

II.9-FFG-WSUP MUNICIPAL WATER SUPPLY GUIDANCE

Many small towns and cities depend on nearby rivers as a source of water supply. As water usage increases water system managers must meet demands by seeking adequate sources of water. In many locations stream-fed lakes or reservoirs provide a good source of water. Large rivers are usually more than adequate to meet water demands without supplemental lakes. Some water systems are supplemented by pumping from underground wells. Those water systems that depend exclusively on stream flow with or without a lake must continually monitor streamflow and/or lake contents and water usage. During droughts and to a lesser extent during dry seasons water managers must conserve water by imposing water restrictions until the water supply can meet the normal water demands.

Municipal water supply guidance is designed to provide water managers an estimate of the expected runoff from various amounts of rainfall. Water supply guidance is based on forecast rainfall, 'what if' scenarios and current soil moisture conditions. The River Forecast Centers (RFC) continually monitor current soil moisture conditions as part of their responsibility to forecast floods on the nation's rivers and streams.

Specifically, water supply guidance is computed from six (6) rainfall scenarios and current soil moisture conditions. Typical rainfall amounts used are 1, 2, 3, 4, 5 and 8 inches, The resulting runoff from the RFCs' rainfall-runoff models is then converted to millions of gallons per day (MGD) per square mile of contributing area. If the area is known, the runoff can be computed for the total area. The equation is expressed as:

$$RO = f(m,ra) * C * A$$

where RO is runoff in MGD

f(m,ra) is runoff in inches from the rainfall-runoff model using
current soil moisture represented by m and rain ra

C converts from inches to million gallons and is 17.374

A is area in square miles