LA12 Fall 2022:
Environmental Science for Sustainable Development
Lab Week 4:
Urban Streams: Strawberry Creek Tour
Post Lab Assignment

Answer the following questions, and complete your cross sections and record your observations as indicated below, and submit these for your lab assignment.

Urbanization and the Hydrograph

- What is your local watershed? Explore the Oakland Museum of California watershed maps to find the drainage basin where you live. Link, Google Earth Link
    - Attach a screenshot of the map **[1 pt]**
    - What is the name of the creek drainage that you live in? **[1 pt]**
    - Where does it originate, where does it ultimately drain to? **[1 pt]**
    - Characterize the stream channel, approximately what percent is day-lit natural stream, engineered channel, or underground culvert? What kinds of environments does it flow through? (1-2 sentences) **[1 pt]**

- In lecture, you learned that a *hydrograph* is a plot of streamflow against time. The reference *Streams and Floods* (in bCourses) explains hydrographs (Fig 10.31, p.247). Explain Figure 1: what does the solid line portray. What is represented by the dashed and solid lines? What does the dashed line portray? **[2 pt]**

Figure 1. Conceptual hydrograph in response to precipitation

- Using your knowledge of the current and historical characteristics of the Strawberry Creek stream to substantiate your answer, explain how this graph applies to the Strawberry Creek system before 1880 and currently. **[2 pt]**

- What is 'urban slobber'? Where did we see it in the creek? **[2 pt]**

- How do the dimensions of Strawberry Ck below the confluence (site 6) compare with its dimensions below the Big Inch Culvert outlet (Site 2), and below the Little Inch Culvert Outlet (Site 1)? How can you explain these differences? Compare those cross sections as well in terms of your additional observations such as bed material, degree of incision, vegetation, etc **[3 pt]**

- What is the function of check dams? **[2 pt]**

- **Flow measurement**
  - Summarize results of your flow measurement at Site 6 **[5pt]**:

Variable	
Width of flowing water (ft)	
Depth (ft)	
Velocity (ft/sec)	
Cross Sectional Area (ft^2)	
Flow (ft^3/sec)	

  - ~~How does the flow you measured here compare with the flow measured by your instructor upstream? How can you explain differences in flow? **[2 pt]**~~

8. Cross Section Below "Big Inch" Culvert (Site 2) [4 points]
Measure the channel depth and width, then draw a cross section roughly to scale (using your measurements) and annotate it by labeling features such as bed material boulders, concrete blocks, cobble, gravel, sand), bank material (natural/reinforced, gradual/steep, type of vegetation). Feel free to add other notes from your observations as you wish.
Channel depth (ft):
Channel width (ft):
Bed material:
Bank material:
Sketch cross section:

9. Below confluence N&S Forks (Site 6) [4 points]
Measure the channel depth and width, then draw a cross section roughly to scale (using your

measurements) and annotate it by labeling features such as bed material boulders, concrete blocks, cobble, gravel, sand), bank material (natural/reinforced, gradual/steep, type of vegetation). Feel free to add other notes from your observations as you wish.
Channel depth (ft):
Channel width (ft):
Bed material:
Bank material:
Sketch cross section: