2005 Project Question
WSMC State High School Math Contest

Let the Water Flow

Create a mathematical model to predict, for the period March 1st through March 10th, the discharges in cubic feet per second of nine streams in Washington State.

Use data from the United States Geological Survey's Water Web site. The URL for this site is http://water.usgs.gov/ . For each stream on each of the 10 days, March 1st through March 10th, predict the mean daily discharge rate in cubic feet per second. Support your model with mathematical reasoning.

You must submit three copies of your project report to your regional director, postmarked by March 1. If your project qualifies for state, an **addendum** of up to two pages in length shall be added analyzing the effectiveness of your model and noting any significant changes in your model you might deem necessary. Support your reasoning with mathematics.

The nine streams are the Chehalis River south of the Puget Sound (gauging station near Grand Mound), the Quinault River representing the Olympic Peninsula (gauging station at Quinault Lake), the East Fork of the Lewis River (gauging station near Heisson) in the southern Cascades, the Nooksack River for the north Cascades (gauging station at Deming), the Puyallup River (gauging station near Orting) is representative of the central Cascade Range, and, for the east side of the Cascade Range, the Wenatchee River (gauging station at Plain), Ahtanum Creek (gauging station at Union Gap), the
Walla Walla River (gauging station near Touchet) in the lower Columbia Basin, and Hangman Creek (gauging station near Spokane), representative of rivers draining the eastern Washington highlands,

When you go to the USGS Water Web site you will discover that the specified gauging stations on the nine streams are given station numbers. Here they are for the stations to be used in the contest:

Stream	Station numbers
Chehalis River	12027500
Quinault River	12039500
East Fork of the Lewis River	14222500
Nooksack River	12210500
Puyallup River	12093500
Wenatchee River	12457000
Ahtanum Creek	12502500
Walla Walla River	14018500
Hangman Creek	12424000