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MEMORANDUM

To: John Page, Parson Brinkerhoff

From: Lorrie Laliberte Boswell, CZR Incorporated

Date: 16, June 2015

RE: Mid-Currituck Bridge Task Order No. 20

Purpose: Summary information from February 2015 field inspections of Section 404 jurisdictional boundaries relative to potential changes since USACE approval (2009).

With the help of 2012 aerial photography, CZR field inspected portions of the previously approved Section 404 jurisdictional boundaries within the Preferred Alternative's the larger of the right-of-way and slope-stake + 25' boundary areas (impact area) to determine the current conditions and accuracy of the 2009 wetland boundaries. Mainland Currituck County and the Dare County portions of the impact area were examined (generally north to south and east to west) on 3 February 2015 and the Currituck Outer Banks portions were evaluated (south to north and east to west) on 4 February 2015.

Approximately 25 jurisdictional areas were identified from review of the recent aerial photographs within the Preferred Alternative impact area. Some of these areas were portions of a single, larger jurisdictional feature and some were a conglomerate of labeled jurisdictional features shown in the 2011 Natural Resources Technical Report (CZR 2011). Because of the preliminary nature of this task, representative portions of these jurisdictional areas, based on aerial photographs and on-site inspections, were evaluated in the field. Based on the aerial photographs and on-site inspections, the sites visited appeared to be representative of the 25 jurisdictional areas. A Trimble Pro XR hand-held unit was used to help locate the previous jurisdictional boundary and the hydric status of the soils was evaluated by using a Dutch soil auger. Photographs (attached) also were taken to characterize the site conditions during the inspection. Additional and adjacent areas were reviewed for potential major changes in biotic community types and roads within a mile of the area were driven to inspect for potential eagle nests.

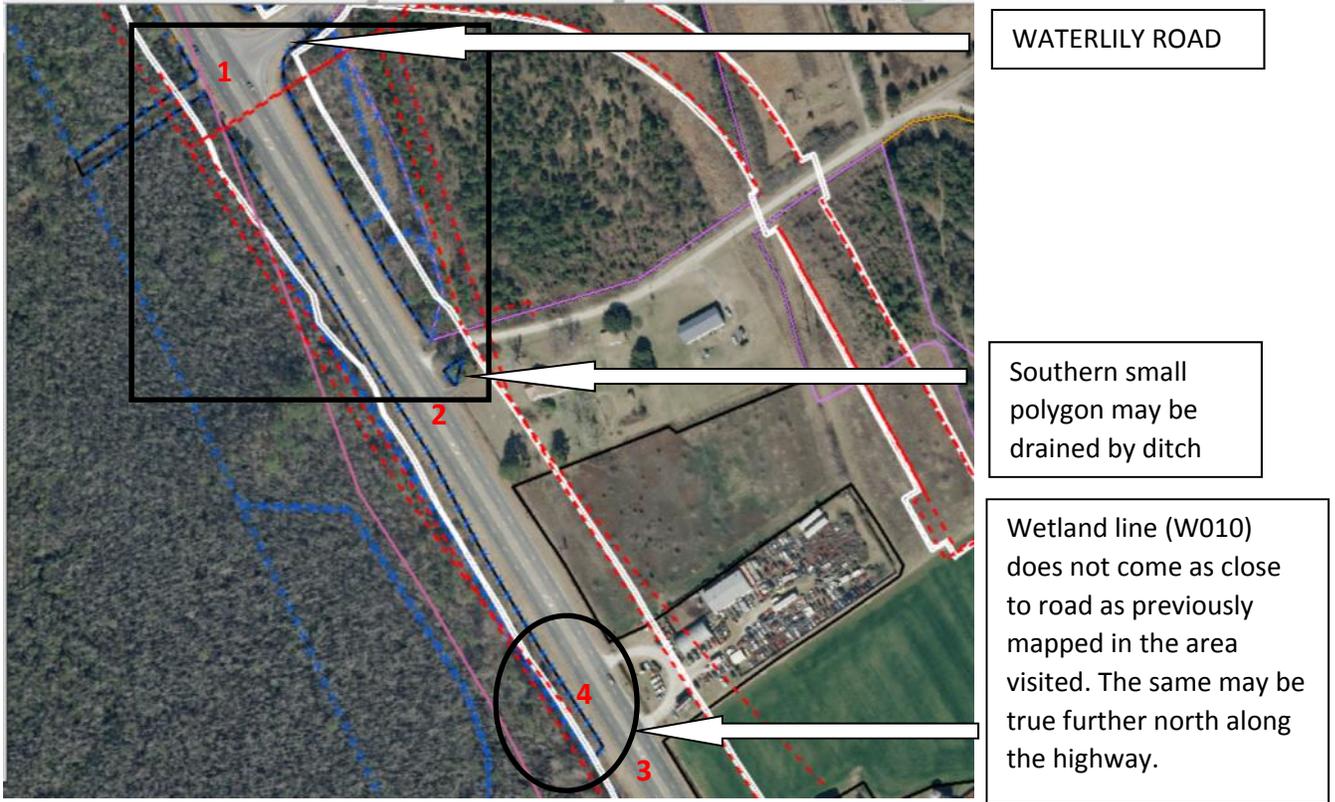
The following pages represent screen-shots of aerial photos at selected sites with the wetland polygons of interest along with field notes taken during the inspections. Numbers within the aerial photos correspond to locations where photographs were taken during the evaluation.

Summary of Findings

Differences in the jurisdictional boundaries were documented during the field visit; however, the scope of this task did not involve quantification of these differences or how they would affect jurisdictional impacts. There were some changes between wetland and upland categories and some are illustrated on the following pages. Some of the differences resulted from changes in environmental site conditions, and some could be the margin of error associated with jurisdictional determinations, done over time during different seasons, conditions, and by different evaluators. It did not appear the differences were specific to the Preferred Alternative's impact area, nor did it appear that overall quantities of potential project impacts to jurisdictional areas would be notably different. A noteworthy finding was the erosion of the shoreline along the east shore of Currituck Sound within the Preferred Alternative's impact area, where many fallen trees with exposed roots were found. The shoreline change does not appear to have affected the area where the bridge abutment is located in the preliminary design of the Preferred Alternative. Areas to the south of the bridge impact area show an apparent accretion of marsh and westward movement of the marsh/open water boundary (based on review of the 2012 aerial photographs). This area is outside and south of the impact area about (3,500 to 4,500 feet) and was not surveyed during the field visit. Perhaps there has been some migration of shoreline material from the shoreline in the project impact areas to the south, allowing the marsh to expand into shallower waters of the sound.

It is unlikely the USACE will re-approve the previous jurisdictional boundaries without some revisions. Approximately 4.2 miles of jurisdictional boundaries (adjacent to upland) exist within the Preferred Alternative's impact area. About half of this linear boundary occurs parallel to US 158 near the road shoulder and is expected to be a relatively straight-forward re-delineation. The amount for re-delineation could potentially be done in a week or two of field work. It is recommended that a wetland delineation task order be issued for the impact area that encompasses the right-of-way and slope stake plus 25-foot impact area plus perhaps some additional area to provide some flexibility for minor alignment changes during final design. Upon NTP of a new task order, CZR would:

- Conduct the delineation field trip to flag the wetland boundaries
- Arrange for USACE, NC Division of Water Resources (NCDWR), and NC-DCM representatives to review the boundaries (second trip under current task order)
- Finalize the boundaries and produce a new wetland shape file so jurisdictional impact changes of the preliminary design could be determined for inclusion in the re-evaluation.
- Complete the associated paperwork for USACE, NCDWR, and NC-DCM approval.



WATERLILY ROAD

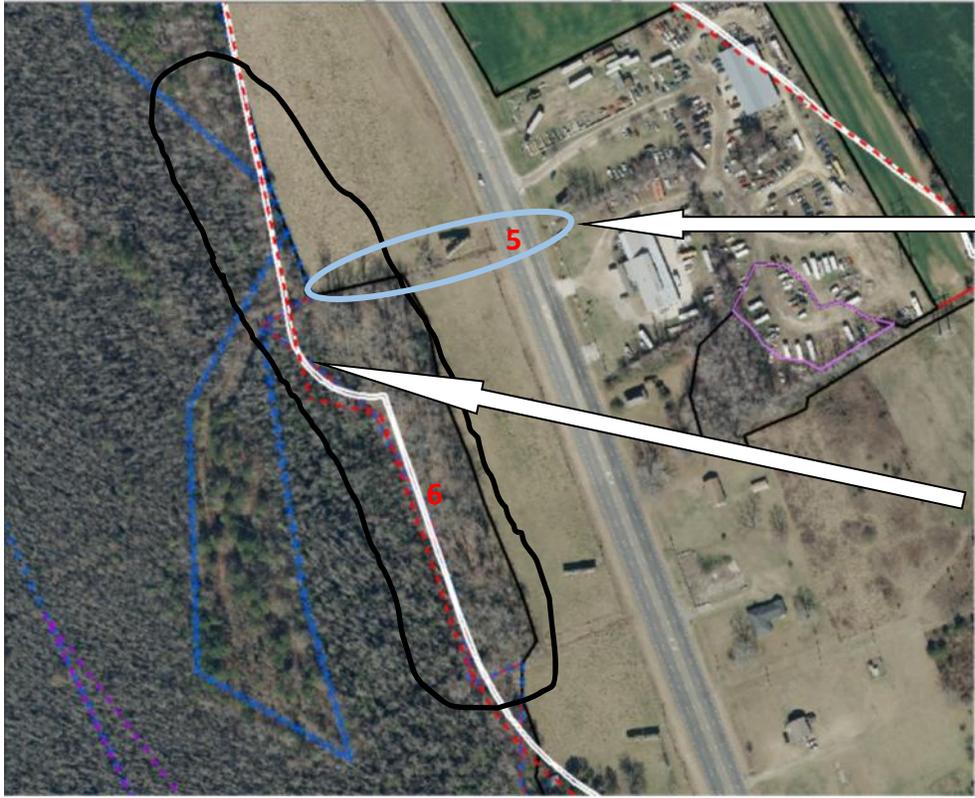
Southern small polygon may be drained by ditch

Wetland line (W010) does not come as close to road as previously mapped in the area visited. The same may be true further north along the highway.

Site 1. US 158 in the vicinity of Waterlily Road.

KEY:

 = area visited
 ++++ = wetland
 ---- = ROW
 == double white line=SS+25



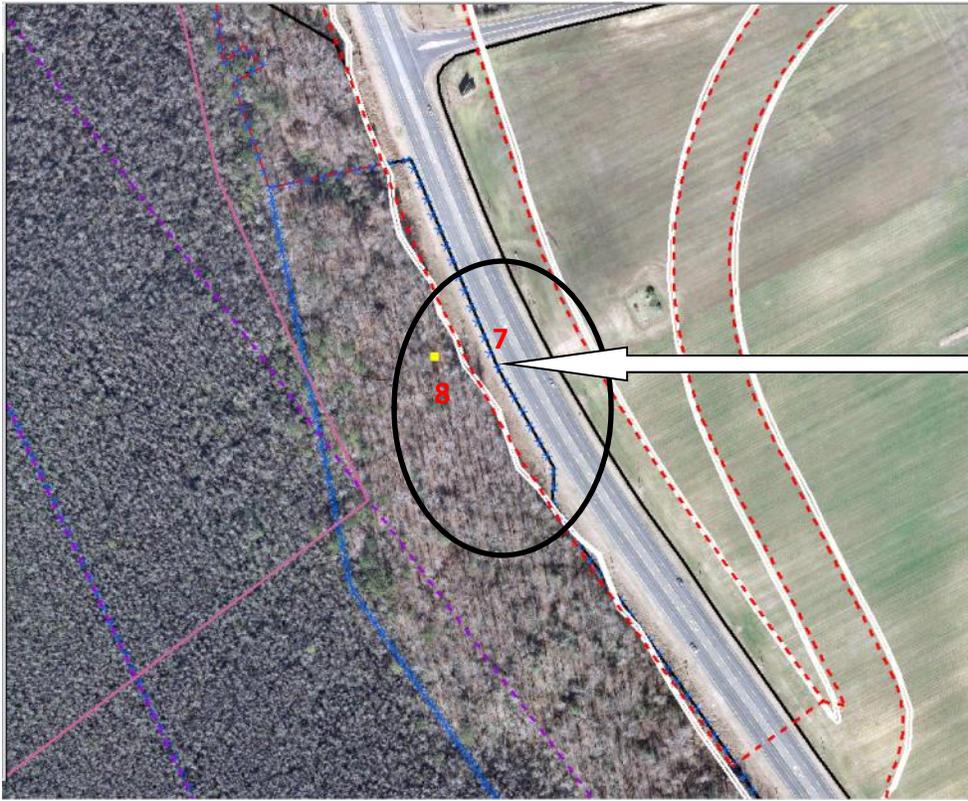
A culvert directs water from east side of road to west side through a ditch that leads into the wetland. Some vegetation in the feature, some bare areas, some sediment sorting, flow at time of visit. May/may not be called Waters of US.

There are some sections where the wetland line (W010) needs to be adjusted both ways (too much wetland and not enough wetland).

Site 2. US 158 north of Aydlett Road.

KEY:

 = area visited
 ++++ =wetland
 ---- = ROW
 == double white line=SS+25

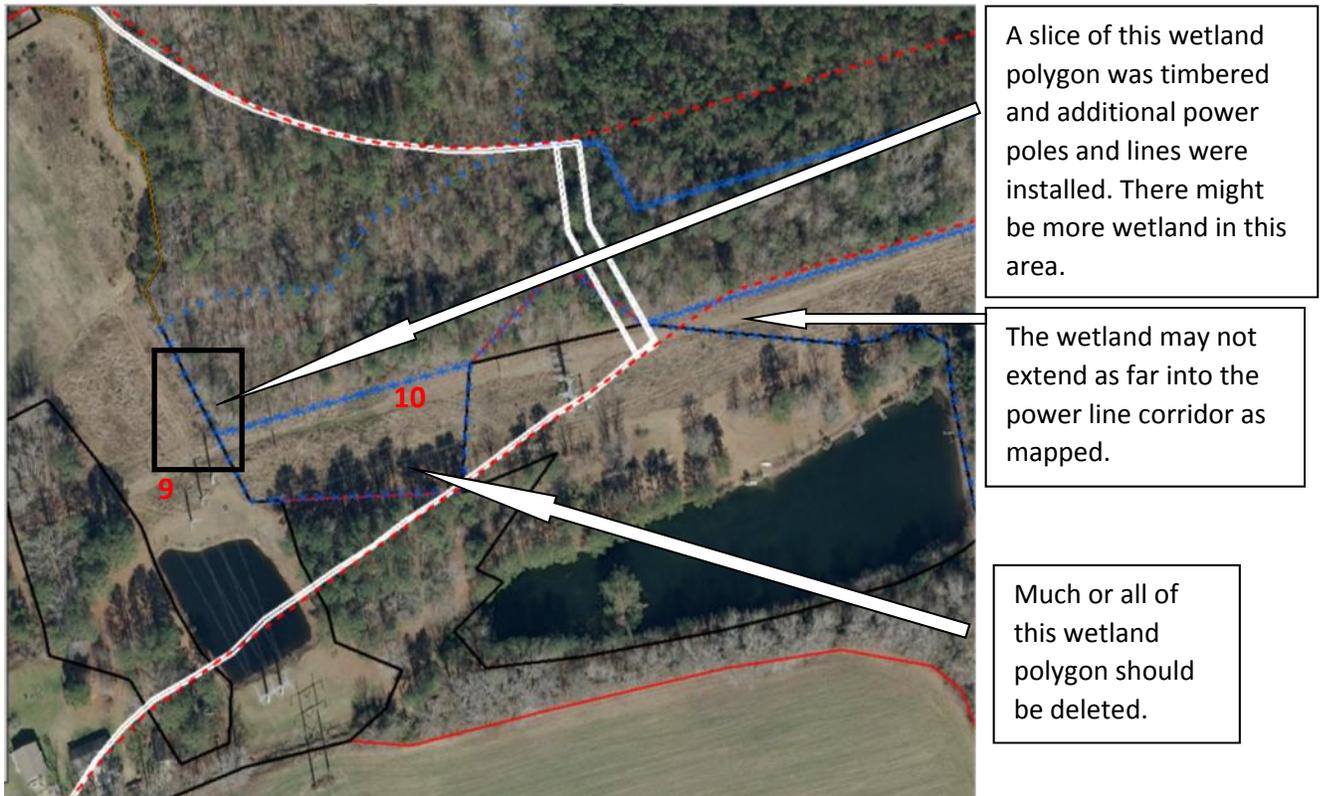


Much, or possibly all, of this mapped wetland polygon (portion of W010) within the ROW and SS+25 impact zones should be upland. The yellow square represents the wetland/upland boundary verified/confirmed 3 February 2015 (approx. 97 feet west of mapped wetland line).

Site 3. US 158 south of Aydlett Road.

KEY:

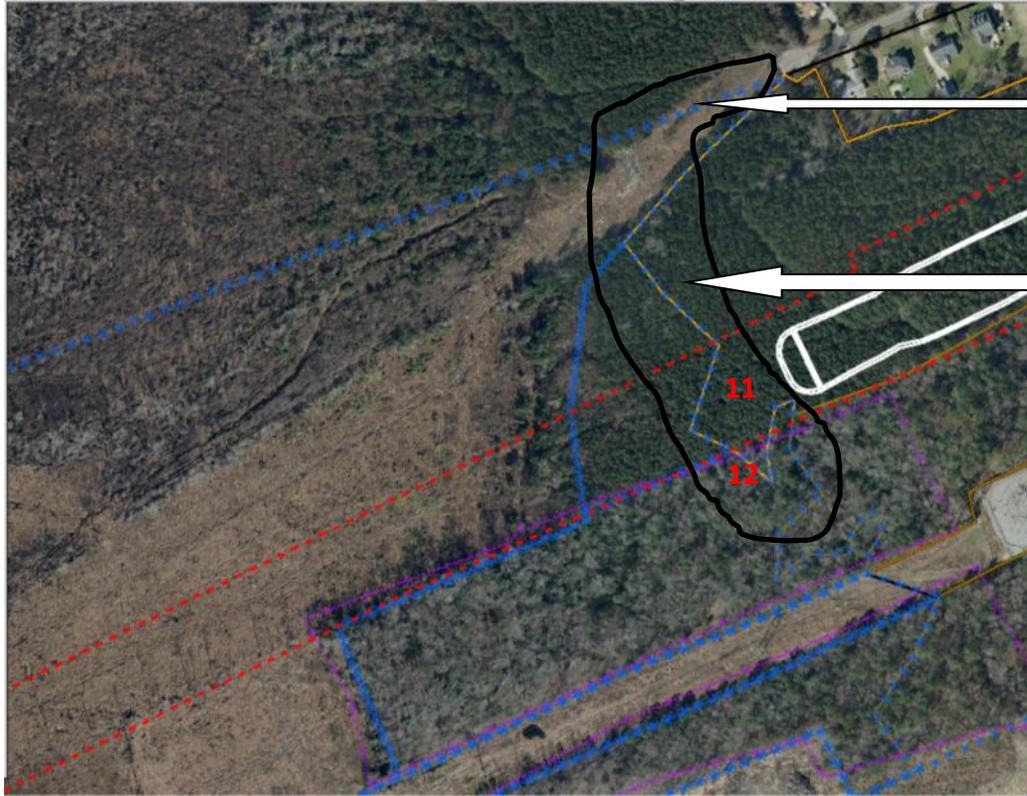

 = area visited
  = wetland
  = ROW
  = SS+25



Site 4. West side of Maple Swamp (jurisdictional feature W013 in the 2011 NRTR). Most of the area in this image was visited during the field inspection.

KEY:

○ □ = area visited ++++ = wetland - - - = ROW double white line = SS+25



Some discrepancy in the shape file; needs additional evaluation; wetland may be altered.

Portions of line checked and seemed fairly accurate; however, areas of pines are low relief and require many soil profiles. The purple polygons are Natural Heritage element occurrences of non-riverine swamp forest in Maple Swamp Natural Area. The polygons are still intact and have many large trees.

Site 5. East side of Maple Swamp (jurisdictional feature W013 in the 2011 NRTR).

KEY:


 = area visited
  = wetland
  = ROW
  = SS+25



There has been some shoreline erosion along the eastern shore of Currituck Sound.

Marginal wetland; small polygon

Site 6. Areas north of the Outer Banks bridge landing corridor. Most of the area in this image was visited during the field inspection.

KEY:

○ □ = area visited ++++ = wetland --- = ROW double white line = SS+25



Green diamond represents the location of an ~30'x30' pond dug out of upland. It does not appear to be a new pond. It is surrounded by wax myrtles and had water in it at the time of the visit.

The shoreline has eroded 45' east from previous mapping and is now located at the two green diamonds. The tiny wetland polygon (formerly W089) mapped here is now open waters of the Currituck Sound. There were a few stumps in the water where the polygon used to be.

Site 7. Areas south of the Outer Banks bridge landing corridor. Most of the area in this image was visited during the field inspection.

KEY:

○ □ = area visited ++++ = wetland - - - = ROW double white line = SS+25



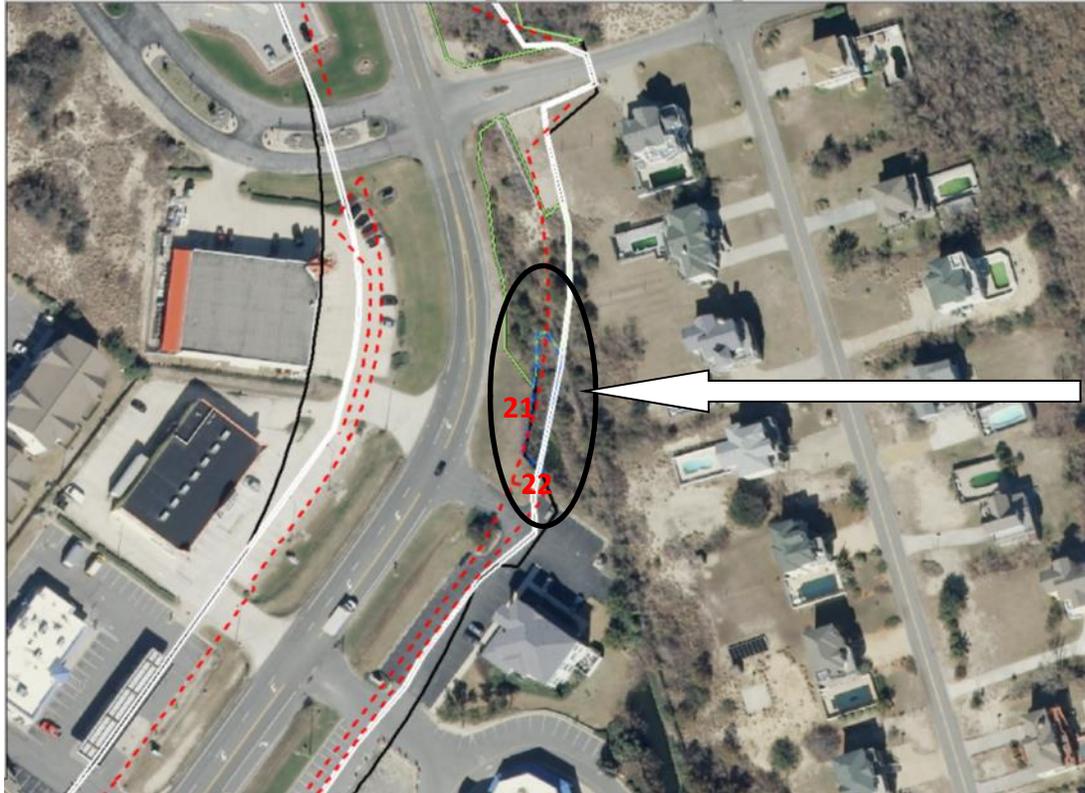
A breach has occurred here. This was mapped as pond P018 and should no longer be considered a pond but Currituck Sound waters. The wetland (W086A) between the pond and the sound has been reduced.

Wetland W086 drains into this water body and at times of high water, the sound waters could flow into the wetland. The small strip of mapped upland between the W086 wetland and this water may be wetland.

Site 8. Areas south of the Outer Banks bridge landing corridor near N Harbor View. Most of the area in this image was visited during the field inspection.

KEY:

○ □ = area visited ++++ = wetland - - - = ROW double white line = SS+25



This wetland polygon (W076, 76a) is likely serving as a storm water wetland. There was water in it at the time of the visit. A partially buried corrugated plastic pipe helps to channel water from the parking area to the wetland. Northern boundary may be slightly different.

Site 9. Areas south of the Outer Banks bridge landing corridor across from Ace Hardware. Most of the area in this image was visited during the field inspection.

KEY:


 = area visited
  = wetland
  = ROW
  = SS+25



Small waterbody (P004) is still a pond with no apparent culverts to other waterbodies. The waters to the west were previously mapped as a pond (P003) but are connected via Little Jean Guite Creek to Currituck Sound.

Site 10. US 158 Crossing of Kitty Hawk Woods in Dare County.

KEY:

○ □ = area visited ++++ = wetland - - - = ROW double white line = SS+25



Photo #1 – West side of US 158. View to west. Wetland # W008 to right and wetland W010 to the left.



Photo #2 – East side of US 158. View to north. Wetland # W012 in foreground (small, between driveways) and wetland # W0011 in background.



Photo #3 – Portion of W010 west of US 158 with more upland along road shoulder.



Photo #4 – View along road shoulder looking north along right-of-way at what was mapped as wetland W010 which may include some portions of upland.



Photo # 7 – West side of US 158 south of Aydlett Road; portion of forest mapped as W010 that is upland.



Photo # 8 – Portion of fringing upland hardwood forest west of US 158 within W010.



Photo # 5 – Ditch/drain west of US 158 that drains into W010.



Photo # 6 – View of wetland # W010 to the north; wetland on left, upland on right.



Photo # 9 – Biologist is standing at wetland boundary (former forest boundary) that has been cleared for power line expansion.



Photo # 10 – View to east along power line corridor.



Photo # 11 – Young pine forest near wetland boundary along eastern edge of Maple Swamp.

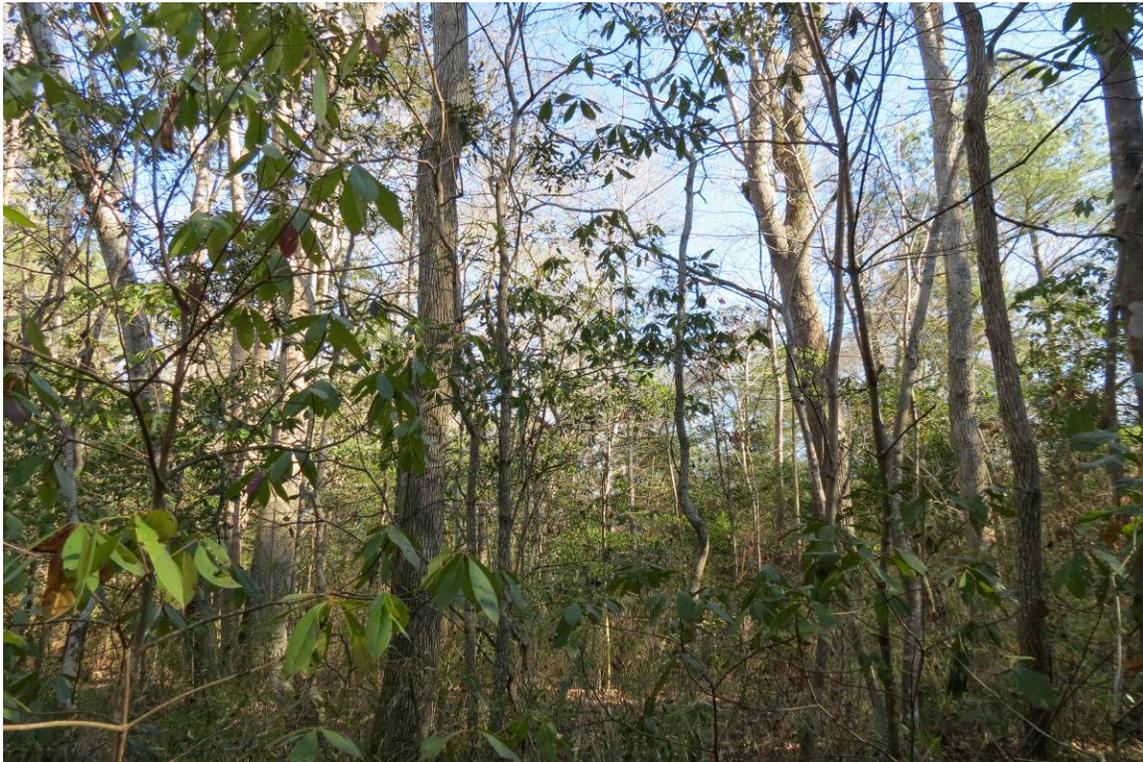


Photo # 12 – North Carolina Natural Heritage Program natural non-riparian wetland hardwood forest, east side of Maple Swamp.



Photo #13 – View to north of wetland # W093.



Photo # 14 – Biologist is standing along former shoreline, documenting eastward migration of shoreline edge.



Photo # 15 – View to north along shoreline with scattered uprooted fallen trees.

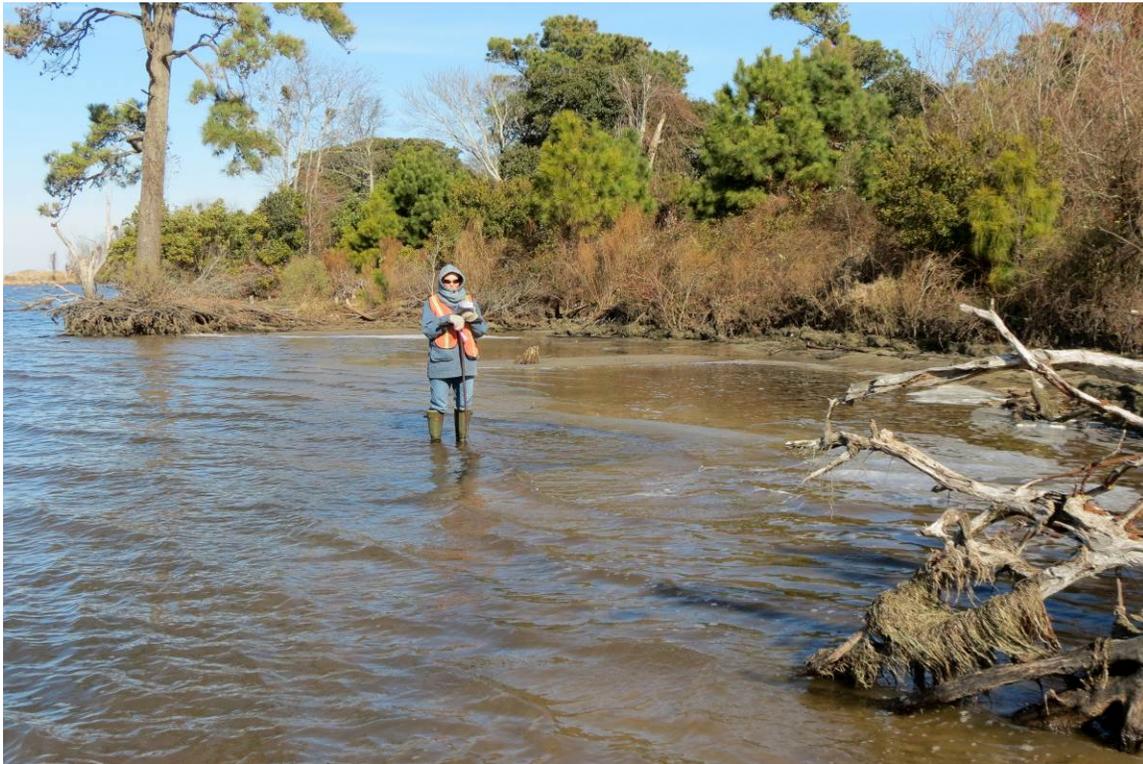


Photo # 16 – Biologist is standing at the western edge of former small wetland (W089) now in Currituck Sound.



Photo # 17 – Former pond (P018) breached across wetland (W086a), now connected to Currituck Sound.



Photo # 18 – View of ditch/drain between former pond (P018) and wetland # W086.



Photo # 19 – View to the north within wetland # W086.



Photo # 20 – View from road to northwest toward wetland # W086.



Photo # 21 – Biologist along mapped western boundary of wetland #W076 (appears accurate).



Photo # 22 – Southern end of wetland # W076 across from Ace Hardware.



Photo # 23 – Pond (P004) view to east in Dare County north of US 158.



Photo # 24 – Open waters of Little Jean Guite Creek (mapped as pond P003) that is connected to the Currituck Sound.

The following photos are not referenced on the site aerials but described below.



Photo # 25 – View to the north of the western shore of Currituck Sound showing habitat near bridge corridor.



Photo # 26 – View to the north of Currituck shoreline at bridge corridor crossing.



Photo # 27 – View of approximate bridge corridor landing on the Outer Banks as viewed from mainland on the western shore of the Currituck Sound.



Photo # 28 – View of approximate bridge corridor landing on the mainland as viewed from the Outer Banks along the eastern shore of Currituck Sound.