

**A NATURAL RESOURCE & CULTURAL HISTORY BASED
“RIVERS TO SOUNDS FIELD EDUCATION CENTER”**

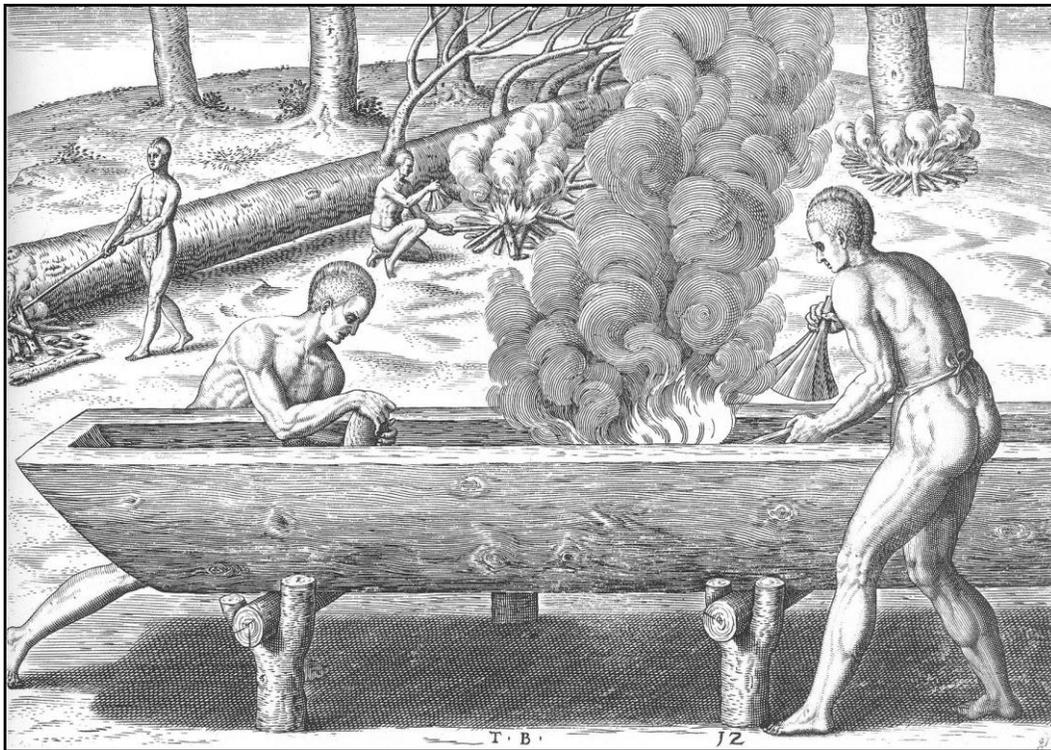
BERTIE COUNTY, NC

**NORTH CAROLINA LAND OF WATER (NC LOW)
BERTIE COUNTY
TOWN OF WINDSOR**

**IN PARTNERSHIP WITH THE
NC DEPT OF NATURAL AND CULTURAL RESOURCES
DIVISION OF STATE PARKS**

NC LOW TEAM

**Dr. Betsy Bennett, Mr. Tom Earnhardt, Dr. Stanley Riggs,
Ms. Ann Simpson, and Mr. Bland Simpson**



Native Americans burning out a cypress log to make a dug-out canoe as observed by the English colonists and recorded in de Bry's engravings of 1590.

November 8, 2019

RIVERS TO SOUNDS FIELD EDUCATION PROGRAM

The natural and human history within North Carolina’s Land of Water (NC LOW) is a product of the continual interplay of the geological, ecological, and human processes operating in this dynamic land and water network. Northeastern NC’s coastal system is a complex set of interdependent ecosystems dominated by changes resulting from ongoing processes of sea-level rise and recurrent, high-energy storms. These energetic processes of change have molded North Carolina’s human history, continue to significantly impact the present culture, and will have a heavy imprint on our future coastal culture and economy. Thus, the “Rivers to Sounds” Field Education Program reflects a water-based, environmental history of a small coastal region through millennia of coastal system change and evolution with a substantial cultural over-print on the landscapes, their ecosystems, and natural dynamics (Figure 1).



FIGURE 1. Google Earth satellite image shows the regional program that integrates the Bertie County Recreational Center and the proposed “Rivers to Sounds” Educational Program on the NC State Parks Salmon Creek Natural Area.

Small towns in North Carolina's Land of Water are hard-pressed to create new economic opportunities. Today they face major challenges that include destructive floods, rising sea level, loss of jobs, population declines, high poverty rates, and crumbling infrastructure. In an effort to stimulate new economic opportunities, NC LOW's strategy is to focus on the natural resources and cultural history from a field oriented educational program as a means of diversifying the rural economy while minimizing the stifling impact of flooding and drought. NC LOW brings this vision to the Bertie County region with the expectation of improving the local quality of life through sustainable economic development that enhances and protects the environment and culture of the region.

Bertie County is water-bound by a complex of different kinds of drainage systems encircling three sides of the county and dissecting it through the interior (Figure 2). The great Roanoke River forms the entire western and southern boundary, while the waters of Albemarle Sound and the Chowan River are embayed estuaries that form the southeastern and entire eastern boundary, respectively. The interior of Bertie County is dominated by the dendritic valley of the Cashie River and its upstream tributary network and downstream inputs from Roquist and Wadling Place creeks. Several smaller and incised, black-water tributary streams flow into Albemarle Sound and include the Salmon, Black Walnut, and Cashoke creeks. The high, east-facing bluffs of the Wicomoco and Talbot Terraces contain numerous small, steep, and deeply incised ravines. These are ephemeral drainages characterized by small delta plains and cypress headlands where they discharge into the Chowan River and Albemarle Sound.

Bertie County's unique and world-class water system represents a diverse and intertwined character of natural resources and cultural history that provides the framework for the "Rivers to Sounds" Field Education Program. Utilizing the natural classroom that already surrounds us in our backyard is essential to grow an educated citizenry, maintain a healthy environment, and to cultivate and train our youth for new career opportunities within the Bertie region landscape and waterscape. An important goal is to realize the advantages of a sustainable environment and balancing economic revitalization with the **3-Ps (preservation, protection, and presentation)** for the broader Bertie regions natural resources and cultural history.

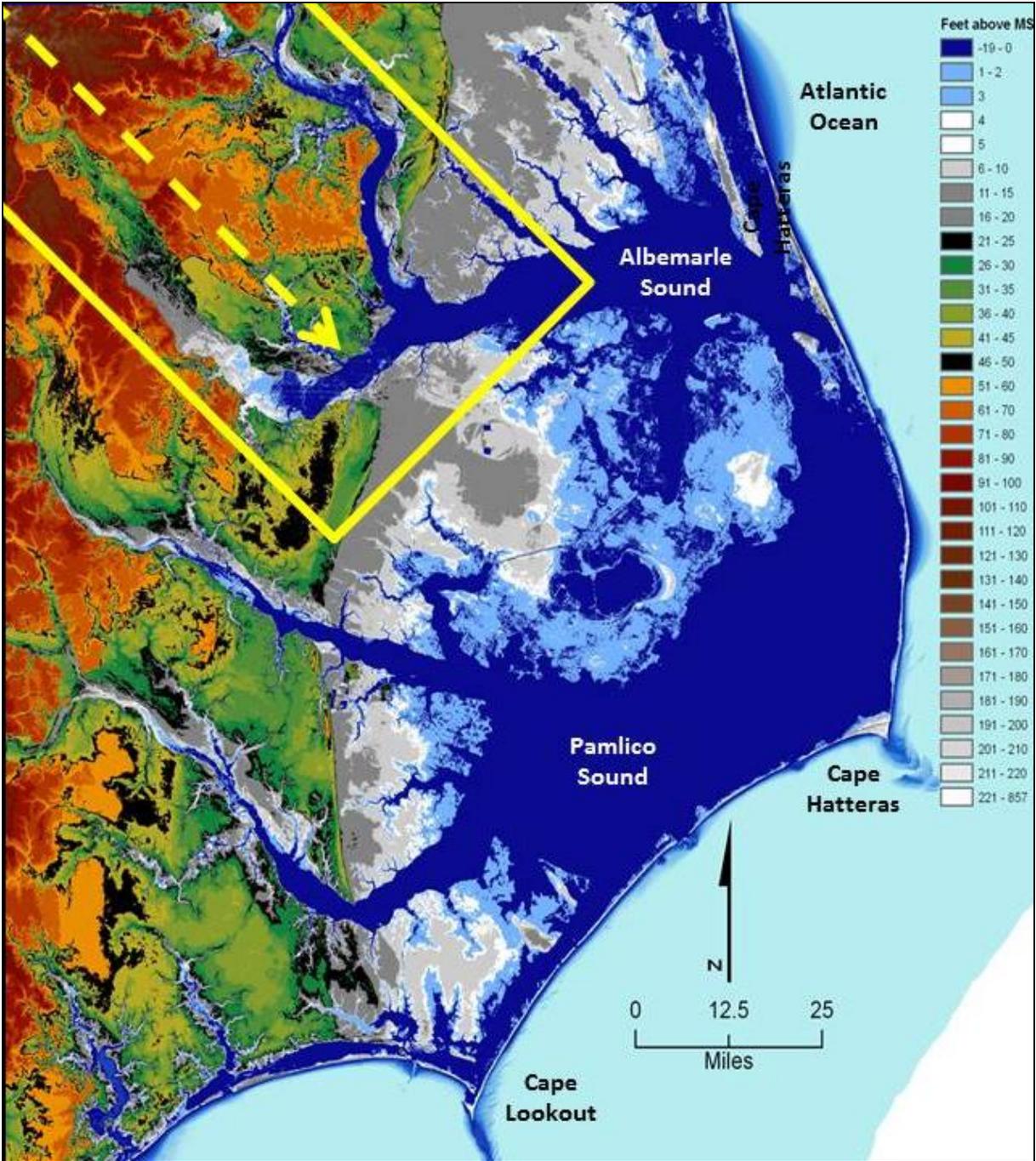


FIGURE 2. A color topography map shows the northeastern North Carolina Coastal Plain, the Bertie Peninsula (yellow box), the Bertie Peninsula (yellow dashed arrow), and associated water bodies. Topographic data are from the NC 2015 LiDAR program.

The Bertie County Board of Commissioners set its strategic goals for economic development beginning in 2014 that included 1) public recreational access to the boundary waters of the County and 2) promotion of eco-tourism. The County's governing body supported these economic development priorities and invested county funds to match a \$500,000 grant from NC Parks and Recreation Trust Fund to acquire the 147 acre tract on Albemarle Sound locally known as the "Tall Glass of Water" project.

Efforts by the two elected bodies (Town Board of Windsor and Bertie Board of Commissioners) demonstrate the vision and willingness to work collaboratively on a regional basis. In addition, the NC Partnership for the Sounds, NC Coastal Land Trust, NC Clean Water Trust Fund, and NC Land of Water have all cooperated with and been major supporters of this vision. One result is acquisition of the Salmon Creek Natural Area (995 acres) and the Bal Gra tract (300 acres), along with the county's land (147 acres), to establish the anchor location on the nose of the Bertie Peninsula. This 1,442 acre integrated education and recreation facilities at the confluence of Albemarle Sound, Chowan River Estuary, Salmon Creek, and the Roanoke-Cashie River systems will become a crown jewel in the regions waterscape system.

In order to realize this dream, the Bertie County leadership and her many towns, businesses, and citizenry must work in unison to support a totally integrated approach to defining its educational and recreational future. This will require public buy in, developing public/private partnerships, forming appropriate organizing committees. A critical component will be the acquisition of key personnel to oversee the various citizen committees, to define and prioritize the steps forward, to secure necessary funding, and to manage the program implementation. If Bertie County can build and market a significant program around its "world-class" natural and cultural resources, people will come. Whether they come to expand their minds or to recreate with dramatic experiences concerning the local natural environment or cultural history, they will need great educators, knowledgeable guides, quality outfitters, unique places to stay, and a variety of good eating experiences. These represent whole new industries with the potential of many new small businesses and associated jobs in the region.

It's all about the **three W's (Water, Wildlife, and Wildness)**. Together they create a beautiful destination for natural resource and cultural history education and recreation for a small coastal system within northeastern North Carolina. We can become a major part of the national movement to make sure that "**NO CHILD IS LEFT INSIDE**".

THE BERTIE COUNTY REGION

The Bertie Peninsula is a long and broad finger of land that extends southeast from the Virginia-North Carolina border into the Albemarle Sound (Figure 2). The peninsula is bounded by the Roanoke River system along the southwest and south shores and the Chowan River system along the east shore. The lower portions of both river valleys are being flooded by the ongoing processes of rising sea level to produce the Albemarle Sound and Chowan River estuaries, respectively. The Bertie Peninsula contains a descending scale of ever smaller tributary drainage basins that flow into the larger Roanoke and Chowan trunk rivers to form the “Bertie Water Crescent”. These smaller drainage systems range from mid-scale Cashie River and Salmon Creek to the small-scale of Black Walnut and Cashoke swamps, and the very small, ephemeral streams that form steep ravines riming the highland bluffs. Thus, the “Bertie Water Crescent” is a complex of different kinds of water drainage systems that are like a series of living organisms, continually interacting with each other and forming a diverse system of associated landscapes and complex eco-systems. Additionally, each of these waterscape and landscape components continuously respond to changing atmospheric dynamics of storm events with their extremes of wind and rain. This dramatic setting of natural resources defines Bertie County with a world-class water system that determined the long and rich, multi-cultural history of human occupation.

Bertie County is blessed with a treasure trove of natural resources consisting of a diverse waterscape that has dissected a unique landscape. The northern portion is a high terrace (45 to 90 plus feet above sea level) where the towns of Roxobel, Kelford, Lewiston-Woodville, Aulander, Powellsville, and Askewville are located (Figure 2). This upper terrace also forms the interstream divide between the south-flowing drainage system of Bertie County and the north-flowing drainage that dominates Hertford County and has been truncated on the east by the Chowan River estuary forming the north-south oriented, high shoreline bluffs. The Cashie River system lies totally within the boundaries of Bertie County with its headwaters incised into the uplands of the upper terrace. The Cashie River flows down slope onto an intermediate terrace (elevations of 20 to 45 feet above sea level) where most of the town of Windsor is located. South of Windsor, the Cashie River is at sea level resulting in a broad, meandering channel with a wide swamp-forest floodplain that flows into the Roanoke River. The entire western and southern portion of Bertie County is low (0 to 20 feet above sea level) and consists of a series of paleo-braid plains and the primary floodplain of the Roanoke River that empties into the estuarine waters of Bachelor Bay at the western end of Albemarle Sound. Albemarle Sound formed as modern sea level rose and flooded the eastern portion of the Paleo-Roanoke River valley.

North Carolina ranks as the 6th most visited state in the U. S. The state’s scenic beauty, rich cultural history, vibrant cities, and quaint villages make it an ideal destination. Previously left out of this economic equation are many of the rural communities of eastern North Carolina. However, many communities throughout NC are now seeking ways to create new economic opportunities to mitigate a number of challenges including loss of jobs, population decline, high poverty rates, empty buildings, and crumbling infrastructure.

NC STATE PARK’S SALMON CREEK NATURAL AREA

As one approaches the Salmon Creek site through the upper agricultural fields, the most striking image is the “century oak” (Figure 3) standing prominently in the middle of the field where it waits patiently to tell its many stories. The Salmon Creek Natural Area is an important historic site with an extensive history of occupation by both Native Americans and early colonial settlers. The Salmon Creek Water Hub has an extensive upland area on the flat Talbot Terrace that is presently in agriculture and piney woods. Salmon Creek is a black-water stream incised into the Talbot Terrace and is today at sea level and thus, is a slow flowing stream (Figure 4). The property has two segments (~0.8 miles) of eastern shoreline along the western end of Albemarle Sound (Figure 5). The southern and western property boundary consists of a 3.5 mile section of highly meandering Salmon Creek and its broad floodplain swamp forest (Figure 5).



FIGURE 3. Two seasons of the “Century Oak” located in the open farm fields and stands as a monument for the history of land and its inhabitants.

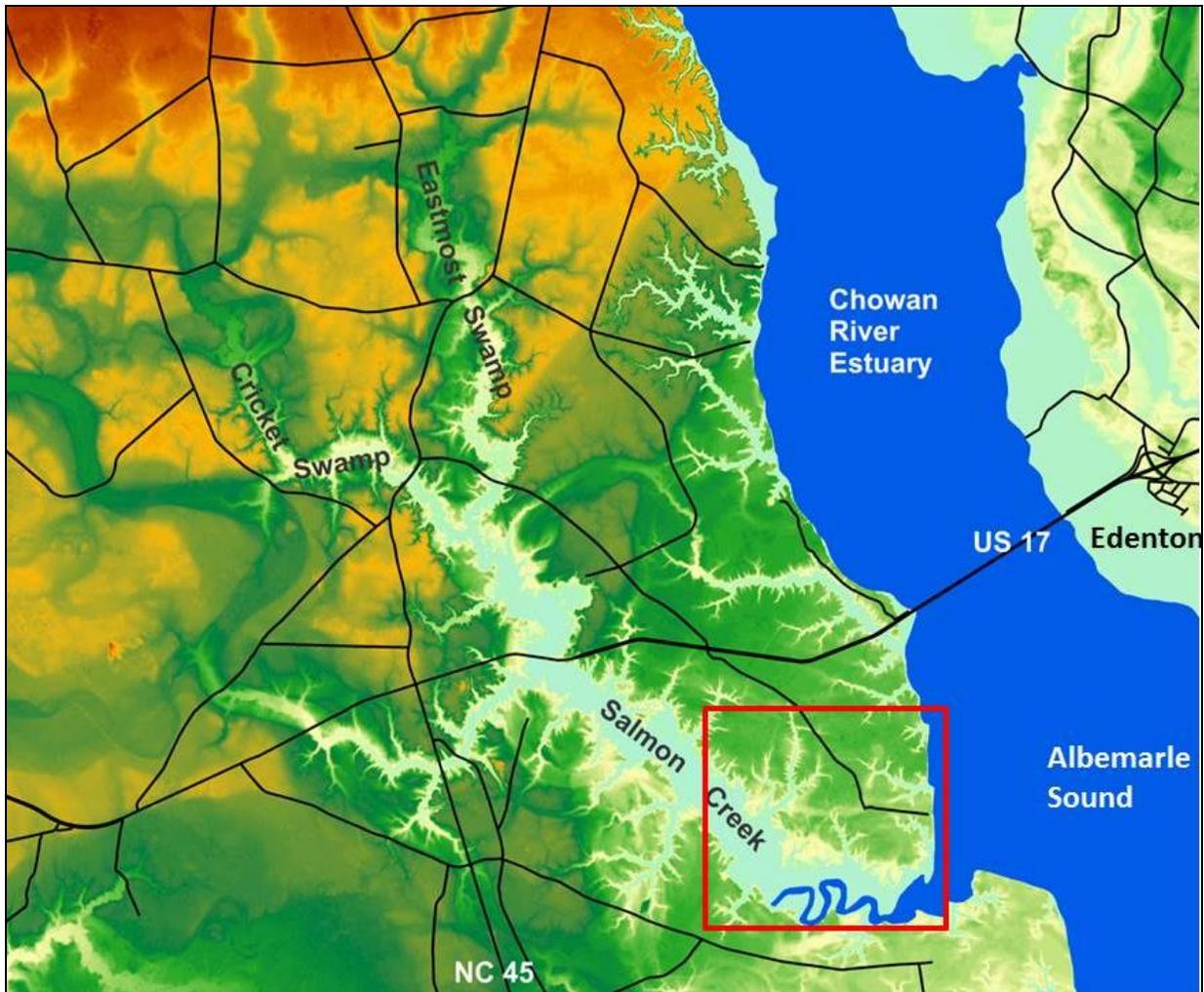


FIGURE 4. A color topography map shows the regional location of the Salmon Creek Water Hub (red box). The orange colored portion of the map is the flat-lying Wicomoco Terrace (from about 40-50 foot elevations) that is being dissected by the many stream valleys (light blue) including Salmon Creek. The green colored region between the orange and light blue is the flat-lying surface of the Talbot Terrace (from about 20-40 foot elevations).

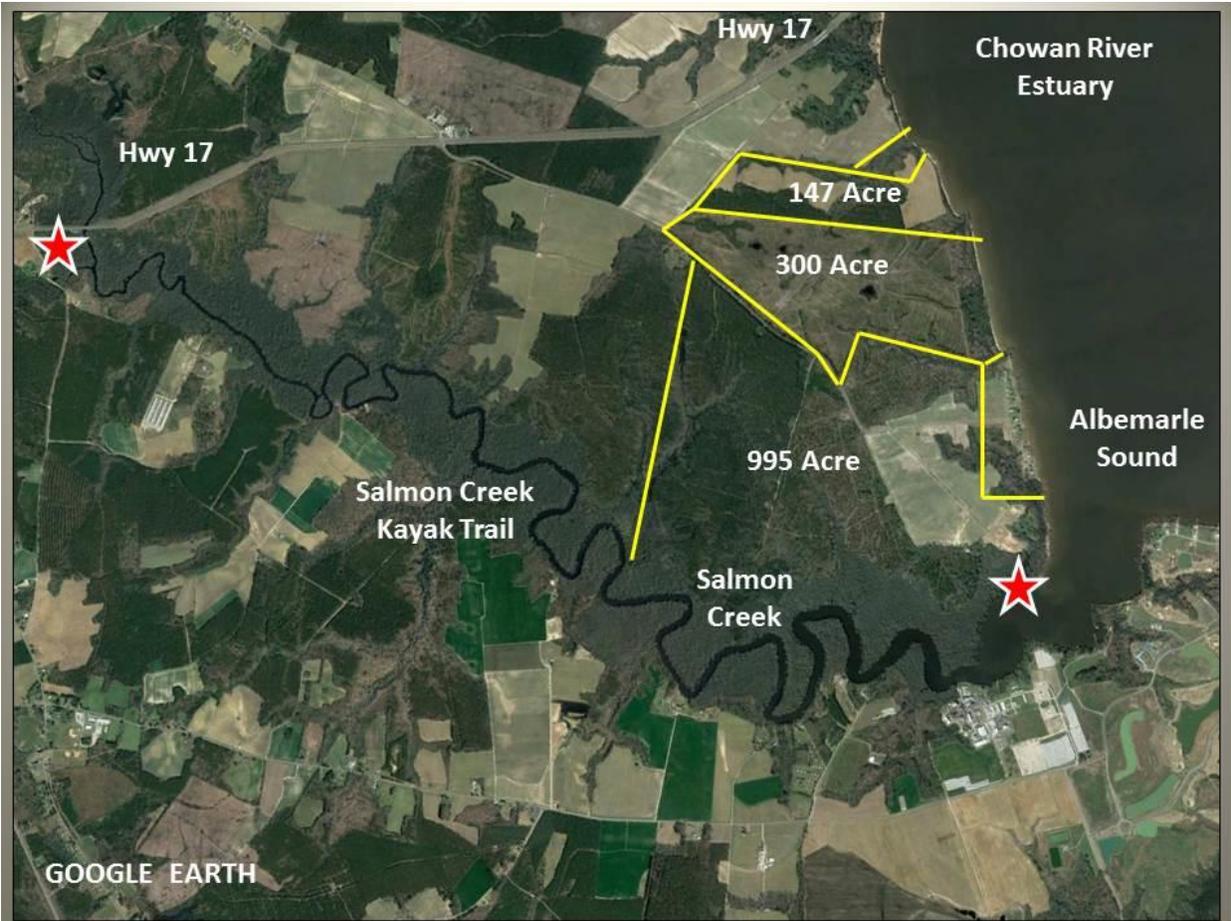


FIGURE 5. A Google Earth image shows the properties that constitute the Salmon Creek Water Hub including the 147 acre Bertie County Recreation Center and the two land area acquired by the NC Coastal Land Trust, now owned by NC's State Parks as Salmon Creek Natural Area. The southern property boundary is along the middle of Salmon Creek. The red stars indicate the potential put ins/take outs for a black-water kayak trail from Hwy 17 to Albemarle Sound.

Assets for the Salmon Creek Natural Area

1. A unique geologic upland setting with diverse eco-systems is surrounded by the confluence of four very different water bodies, each characterized by unique water chemistry, fauna and flora, and flow dynamics (Figure 4).
2. There is about 3.5 miles of land that borders the northeast side of the floodplain swamp forest and black-waters of the meandering Salmon Creek (Figure 5).
3. About 0.3 miles of Albemarle Sound waterfront consist mostly of swamp forest with its drowned cypress fringe and small area of barrier sand beach extending southwards into the mouth of Salmon Creek (Figure 6).

4. Just inside of the mouth of Salmon Creek is a heavy duty dock that needs new planking, but is generally in good shape and is an important existing resource that can be put to work in the near future (Figure 7).
5. A critical resource is the archeological history that exists on this key piece of property. There is a rich Native American history, as well as early European history that resulted from extensive archeological digs and studies by the First Colony Foundation and numerous other groups and historians.
6. On the south side of the four-lane Hwy US 17 where it crosses over Salmon Creek, there is a private and unimproved small boat launch area. With some work this could be developed into an improved public facility to provide many miles of black-water kayaking in Salmon Creek (Figure 4).
7. The addition of the Bal Gra (300 acre waterfront property) to the Salmon Creek Natural Area is the connector between the NC State Parks property and the Bertie County Recreation Center (Figure 4).
8. This adds a unique opportunity to restore a completely cut over landscape with a native biota for future generations.
9. The ~0.5 miles of beach, bluffs, perimeter land strip, and associated ravines are all a “significant natural area that represents a major contrast to the recently harvested timber land.



FIGURE 6. Left panel is the waterfront along the western end of Albemarle Sound with both swamp forest and sandy strand-plain beach shorelines. Right panel shows the low-energy floodplain shoreline of the black-water Salmon Creek.



FIGURE 7. Left panel is looking east from the heavy duty dock located within the semi-protected waters at the mouth of Salmon Creek down the length of Albemarle Sound. Right panel is looking west up the Salmon Creek with the installation of a water-level recorder to monitor storm events.

Bal Gra Portion of the Salmon Creek Natural Area

The 300 acre Bal Gra property (Figure 8) is a critical connector between the Bertie County 147 acre Recreational Center and the NC State Parks 995 acre Salmon Creek Natural Area. Bal Gra has recently been acquired by the NC Coastal Land Trust and will soon be turned over to the NC State Parks as part of the Salmon Creek Natural Area. Much of the upland area has recently been clear-cut (Figure 8) and is now covered with small pines and scrub/shrub. Only the coastal fringe west of the Albemarle shoreline and very small ravines retain a natural forest. The property is mostly an upland portion of the Talbot Terrace which extends east to the Albemarle shoreline where it forms an eroding bluff. The Albemarle shoreline is very straight with a very narrow sand strand-plain beach in front of the eroding bluff and is bounded on both the north and south by a small ravine and associated delta flat and cypress fringe (Figure 6A). The Bal Gra site has about 1/2 mile of east-facing estuarine shoreline that is directly at the confluence of the west end of Albemarle Sound and the Chowan River estuaries. The eroding bluff is the supply source for all the sand on the sandy beaches.

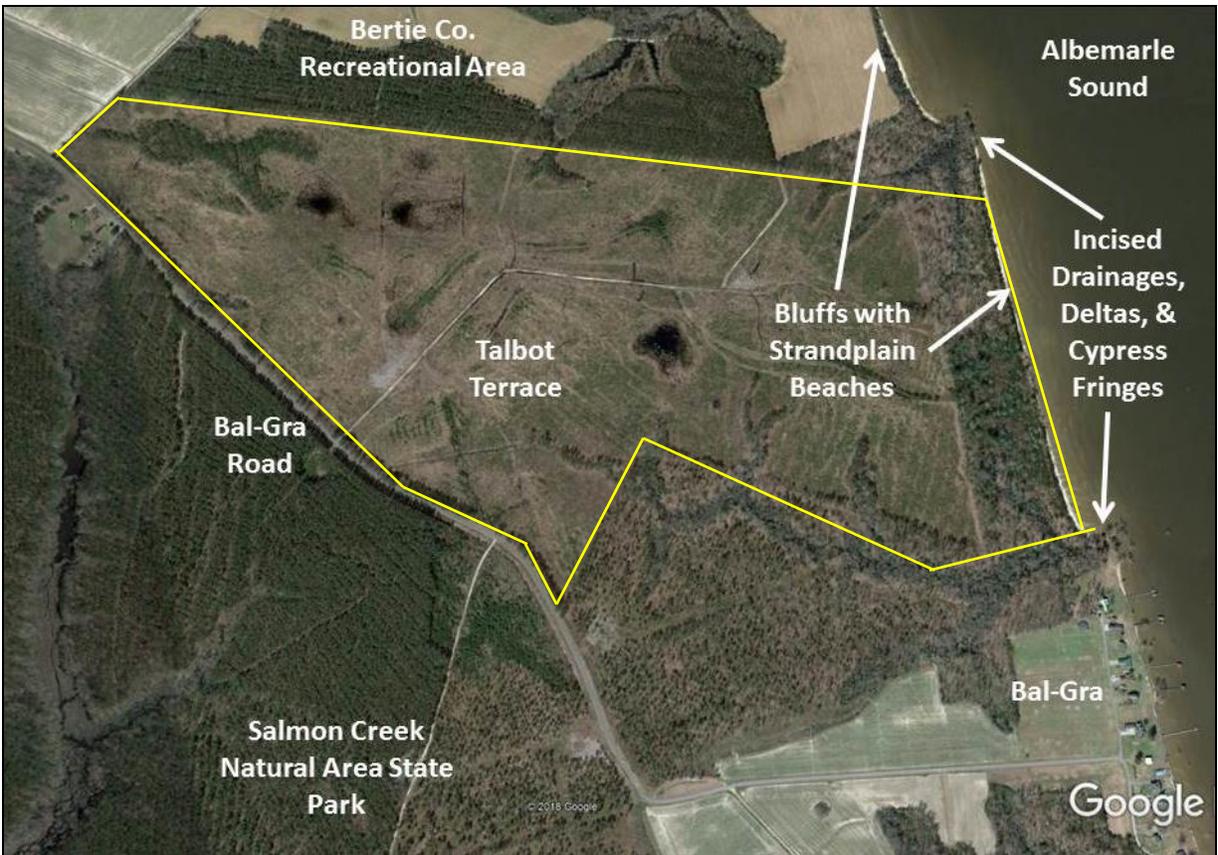


FIGURE 8. A Google Earth image shows the potential 300 acre site that would connect the Bertie County “Tall Glass of Water” with the NC State Parks “Salmon Creek Natural Area”.

BERTIE COUNTY’S RECREATION CENTER

This 147 acre piece of water-front property (Figure 9) was purchased by Bertie County in 2017 to provide its citizens with a water-front for many different types of aquatic opportunities and adjacent land for recreational activities. The major portion of this land is an upland portion of the flat Talbot Terrace and consists of mixed agriculture and pine plantation. The northern boundary is a small ravine formed by an incised ephemeral stream that is heavily wooded with a dam across an even smaller tributary stream. Where this incised stream discharges into Albemarle Sound there is a series of drowned cypress trees that originally grew in the floodplain of the stream; now with rising sea level the drowned trees form a natural buffer that semi-protects that shoreline segment from severe erosion. Most of the eastern park boundary is an eroding bluff of the flat Talbot Terrace along the western edge of Albemarle Sound. Erosion of the bluff is essential to provide sand for the narrow sandy strand-plain beach (Figure 10). The western access point to the property is on a dirt farm road off the Bal Gra Road (NC 1501).

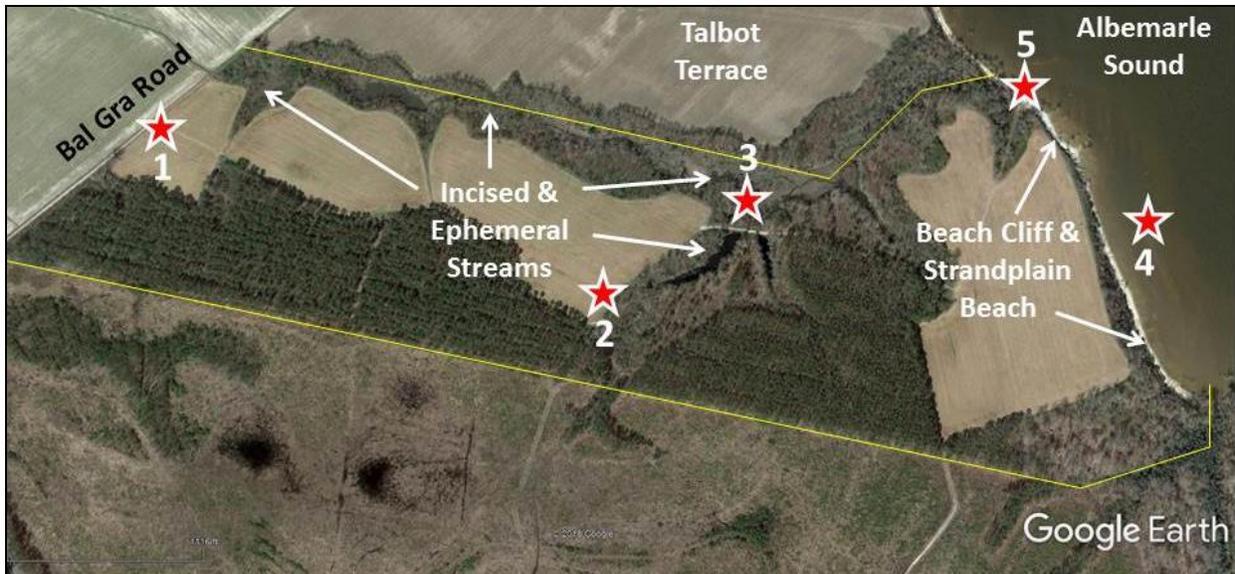


FIGURE 9. A Google Earth image shows the 147 acre land acquired by Bertie County as a regional Recreation Center. Notice the extent of the Albemarle shoreline and mixed open field and pine forest nature of the property.



FIGURE 10. Photographs show the Albemarle shoreline with mixed areas of swamp forest and drowned cypress trees surviving in the water and the important sandy beaches. The source of the beach sand comes directly from the active erosion of the Talbot Terrace bluff that is shown in the right panel.

The recreational opportunities for the Bertie region are vast and varied ranging from summer swimming (Figure 11) to winter seafood boils or BBQ pig-pickings (Figure 12). Other activities range from land-based activities such as hiking, biking, star gazing, and birding, to water-based boating and kayaking, and from primitive to RV camping.



FIGURE 11. Photographs show the Albemarle Sound beach being used for swimming, kayaking, paddle-boarding, and just enjoying access to the water.



FIGURE 12. A down-easter oyster roast or BBQ on cold winter days brings people together to enjoy the natural resources of coastal North Carolina.