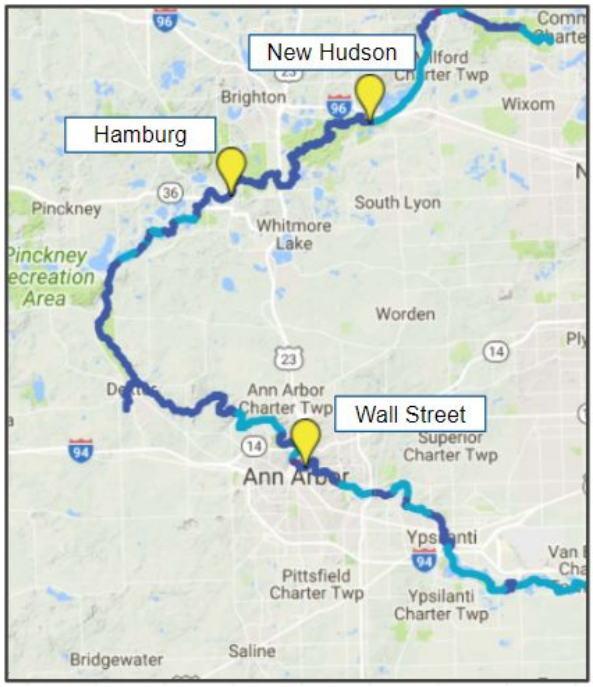
Huron River Watershed Council Data Instructions

Thank you for helping us during the data dive! Here is a rundown of the essential terms you will need to know, HRWC's questions, and ideas to begin analyzing the data.

Terms:

Flow - Refers to the actual water-flow speed in the river.
Discharge - Term that can be used synonymously with flow. Units for discharge are cubic feet/second (or cfs).
Gages - There are gages along the river that measure the flow. We will be working with three of them today: New Hudson, Hamburg, and Wall Street. The locations of these gages are seen in the map below:



Main questions:

1.) When do we see sudden fluctuations in flow?

- Sudden fluctuations are changes in flow by 150% or above within a 12 hour period.
- This change in flow is calculated by comparing the current flow to the average flow in the previous 12 hour period. For example, if during the past 12 hours the average flow is 100 cfs then we do not want the flow to exceed more than 250 cfs.
- Primarily focus on the spring window (April - June).
- If there's time, considering relaxing the constraint to 100% or above.

2.) Can we attribute changes in flow to man-made or natural causes?

- This is a stretch goal but it does give you a chance to explore the data and observe how changes correlate with precipitation data.
- Any instances where flow change is more than 200% could be attributed to a man-made cause.
- This question is pretty open ended, get creative :)

Ideas for data analysis:

This is not an exhaustive list! Please feel free to get creative and use your own ideas to help answer these questions!

1. Summarize the data with descriptive statistics:
    a. How do monthly flow averages vary during the year? Across years?
    b. How do yearly flow averages vary over the past 30 years?
    c. What are the minimum and maximum flow we observe each year?
2. Look for “sudden fluctuations”
    a. Do consider there may be gaps in the data
    b. When and how often do the sudden fluctuations appear?
3. Look for the effect of precipitation
    a. Are there correlations between flow and precipitation? How does precipitation affect flow? Is it related to the flow itself? To the change of flow?
    b. Could we predict what is an expected change of flow after rain?
4. Visualization: can you show any of the previous part in nice looking graphs?

More opportunities with HRWC if interested:

Volunteer Stonefly search:
https://www.hrwc.org/volunteer/stonefly/
January 17

Summer internships:
https://www.hrwc.org/about/jobs/
HRWC will be looking for some very specific projects - TBD