and Lower Scriver Creek Powerplants, a reservoir and powerplant at the Garden Valley site on the South Fork of Payette River 3 miles upstream from the confluence with the north Fork near Crouch, Idaho, a reregulating reservoir and powerplant a short distance downstream from the Garden Valley Dam, and the necessary diversion and water-conveyance structures. The facilities would utilize storage water from the existing Cascade and Deadwood Reservoirs.

Under the plan, water stored in Cascade Reservoir and the natural flows of the North Fork of Payette River would be diverted near Smiths Ferry to Scriver Creek by tunnel. The difference in elevation of some 1,200 feet between the Smiths Ferry Diversion and Garden Valley Reservoir would be utilized for power production at the Upper and Lower Scriver Creek Powerplants with a combined initial capacity of 127,500 kw and an ultimate capacity of 157,500 kw. Discharges from Lower Scriver Creek Powerplant and the flows of the Middle and South Fork of the Payette River would form the water supply for the Garden Valley Reservoir. A reregulating dam and powerplant would be provided below the Garden Valley Dam on the South Fork Payette to permit the peaking operation of the Garden Valley Powerplant.

The development will serve the multiple purposes of irrigation, flood control, at-site and downstream power production, recreation, and fish and wildlife.

Pertinent data on the Garden Valley Dam and reservoir are:

Reservoir - Area, 13,600 acres at full pool elevation of 3335
Minimum pool elevation, 3143
Usable storage, 1,940,000 acre-feet
Gross storage capacity, 2,400,000 acre-feet

Spillway - Type, Gated Glory Hole Capacity, 30,000 cfs

Dam - Type, Concrete arch Height (foundation to crest) 536
Crest length, 1350 feet Crest elevation 3336 feet
Top of parapet 3340 feet

Power Plant - Initial installation, 3 units at 35,000 kw = 105,000 kw
Ultimate installation, 5 units at 35,000 kw = 175,000 kw

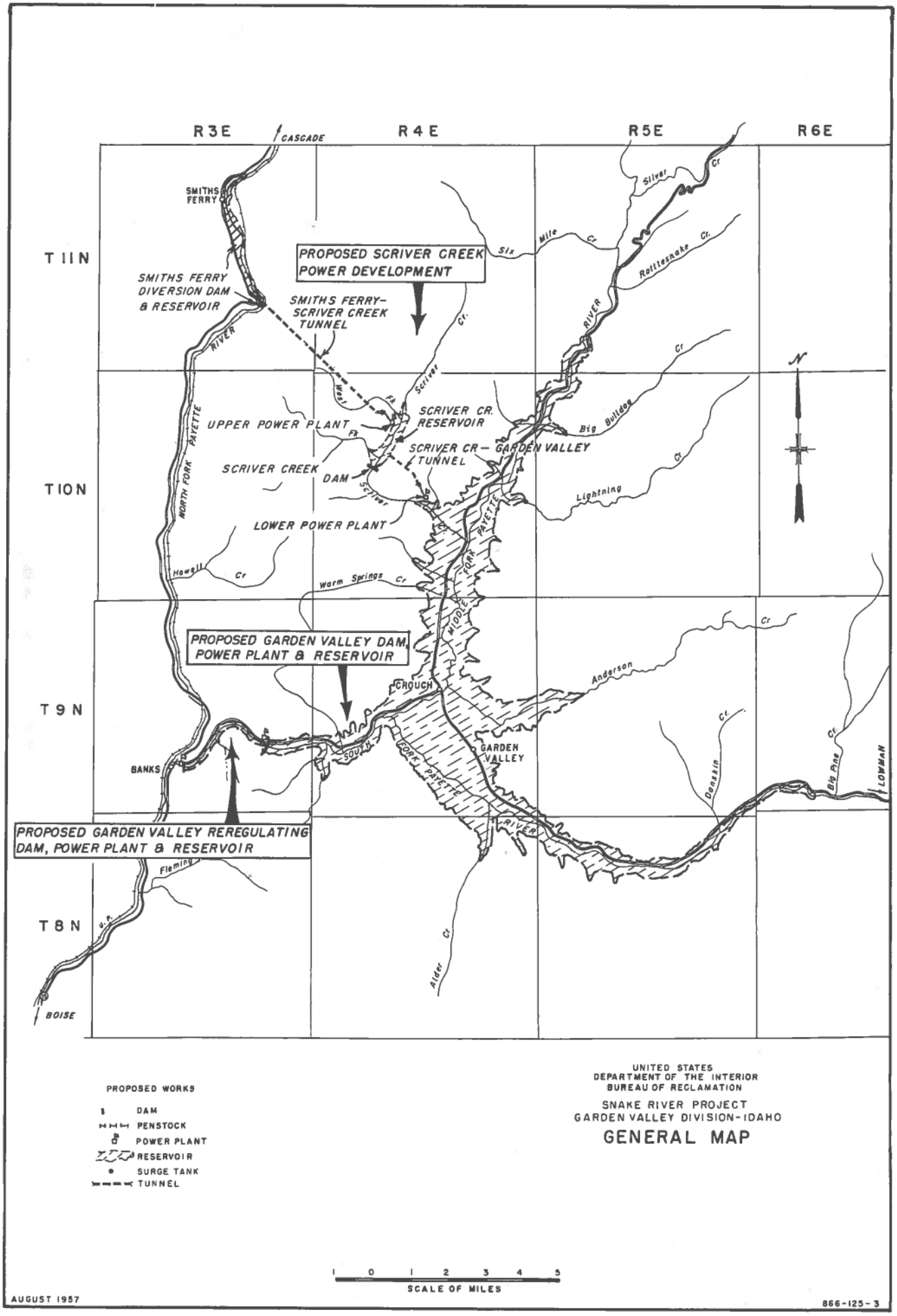
Reregulating Facility Powerplant -
Initial installation, 2 units at 12,000 kw = 24,000 kw total
Ultimate installation, 3 units at 12,000 kw = 36,000 kw total

Estimated Construction Cost:

Garden Valley Dam, Reservoir and Powerplant (Including Reregulating Facilities)	$93,800,000
Scriver Creek Power and Diversion Facilities	55,700,000
Transmission Facilities	17,000,000
Total	$166,500,000

The Garden Valley Reservoir, together with existing reservoirs, would provide adequate water supply for presently irrigated lands and sufficient water for the irrigation of 130,000 acres of new lands. The at-site power production from the four powerplants in the division would average 1,425,000,000 kilowatt-hours annually. The storage in Garden Valley Reservoir, operated in coordination with existing storage in Cascade and Deadwood Reservoirs, would provide relief from flooding in the Payette River Valley and would contribute to control of floods in the Main Stem of the Snake River and Columbia downstream from the mouth of the Payette River. The Smiths Ferry, Scriver Creek, and Garden Valley Reservoirs would furnish boating, camping, fishing and other forms of outdoor recreation to many thousands of people each year.

The Garden Valley Reservoir would provide a large new reservoir fishing area, and the State Fish and Game Department is investigating means of preventing rough fish infestation. The plan provides for construction of roads on both sides of the reservoir for timber and recreation access. These roads will connect to the existing road system serving the area. Garden Valley Reservoir will inundate about 6,000 acres of land presently farmed and some bottom lands in the upper reservoir now used for big-game wintering. Present program of range improvement on the adjacent lands would serve to somewhat mitigate this latter effect.



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

SNAKE RIVER PROJECT
GARDEN VALLEY DIVISION-IDAHO

GENERAL MAP

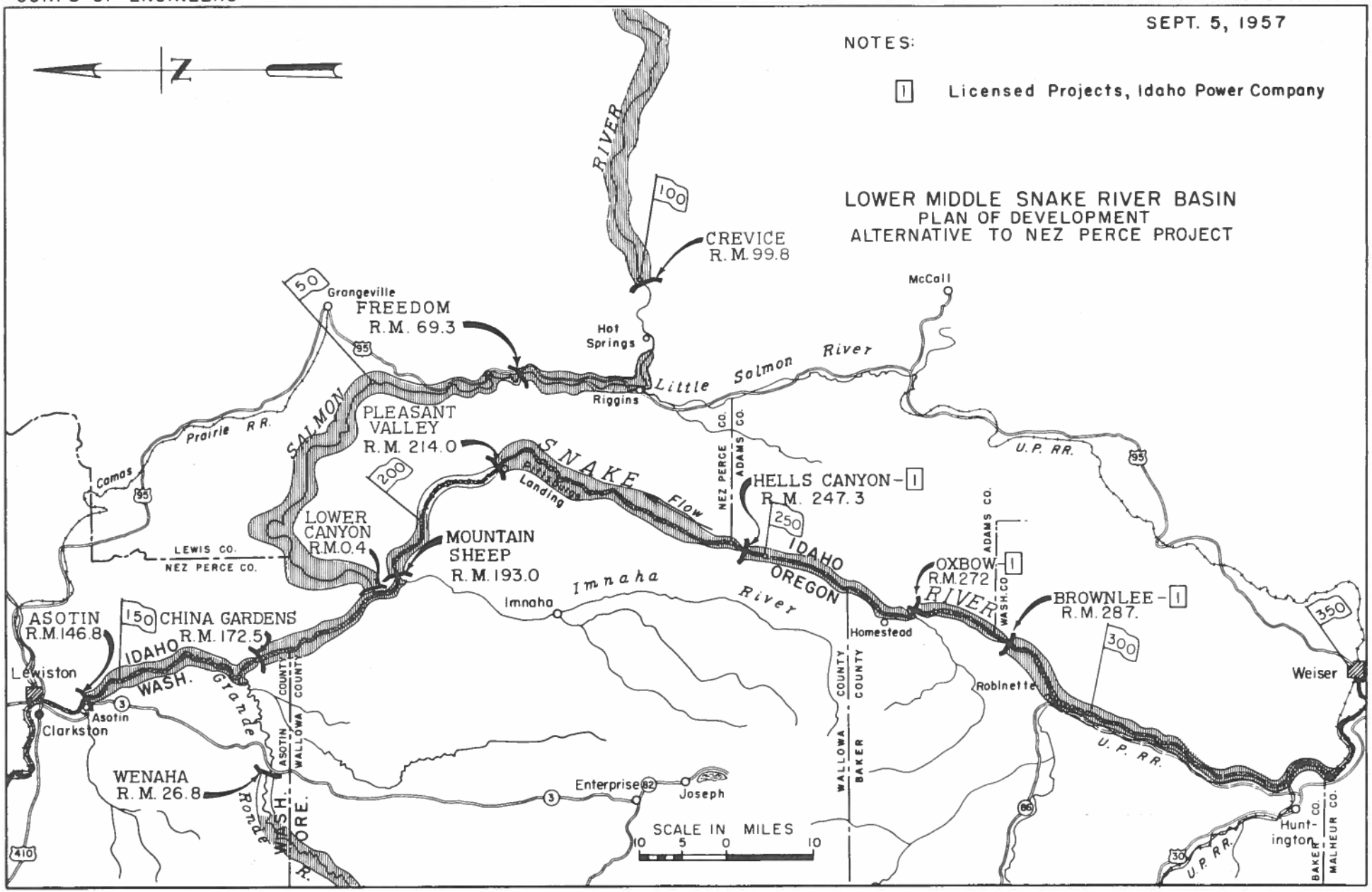
AUGUST 1957

866-125-3

CORPS OF ENGINEERS

U. S. ARMY

SEPT. 5, 1957



CORPS OF ENGINEERS

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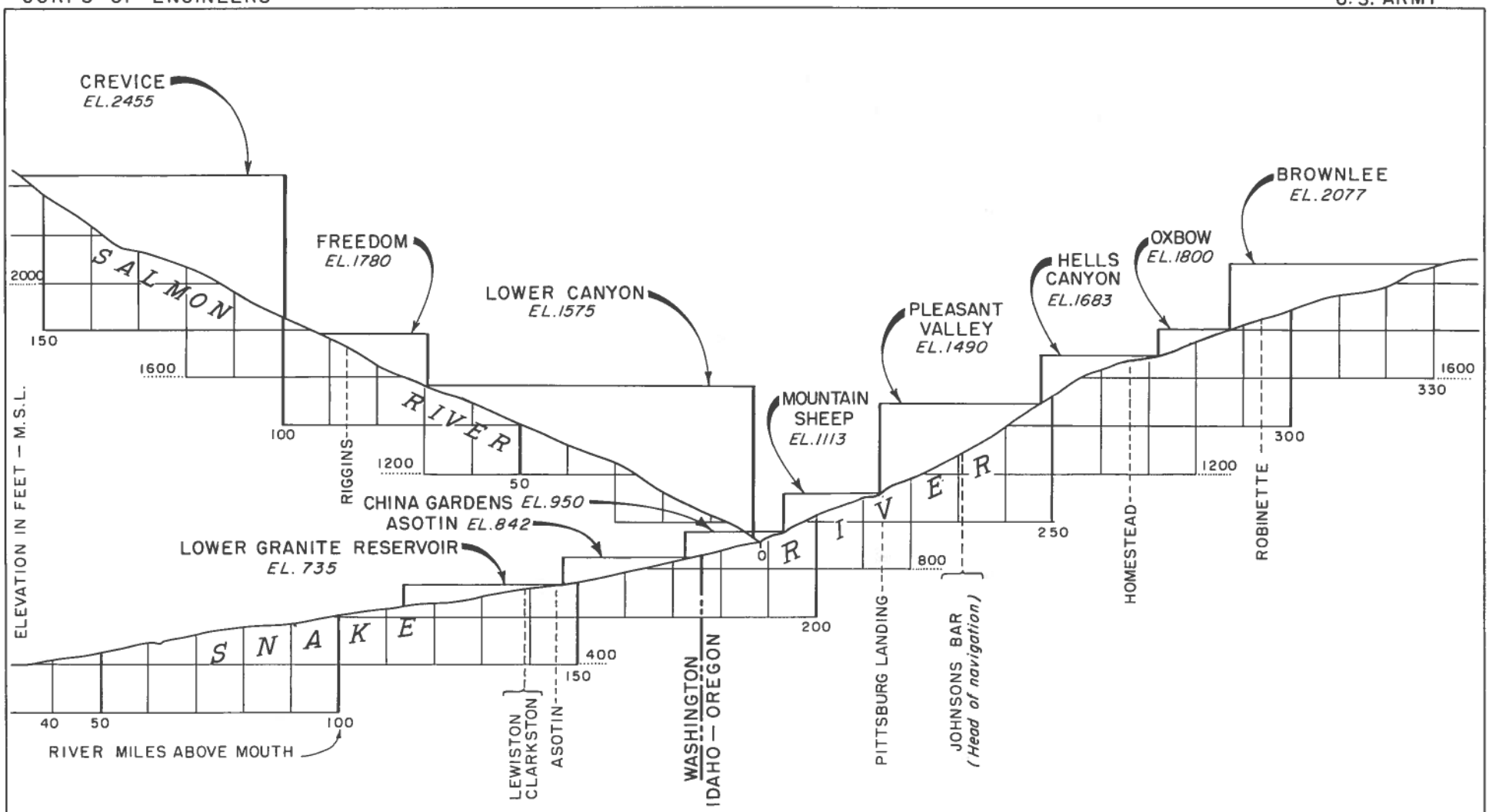


LOWER MIDDLE SNAKE RIVER BASIN

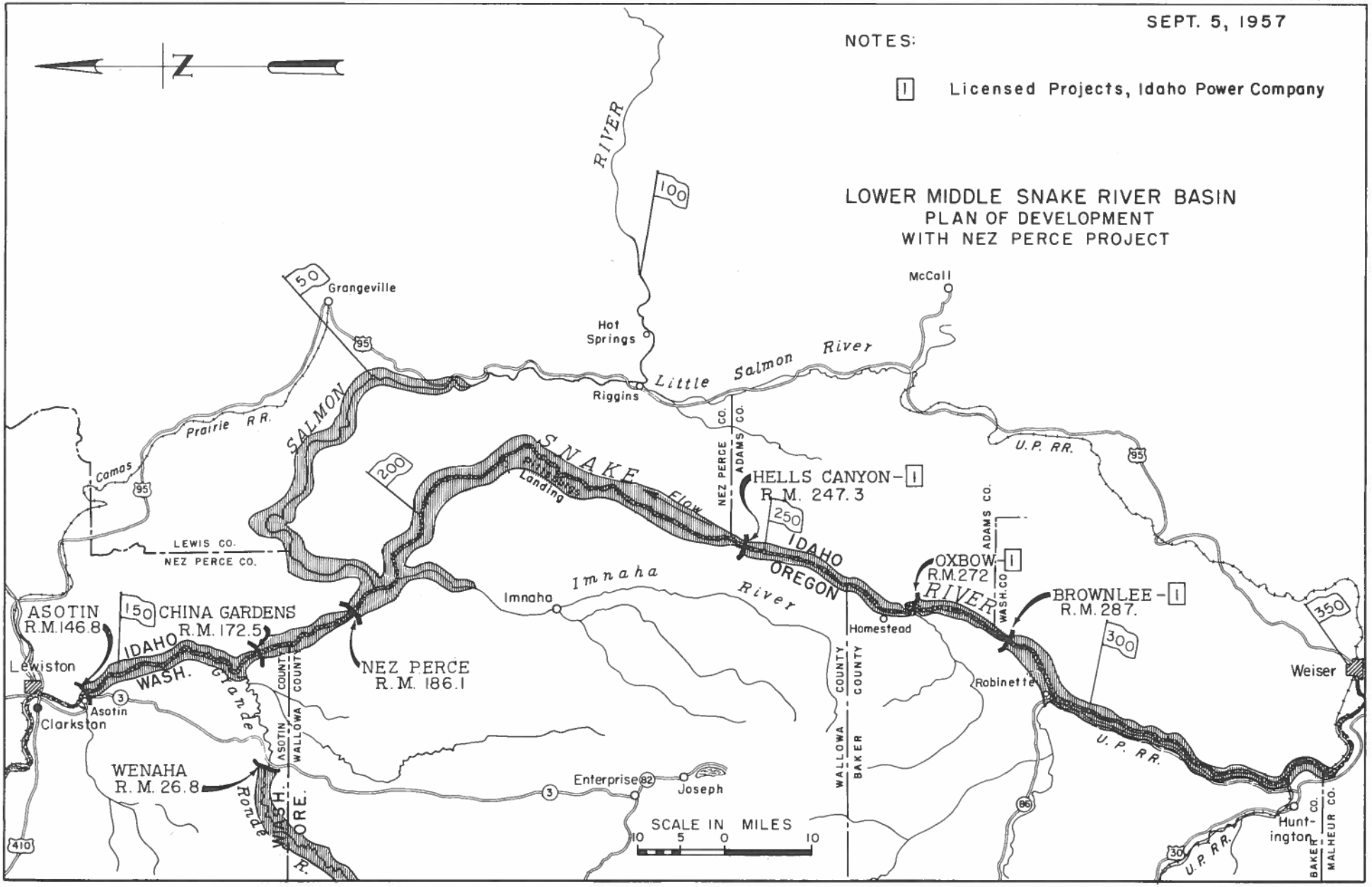
PROFILE OF PLAN OF DEVELOPMENT
ALTERNATIVE TO NEZ PERCE PROJECT

SEPT. 5, 1957

CORPS OF ENGINEERS

U. S. ARMY

SEPT. 5, 1957



CORPS OF ENGINEERS

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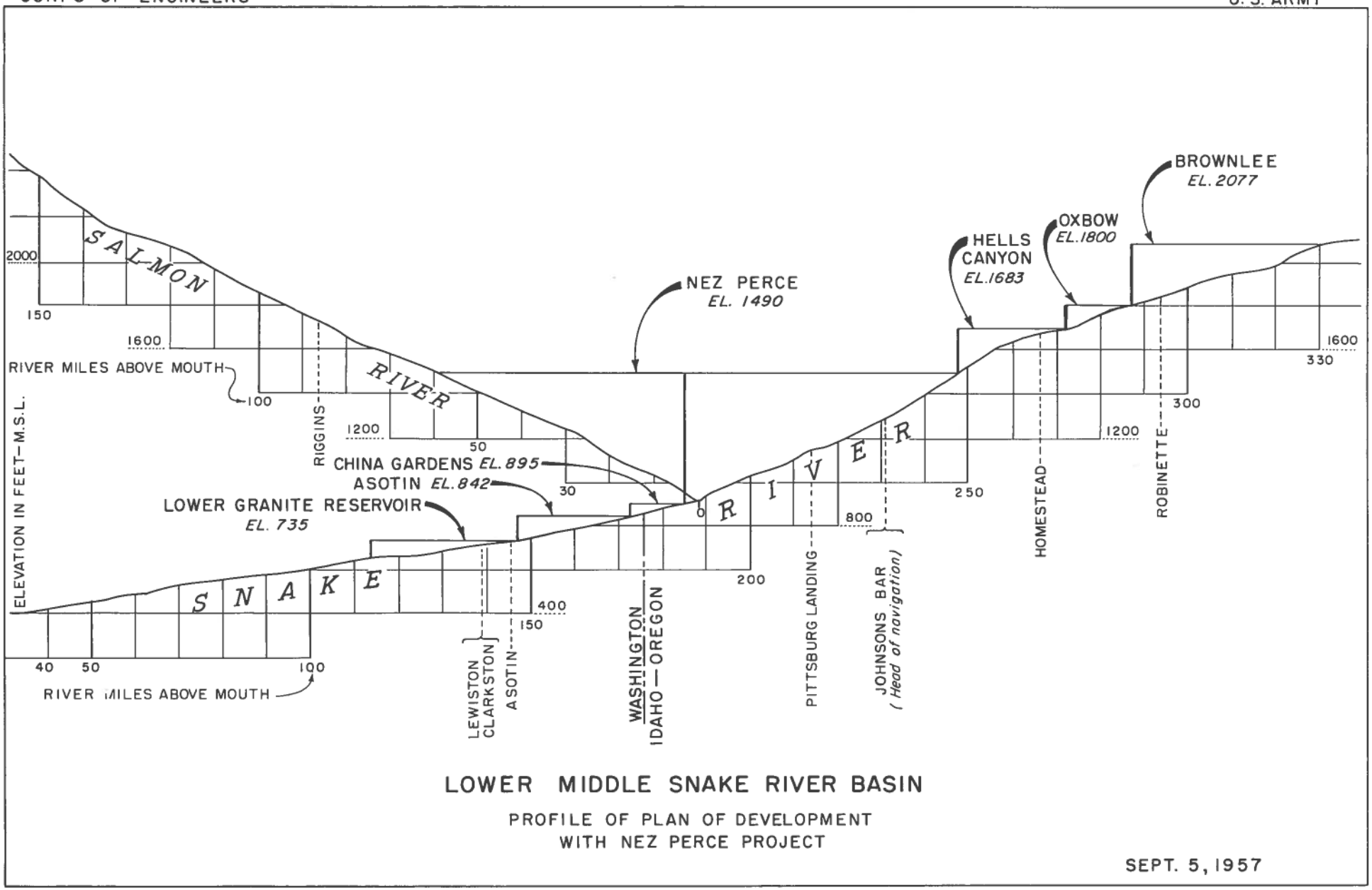


LOWER MIDDLE SNAKE RIVER BASIN

PROFILE OF PLAN OF DEVELOPMENT
WITH NEZ PERCE PROJECT

SEPT. 5, 1957

Walla Walla District
29 August 1957

WENAHA DAM

Wenaha Dam site is located in the State of Washington on Grande Ronde River, 26.8 miles above its mouth, about 0.5 miles above the crossing of State Highway No. 3, and about 12 miles southwest of Anatone, Washington. Primary purposes of the project would be development of storage for regulation of Grande Ronde River flows in the interest of downstream flood control and production of power, both at site and downstream. Pertinent data on the project are:

Reservoir - Area, 6600 acres at full pool elevation of 1,770
Minimum pool elevation, 1,575
Usable storage, 900,000 acre feet

Spillway - Type, gated chute — Capacity, 75,000 c.f.s.
Crest length — Crest elevation

Dam - Type, rock-fill
Height (foundation to crest), 580 feet
Crest length, 1,780 — Crest elevation, 2,210

Power Plant - Initial installation, 3 units at 66,670 kw = 200,000 kw
Ultimate installation, same as initial

Estimated construction cost - $78,900,000.

Benefits to be derived from this project consist of flood control and power production. Principal flood control benefits would be derived as a part of the main control plan for lower Columbia River. The project will increase system prime power output by 161,000 kilowatts, of which 85,000 kilowatts will be produced at site and 76,000 kilowatts at downstream projects. System average energy production will be increased by 960,000,000 kilowatt-hours annually, of which 673,000,000 kilowatt-hours will be produced at site and 287,000,000 kilowatt-hours at downstream projects. Downstream prime power and energy assumes all available head on Snake and Columbia Rivers downstream from Wenaha to be developed. It is estimated that recreational use of the river reach to be occupied by the reservoir will increase from 3,000 man-day visits under existing conditions to 12,000 man-day visits after the reservoir is constructed.

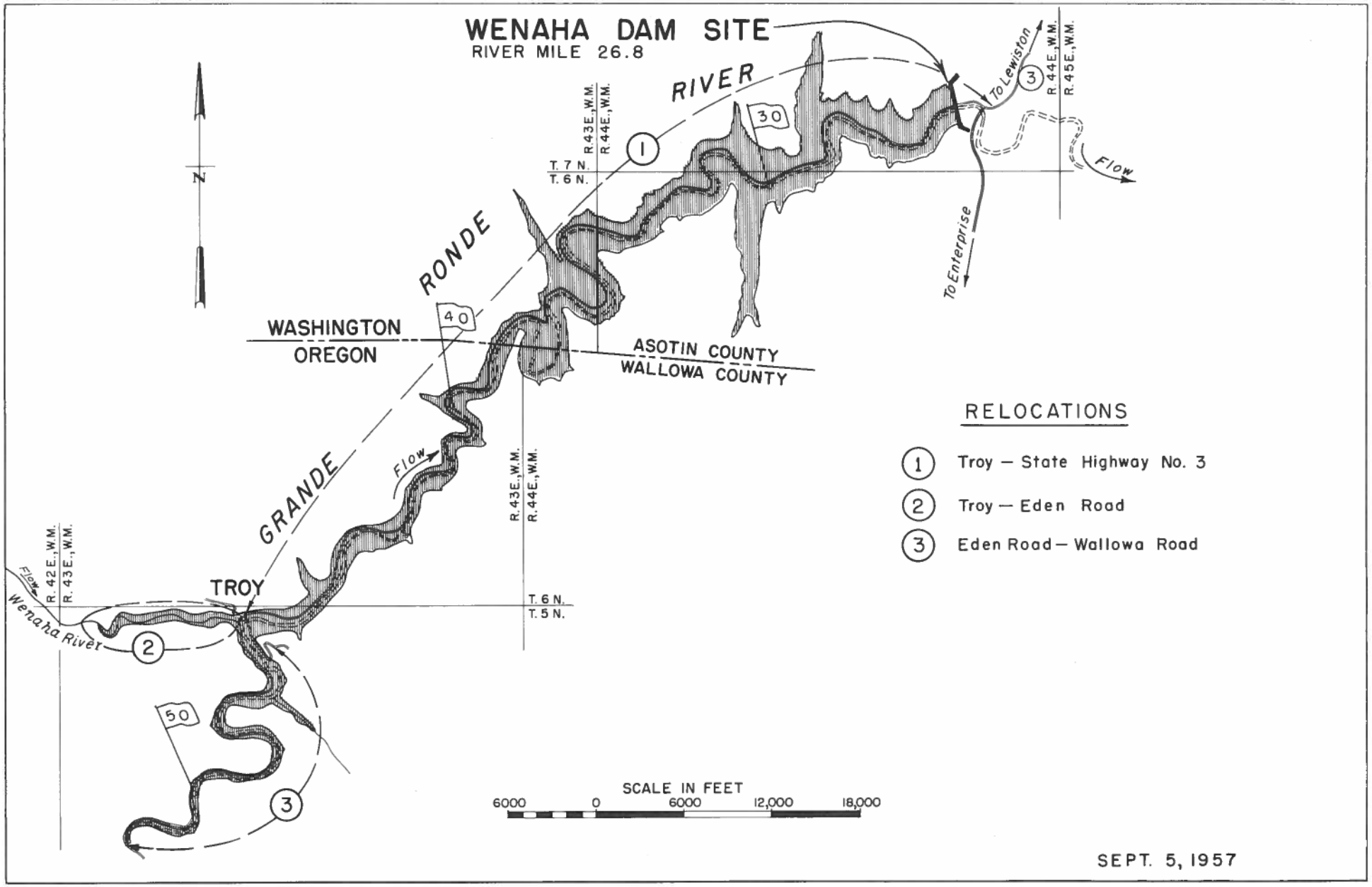
The Grande Ronde River supports runs of anadromous fish, most of which spawn above the dam site. The reservoir would inundate some presently utilized spawning area. Replacement for this loss may require special development of additional production areas elsewhere above the reservoir. Release of water from the deep reservoir will lower the water temperature in the river below the dam. There is a very definite possibility that this condition will result in extensive natural spawning in the 25-mile reach of the lower river. The valley throughout the reservoir area is utilized extensively as winter range by elk and deer. Since

winter forage is the limiting factor in big-game production in the Grande Ronde Basin, those forage areas inundated by the project should be replaced. Suitable fish passage facilities will be required for both upstream and downstream migrants. The upstream facilities would consist of a collection system in the vicinity of the powerhouse where fish would be collected and transferred to a truck and hauled to the reservoir for release. The downstream facilities would be essentially as outlined for the Nez Perce project.

The lake formed by the dam at normal pool elevation 1,770 msl would back water upstream for about 28 miles. The reservoir area is sparsely vegetated and lies almost entirely within the canyon walls. Main flowage items are relocation of the town of Troy, Oregon, with population less than 100, 18 miles of county road between highway 3 and Troy, the Troy-Eden road for 11 miles, the Eden-Wallowa road for 8 miles, and a portion of the Wenaha River trail.

CORPS OF ENGINEERS

U. S. ARMY



Walla Walla District
5 Sept 57

PLEASANT VALLEY DAM
Reservoir Elevation 1,490 Msl

Pleasant Valley site is located about river mile 213 on Snake River, some 10 miles southwest of Whitebird, Idaho. Primary purposes of the project would be development of power and downstream flood control. The Pleasant Valley project has been the subject of investigations and reports by both the Bureau of Reclamation and Pacific Northwest Power Company. Pacific Northwest Power Company has pending before the Federal Power Commission an application for a license to construct a dam and powerplant at this location together with a run-of-river project at the Mt. Sheep site located 20 miles downstream. The data presented hereinbelow for reference in relation to other proposed projects under this study have been adopted from the Pacific Northwest Power Company's license application dated 6 September 1955.

Under the private utility company's plan, the reservoir, with a normal surface elevation of 1,490 feet msl, would extend upstream over 34 miles to the Hells Canyon site. For this normal reservoir, the surface area would be 6,000 acres and the gross storage about 928,000 acre-feet, of which 500,000 acre-feet would be usable. The area involved is generally undeveloped with the greater portion consisting of national forest lands and ranches.

The Pacific Northwest Power Company proposes a concrete arch-type dam with a hydraulic head of 371 feet and an over-all height of 534 feet. The crest length of the dam at elevation 1,509 msl would be 1,310 feet.

Two powerhouses, one on each bank, would be located immediately downstream from the dam; three units would be installed on the Oregon, left side, and two on the Idaho side, with provision for a third. The installed capacity of five units would be 720,000 kw, and the ultimate installed capacity of six units would be 864,000 kw.

Spillway capacity would be provided over the center of the dam for a flood of 275,000 cfs. The spillway would consist of four 45-foot wide gated sections and eight 45-foot wide ungated sections. In conjunction with power units total discharge would be 300,000 cfs.

The benefits of this project would be derived from power revenues and from flood control. The Pleasant Valley project will increase system prime power output by 375,000 kilowatts, of which 335,000 kilowatts will be produced at site and 40,000 kilowatts at downstream projects. Of the at-site prime power 45,000 kilowatts result from upstream storage regulation. System average energy production will be increased by about 3,500,000,000 kilowatt-hours annually, assuming all available head on Snake and Columbia Rivers downstream from Pleasant Valley to be developed.

The height of the structure would pose difficulties with the passage of anadromous fish, but the reservoir itself should be an asset to fish and wildlife as well as promoting other recreational aspects by providing, in conjunction with other planned and proposed projects, vastly improved access to this remote region. This project would be operated in conjunction with Idaho Power Company dams immediately upstream. Upstream migrant fish would be trapped and hauled from the downstream Mt. Sheep dam to Brownlee reservoir. Similarly, downstream migrants would be trapped in Brownlee reservoir and hauled below Mt. Sheep.

Estimated construction cost for this project is $94,500,000 (Pacific Northwest Power Company) with five generating units installed.

Walla Walla District
30 August 1957

CREVICE DAM

Crevice Dam site is located in the State of Idaho on the Salmon River, 99.8 miles above its mouth, and about 13 miles upstream from Riggins, Idaho. Primary purpose of the project would be development of storage for regulation of Salmon River flows in the interest of downstream flood control and production of power, both at site and downstream. The project could be included in alternative plans for development of the Middle Snake River Basin replacing in part the Salmon River control that would be afforded by the Nez Perce project. It could also be developed at some future date, if found warranted, to supplement the Nez Perce project. Pertinent data on the project are:

Reservoir - Area, 11,100 acres at normal pool elevation 2,445 feet msl.
Minimum pool elevation, 2,245 feet msl.
Usable storage, 1,700,000 acre feet.

Spillway - Type, gated tunnel. Capacity, 180,000 c.f.s.

Dam - Type, rockfill. Height (foundation to crest) 660 feet.
Crest length, 1,200 feet. Crest elevation, 2,455 feet.

Power Plant - Initial installation, 3 units at 135,000 kw = 405,000 kw.
Ultimate installation, 6 units at 135,000 kw = 810,000 kw.

Estimated construction cost approximately $140,000,000 with initial power installation.

Benefits to be derived from this project consist of flood control and power production. Principal flood control benefits would be derived as a part of the main control plan for lower Columbia River. The Crevice project would increase system prime power output by 382,000 kilowatts, of which 182,000 kilowatts would be produced at site and 200,000 kilowatts at downstream projects. System average energy production would be increased by 3,375,000,000 kilowatt-hours annually. Downstream prime power and energy assumes all available head on Salmon, Snake, and Columbia Rivers downstream from Crevice to be developed.

The Crevice project would be located on the migratory route of extensive runs of anadromous fish. Therefore, the project would require construction of fish passage facilities for both upstream and downstream migrants essentially as outlined for the Nez Perce project. Some big game inhabit the forest lands adjacent to the reservoir, but the nature of the topography is not conducive to heavy concentrations of big game. Requirements for fish and wildlife are being studied by the U.S. Fish and Wildlife Service and the Idaho Fish and Game Commission.

The lake formed by the dam at normal pool elevation 2,445 msl would back water up Salmon River about 55 miles and up the South Fork of the Salmon River about 7 miles. The reservoir area is sparsely vegetated and lies within the canyon walls. Main flowage items are relocation of 15 miles of county road and the buying-out of mineral rights of the fairly extensive gold mining interests.

Walla Walla District
5 September 1957

LOWER CANYON DAM

Lower Canyon project is the farthest downstream site on Salmon River in Idaho. It is located approximately 0.5 miles above the confluence of that river with Snake River. The proposed construction is a rockfill dam to provide storage, power, and flood control facilities for optimum development of this reach of the river should Nez Perce project not be constructed. Pertinent data on the project are:

Reservoir - Area, 17,150 acres at full pool elevation of 1,575 feet msl.
Minimum pool elevation, 1,367 feet msl.
Usable storage, 2,300,000 acre-feet.

Spillway - Type, gated ogee discharging directly into Snake River.
Capacity, 200,000 c.f.s.

Dam - Type, Rockfill. Height (foundation to crest) 675 feet.
Crest length, 2,120 feet. Crest elevation, 1,585 feet msl.

Power Plant - Initial 5 units at 160,000 kw = 800,000 kw.
Ultimate 6 units at 160,000 kw = 960,000 kw.

Estimated construction cost with 5 units installed in magnitude of $210,000,000.

Access for construction of the project would require extensive new road construction up Snake River from the vicinity of Asotin, Washington, involving about 40 miles of highway. At maximum pool elevation of 1,575 portions of the townsites of Whitebird and Freedom will be inundated; also, about 17 miles of U.S. Highway 95 would have to be relocated.

Lower Canyon Dam is located on the migratory route of chinook salmon and steelhead trout, and will require inclusion of fish passage facilities essentially the same as outlined for the Nez Perce project. The reservoir is steep and barren affording poor habitat for wildlife, and the stream area is not suitable for extensive spawning. The over-all effects of the reservoir on fish and wildlife are under study by the U.S. Fish and Wildlife Service and the Idaho Fish and Game Commission.

The Lower Canyon project will increase system prime power output by 433,000 kilowatts, of which 323,000 kilowatts will be produced at site and 110,000 kilowatts at downstream projects. System average energy production will be increased by 3,900,000,000 kilowatt-hours, annually. At-site prime power and energy assume 1,700,000 acre-feet of storage regulation at the upstream Crevice project, and downstream prime power and energy assume all available head on Snake and Columbia Rivers downstream from Lower Canyon to be developed. This reservoir would be operated as a unit of the main control plan in the interest of downstream flood control. Benefits from improved navigation and recreation would also accrue to this project.

Walla Walla District
4 September 1957

NEZ PERCE PROJECT

Nez Perce Dam site is located on Snake River 2.5 miles below the mouth of Salmon River in Oregon and Idaho, and about 50 miles upstream from Lewiston, Idaho. Nez Perce was previously proposed in House Document 531 in 1948 but not recommended at that time due to the difficulty of passing anadromous fish over high dams. Primary purpose of the project would be to regulate flows of Salmon and Snake Rivers in the interest of flood control on lower Columbia River, of navigation on lower Snake and Columbia Rivers, and of power production at all downstream plants. In addition, a large block of power would be generated at the dam and integrated into the Northwest Power Pool. The average annual runoff at this site is estimated to be 21,300,000 acre-feet and is subject to future irrigation depletions of approximately 3,500,000 acre-feet. Pertinent data are as follows:

Reservoir - Area, 28,500 acres at full pool elevation of 1490 feet.
Minimum pool elevation, 1290 feet msl.
Usable storage, 4,150,000 acre-feet.

Spillway - Type, gated ogee section with an auxiliary tunnel spillway. Total capacity, 600,000 cfs.

Dam - Type, concrete gravity. Height (foundation to crest) 700 feet. Crest length, 1,300 feet. Crest elevation, 1,500 feet msl.

Power plant - Initial installation, 10 units at 150,000 kw = 1,500,000 kw.
Ultimate installation, 16 units at 150,000 kw = 2,400,000 kw.

Estimated cost with 10 units is in the magnitude of $340,000,000.

Construction of this project would increase system prime power output by 945,000 kilowatts, of which 725,000 kilowatts would be produced at site and 220,000 kilowatts at downstream projects. System average energy production would be increased by about 8,900,000,000 kilowatt-hours annually, assuming all available head on Snake and Columbia Rivers downstream from Nez Perce to be developed.

Incidental recreation benefits would also be produced through use by recreationists of the reservoir for boating, fishing, and hunting in previously inaccessible areas.

The dam would be located on the migratory route of large runs of chinook salmon and steelhead trout; however, the stream areas in the

reach of river affected by the reservoir are not suitable for extensive spawning. Facilities for the passage of upstream migratory fish would consist of an attraction and collection system at each powerhouse and two short fish ladders to conduct the migrants to holding pools. Four pressure locks would elevate the fish from the holding pools to the reservoir. Downstream migrants would be collected at the upstream face of the dam in skimmer devices, transferred to a tank truck, hauled to a point downstream from the dam, and there returned to the river.

U.S. Highway 95 enters the reservoir area at Whitebird, Idaho. This is a principal north-south route between northern and southern Idaho. Approximately 6 miles of relocation would be necessary to raise this road above the pool. Relocation would start at Whitebird and continue upstream. Additionally about 12 miles of county road would also be relocated.