# TSM 352 Land and Water Mgt Systems

**Runoff Lab (Due Tuesday, April 14th, 2014)**

**Watershed from Contours**

**Note: Map units are in feet.**

1. Open MapWindow and load the sample dem file from the **Lab10** directory.
2. Generate and label a contour file with 5 ft. contour intervals.
3. Load the sample streams and the sample outlet layers.
4. Use the stream and contour layers to create the boundary of the watershed upstream of the sample outlet.
5. Determine the area and the time of concentration for the watershed using Kirpich’s formula:

 **Tc = 0.0078 L0.77S-0.385**

where Tc = time of concentration in minutes.

 L = maximum length of flow (ft)

S = the watershed gradient (ft/ft )or the difference in elevation between

 the outlet and the most remote point divided by the length L.

1. The watershed is located near the town of Weed, California. Determine the peak flow using the using the Rational Method.
2. Route the hydrograph at the watershed outlet through a flow section for which *x* = 0.2, K = 40 minutes, and t = 10 minutes.