



## Upper Baker Hydroelectric Project FERC No. 2150



### LOCATION

The Upper Baker River Development is located upstream of Lake Shannon, and 9½ river-miles upstream from the town of Concrete, which is 31 miles east of Mount Vernon, Washington. The Baker River is the second largest tributary to the Skagit River, which has its headwaters in the glacial ice fields of Mt. Baker (El. 10,778 feet) and Mt. Shuksan (El. 9,127 feet). The river drains 297 square miles.

### CONSTRUCTION

In June of 1956, construction began on the development and it was placed in operation in October 1959. A straight concrete gravity dam and an earth-filled saddle dam back water up a distance of nine miles creating the Baker Lake reservoir. Puget Power (now PSE) began its development of the basin in 1924 with construction of the Lower Baker hydroelectric project. A major portion of the lower development's power plant was destroyed by an earth slide in May of 1965. Reconstruction of the plant was begun in early 1967 and completed in September 1968.

### RESERVOIR

The Baker Lake reservoir is approximately 9 miles long and one mile wide, and has drainage of 215 square miles and a useable storage of 184,796 acre-feet. The normal full pool elevation is 724 feet. The minimum operating pool elevation is 674 feet. However, the top of the penstock intake is at elevation 654 feet. The lake surface area covered at normal full pool is 4,985 acres.

### DAM

The Upper Baker concrete gravity dam is 312 feet high, 1,200 feet long and the roadway across the top is 12 feet wide. The dam has a volume of 609,000 cubic yards of concrete.

### POWERHOUSE

The powerhouse contains two generating units with a combined authorized installed capacity of 90.7 megawatts (MW). In November 1997, Unit #1 was refurbished and the runner was replaced with one manufactured by Voith Hydro. The new configuration, at best gate position and rated net head, produces 72,314 hp or 52.4 MW with 93% efficiency. In 1996, Unit #2 was repaired with the wicket gates and servomotors refurbished. At rated net head, the best gate position produces 53,600 hp or 38.3 MW power with 92% efficiency. Rated flow is about 1,800 cfs at efficient gate setting and rated net head.

### FISH PASSAGE FACILITIES

Upstream migrating adult salmon and steelhead passage is provided year-round by a trap-and-haul facility located one half mile downstream of Lower Baker Dam. Fish are collected, loaded into specially designed tank trucks, and transported to the Upper Baker reservoir and/or spawning beaches. Each year, tank trucks

transport an average of 9,900 salmon and steelhead to Baker Lake. Downstream migrating juvenile salmon are collected upstream of each dam by a surface collection barge (gulper) from March through August. Fish are transported daily by tank trailer and released into the Skagit River.