

BASIN DESCRIPTION

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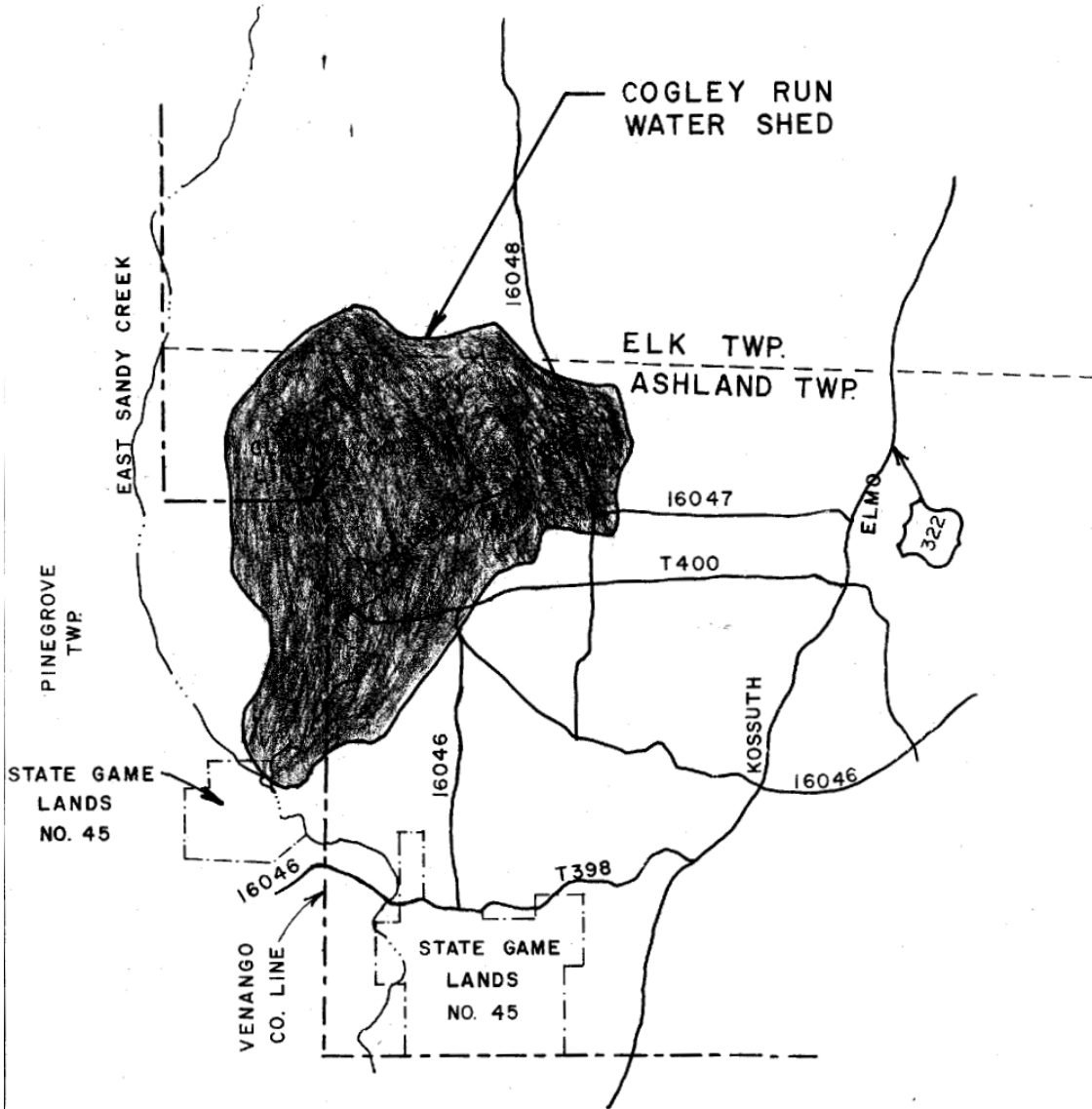
LOCATION

Cogley Run Watershed is situated in the northeastern portion of Elk Township and the northwestern portion of Ashlaod Township, Clarion County extending into the south-central portion of Pinegrove Township, Venango County. The center of the watershed is located approximately 1 mile north northwest of the Village of Fern and 13.5 miles northeast of Clarion, Pennsylvania. The 3.81 square mile watershed is approximately 3.125 miles long and 2.20 miles wide. The main stream meanders through the watershed and is approximately 4 miles long. Cogley Run flows in a northwesterly direction to its confluence with East Sandy Creek. From there East Sandy Creek flows west to its confluence with the Allegheny River south of Franklin, Pennsylvania. There are three major unnamed tributaries to Cogley Run.

PHYSIOGRAPHY AND GEOLOGY

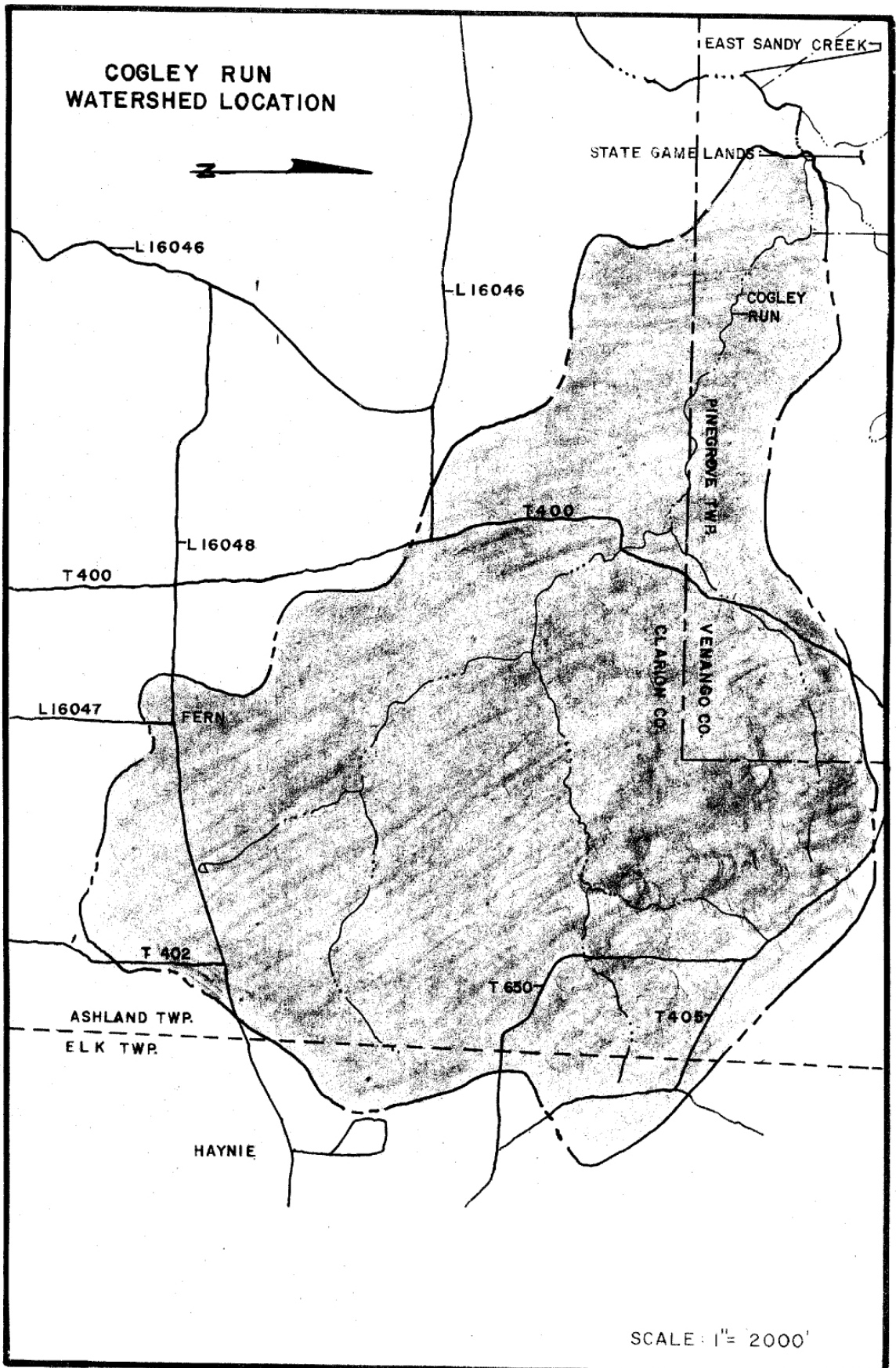
The topography of the Cogley Run Watershed consists principally of steeply sloping, heavily wooded hills and valleys. The structural features of the Millerstown Anticlinal Axis is responsible for a total relief of about 460 feet from the western end of the watershed to its confluence with East Sandy Creek.

Surface formations in the two counties in which the watershed is situated range from the Mercer Bed in the Pottsville Series to the Allegheny Series. There is little exposure of the various formations except in the upper reaches of Cogley Run where mining has shown some formations in the Allegheny group above the Clarion coal seam. The Lower Kittanning Seam of



LOCATION MAP

SCALE: 1" = MILE



coal caps the hills at the headwaters of Cogley Run.

The drainage from the mines on the Clarion and Lower Kittanning seams is predominantly acidic with large concentrations of iron and sulfate. The mildly fluctuating rate of submergence and the variable base level resulted in an open water to swamp to fluvial-deltaic depositional sequence responsible for complex stratigraphic nature of the coal deposits. Such an environment of deposition often contains areas of restricted water and high biochemical oxygen demand, resulting in an atmosphere of reduction. The high content of sulfidic compounds such as pyrite and marcasite in the coal seams and adjacent strata reflect this condition. Limestone was occasionally deposited and/or precipitated in back swamp areas during periods of sedimentary cycle. When this limestone occurs below a coal seam, the acidity caused by oxidation and hydrolysis of these iron disulfides in the mine drainage is neutralized to various degrees. The resultant higher pH causes the ferrous iron to be precipitated as ferric hydroxide or yellowboy.