FROM RIVERS TO SOUNDS IN THE BERTIE WATER CRESCENT

AN EARTH & ENVIRONMENTAL SCIENCE PROGRAM THAT FOLLOWS THE WATER

NORTH CAROLINA LAND OF WATER (NC LOW) & A TIME FOR SCIENCE (ATFS)
www.nclandofwater.org & www.atimeforscience.org

WORKSHOP 4: MARCH 1, 2019
FIELD TRIP CONCEPTS AND QUESTIONS FOR A "TALL GLASS OF WATER"

1. UPLANDS AND EPHEMERAL DRAINAGE SYSTEMS

ASSIGNMENT: With your I-Phone, take a series of pictures at each of the field trip stops that you can put on your internet site and use with your students that introduce the students to this unique property and the many different "Dynamics of Water".

a. Key component of the Salmon Creek Water Hub in the world-class Bertie Water Crescent.

b. The flat-topped agricultural field, called the Talbot Terrace, is an ancient shallow seafloor that formed when the ocean was substantially higher than today's sea level.

c. Subsequent drop in sea-level produces a gradient that causes rainwater to run off the flat-topped Talbot Terrace, eroding small valleys that are head-water streams (they look like ditches).

d. The flat topography and rich marine sediments provide good soils for agricultural production and growth of pine forests.

e. The stream valley increases in depth and size as it moves down-slope towards sea level (Albemarle Sound), which controls the valley geometry and where the eroded sediment from upstream is deposited forming a floodplain and a delta that extends into the standing water body.

f. Wherever there is an obstruction in the flow of the stream such as a beaver dam, mill dam, power dam, etc, the obstruction forms a pond or lake, which acts as a temporary base level.

g. As the stream erodes deeper into the Talbot Terrace an incised canyon results.

h. As the stream approaches sea level the slope decreases, the valley widens,

i. These steep canyons contain more mature and unique eco-systems due to the cooler, shady, and often wetter environment, as well as being less useful land for development.

2. THE DELTA SYSTEM

Describe what happens when the spring-fed upland stream flows into the standing water of Albemarle Sound?

Draw a sketch of the interaction showing the areas of erosion vs deposition.

What happens to the stream when the tide comes in or goes out? These are small scale changes in sea level.

3. ALBEMARLE SOUND. What direction are you looking as you look down the length of Albemarle Sound?____

Is there a wind blowing?_____ If so what direction is the wind blowing from? _____

From what direction are the waves coming onto the beach?_____

What happens to a wave when it breaks on the beach?_____

How does an individual sand grain move as a wave breaks on the beach? _____
_____

What happens to a wave when it runs into a tree in the water?_____

How many different types of trees live in the Albemarle Sound water? _____

Why are the trees in the water? _____

3. BEACH

Where does the sand on the modern beach come from? _____

List the different kinds of sediment you find on the beach. 1. _____ 2. _____
3. _____ 4. _____ 5. _____ 6. _____

How many different wrack (debris) lines occur on this beach?_____

How does each wrack line form? _____

Collect a series of samples for use in your classroom.

4. ERODING CLIFF

What evidence can you find in the cliff to prove it is a marine deposit?_____

List 2 things that prove the cliff is eroding. 1._____ 2._____

Is the cliff eroding today? _____ If not when will it erode? _____

Where does the cliff sediment go when it does erode? _____

Are the trees in the water helping to prevent cliff erosion? _____

5. HUMAN MODIFICATION (Photos by S. Sauer)

Should we put rock bulkheads against the cliff to prevent the erosion? _____

What do you think will happen to the beach if we harden the cliff face to stop the erosion?

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