

## The Watershed Short Story:



After experiencing flooding from six major storms between 1935 and 1955, the Culpeper Soil and Water Conservation District and the Town of Culpeper requested assistance from the USDA Soil Conservation Service\* to plan and install flood control dams in the Mountain Run watershed.

The partners developed the Mountain Run Watershed Work Plan in 1958 under the authority of the Watershed Protection and Flood Prevention Act (PL-566), constructing two single purpose and three multiple purpose flood control and water supply dams between 1959 and 1973.

### Flood Control (Single Purpose)

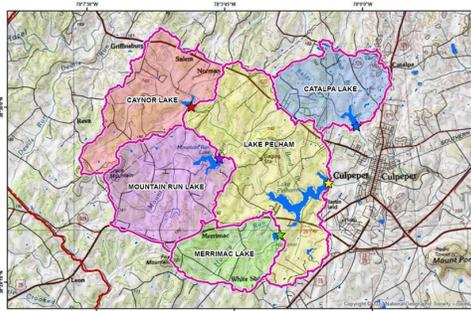
- No. 8A (Caynor Lake) - 1959
- No. 13 (Merrimac Lake) - 1960

### Water Supply and Flood Control

- No. 11 (Mountain Run Lake) - 1959
- No. 18 (Catalpa Lake) - 1973
- No. 50 (Lake Pelham) - 1972

Mountain Run Lake and Lake Pelham now require upgrades to reduce the risk of dam failure and to meet state dam safety regulations.

\* Now the Natural Resources Conservation Service (NRCS)



July 2016

# Dam Rehabilitation Fact Sheet

## Mountain Run Lake, Mountain Run Watershed



A scenic view of Mountain Run Lake in Culpeper, Virginia.

### Description of Problem:

The auxiliary spillway of Mountain Run Lake does not have the capacity to pass the water volume required by Virginia dam safety regulations and needs rehabilitation.

### Sponsors:

Town of Culpeper and the Culpeper Soil and Water Conservation District

### Funding:

The USDA Natural Resources Conservation Service will pay 65 percent of the total project costs but must not exceed 100 percent of the cost of construction. The sponsors will be responsible for the remaining 35 percent. The total project cost is estimated at \$5,622,000.

### Dam Rehabilitation Schedule:

The Mountain Run Rehabilitation Plan will be finished in April 2016. The NRCS Chief must authorize the plan for the process to continue into design and construction. Funds have already been secured for construction. Once design and construction are completed, the dam's flood protection, water supply, recreation, and water quality benefits will continue for the next 50 years.

Mountain Run Lake Dam Specifications	
Date Built	1959
Drainage Area (Acres)	4,128
Normal Pool Surface Area (Acres)	65
Flood Pool Surface Area (Acres)	154
Dam Length (Feet)	750
Dam Height (Feet)	39

**How a Dam Works:**

Flood control dams such as Mountain Run Lake are designed to store flood water during storm events and gradually release it into the stream over several days through the principal spillway pipe. These dams also trap sediment and keep it from moving downstream.

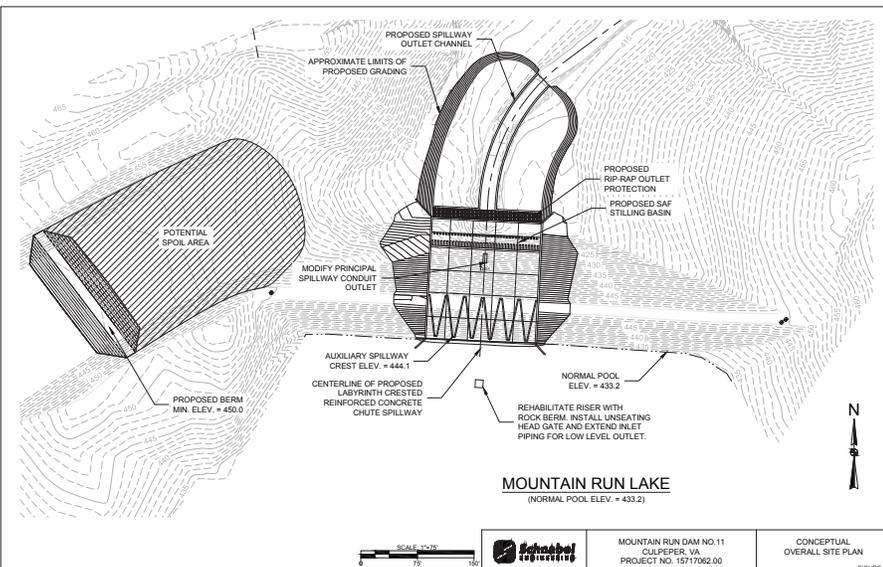
The principal spillway pipe regulates the water level in the dam on a daily basis and controls the rate at which the detained storm water is released from behind the dam. Excess water that cannot be stored in the reservoir exits through the grassy area at the end of the dam known as the auxiliary spillway.

**Required Characteristics of an Auxiliary Spillway:**

1. Capacity: The auxiliary spillway size needed to safely handle the probable maximum flood.
2. Stability: The resistance of the soil to surface erosion.
3. Integrity: The strength of the underlying soil and rock material.

**Proposed Solution:**

The plan view drawing below outlines the proposed solution to the auxiliary spillway problem.



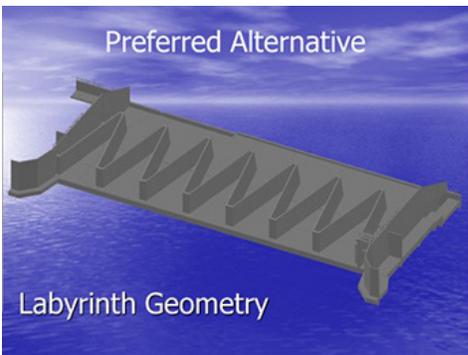
The plan includes the following rehabilitation activities:

- Installing a 144-foot wide, 6-cycle structural concrete labyrinth weir auxiliary spillway over the embankment
- Installing an earthen berm across the existing auxiliary spillway
- Installing a stilling basin and rip-rap outlet protection below the dam
- Upgrading the principal spillway riser to meet seismic criteria through the installation of about 5.5 feet of granular rock fill placed above and around the periphery of the existing riser footer

Project activity will not affect existing water supply storage, recreational uses or current levels of flood protection downstream.



The photo above is an aerial view of a typical labyrinth weir. The graphic below provides a closer look at how this enhancement to a spillway helps to control rising flood waters.



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