

## **2018 ENR CDE Team Event: Ecosystems**

It is up to you and your team to assess three stream habitats. Your mission is to look at three streams OR three reaches of a stream to assess the stream habitat. You should choose three streams OR three reaches of a stream that have different land use functions so that the reaches can be compared and contrasted. Land use can be gauged by looking at the land use upstream and surrounding a potential monitoring site. Your three streams/reaches should fit into the following categories; one with a predominantly urban area, one with an agricultural drainage area, and the other with a mostly forested drainage area. A resource to help you determine these areas is attached at the end of the document.

**With your team, you need to collect and present the following information:**

1. Select three streams OR three reaches of a stream that have different land use functions.
2. Include a map/maps with the locations of each stream/reach identified but do not list the town name on the poster.
3. At each location please use the “*Habitat Assessment Field Data Sheet*” to assess each stream/reach.
4. Based on your assessment of each location, use your analysis from the “*Habitat Assessment Field Data Sheet*” to summarize the condition of each stream/reach. Use your summary to answer the following questions for each
  - Compare and contrast the reaches
  - What are potential causes for the conditions observed?
  - How would you improve this habitat?
5. Your poster should include the following items at minimum:
  - Answers to the above questions
  - A map depicting the location of each stream/reach,
  - Pictures
  - Data Tables
  - Graphically Displayed Results

**Each team may bring the following:**

- One standard size poster board, flip chart page or three-fold display board not to exceed 3' by 4'. Put your chapter name and CDE team members on the back of the poster.
- The poster must be submitted when you give your registration form to the event Superintendent.
- No electronic materials (Power Point etc.) or any other additional materials may be used for the presentation.
- Presentations must be 6-8 minutes long with 5 minutes allocated for questions from the judges.
- Posters and presentations will be graded with National FFA and State FFA grading rubrics. These will be posted on the website.

**Notes:**

Avoid areas where the stream meanders, and look to areas with riffles. Make sure that you have easy access to the stream sites. They should be not too far from a road, and should not require crossing private property.

## **Resources:**

### **Types of land use to look for:**

- Agricultural Areas
  - Riparian buffers – width and type of vegetation
  - Streams running directly across fields
  - Type of agriculture- crop vs. hay/pasture
  - Proximity of agriculture to the stream
  - Drainage canals/ modified water courses (allow surface runoff to easily enter streams)
  - Steep slopes and slope length- relief profile
  - Runoff from confined feeding operations
  - Agricultural ponds with large algae blooms
  - Livestock Access (streamside grazing, livestock crossing)
  - Bank erosion
  - Water withdrawal for irrigation
  - Wetland impairment
- Forested Areas
  - Logging
  - Obvious bank erosion
  - Obvious human use (hunting cabins, trails, camping)
- Urban Areas
  - Steep slopes
  - Proximity of impervious surfaces to stream
  - Catchment basins (can mitigate runoff effects)
  - Storm drains- where do they drain?
  - Direct discharge pipes into streams and rivers (septic, industrial)
  - Obvious applications of lawn fertilizers and pesticides
  - Areas of known high fertilizer/ pesticide use- golf courses, ball fields, etc.
  - Mining areas with runoff
  - Large percentage of impervious surface (greater than 70%)
  - Riparian buffers – width and type
  - In-stream pollution (debris/trash, junk cars, etc)
  - Stream/river channelization or containment (concrete retaining walls)
  - Construction and/or major land work/landscaping
  - Bank erosion
  - Wetland impairment