Washington Science Olympiad
Clark Community College 2003 Regional Tournament
Event Supervisors: Jason Colberg, Loren Langland

Compute This!

The Problem

A Washington company, Colberg Whitewater Expeditions (CWE) operates a commercial whitewater rafting guide service on the Suiattle River. Client safety and quality service is of utmost importance to Colberg Whitewater Expeditions primary objectives. The United States Geological Survey (USGS) provides accurate real-time stream flow data which helps Colberg Whitewater Expeditions identify safe, entertaining water levels for its clientele via the Internet minutes before expedition parties depart. This data allows CWE guides to make crucial decisions related to every expedition.

The problem Colberg Whitewater Expeditions has encountered is that the most accurate data provided by USGS gauging stations are both upstream and downstream from the confluence of the Sauk and Suiattle Rivers. CWE management would like to provide more accurate data than is provided by the USGS to their guides. As a result, they have begun interviewing potential computer technicians that would be able to take accurate data provided by the USGS for the Sauk River and calculate stream flow for the Suiattle River. As a part of the interviewing process, CWE's office manager compiled the following test. You, as a 2003 Compute This! participant, are required to complete this test for Science Olympiad:

Test

Primary Objective: Calculate the average monthly stream flow for the Suiattle River using United States Geological Survey data recorded between 1911 and 2001.

Secondary Objective(s):

- Create a spreadsheet data table including data and appropriate labels/headings for the Sauk River at Sauk, Washington; the Sauk River above the Whitechuck River; and calculated estimates for the Suiattle River at its confluence with the Sauk River.

- Create a smooth line graph which provides visual representation of the spreadsheet data table identified above. Provide detailed attention to accuracy, titles, fonts, color and layout.

- Answer questions related to the USGS website using Word. Please cite answers using specific URL's leading to web page(s) where answers can be identified.

Information and Resources:

- USGS Real-time Stream Flow Data is accessible via http://waterdata.usgs.gov/usa/nwis/rt

- The Suiattle River is upstream from the Sauk River gauge at Sauk, WA

- The Suiattle River is downstream from the Whitechuck River gauge near Darrington, WA

- The Suiattle River is the only major source of water flowing into the Sauk River between the Sauk and Whitechuck River gauging stations

- The Sauk and Suiattle River drainage areas are in Skagit and Snohomish counties

- The Sauk and Suiattle Rivers are tributaries of the Skagit River

- The Skagit River flows into the northeastern part of Puget Sound (Washington)

Instructions

- Use the Compute This! Scoring Rubric provided by the event judge to identify specific scoring values associated with specific skill-related tasks

- Use a web browser to locate USGS Sauk River real-time stream flow data

- Use Microsoft Excel to create a spreadsheet data table and smooth line graph
    - Within the spreadsheet use a formula and Sauk River flow data to calculate the average stream flow for the Suiattle River between 1911 and 2001
    - Use a single **or** triple line graph to depict the results of data collection and computation

- Include answers to the five questions below and accompanying URL's in a Word document

- Save your Excel and Word files as (schoolnamenumber).xls and (schoolnamenumber).doc

- Attach and send completed spreadsheet, line graph, answers and URL's to:

    computethis03@scienceolympiad.com

- Print and turn in duplicate copies of the materials you have forwarded to the above e-mail address. **Please put your team # on every page you print.** If you don't, we may not know it is yours. Thank you.

Questions

1) Which country, beside the United States, is included in the survey of USGS real-time stream flow data?

2) What color is used to represent new, daily record (high) stream flow data for any USGS gauging stations?

3) Which Washington River basin includes the Twisp River?

4) How many USGS real-time stream flow gauging stations are located in Clark County?

5) What is the USGS real-time stream flow gauging station number for the Satsop River?

Again, please send your completed spreadsheets, line graphs, questions answers and URL's saved as schoolnamenumber.xls and schoolnamenumber.doc to:

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This event has been sponsored by Colberg Whitewater Expeditions. Visit Colberg Whitewater Expeditions website, www.colberg.com for more information about professionally guided whitewater rafting expeditions on the Suiattle River. . . after completing this event. Thank you!