

PROJECT LOCATION

Philpott Lake project was completed in 1952 and is located on the Smith River about 44 miles above its confluence with the Dan River, about 7 miles upstream from Bassett, Virginia.

PROJECT DESCRIPTION

The dam is a concrete gravity structure with a top elevation of 1016 feet msl and a length of 920 feet. The maximum height above the riverbed is about 220 feet. The spillway is an Ogee type and is 120 feet long with a crest elevation of 985 feet msl. The powerhouse is a reinforced concrete and steel structure located on the right bank of the river at the toe of the intake section of the dam. It houses the turbines and control equipment. The total installation is 14,000 KW (two 6,700 KW units and one 600 KW unit).

LAKE STORAGE

The total storage space in the lake up to the top of the spillway (elevation 985 msl) is about 200,400 acre-feet. The storage capacity between 985 and 974 feet msl is reserved for floods and contains about 34,200 acre-feet. The storage capacity between 974 and 951, which is the current bottom of the power pool elevation, is utilized for power generation and contains 57,800 acre feet. The storage capacity below 951 feet msl is inactive and dead storage and contains 108,400 acre-feet.

CURRENT PHILPOTT OPERATIONS

The present Philpott operations provides for flood control, power production, and low flow augmentation. These are accomplished as follows:

- a. Power Operation. In general, when Philpott lake is below 974 feet msl, the project is operated in accordance with a plan to obtain maximum revenue from the sale of power. The powerplant is designed to operate with the reservoir as low as 920 feet msl. Normally, Philpott will operate as a peaking plant with the main units being operated about 15 hours per week and occasionally up to 84 hours per week. During the hours when peak generation is not scheduled, energy will be generated by minimum flow releases scheduled by Wilmington District.

The main units are connected to penstocks 9 feet in diameter flared to 22.5 feet at the face of the dam with centerline elevations at 888 feet msl. The main units discharge at a rate of 1,260 cfs at a pool elevation of 974 feet msl. The smaller unit is connected to a 3-foot diameter penstock at approx. the same elevation as the main intakes. The small unit discharges at a rate of about 30 to 35 cfs at a pool elevation of 974.

- b. Flood Control Operations. A primary purpose of the project is flood control. Flood control requirements dictate the use of storage capacity above elevation 974 and power releases will be reduced to zero if necessary to avoid damaging stages on the Smith River. When the reservoir is between 974 and 985, the operation in progress for power generation and low flow augmentation will be continued until 24 hours after the peak stage resulting from runoff originating downstream of Philpott has passed Bassett. Discharge from one sluice will be opened 24 hours after the stage peaks at Bassett and the turbines will be operated at full load for as many hours per day as generation can be scheduled. This operation will be continued until the reservoir is emptied to elevation 974. When the reservoir

elevation is above 985 and the flood crest has passed Bassett and the stage at Bassett is below 10 feet, the discharge from Philpott will be increased to provide a 10-foot stage at Bassett by operating the turbines and opening the sluices. Since the flow over the uncontrolled spillway varies with reservoir level, the flow at Bassett gage is maintained by varying the releases through the sluices.

- c. Low Flow Augmentation. The Smith River downstream from Philpott is used as a source of water supply and also a means for disposal of wastes. The required minimum instantaneous flow target for the Smith River below Philpott Dam is 59 cfs at Stanleytown, Virginia. This was established by the U.S. Public Health Service in the 1950's with concurrence from the Commonwealth of VA. (I have seen reference to this letter but have not found it in our files). Minimum releases at the dam range from 20 to 30 cfs plus about 15 cfs leakage.

Two gated, 12-inch diameter pipes are provided for low flow releases when the turbines are not in operation. The capacity of these pipes is 75 cfs at a pool elevation of 974 feet msl.

Generally, all releases are discontinued 2 1/2 hours before full generation and 1 hour after full generation. During these times, streamflow at the dam is limited to leakage (about 15 cfs). For the remaining time releases of about 30 cfs are made through the 600 KW unit to provide for station use energy and maintain low flow requirements.